WORLD BANK WORKING PAPER NO. 199

Berg Water Project

Communications Practices for Governance and Sustainabilty Improvement

Lawrence J.M. Haas
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Abstract

The past decade has witnessed a major global shift in thinking about water, including the role that water infrastructure plays in sustainable development. This rethinking aims to better balance the social, economic, and environmental performance aspects in the development and management of large dams. Additionally, it reinforces efforts to combat poverty by ensuring more equitable access to water and energy services.

There is also growing appreciation of how broad-based policy reforms come into play and influence decisions around issues related to dams. Apart from democratization of the development process itself, it is increasingly recognized that infrastructure strategies must complement strategies for water, environment, and energy security; they must also address emerging concerns to reduce vulnerability in water resource systems due to the probability of climate change.

Communication comes to the forefront in modern approaches to dam planning and management in several respects. Communication is central to multistakeholder dialogue and partnerships at all levels needed to achieve sustainability and governance reform in water resource management and infrastructure provision. At the same time, communication drives the advocacy to mobilize political will and public support for beneficial change and continuous improvement in practices.

This case study emphasizes that it is important not only to mobilize all opportunities to reconcile water demand and supply in river basins facing increasing levels of water stress, but also to effectively integrate governance and anticorruption reforms and sustainability improvements into all stages of the planning and project cycle—adding value for all stakeholders, not just for some of them.

Disclaimer

The Berg Water Project (BWP) is not a World Bank project. This paper is an overview of a project implemented by the Trans-Caledon Tunnel Authority (TCTA), a South African state-owned enterprise responsible for development of bulk water infrastructure. The BWP was funded on a commercial basis by the following agencies: Development Bank of Southern Africa; European Investment Bank; ABSA.

Preface

This case study of the Berg Water Project (BWP) in South Africa was prepared as part of the initiative, Good Communication Practices for Governance and Sustainability Improvement: Opportunities in Dam Planning and Management supported by the World Bank Netherlands Water Partnership Program (BNWPP). The BNWPP mission is to improve water security by promoting innovative approaches to Integrated Water Resources Management (IWRM) and thereby contributing to poverty reduction.[1]

The BWP is one of two case studies from the southern Africa region to provide practical grounding for recommendations that capture the synergy in connecting governance, sustainability, and communication themes in dam planning and management. South Africa, and the BWP in particular, was selected for case study because of the comprehensive and progressive nature of national water legislation—recognized to be among the best in the world.

Lessons from these case studies and additional information are synthesized in a handbook for infrastructure practitioners working on dam planning and management. A synopsis of the BWP case study is presented in an annex in the practitioner handbook. This paper is a more comprehensive version of the BWP case study, illustrating the rich contextual background and tapestry of lessons the project has to offer.

Box A summarizes the history of the Berg Water Project. Its purpose is to capture and store winter runoff from the mountainous upper reaches of the Berg River basin and transfer it to the existing Western Cape Water Supply System. The BWP will contribute 18% to the total bulk water storage. This will ensure that urban demand is met and will increase assurance of supply. The BWP must release enough water for the statutory reserve flow to meet basic human, ecological, and seasonal needs of downstream river users and for water quality and sedimentation management.

Looking through governance, sustainability, and communication lenses, the BWP provides a unique case study in several respects:

- It was the first major bulk water transfer scheme approved in the post-apartheid era under South Africa's progressive water legislation, the largest water project in the country at the time. As such, the design parameters and the decision to build the BWP constituted the first major test of the new progressive legislation. Consequently the BWP emerged as the first bulk water supply project in water-stressed South Africa directly linked to water demand management.
- BWP is a good illustration of a contextual translation of progressive macropolicy reforms to an infrastructure strategy and project, and the challenges entailed. It introduced new mechanisms for project governance and partnership approaches, in which sustainability from the perspective of stakeholders is more broadly defined in terms of social, environmental, and economic performance.
- This case study offers a holistic view of how large dam developments can be optimized as wider development interventions, rather than narrowly defined as physical assets delivering water and energy services.
- The BWP promises further insights on adaptive management of a dam based on multistakeholder impact monitoring. It also links dam operations to a catchment management strategy founded on IWRM principles.

Box A. The Berg Water Project

The Berg Water Project (BWP), consisting of the Berg River Dam and supplemental diversion scheme, is designed to augment raw bulk water supply to the greater Cape Town metropolitan area in the Western Cape region of South Africa.

The BWP was part of a multitrack drive to improve water security for over three million people served by the integrated Western Cape Water Supply System, in which combined demand from urban and agriculture users will exceed the water yield available from the area's conventional water resources before 2020.

The initial project planning occurred during South Africa's fundamental governance transformations in the 1990s. The project was approved by the South African Cabinet in 2002 but only after exercises in cooperative governance involving interested and affected parties (I&APs) in three sequential public processes: to prioritise water demand and supply reconciliation options (i) in the Berg Water Management Area, (ii) around the project EIA, and (iii) on Cape Town's targets and investment plan for water services improvement, a statutory requirement.

Cape Town residents were subject to stringent curbs in water use during the drought of 1998–2000 when these decisions were made. This had a deep impact on public perceptions about water security and polarized views on how to deal with scarcity. Certain environment NGOs and rights-based CSOs (particularly the Wildlife and Environment Society of South Africa and Earthlife Africa) were firmly against the BWP. They contended that demand management was a better investment and the only environmentally sustainable solution. The City of Cape Town argued that demand and supply measures were complementary and both were urgently needed.

The South African Cabinet approved the BWP on the condition that Cape Town take steps to ensure a 20% reduction in projected water demand by 2010. The Trans-Caledon Tunnel Authority (TCTA), a state-owned entity mandated to implement South Africa's raw bulk water infrastructure, implemented the project with construction starting in 2004 and the project coming into operation in 2008.

From a strategic development perspective, demand-supply reconciliation is central to achieving water security in most water-stressed regions of the world. The BWP case study encompasses two relevant story lines. The first relates how communication is a vital ingredient both to achieve public endorsement and political legitimacy of decisions on bulk water supply projects and to deliver sustainable improvements in infrastructure provision. This project involves stakeholders, manages the risks they perceive as important, and addresses their expectations directly. The second story line concerns the role water conservation and demand-side management play in the overall sustainability equation and how communication is essential for the behavioral changes needed.

BWP also demonstrates the value of moving beyond stakeholder consultation as a validation exercise and empowering the dialogue to drive innovative thinking and enable partnership approaches. In 2007 the multistakeholder Reference Group working on proposals to establish the Berg Catchment Management Authority agreed:

> ". . . it is becoming more and more obvious that water professionals, policy makers or water ministries alone can no longer resolve the water problems of a country or river basin. The problems are too complex, interconnected, and multidimensional to be handled by any one institution, or one group of professionals."

The accomplishments of the BWP emphasize the need for effective communication at all levels of decision making and across all stakeholder interests.

One immediate and tangible outcome of the participatory philosophy that South Africa adopted on the Berg Water Project and on demand-supply reconciliation is that both Cape Town residents and the wider economy benefited from an 18% water supply increment combined with a 20% reduction in projected water demand—a net gain of 48%.

Acknowledgments

This paper is the product of discussions with people in South Africa in February 2008 and of subsequent research through documents collected in Pretoria, Centurion, and the Western Cape. The case-study team extends its gratitude to all the interested and affected parties in the Berg Water Project that they met on the mission.

Special thanks is extended to Paul Roberts, Charles Sellick, Jessica Hughes, and Liane Greeff, who provided valuable support for the case-study team and insights as participants in the BWP process. Additionally, we wish to thank the many representatives of Department of Water Affairs and Forestry (DWAF), Trans-Caledon Tunnel Authority (TCTA), and the City of Cape Town (CCT) and Ninham Shand Inc. for their valuable time, insights, and willingness to share their experiences.

Special acknowledgement is also given to former members of the Environment Monitoring Committee (EMC) for the Berg Water Project, who offered their insights and perspectives, and to Department of Water Affairs and Forestry (DWAF) and Trans Caledon Tunnel Authority (TCTA) for permission to use the maps and photos contained in the case study.

Acknowledgement is extended to The World Bank-Netherlands Water Partnership Program (BNWPP) for its support.

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Acronyms and Abbreviations

BWP	Berg Water Project
BWCC	Berg Water Capital Charge
BNWPP	The World Bank-Netherlands Water Partnership Program
CCT	City of Cape Town
CMA	Catchment Management Authority
CMS	Catchment Management Strategy
CSOs	Community service organizations
DBSA	Development Bank of South Africa
DEAT	Department of Environmental Affairs and Tourism
DevComm	Development Communication
DWAF	Department of Water Affairs and Forestry
ECO	Environmental Control Officer
EIA	Environmental impact assessment
EIB	European Investment Bank
EIR	Environmental impact report
EMC	Environment monitoring committee
EMP	Environmental management plan
EWRM	Enterprise-wide risk-management framework
FBW	Free Basic Water Policy
FFP	Franschhoek First Policy
IDP	Integrated development plan
IFR	Instream flow requirement
IWRM	Integrated water resources management
I&AP	Interested and affected parties
LOC	Letter of Commitment
NWA	National Water Act (1998)
NWRS	National Water Resource Strategy
POE	Panel of experts
PPP	Public Participation Process
ROD	Record of Decision
SAG	Skuifraam Action Group
SUP	Sustainable Utilization Plan
TCTA	Trans-Caledon Tunnel Authority
TI	Transparency International
UaW	Unaccounted for water
WCD	World Commission on Dams
WC/WDM	Water Conservation and Water Demand Management
WCWSS	Western Cape Water Supply System
WMA	Water Management Area
WCR	Water Resource Commission Report (2006)
WFD	European Water Framework Directive (2000)
WRC	Water Research Commission
WRM	Water Resource Management

WSDP	Water Services Development Plan
WSA	Water Services Act (1997)
WSAs	Water Service Authorities
WSP	Water Service Providers
WUAs	Water User Associations

Notes

[1.] The broader goal of this BWPP initiative is to explore ways to strengthen communication activities on dam-related planning and management linking this to advancement of governance reforms promoting sustainable infrastructure and poverty reduction. Subobjectives are

1. To create awareness of the benefits/costs of strengthening the role of communication in water infrastructure development initiatives;
2. To demonstrate how communication can improve capacity to address corruption in water infrastructure provision through advocacy and mobilizing support to build anticorruption measures into policy initiatives, regulatory systems, and projects;
3. To develop good practice guidelines for communication that cover all stages of the infrastructure project cycle;
4. To build capacity within project teams and government officials to adopt modern communication principles and tools relevant to their work;
5. To develop knowledge management and training products (i) tailored to practical operational concerns, and (ii) to address what key actors in government, civil society, and the media prioritize as key capacity building needs.

CHAPTER 1

Contextual Background

South Africa is a water-stressed, semi-arid country subject to highly variable runoff and cyclical drought.[1] Only 35% of the country has precipitation of 500 mm or more. Over 65% of the country does not receive enough rainfall for successful rainfed crop production. Generally water is seen as a constraint to the nation's aspirations for social progress and economic growth, although one that can be overcome by a fundamental shift to an integrated water resource management (IWRM) framework, balancing future water requirements with availability.[2]

The irrigation sector accounts for over half of water use in the country, while only contributing approximately 6% to the GDP. Government policy statements acknowledge that the irrigation sector must find the water it needs for expansion increasingly through water savings while gradually sacrificing some of its current share to public and industrial usage and to the new reserve flow requirement for watercourses serving basic human and ecological needs. Apart from optimizing conventional surface and groundwater sources, South Africa's strategy is to move simultaneously on multiple tracks, including water conservation, demand-side management, mobilization of nonconventional water supply sources like desalination, and fostering long-term spatial and structural changes in water demand.[3]

South Africa's fundamental goal is to achieve equitable access to water resources while ensuring their efficient and sustainable use. A national slogan from the mid-1990s captures this goal, "Some, For All, Forever," meaning access to a limited water resource (some), on an equitable basis (for all), in a sustainable manner, now and in the future (forever).[4] The 2004 National Water Resource Strategy (NWRS), self-described as "a blueprint for survival," elaborates strategies to "improve the progressive reallocation of water to sectors of society previously excluded from access to water to bridge the divide between the first and second economies, whilst maintaining existing beneficial water uses and encouraging the greater efficiencies needed in our dry country."

Macro Policy Setting

During the post-apartheid transitions to multi-racial democracy, South Africa overhauled its governance framework comprehensively, starting with the Interim Constitution (1994). This mandated a high degree of decentralization as part of the commitment to participatory democracy. Among the broader challenges that the new South Africa faced then, as now, include accelerating growth while sharing benefits more equitably; broadening participation; ensuring local participation in natural resource management, especially water "that permeates most deeply into all aspects of life;" extending opportunities to all; and providing equitable access to public services.[5]

In keeping with international consensus on water governance, South Africa's post-apartheid water strategy proposed the separation of water management and water services provision. This was the basis for two main pieces of water legislation that won immediate international acclaim:[6]

- *The Water Services Act (WSA, 1997)* mandated both basic rights of access to water and sanitation and municipal duties to ensure equitable service provision. The WSA committed to raising standards for water services when needed with a combination of investments funded by water users and centrally allocated subsidies. All municipalities had to identify service improvement targets in open, collaborative, and time-bounded processes and to prioritize demand and supply-side investments to meet their targets. The Department of Water Affairs and Forestry (DWAF) that formerly focused on water management was mandated to be an "apex institution" with oversight for expansion of water and sanitation services.
- *The National Water Act (NWA, 1998)* set in motion the gradual shift to management of scarce water resources founded on IWRM principles with explicit focus on equity, sustainability, and the environment. The NWA transformed water control from a system of rights based on land ownership along rivers (the riparian system) to a system that allocates water equitably in the public interest. In addition to promoting water resource use for overall social and economic development, the NWA prescribed a "reserve" to meet basic human needs and maintain basic ecological functions.[7] This reserve is the only water allocation specified as a right under the constitution. Beyond this amount, water can be allocated to other productive uses. The NWA also provided for a phased setup of new institutions to support devolved water resource decision making at the catchment level.

The South African Constitution (1996) contains a "right to sufficient water." As elaborated in the WSA (1997), this right was subject to available resources (e.g., extension of services) and sustainability (financial planning, tariffs, service-level choices, and environmental monitoring). The constitution also did not guarantee the right to free water.[8] The concept of 25 liters of safe water per person/day within 200 meters of a household, which may be adjusted over time, was interpreted in practice as 6 kiloliters per household connection/month.

Elements of the water strategy relevant to dam planning and management and to related water service provision include the following:[9]

On integrated water resource management

- Divide the reserve for watercourses into two components: (i) the Basic Human Needs Reserve to guarantee the constitutional water rights of current and future generations, and (ii) the Ecological Reserve to maintain the ecology of rivers (or groundwater-dependent ecosystems) to a status based on objective scientific study and dialogue among interested and affected parties within a national protection categorization/classification system.
- Place dam planning and management decisions within the river basin management context, including the major challenge of assessing how much water can be extracted before the remaining instream flows fall below acceptable levels of risk for meeting downstream social, ecological, and economic needs.
- Devolve water resource management and regulation to Catchment Management Agencies (CMAs) created and mandated to develop a Catchment Management Strategy (CMS) with specific functions delegated, as decided locally by multi-user Water User Authorities (WUAs). The CMS must be within the framework of the NWRS.
- License all water uses locally, with the exception of reasonable domestic use, home garden use, and stock water requirements linked to local water allocation

Box 1.1. Seven goals for Water Resource Management—WRM (NWA, 1998)

1. Sufficient water for Basic Human Needs Reserve
2. Sufficient water for the Ecological Reserve
3. Equal access for all
4. Avoid waste and use water efficiently
5. Sufficient water for future demands of a healthy economy and prosperous society
6. Users pay their fair share for water use with equity in payment
7. Honor obligations to our neighbors

priorities, and over the longer term, shift from water allocation to water markets in a basin specific context.

- Include the costs of water conservation in the water pricing strategy (see Box 1.1). Those driving the marginal cost of water need to pay the marginal price with stiff penalties for proven, "ineffective" use of water and pollution of water bodies.

On integrated water service provision

- Base service provision on municipal boundaries regulated by Water Service Authorities (WSAs) and use national norms for services and tariffs set by DWAF; let municipalities decide the type of Water Service Providers (WSPs), i.e., public or private providers.[10, 11]
- Strengthen planning links between water resources and bulk water supply management, either directly as local municipality structures gradually assume supply roles or by involving Water Boards (operating as abstractors, purifiers, and distributors of the raw water) and specialized bulk water supply entities like TCTA.
- Mandate preparation of five-year Water Services Development Plans (WSDP). As a business plan, each WSDP must show targets for water conservation, demand management, and supply infrastructure investment, as well as the measures to reach unserved communities. WSDPs must also harmonize with municipal Integrated Development Plans (IDP) to coordinate all municipal service planning, subsidy, and delivery.[12]

After 1998 when the new legislation was in place, South Africa focused on the implementation challenges, especially with the political priority to provide basic water and sanitation to the large number of previously unserved communities.[13] In the first few years, DWAF (instead of municipalities) drove the water supply program to lay the ground for a coherent national approach. Following the first countrywide democratic local municipal elections in 2000, more emphasis was placed on building capacity within the newly formed municipalities (such as Cape Town, amalgamated in 2000) to assume their primary roles in water and sanitation as envisaged in the WSA (1997).[14]

Ongoing implementation and policy reforms

A number of ongoing policy reforms in water services delivery had high political visibility that impacted the BWP and its decision context. For example, in 2000, DWAF introduced the "water ladder" concept for water services, where provision of a basic level of safe drinking water is the first rung on the ladder, and as the ladder is climbed, people realize better standards of water service.[15]

In 2001, the government announced the Free Basic Water (FBW) service program (six kiloliters per household connection/month), in which funding for water supply above the basic water allocation comes from water tariffs. Debate continues today on how to implement the FBW policy in practice, given its apparent contradiction with the concept of water as an economic good (user pays) on the one hand and its conformity to water as a social good on the other, both of which are enshrined in laws.[16] Contextual factors also cause controversy, such as how the FBW impacts the financial sustainability of WSPs, how the FBW is reconciled with water tariffs in urban and rural settings (in respect to life-line tariffs, progressive block tariffs, cross-subsidy policy, etc.), and the timeframe needed to roll out the FBW policy nationally.[17]

Most literature indicates that South Africa is systematically working through the implementation challenges of its progressive water agenda. In respect to water management and service provision, many institutional transitions still need to be addressed.[18] Tackling water management, the first edition of the NWRS (Sept 2004) details the longer-term vision with immediate priorities and measures to advance water conservation and water demand management (WC/WDM) as a new strategic water management paradigm after a two-year consultation processes. It identifies a range of measures to speed the progressive decentralization of decision making and the steps to enable DWAF to move more rapidly from its multiple roles as operator, developer, and regulator to focus on policy and regulatory functions. The NWRS identifies the development of physical infrastructure as part of the integrated approach to finding solutions for water availability. The BWP is identified as one of the options in the list of physical infrastructure to meet the water supply objectives in the NWRS.

Civil society critique of the BWP approval

South African civil society played an important role in forging political consensus on the water reform agenda and putting pressure on government to fully reflect emerging international consensus on issues, such as IWRM. In South Africa the water sector reform process was highly participatory and inclusive, and there was broad acceptance among a range of stakeholders on the outcomes of the policy reform process and particularly the NWA and the NWRS (Stein, 2002; De Coning and Sherwill, 2004). Criticisms and divergence emerged during the implementation process when specific measures such as the BWP and CCT's demand management strategy were identified for water supply, water conservation, and water demand management. Deeper critiques of the direction and pace of water reforms in South Africa also exist. For example, a number of environment and civil rights activist movements abroad and in South Africa organized under the Skuifraam Action Group (SAG).[19] SAG consistently opposed the BWP as a bad decision[20] mainly on two grounds: (i) the potential adverse water quality and environment impacts downstream in the Berg River system, and (ii) the 1.5 billion Rand cost of the BWP would be better invested in WC/WDM.[21]

While environment and civil rights groups applaud the enabling legislation for its commitment to justice, rights-based, and pro-environment stances, these groups believe the strategic options assessment and project-level environmental impact assessment (EIA) consultations informing decisions around the BWP were technical management exercises. Some civil society observers contend that on the surface there appeared to be a very high level of government commitment to meaningful engagement with civil society, community-based organizations, and NGOs in strategic-planning exercises informing decisions on whether to proceed with the BWP, but in fact, the management of these formal processes by the various government agencies, such as DWAF, led to the "validation" of pre-determined outcomes and "silencing" of environmental movements concerns and actions.

Moreover, they contend that the water "crisis" in the Western Cape was manipulated by government to co-opt public support for storage dams. As a consequence, water demand management investments were limited and achieved far less than they could have, regardless of the decision the cabinet reached in 2002 to proceed with WDM in parallel

with supply augmentation with the BWP. They suggest that imbedding IWRM principles in the legislation has so far demonstrably failed to limit the focus on development of new dams and water transfers and does nothing to address past inequities in water access in South Africa. These views, it must be said, were strongly held minority views.[22] They were nevertheless instrumental in bringing about the explicit link between supply and demand management reflected in government decisions on the BWP.

The views expressed by environmental activists need to be contextualized within the decision-making process where trade-offs occur. It also needs to be contextualized by appreciating the tension between parties who are consulted and the decision makers. In an ideal world, all policies, programs, and projects would be based on mutually compatible and supporting objectives informed by reliable data and beneficial to all affected stakeholders. In reality, most initiatives address complex problems, have diverse and to some extent conflicting objectives, affect stakeholder groups, and are developed under conditions of uncertainty. Although "win-win" scenarios that meet the interests of all stakeholders may be sought, these types of outcomes cannot always be immediately achieved (Wright and Burns, 2007). A critique that can be leveled at the BWP decision-making process is that trade-offs were not explicitly identified, analyzed, and justified. The values and weighting that was used in the decision-making process were not explicitly communicated.

Features of the Berg Water Project

The BWP dam site is located on the upper reaches of the Berg River in the former La Motte forestry plantation in the Drakenstein Mountains 8 km from Franschhoek and about 60 km northeast of Cape Town. Franschhoek is a small, picturesque town surrounded by mountains and has a unique combination of cultural and architectural attributes. Its international stature as part of the Western Cape wine route and rural sense of place make it a much-sought-after residential area and tourist destination. Franschhoek also has extremes of wealth and poverty among the mix of retired residents, established landowners, and previously disadvantaged groups. Many of the poorest people in the Franschhoek Valley are trapped in unskilled, seasonally remunerated agriculture. Consequently empowerment and job creation is a major expectation and major theme for any large infrastructure program.

Except for two privately owned farms, much of the 560 hectares of land acquired for the BWP dam and reservoir was state owned. For the other infrastructure components, land was acquired for servitudes of aqueduct and servitudes of submersion. Thus, resettlement was not a major social concern. Instead, addressing divergent perceptions on how the project would impact on Franschhoek and La Motte Village (where 80 houses for construction workers were built) was key to local acceptance. On one hand, minimizing adverse impacts on heritage, tourism, and the local environment was important, and on the other, meeting local expectations to benefit through jobs and other income-generation opportunities during construction and longer term, especially among the previously disadvantaged groups in the valley, was essential.

The physical components of the BWP: In its corporate communication, TCTA says care was taken to ensure that the final project design and construction plan met community concerns, minimizing construction disturbance and improving aesthetics, as well as optimizing the performance of physical and nonphysical aspects of the project.[23]

The following were the three main physical components of the project:

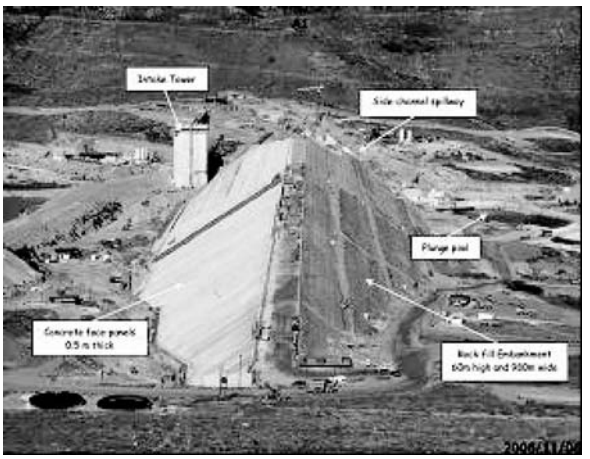
(a) The 65 m high concrete-faced rock fill embankment dam impounding a 537 ha (5.37 km^2) reservoir with a gross storage capacity of 130 million m^3 that is situated in the Assegaaibos catchment, adjacent to the Franschhoek valley ringed by steeply rising mountains.

(b) A pump station at the foot of the dam to convey water via a 2.5 km-long pipeline to the existing Riviersonderend-Berg River water tunnel system linked to the integrated Western Cape system serving Cape Town and other users.
(c) A supplement scheme consisting of a 1.6 m-high weir 10 km downstream of the main dam that diverts water to an off-channel balancing reservoir, which can then be pumped back up into the Berg reservoir.

The Berg supplement scheme optimizes the overall technical performance by increasing the yield of the scheme by 25 million m^3 per year (on top of 56 million m^3 for the reservoir). The supplement scheme will only operate in winter when river-high flows exceed the reserve flow and instream flow requirement (IFR) requirements. In summer, irrigation water from the Theewaterskloof Dam will be conveyed by a pipeline from the tunnel system to the confluence of the Wemmershoek and Berg Rivers from where the water will be released, bypassing the section of the river immediately below the dam that was judged to have high conservation value in the EIA. This area would otherwise be adversely affected by changes in chemical water quality and temperature before being diluted farther downstream.[24, 25] Figures 1.1 and 1.2 show the main physical features under construction in 2007.

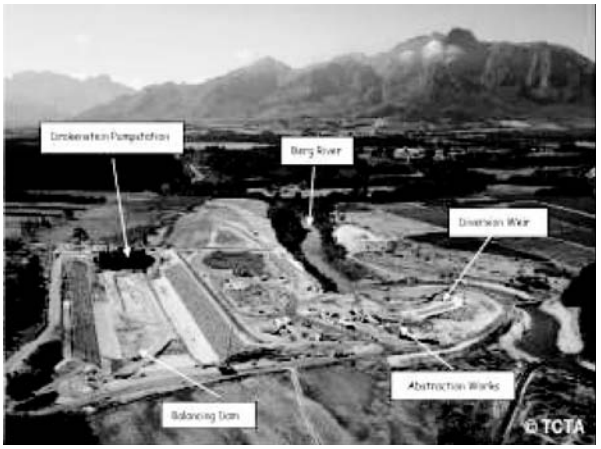
The capacity of the Berg reservoir (130 million m^3) is approximately less than the mean annual runoff (141 million m^3) of the upper Berg subcatchment that it drains. It is important to note that the Supplement Scheme contributes 25 million m^3 annually to the reservoir capacity. So the Dam will not retain all the winter flow. In addition, the operating rules allow approximately 35% of the total annual flow to be released. A unique feature of the Berg River Dam is the unusually large, 63 m high (wet and dry well) intake tower connected to the outlet works (see Figure 1.1).[26] The Berg River Dam intake tower is designed to cater for two distinct flow release systems (i.e., small releases and large releases). The system for small releases occurs in the range from 0.3 m^3/s to 12 m^3/s. These releases occur continually and are adjusted in magnitude as required by the Ecological Reserve, depending on the inflow into the Berg River Dam. The system for large releases uses the radial arm gate for releases up to 200 m^3/s. The Berg River Dam intake tower is divided into two sections: wet

Figure 1.1. Berg River Dam near Franschhoek



Photos: Courtesy of Nigel Rossouw TCTA Environmental Manager
From the March 2007 BWP Progress Report, TCTA

Figure 1.2. Berg Supplement Scheme



Photos: Courtesy of Nigel Rossouw TCTA Environmental Manager
From the March 2007 BWP Progress Report, TCTA

and dry well sections. The north section is a dry shaft equipped with multilevel inlets with pipes and valves, which provides the facility for drawing water into the Cape Town supply system and provides for low flow (under 12 m^3/s) environmental releases. The system for small releases is a conventional pipe system that extracts water from the dam for either environmental flows or for pumping to Cape Town to meet urban water demand. The system consists of pipes and valves in the intake tower, pipes under the embankment and the sleeve valves at the outlet works. The south section is an open vertical shaft (wet well) with multi-level gates for drawing water from the dam for high flows/floods (up to 200 m^3/s). The radial arm gate system for large flows is able to make releases up to 200 m^3/s. These large flow releases will mimic naturally occurring flood events. The system for large flood releases is purely as a requirement of the Ecological Reserve and is unique (Rossouw and Grobler, 2008).

The IFR (daily and seasonal pattern of downstream releases) was the result of extensive study by specialists (including freshwater and marine biologists and specialists in the river morphology, sediment, soils, salinity, botany, and water quality fields) discussed in section 3.2. These specialists played a major role in support of stakeholder reviews that were part of the environmental impact report (EIR) approval process and the subsequent IFR and Reserve flow determinations.[27] This role included digesting technical information and presenting it in terms that local people understood.

The nonphysical components of the BWP: The integrated Environment Management Plan (EMP) prepared in 2003 incorporated environmental and social strategies, detailed design guidelines, and social and river-monitoring programs. It also served as the guideline document for environmental governance whereby the natural environment and social components of the project were actively monitored by stakeholders. Discrete activities to enhance social and environmental performance included[28]

- *Franschhoek First Policy (FFP)* a policy commitment to maximize local training, procurement (of services to ensure that local contractors were able to take maximum advantage of the business opportunities generated by the BWP), and employment;

- *Sustainable Utilization Plan (SUP)* a resource management plan to sustainably manage land and water use whilst promoting local economic development;
- *La Motte Housing TrustFund* that acted as a mechanism to transfer the 80 purpose-built houses for contractor's staff in the La Motte Village to qualifying local residents after project completion. It was anticipated the proceeds, worth some R30 million in 2004 price levels, would be used to create a revolving fund for reinvestment in further low-cost housing or community infrastructure projects for disadvantaged communities in the Franschhoek and Dwars river valleys—the host community for the Berg Water Project;
- *Water Quality Monitoring Programme* set out in the EMP to monitor the water quality impact of construction-related activities and to ensure compliance with the specified water quality standards;
- *River Monitoring Programme* set out in the EMP to establish a baseline of the functioning of the river prior to impoundment. During the operation of the dam, the monitoring program will be used to determine the impact of the dam on the river and estuarine functioning and ecological status;
- *Environment Compliance Audit* a biannual audit by an independent Environmental Control Officer (ECO) mainly concerned with EMP compliance. The ECO is paid by TCTA but reports in parallel to the Environmental Monitoring Committee (EMC), the independent governance body on which interested and affected parties are represented;
- *Social Monitoring Programme* initiated as part of the EMP with the purpose of developing effective strategies to compensate and mitigate construction-related negative impacts and maximize social benefits. It gave special attention to issues like the impact of in-migration and effectiveness of host community skills training; impacts of skilled migrant workers; and the nature and scale of women's empowerment on the project; and
- Environmental and Social Panel of experts (POE), an independent peer review body consisting of three respected experts to provide an additional mechanism for quality assurance and independent evaluation of the social and water quality monitoring activities and the validity of data.

Project implementation arrangements: Many different government departments and interested and affected parties played roles in three strategic planning processes that informed the government's decision to proceed with the BWP in 2002, as highlighted in section 2.1.[29] From 2002 on, the three main institutional partners were

- *Department of Water Affairs and Forestry (DWAF)*: The regulator and national department responsible for water policy and overseeing the BWP implementation. DWAF owns and operates other bulk water infrastructure assets in the Western Cape System, though these will be transferred to the proposed new water infrastructure agency as DWAF completes its transition to a policy/regulatory role.[30]
- *Trans-Caledon Tunnel Authority (TCTA)*: The state entity mandated by the Water Affairs Ministry to fund and implement bulk water infrastructure to supply water users who can afford the increases to the water tariff. TCTA was initially formed in 1988 to fund and implement the South African portion of the Lesotho Highlands Water Project. In 2002 responsibility to fund, implement, and operate the BWP was transferred from DWAF to TCTA by a decision of the Minister of Water Affairs.[31]
- *City of Cape Town (CCT)*: As the principal beneficiary of the water supply scheme, the city identified the BWP in its water services development plan (WSPD). The city is also responsible to plan and implement water demand management initiatives, on which approval of the BWP was conditional (as discussed in section 1.3).

The two main project implementation agreements finalized in 2003 after a year of intense tri-lateral negotiations between DWAF, CCT, and TCTA were

- *The Raw Water Supply Agreement between DWAF and CCT (2003)* covers payments for water service delivery. The agreement makes provision for (i) ownership of the BWP assets, (ii) allocation of water, (iii) funding mechanisms, (iv) pricing strategies, and (v) rights, roles, and responsibilities of the various parties.
- *The Implementation Agreement between DWAF and TCTA (2003*) covers TCTA's obligations to finance, build, and operate the BWP assets that will be owned by TCTA during the 20-year loan redemption period, thereafter transferred to DWAF. The agreement has terms relating to payment by DWAF to TCTA for bulk raw water delivered.

These were significant because they were the first public-public agreements of their kind in South Africa. They enabled TCTA to secure project financing without an explicit government guarantee and with a favorable credit rating from an international credit rating service.[32] A second public-public agreement was the agreement between TCTA and Stellenbosch Municipality (where Franschhoek town is located) regarding eventual transfer of ownership of the construction housing and the supporting municipal services (e.g., streets, water, and sanitation services, etc.) on project completion.

The mechanisms for institutional coordination and stakeholder engagement in the implementation and operation phases of the BWP are indicated in Appendix A. These arrangements include the multi-stakeholder environment monitoring committee (EMC) as a mechanism to formalize the role of interested and affected parties in the project governance structure around the EMP, facilitated by an independent, elected chairman. EMC membership is noted in Box 1.2.

Appendix A also presents the BWP capital budget and financing arrangements. Financing partners included the European Investment Bank (EIB) as the largest single lender, the Development Bank of South Africa (DBSA), and ABSA, a major South Africa–based commercial bank. One important aspect is that the BWP capital debt will be repaid over 20 years through the Berg Water Capital Charge (BWCC). The BWCC is added to the tariff the CCT already pays DWAF for each unit of raw water supplied from the Western Cape System. This arrangement means the capital repayment schedule will not constrain any future modification or adaptive management of the reservoir that changes the quantity of water transferred to Cape Town.

Integration with the Western Cape System and Water Conservation and Water Demand Management Link

The WCWS supply integration: The Western Cape Water Supply System (WCWSS) delivers raw water to Cape Town, Stellenbosch, and a number of smaller towns such as Paarl and Wellington in the Berg WMA, as well as irrigators along the Berg and Eerste Rivers and

Box 1.2. Composition of the Berg Water Project Environment Monitoring Committee (EMC)

Membership on the 20-person EMC is comprised of the project authorities (i.e., DWAF, CCT, DEAT, and TCTA), local and provincial government representatives, and mandated representatives from different I&AP groups including ratepayers, previously disadvantaged communities, irrigation boards in the process of converting to multi-user water users associations, farmers, business people, other downstream water users like industries and towns, conservation groups, and those involved in Franschhoek's tourist trade.

users in the Breede WMA. In Cape Town, water is delivered to filtration plants feeding eight reticulation districts who in turn distribute to end users.[33]

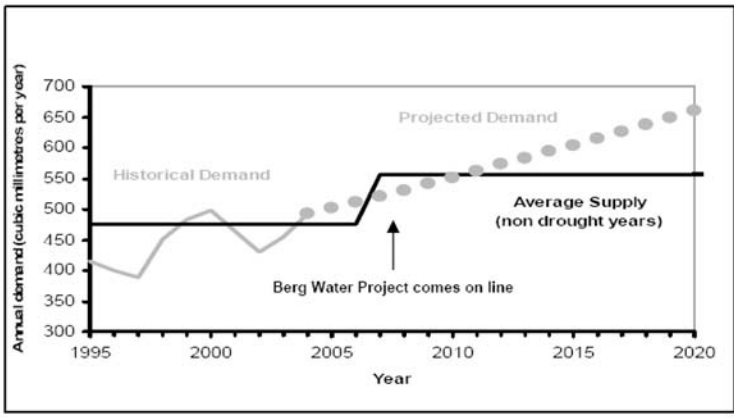
Appendix B illustrates the main physical elements of the integration of the BWP into the WCWSS, an arrangement that increases total yield (supply) on the system by 81 million m^3 per annum, raising total supply to 523 million m^3 per annum.[34] A strategic issue that media, public communication, and stakeholder debate revolved around in the planning stages of the BWP was the role the project played in the larger strategy to reconcile water demand and supply in the Western Cape region. Within that debate, water conservation and water demand management (WC/WDM) was perhaps the most prominent issue linked to the decision on the BWP—in the context of water security and public perceptions on how water security would best be provided.

The WC/WDM link: Cape Town's 2.5% per annum population growth has been driving water demand, along with the water-intensive suburban lifestyle, of some of the affluent minority population. The pattern of demand has also been strongly influenced by drought episodes and supply restrictions.[35] Figure 1.3 taken from the WC/WDM Study (2007) prepared for the CCT shows that water demand is projected to exceed conventional water supply in the Western Cape before 2010—even with the BWP. The same study notes that in the wider Berg Water Management Area (WMA), demand will exceed total available water resources under "business as usual" demand forecasts by 2016, and by 2028 if planned conservation and demand-side management actions are successfully implemented (CCT, 2007).

Urban use currently accounts for 70% of water demand in the area served by the WCWSS, irrigation the remaining 30%. Domestic (or household) water use accounts for half of total urban water use. Bulk supply losses and unaccounted for water (UaW) in distribution together account for close to 20% of the total.[36] The remaining 30% of urban demand is consumed in industry and other economic sectors. As of 2007, about 70% of households in Cape Town have piped water supply, 15% have water on-site, and about 14% make use of communal taps.[37]

In 2002, cabinet endorsed recommendations by the CCT and DWAF to develop the BWP in parallel with demand management, whereby the city committed to reduce projected demand 20% by 2010. Water security was a diving consideration. The measures and investments to achieve the demand reduction (in response to the political conditions set in 1998) were presented in the CCT's first Integrated Water Resource Planning Study (IWP,

Figure 1.3. Projected demand-supply gap on the Western Cape Water Supply System



2001). This proposed two broader packages of WC/WDM options: one implemented directly by the CCT, the other requiring action by end-users promoted via public communication and awareness programs.[38]

The Skuifraam Action Group (SAG) was among the most prominent civil society groups highly critical of the scope of WC/WDM strategy the CCT developed and the lack of actual budget to implement it.[39] Former members of SAG the case-study team met in 2008 argued that there had been no noticeable ongoing water demand awareness campaign in Cape Town in the preceding years.[40] On the other hand, media articles report government statements that Cape Town is "on-track" to achieve a 20% reduction by 2010. Cape Town's Bulk Water Department in collaboration with all seven administrations within the CCT won awards for its Water Awareness campaigns—the most recent being the Green Trust Award in 2008, which cites the "high degree of visibility, innovation, and effectiveness of the public water-saving campaign."[41, 42]

Clearly there are differences in perspective regarding the progress being made on the water demand management front that perhaps reflect irreconcilable views on how best to tackle the water demand-supply nexus. In the last long-term WC/WDM Strategy (CCT, 2007), Cape Town indicated there was still some distance to go with demand management, citing that its intention was to " . . . motivate and illustrate the need for a revised, more comprehensive WC/WDM policy and strategy."

The 2007 strategy update also reinforced that existing water supply, even with the BWP, will not cover projected urban and agricultural demands much beyond 2012 in the absence of aggressive WC/WDM measures. The new WC/WDM strategy proposed stronger measures on the supply and distribution side, such as pressure management (reducing pressure in the reticulation system), recycling in industry, and accelerated investment in leakage control.[43] On the demand side, it estimated, for instance, that up to a 38% reduction in existing household demand was feasible by a combination of measures like (i) retro-fitting plumbing fittings (especially retrofitting toilets), (ii) consumer behavior changes, and (iii) usage of water-efficient appliances.[44] The study prioritized measures to achieve the 20% demand reduction target with individual contribution targets.

In parallel with these CCT studies, DWAF started the Western Cape Reconciliation Strategy Study (WCRSS, 2007) as an integral step to develop the first Catchment Management Strategy (CMS) for the Berg WMA. This step was mandated under the National Water Act (NWA, 1998).[45]

Key recommendations are noted in Box 1.3, including the call for Cape Town to proceed urgently with a pilot seawater desalination plant to familiarize itself with the technology,

Box 1.3. 2006 reconciliation study recommendations (for the Berg WMA)

- Implement WC/WDM strategies in the CCT (IWRP, 2002) and study further measures
- Other municipalities introduce efficiency measures
- Investigate re-use of treated effluent as a priority
- Develop ground and surface water resources identified in the reconciliation study
- Form a Strategy Steering Committee to monitor and make timely recommendations on planning and implementation of interventions
- Proceed with a pilot seawater desalination plant to learn lessons for large-scale implementation, and
- Assess potential impact of climate change on the reconciliation of supply and requirements

Source: Berg CMA Reconciliation Study (DWAF, 2007)

prepare to scale-up implementation of desalination, and to assess the potential impacts of climate change on water security. The study also sought to prioritize water schemes that support the government's rural development strategy to uplift disadvantaged communities in the Berg River catchment and develop irrigation schemes for emergent farmers from these communites.

Cape Town agreed to report progress on its water demand management strategy to the EMC on a semi-annual basis, and annual reports were to be available on the City of Cape Town's website.[46]

From a communication perspective, this is an example of how clear public communication, including testing public perception of progress in water demand management against actual achievement, can help to minimize controversy on dam projects that are linked to demand-reduction targets.

Integration with Water Management in the Berg River Basin

As mentioned in the introduction section of this case study, IWRM thinking is central to South Africa's water reform and strategies to deal with water scarcity.[47] One of the central lessons the BWP story offers is how placing decisions about dams in an IWRM framework was contextually addressed in South Africa and the sort of challenges that can arise.

Appendix C provides a description of the Berg River Basin and the steps to establish the governance arrangements for the Berg Catchment Management Authority. The CMA is important for the long-term adaptive management of the Berg project because, after it is gradually established, it will assume key responsibilities for communication and decisions processes on how the BWP is adaptively managed to meet multiple river-user values.

The following paragraphs highlight some of the key links between planning, design, and operation of the BWP and the wider basin management strategy, which helps to explain the sort of governance arrangements and communication capacity needed going forward.

The Policy Setting: Under the NWA (1998), all WMAs were required to transform to catchment management authorities (CMAs) in a gradual process. Each CMA is to become a legal entity managed by a multi-stakeholder, elected governing board. Their primary (initial) role is to develop the catchment management strategy within the framework of the NWRS, taking into account the water services development plans (WSDPs) of each municipality within the CMA geographic boundary. The CMS, for example, must set out principles for water allocation within the CMA based on national norms (by DWAF), including the reserve determinations and IFRs in basins that have dams and water transfer schemes, either existing or proposed.

Basin characteristics: The Berg River is the only major river in the Berg WMA, although it also contains several smaller rivers and streams. There are eight tributary systems along 160 km BWP main stem from its headwaters in the Franschhoek and Jonkershoek mountains to the estuary at Laaiplek, where it enters the Atlantic. The estuary has major conservation importance for birdlife.[48]

Agriculture accounts for 65% of land use in the Berg WMA and over half (54%) of the water demand. Historically, irrigation demand has grown between 1% and 2% per annum.[49] Various crops are under irrigation along the mid and upper reaches of the Berg River, where estates and smaller farms produce high value table grapes, fruit, and wines. Land around lower reaches of the Berg River has poorer soil conditions and is mainly cultivated for dry-land wheat production.

Apart from water access, water quality is a primary concern to the commercial agriculture sector.[50] It was one of their major motivations for participating in the BWP planning and serving on the multi-stakeholder EMC.

Box 1.4. Value of irrigated agriculture from the Berg River downstream of the Berg Water Project

Approximately 22,000 ha of farmland (more or less 600 farming units) rely on the Berg River for irrigation water supply. In 2006 water use entitlements equaled 128 million m^3/a.

Exports from these farms generate in the region of R462 million a year (over $US 50 million/yr). On average 14,000 permanent and 16,500 seasonal workers are employed by the sector. Permanent employees in the agricultural sector represent 13% of the Western Cape's formal employment sector. According to recent studies, the agricultural sector adds on average a factor of 10.9 to every Rand of farm produce sold.

Source: Proposal for Establishing the Berg CMA (DWAF, 2007)

The context is that Berg River irrigators export primarily to Europe, where import standards are extremely sensitive to water quality at produce origin. In 2006 the CMA Reference Group dialogue indicated that, " . . . during the 2004/05 season, the export market was under severe threat when retailers and importers (in Europe) became aware of the many pollution spills in the river and seriously considered canceling imports from the region.

Should these (EU) countries stop imports, it could mean a loss of between R128–R385 million a year (over US$ 50 million a year). Box 1.4 notes that irrigated agriculture otherwise make a substantial contribution to employment and the economy of the Western Cape. The multiplier effect of losses of export the economy could be devastating" (Berg WMA, Reference Group notes 2006).[51]

Water quality management controversy: Water quality was a key issue in planning stages, most notably salinity management in the middle and lower stretches of Berg River. Specialists report that the primary cause of salinity in the Berg is irrigation return flows and runoff due to the particular soil chemistry and leaching mechanisms.[52] In the mid-1990s sharply contrasting specialist views emerged in the efforts to disentangle the salinity management issue and water quantity-quality interdependencies during the EIA process for the BWP. This became part of the controversy over whether to proceed with the BWP or not.

Many specialists argued the river flow regulations introduced by the BWP would only marginally increase salinity concentrations in the middle and lower reaches of the main stem river.[53] DWAF staff, as well as water quality specialists undertaking the operational modeling of downstream water releases from the BWP, held this view. The operational modeling was part of a study to develop an integrated strategy to manage existing salinity concentrations in the Berg River system.[54] On the other hand, specialists working with, or aligned to, conservation and environment NGOs argued the diversion would have a significant adverse impact on salinity concentrations by reducing dilution. They also expressed concerns about the modeling methodologies that DWAF and their consultants employed and the interpretation of data by the government-funded scientists. This salinity controversy continued during the EMC work in 2004, which is further explained in section 3.2.[55]

In June 2002, the Minister for Water Affairs in the National Assembly responded to the question raised in parliament of "whether the Skuifraam Dam (BWP) will increase the salinity of the Berg River," with a yes, but only marginally. The minister indicated the government view was that salinity concerns as a direct consequence of the BWP were unfounded. But recognizing the concern, the minister indicated that a precautionary approach was adopted. In that plan, DWAF would develop an integrated information system for water quality management in the Berg River system with early warning capacities.[56] DWAF, through

the national Water Research Commission (WRC), would fund the necessary research and public communication about water quality management, engaging with all river users and communities in the catchment of the Berg system.[57]

The BWP salinity controversy revealed an interplay of perceptions about uncertainty and risk. Its ultimate impact was that stakeholders trusted the government to take remedial steps if there were a salinity problem. From a communication perspective, considerable time and effort went into explaining the science in a manner that all interested and affected parties could understand, thereby enabling them to reach their own conclusions on the level of risks and uncertainty on the issue.

Additional measures, however, were needed to shore up trust in a compliance mechanism. This was a consideration in the specific guidance that the government provided in the Record of Decision (ROD) that the Department of Environmental Affairs and Tourism (DEAT) issued in 1999 on the EIA for the Berg Project. Item 3.5 of the ROD stipulated "a monitoring program of the river and estuary must be established immediately . . . to ensure that sufficient baseline information is gathered prior to completion of the dam." Item 3.6 followed, "If the dam or supplemental scheme have an adverse impact on the river or estuary, the applicant (i.e., TCTA) will have to revise the IFR and releases from the dam. Item 3.4 stated, "The reserve may need to be adjusted in light of the monitoring results."

Authors of the Water Research Commission Report (WCR, 2006) on water quality monitoring of the Berg River System subsequently stated that reconciling the water supply and demand of agricultural to support both emergent farmers and productivity extensions by currently established farmers was key to sustainably and equitably managing water resources in the area.

The WRC research noted that the scale of the challenge in irrigation demand reduction was similar to that of water demand reduction in the urban sector (e.g., requiring a mix of measures, including water scheduling, improved control of water abstractions, water efficient irrigation systems, etc.). It noted that with supply-side approaches only, the current trajectory (from in 2005 when the analysis was done) was irrigation demands would translate to an additional 20% draw of fresh water from the Berg River main stem. This would present many challenges for future water quality fitness-for-use and for maintaining the ecological integrity of the system.

Stakeholder emphasis differs on key water issues and related risks

Water quality was a key issue. The well-documented dialogue process around the establishment of the Berg Catchment Management Authority (CMA) revealed differences in priorities with stakeholders on other key water management issues and related risks.

Table 1.1 illustrates the differences among just three of the parties involved. All interested and affected parties supported crosscutting concerns like environmental stewardship, equity, and empowerment. The priority for rights-based community service organizations (CSOs) was not only ensuring that previously disadvantaged groups had secure access to potable water to meet their basic human needs (a constitutional right) but also a share for productive use to close the poverty gap.

While it is recognized that interested and affected parties always bring constituency issues to the negotiation table, as in any political economy negotiation, it is worth noting how the multi-stakeholder Reference Group for the Berg CMA viewed participation as a whole in the CMA process up to 2007. An excerpt of prevailing opinion follows:

"It would be of benefit to the CMA to take note of the fact that the public participation elicited as part of the CMA establishment process was held in very high esteem by all sectors. It was often said that this was the first time an independent platform was created

Table 1.1. Perspectives on key water management issues and related risks in the Berg River

Farmer views	Conservation and environment NGO views	Municipal and local government views
Commercial farmers ■ water assurance ■ water quality ■ economy and employment ■ general issues (many listed) Poorly resourced farmers ■ access to water ■ registering water use entitlements ■ efficient use of water and best farming practices ■ understanding sustainable practices	■ conserving mountain catchments ■ cumulative impacts of smaller farm dams ■ protecting riparian zones ■ determining and implementing the Ecological Reserve ■ controlling pollution ■ monitoring river health ■ adequate capacities to manage the catchment ■ education	■ updating the Western Cape system model of major water supply components regularly ■ modeling the Berg River Reserve to determine its impact on water availability. ■ developing water quality management strategies for the middle and lower Berg River. ■ water trading preference in licenses for new irrigation expansion ■ re-use of treated wastewater

Source: Berg CMA reference Group, endorsed in the CMA Report, 2006

where the private and public sector could enter into dialogue with each other and voice their various concerns and issues in a nonconfrontational manner. However, it is becoming more and more obvious that water professionals, policy makers, or water ministries alone can no longer resolve the water problems of a country or river basin. The problems are too complex, interconnected, and multi-dimensional to be handled by any one institution or one group of professionals."

The approach in establishing the Berg CMA (noted in Appendix A) is highly relevant as one of the first catchment management authorities to be formally established in South Africa. In relation to the BWP itself, the handover arrangements between the Berg EMC and the Berg CMA (yet to be decided) will offer interesting lessons in moving from a project orientation to a basin-level focus for the adaptive management of dams.

Chronology of Governance Events and Project Decisions

The studies and consultation processes leading to approval of the BWP extended over 12 years, starting with the Western Cape System Analysis study in 1989. A chronology of key events in the evolving macro planning and water governance environment in South Africa and the Western Cape are shown in Table 1.2. This covers the project identification, preparation, and approval stages from the mid-1980s to 2002.

Similarly Table 1.3 covers the BWP project implementation stage from 2002 to commissioning in 2008.

Table 1.2. Chronology and key events: project preparation and approval

Macro-planning and governance environment	Year	Project related
■ Western Cape System Analysis Study initiated (DWAF, WCSS, 1994) ■ Environment Conservation Act (1989)	Pre-1989	■ Skuifraam Dam identification & reconnaissance studies (later renamed the Berg River Dam) and major component of the BWP
■ Initial studies confirms need to study Skuifraam Dam	1991	■ Continuation of Skuifraam Dam identification and reconnaissance studies as part of the WCSS
■ RSA interim constitution ■ WCSS confirms Skuifraam Dam least-cost bulk supply option for Cape Town	1994	
■ Govt issues White Paper: Water Supply & Sanitation ■ Process Design Group (PDG) set up to recommend public participation on water matters in the Western Cape ■ I&AP Task Group short listing of demand/ supply options (1995–1996) ■ Two-Day Multi-Stakeholder Conference on options and selection criteria	1995	■ Feasibility and EIA Studies of Berg Dam initiated ■ Public Consultation process and I&AP consultation group established for EIR
RSA CONSTITUTION ADOPTED ■ Municipal Elections	1996	■ Dam feasibility study finalized (DWAF, 1996) ■ Draft EIR sent to I&APs and workshop in Franschhoek (June) including IFRs discussions ■ Follow-up IFR scenario workshop: I&APs agree to EIR recommendations (Sept)
■ White Paper: National Water Policy ■ Water Services Act (1997) requiring municipalities to prepare WSDPs	1997	■ DWAF Letter of commitment on maximizing local benefits and more study to underpin IFRs (Feb) ■ Dam EIR finalized (DWAF, Nov) summaries to I&APs ■ Initiation of feasibility study of Berg Supplement Scheme (DWAF, 1998)
■ National Water Act (1998) sets in place fundamental water management reform ■ Environment Management Act (1998), EIAs become statutory requirement ■ Cape Town starts work on first WSDP ■ DWAF Minister appointed WCD Chairman; Secretariat in Cape Town	1998	■ CMC requests national (Ministerial) approval of the BWP, with DWAF staff support ■ Minister reports to National Assembly deferring BWP decisions until Cape Town (i) reviews demand projections; (ii) commits to demand management; and (iii) gives technical information on WC/ WDM potential and planned budgetary support (Sept).

Table 1.2. ***(Continued)***

Macro-planning and governance environment	Year	Project related
■ DWAF orders drought-induced water-use restrictions in the Western Cape (summer 1999 through 2000) ■ CCT initiates IWRP study of WC/WDM options in response to conditions for BWP approval.	1999	■ IFR Workshop Report on high flow release (Feb) ■ Record of decision (ROD) approving Berg EIR with conditions (e.g., EMC, EO, design provisions for Reserve flow, extensive monitoring) (May). ■ DWAF Minister gives conditional BWP approval pending City meeting demand-management conditions ■ Skuifraam Action Group (SAG) and network of NGO/CSOs call for WC&WDM instead of BWP ■ The Skuifraam Action Group (SAG), a local network of environmental groups, made a strong bid for the implementation of water conservation and demand management (WC&DM) before supply side dam building decisions were made.
■ CCT amalgamated MLCs & CMC ■ Global WCD Report issued (Nov) ■ TCTA given bulk water supply mandate	2000	■ 15 legal appeals made against the ROD mainly concerned with demand management issue. ■ DEAT considers and dismisses appeals ■ 2nd provisional approval of BWP by DWAF (June)
■ IWRP Study on WC/WDM & Bulk water supply options starts (CCT, Oct) ■ Final WCD Forum, where Govt & CSO representatives present analysis of how BWP did/did not conform to WCD, respectively (Feb 2001) ■ National WCD Symposium in Gauteng looks again at the BWP via WCD ■ Multi-stakeholder Initiative to contextualize WCD to RSA launched	2001	■ New Minister appointed for DWAF ■ Ministerial re-approval (in principle) of BWP.
■ First National Report on adapting WCD ■ IWRP study defines WC/WDM program and budgets for the CCT ■ CCT requests govt. final approval of BWP in parallel with WC/WDM to meet 20% reduction target by 2010.	2002	■ Cabinet endorses Ministerial decision to start BWP conditional on WC/WDM program proposed in IWRP study (May) ■ Financing and implementation of BWP mandated to TCTA by DWAF, endorsed in Cabinet minuets (May)

Table 1.3. Chronology and key events: project implementation

Macro-planning and governance environment	Year	Project related
■ Generic Guidelines on Public Participation (DWAF) ■ Guidelines on Sustainable Utilization Plans for water projects (DWAF) ■ King II Report on Corporate Governance (TCTA and DBSA commit to adopt)	2002	■ Tripartite negotiation DWAF, CTC and TCTA start ■ EMC membership established in consultative process. ■ Start of River Baseline Monitoring Program which was a condition of the ROD ■ TCTA awards design and supervision contract to Berg River Consortium (BRC), includes Knight Piesold, Goba, and Ninham Shand (Dec) ■ TCTA prepared communication strategy for BWP
■ Raw Water Supply Agreement concluded between the DWAF-CCT approved by Minister ■ Promoted as a Public-public participation model ■ DEAT approval of the EMP (October)	2003	■ First EMC meeting (TCTA proposes name change from management to monitoring); EMC Constitution discussed ■ BWP Implementation Agreement between the DWAF-TCTA concluded (April). ■ Shortlist of pre-qualified construction contractors ■ Tender documents issued. ■ Endorsement of EMP by Environmental Monitoring Committee (EMC, July)
■ New drought cycle in Western Cape ■ Version 1 of National Water Resource Strategy issued (NWRS) by DWAF) with a National WC/WDM Strategy as a component and model (Aug) ■ Substantive Report of the SA Multi-stakeholder Initiative on WCD issued (Nov)	2004	■ The DWAF Construction Unit mobilized to implement advanced infrastructure construction (Jan) ■ Award of Dam construction contract to Grinaker-LTA, Group Five, WBHO and Western Cape Empowerment Contractors. ■ Award of supplement scheme contract to DWAF Construction Unit (civil works) (Sulzer were sub-contracted for the mechanical and electrical component) ■ Award of pipeline contract to Cycad construction ■ Berg dam construction start (July) ■ Resignation of 10 I&AP members and delegates of the Franschhoek Valley Task Team after which Stellenbosch Municipality represents Franschhoek Valley interests on the EMC (Sept) ■ Berg river diverted for dam construction (Nov)

Table 1.3. ***(Continued)***

Macro-planning and governance environment	Year	Project related
		■ Appointment of Donico/Power Joint Venture for construction for first batch of 40 houses for contractor staff in La Motte Village.
■ Berg CMA Reference group nominated ■ DWAF imposes 20% curtailment on water use in the Western Cape. ■ Final report, Applying the World Commission on Dams Report in South Africa, issued	2005	■ Appointment of Bright Ideas 632 cc, from Franschhoek, and Bright Ideas 611 cc, from Dwars River for second batch of 40 houses (the appointment of black contractors was delayed to allow pre-training of prospective contractors. Training was provided in project management, contract administration and financial control) ■ Ongoing construction ■ Ongoing EMP implementation
■ Proposed change in Berg Water Capital Charge (BWCC) submitted for approval	2006	■ Ongoing construction ■ Ongoing EMP implementation
■ CCT Long-Term Water Conservation & Demand Management Strategy ■ Berg CMA establishment proposal finalized with recommendations	2007	■ Berg River Dam construction substantially completed and river impounded ■ dam starts filling (Aug)
	2008	■ Commissioning of the BWP

Notes

[1] Per capita water resource availability in South Africa is 1100 m^3. FAO as primary source: http://www.eoearth.org/article/Water_profile_of_South_Africa.

[2] The NWRS (1996) states the following: "In general, sufficient water can be made available at all significant urban and industrial growth points in the country for water not to be a limiting factor to economic development. However, given the long lead times for developing new supply schemes, co-operative planning will be required between water users and water management institutions to ensure that water can be made available when it is needed." Provisional estimates are SA will run out of surplus usable fresh water by 2025, or soon thereafter, with current patterns of demand growth. In the Berg Water Management Area (WMA) encompassing Cape Town demand for municipal water supply and irrigation, roughly 50% of total consumption each, is projected to exceed total yield of water resources by 2016 under business as usual demand forecasts, and by 2028 if planned conservation and demand-side management actions are implemented successfully (CCT, 2007).

[3] Including the promotion of water conservation behavior, demand-side management to minimize the need for water restrictions during drought, the mobilization of nonconventional water supply sources and long-term structural changes in water demand.

[4] Reflected in the government communication on a White Paper on water leading to the NWA, 1998.

[5] Constitutional principles and ideals like meeting basic food and water rights to help eradicate poverty and redress past inequalities were translated into primary legislation in each sector, shortly after the full Constitution was adopted in 1996. http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/SOUTHAFRICAEXTN/0,,menuPK:368086~pagePK:141132~piPK:141107~theSitePK:368057,00.html.

[6] Consensus emerged emerging from extensive discussions on many working papers circulated for public debate at that time. All structures under the National Water Act are therefore known as water management institutions, and all of those structures that fall under the Water Services Act are known as water service institutions.

[7] The NWA (1998) defines the ecological reserve, as "the basic human needs reserve and the ecological reserve. The basic human needs reserve provides for the essential needs of individuals served by the water resource in

question and includes water for drinking, for food preparation and for personal hygiene. The ecological reserve relates to the water required to protect the aquatic ecosystems of the water resource. The reserve refers to both the quantity and quality of the water in the resource, and will vary depending on the class of the resource."

[8] Since 1997 DWAF has introduces the water ladder concept and the Free Basic Water (FBW) policy was introduced, as explained later in the text. In practice today the CCT domestic users are not charged for the first 6 000 ℓ of water supplied and 4 200 ℓ of sewage treated per month, after which they are billed according to a steeply rising incremental tariff that discourages high consumption.

[9] Documented in the substantive report of the South African Multi-stakeholder Initiative on the World Commission on Dams," 2004.

[10] This is done the separation of local regulation and water delivery functions. The WSPs can either be autonomous ring-fenced business units, contracted entities, municipalities themselves, Water Boards, or rural entities, in the case of rural water supply (but with only one WSP in a specific area);

[11] CCT WSDP 2001 Summary available at http://72.30.186.56/search/cache?ei=UTF-8&p=Skuifraam+Dam+EIA&rd=r1&fr=yfp-t-501&u=www.capetown.gov.za/water/wsdp/documents/ExecutiveSummary.pdf&w=skuifraam+dam+dams+eia&d=LoVMXzWxQiPc&icp=1&.intl=uk.

[12] This includes all forms of subsidy for all forms of public services. WSDPs must incorporate water demand projections, identify infrastructure requirements and investment plans, provide a water balance, establish key performance indicators to improve and monitor service delivery, and review environmental management issues associated with water service provision.

[13] There is, for example, constructive debate about whether the different boundaries for water management (catchments) and water supply (municipalities) are mismatched (Pollard and du Toit, 2006).

[14] WSDPs must also describe water demand projections, current and future consumer profiles, types of services provided, infrastructure requirements, water balance, organizational and financial arrangements to be used, assessment of the viability of the approach, and overview of environmental issues.

[15] Kasrils (2003).

[16] The constitution (1996) also provides water access as a basic right, but does not say it will be free. Another factor debated is the amount of FBW with social movements calling for increased FBW allocations linked more closely to numbers of people rather than just households.

[17] This social equity policy, many argue, supports the broader objectives of conservation and sustainability.

[18] These transitions include reorganizing water institutions after the 2002 reworking of municipal governance that reduced local government structures in South Africa from 843 to 284. On that aspect alone, it is widely acknowledged that the division of powers and functions between district and local municipalities, including the amalgamation of their roles in water service provision and buy in from municipalities in catchment management, still poses many challenges (Mackintosh, et al, 2003)

[19] The Berg River Dam was formerly called the Skuifraam Dam.

[20] Institute for Development Studies, 2004, and International Rivers Network (IRN) 2004.

[21] Those opposed to the Skuifraam Dam argued that a dam option was unnecessary, costly, and environmentally damaging; instead, a package of water recovery and recycling measures could be mobilized to provide new supply for immediate and future needs. They argued that the demand management measures were conservative and limited in scope, pointing to achievements of smaller water-stressed municipalities in the region that had mounted programs to reduce peak water demands (e.g., Hermanus). Further, they argued that building the Skuifraam Dam would not change the inequities of water use prevalent in the Western Cape, while paying for it would impose high water charges on low-income consumers. The city argued this did not portray the situation and that demand and supply interventions were needed.

[22] This nevertheless emphasizes that regardless of the governance framework (i) large dams will always remain controversial, (ii) closer inspection always reveals opportunities to close the gap between policy and practice, and (iii) ability to listen and learn, by all parties, is essential for going forward with evolutionary reforms in water governance—and needs to be constantly underpinned by effective two-way communication.

[23] For example, the downstream face of the main wall, visible from the main road into Franschhoek, has been re-vegetated with indigenous flora, ensuring that the dam does not contrast with the surrounding landscape. And under DWAF, the Working for Water Programme was awarded a R21 million contract to remove alien vegetation from the Berg river dam catchment area, significantly increasing the amount of water available for storage in the dam and to re-establish indigenous plant species in the catchment area.

[24] The EIR concluded that the reach 4km downstream of the proposed Skuifraam Dam contains rare and endangered invertebrate (zoobenthic) species that would be threatened by release of hypolimnetic water.

[25] The design of the pipe systems allows for the direction of the water flow to be reversed, such that water from Theewaterskloof can be released, through the Dasbos Adit, into the Berg River downstream of the dam. The irrigation release is some 3 km downstream of the dam at the Wemmershoek River so the pristine river stretch below the dam wall remains unaffected by summer irrigation releases. Water from Theewaterskloof dam

will, as a rule, not be released directly into the Berg river dam so as to maintain water quality. Source: http://www.engineeringnews.co.za/article.php?a_id=121762.

[26] The wet well has two gates at three levels; the dry well has two intake points at five different levels. The outlet works consist of a 5.5m reinforced-concrete conduit, hydraulically operated radial gate, and a slide gate. The conduit was used for river diversion during construction and environmental flood releases during operation.

[27] Namely to reset the ecological system and to provide dilution for water quality management (especially downstream salinity management) and for downstream users access needs, river morphology, and ecological functions. Many specialists were from or associated with Stellenbosch University or the University of Cape Town (UCT) and are counted among the leading specialists in environmental flow assessment in the world.

[28] Activities that were either undertaken as sub-plans under the EMP, or linked to the EMP

[29] The three parallel processes being (i) the Western Cape System Analysis Study, (ii) the project EIA approval, and (iii) the first WSDP for Cape Town, as discussed in sections 1.3 to 1.5. Apart from DWAF and the City of Cape Town, the actors included the Department of Environment and Tourism (DEAT), provincial agencies, the national Parliament (where the progress was frequently discussed), the media, and the interested and affected parties associated with the three parallel processes.

[30] The historical practice in South Africa has been that a dam is either constructed by the DWAF itself (departmentally) or by a private construction company/consortium.

[31] In 2000 the Minister of Water Affairs gave TCTA the mandate to fund and implement bulk water infrastructure in South Africa. It will eventually be integrated into the National Water Resources Infrastructure Agency, as DWAF itself moves increasingly to policy and regulatory roles.

[32] From Fitch Ratings.

[33] Cape Town's physical water supply infrastructure includes 33 treatment plants, 136 reservoirs, 690 pumping stations, and 17,600 km of pipelines with an estimated replacement value of US$ 2 billion (CCT, 2006).

[34] The combined impoundments of the Riviersonderend-Berg River (RSE-BR) system currently contribute more than 80% of the total annual water yield of 450 million m3 available to the Greater Cape Town and West Coast Region (WRC 2006).

[35] From a technical perspective, it is also interesting to note the behavioral relationship between physical supply restrictions introduced on end-users due to drought and water demand growth illustrated in Figure 2.1. After the 10% water restrictions for the 1999–2000 drought were lifted, demand growth returned to pre-drought rates—but on a lower trajectory. A similar phenomenon was reportedly observed when Cape Town's 20% water use restrictions were lifted after the 2004–2005 drought was over (where existing reservoirs reached critical low levels).

[36] The latter includes reticulation losses through leaks and apparent losses (inaccurate meters), as well as some of the water used by nonpaying consumers.

[37] Not all informal households have been supplied with water due to land occupation issues.

[38] The principles of the city's WDM policy at that time were set as (i) equity, sustainability, and affordability, (ii) reduce the projected demand for water by 20% by the year 2010, (iii) encourage, educate, and promote the optimal use of water, (iv) maximize the use of alternative sources such as wastewater effluent, boreholes, etc., and (v) minimize the loss of water.

[39] While CCT argued also it had implemented a number of the measures starting back in 1995, the criticism was they were not sufficient or adequately funded. SAG leader John Taylor wrote in 1999, "When Charles Chapman was appointed to the position of Water Demand Manager for the CMC, he arrived in Cape Town from Rand Water, with the promise of a budget of R50 million for the first year. Soon after his arrival, this budget was cut to 5 million, and again cut to 2 million."

[40] Communication between the SAG group representatives and the case-study team

[41] http://www.capetown.gov.za/en/Water/Pages/Awards.aspx.

[42] The Water Awareness campaign, initiated by the City's Bulk Water Department in collaboration with all seven administrations within the City of Cape Town, "impressed the judges with its imaginative, informative, topical and often humorous advertisements that were to be seen on billboards, in newspapers and magazines, and on taxis, and heard on several radio stations in all three languages. The campaign also established a Waterline to give water users the chance to comment on the campaign or request further information, as well as to report leaks and other water wasting activities. An industrial theater group, Group Africa, was engaged to promote water awareness both in schools and communities. The campaign was linked to other water demand programs, notably the schools competition program and the water week program, which together gave the campaign added impetus, continuity, and strength. The success of the campaign can be measured by the fact that the city's water savings target was exceeded and proved that awareness initiatives are vital in helping keep the water-saving issue alive and giving consumers the tools to make informed and responsible choices. The competition judges commented: "When it comes to raising awareness about saving water, this campaign really hits you in the face. We want to encourage other local authorities to run similarly innovative accessible campaigns." Source: CCT.

[43] The WC/WDM implementation strategy will have the following priorities (in descending order):
1. Reduce the level of nonrevenue demand
2. Reduce pressures in the reticulation system
3. Recycle water
4. Reduce the projected demand by new consumers and new developments
5. Reduce the water wastage of existing paying consumers
6. Increase the efficiency of water by paying consumers.
7. Sustain demand targets achieved
8. Explore alternative Water Resources

Source: CCT.

[44] The CCT's WC/WDM study (2007) estimated that the efficiency of household water use can be improved significantly through key measures including (i) Retro-fitting of plumbing fittings (especially retrofitting toilets), (ii) consumer behavior change, (iii) pressure management, (iv) usage of water efficient appliances.

[45] As part of a national program instituted by DWAF to prepare CMS for the CMAs around the countries that encompassed major metropolitan areas. Consultations around the WCRSS with were also an essential part of efforts to establish a functional Catchment Management Authority. The interim technical aim was to provide a decision support framework for studies and interventions up to 2030.

[46] Source: EMP for the BWP, June 2003, approved by DEAT. DWAF is responsible to monitor progress on WC/WDM in all municipalities.

[47] The World Bank-Netherlands Water Partnership (BNWP) that provided resources to prepare this case study also has a core aim to illustrate how adoption of integrated water resource management practices (IWRM) is key to tackling water security concerns and thereby to reducing poverty globally.

[48] Includes the Steenbras River catchment and catchments of other smaller rivers in the draining into Table Bay and False Bay. The main stem of the Berg is about 160 km from headwater to the delta in the Atlantic. It rises in the Franschhoek and Jonkershoek mountains and flows northwest to the sea forming a delta at Laaiplek. There are 10 main tributaries in the 9,000 km2 catchment of the Berg. The lower reaches are flat, so salt water intrusion can reach up to 100 km upstream during high tide.

[49] Historically up to 2000. There was a decline in agriculture exports in the early 2000. The Reconciliation Study (DWAF, 2006) suggests limited increases in irrigated areas along the Berg River will probably take place, perhaps growing at between 1% and 2% per annum.

[50] Namely registration of all surface and groundwater users, establishment of quotas, and deciding whether in future permits will be tradable or not, etc., and on-farm water demand management.

[51] Proposal for Establishment of the Berg Catchment Management Agency prepared by the stakeholders of the Berg WMA and facilitated by NOSIPHO Consulting (Pty) Ltd., DWAF, 2007.

[52] Flows in the lower part of the river are more saline than the upper reaches. Salinity creates problems for municipal supply, irrigation, and ecosystems, especially in low flow periods. While the cumulative impact of upstream water abstractions from the Berg River and its tributaries has a role in increasing salt concentrations and also salt intrusion up the Berg estuary, the primary source of salinity is irrigation return flows and runoff due to the particular soil chemistry of the area and leaching mechanisms.

[53] Meaning average TDS concentration rising from 192 mg/l to 206 mg/l.

[54] The strategy involved coordinating releases from the existing Voëlvlei dam, an off-channel dam downstream in the mid-reaches, the Misverstand dam, and many smaller dams and weirs on the Berg River tributaries.

[55] Including one professional member of the EMC.

[56] The Minister for Water Affairs and Forestry stated to the National Assembly July 2002, "(i) The commissioning of an environmental baseline monitoring study to provide further information and to assist in managing the environmental releases from the proposed dam and as input to Resource Directed Measures determinations; (ii) an overall objective of the baseline monitoring program is to identify those chemical, physical, and biological characteristics of the Berg River and hydraulically linked systems that are most likely to be affected by the changes imposed after the construction of the dam; (iii) social aspects related to dam flood releases and recreation that may be affected will also be identified and defined; (iv) the development of an operational model to enable and plan releases from the new dam and the Voëlvlei Dam to effectively manage flows and salinities in the Berg River; and (v) information on flows and salinities will be available in my department's Western Cape Regional Office via telemetry in order to provide updated information and early warnings of potentially undesirable conditions."

[57] Research on Berg River water management: Summary of water quality information system and soil quality studies; WRC Report No: TT 252/06, July 2006.

CHAPTER 2

Governance Dimension

Governance Context

While water governance is a multi-faceted topic, looking retrospectively, four broad governance themes emerge from the planning and implementation phases of the BWP:

A. *Setting priorities*: This is a primary role of government. Reaching a decision on the BWP was facilitated by bringing political, economic, and technical factors to a convergence and linking water supply augmentation to water demand management;
B. *Integrated risk management*: Provides insights on how risk assessment and management underpin a shift to integrated water resource management and sustainable infrastructure development. Shows the empowerment of interested and affected parties in monitoring of risks relevant to their rights and the steps to reduce corruption risks;
C. *Project-level governance framework:* How project governance arrangements enable co-operative governance and partnerships, especially with basin and local communities hosting the project (not without challenges); and
D. *Development effectiveness of water infrastructure*: Reflects how international thinking informs national governance at different levels. In this case, the World Commission on Dams (WCD) based in Cape Town served a key point of reference to contextualize international thinking on sustainable infrastructure to South Africa's situation and at the same time informed thinking in South Africa.[1]

External Partnerships

South Africa's much acclaimed water legislation pre-dates the European Water Framework Directive (WFD, 2000) widely regarded as the most advanced piece of integrated water resource management legislation in the wealthy OECD counties. Whether South Africa's legislation actually inspired or contributed to the WFD at some level (conceptually or methodologically) is a moot point.[2] But the EU approach, like that in South Africa, centers on achieving good status of water (quantitative and qualitative) in watercourses under a river classification system. In this framework, laws prescribe only the steps to reach a common objective (i.e., a status agreed by stakeholders) rather than the old minimum standard approach. The new approach calls for empowering interested and affected parties to work together to establish the agreed river status by negotiation within norms: in South Africa, the reserve and river classification; and in the EU, broader definitions of qualitative, quantitative, and ecological "good status." This process elevates the importance of communication.

It is important to note that the European WFD (2000) must be adopted by each European member state in stages over a 15-year time frame (2000–2015). This indicates what the EU considered as sufficient time for member states to put the requisite water governance reforms in place—in a European setting where countries have financial resources. It also suggests that it was no accident that the European Investment Bank (EIB) became the largest funding partner for the BWP in 2004. South Africa and the EU have many shared interests in water management, which include the environmental sustainability agenda and parallel implementation of far-reaching water reforms. In fact, EU development assistance policy in the water sector commits the EIB to advance the principles embodied in the WFD. That EU member countries are main consumers of high-quality exports from the Berg River catchment was perhaps another motivation for the European partnership.

Box 2.1 illustrates the governance issues the EIB factored into its own decision to partner with South Africa on the BWP.

Many other factors shaped the governance context for decisions reached on the BWP, including those of South Africa:

(a) **Freedom of information legislation**: Prior to 1994, access to official information was controlled. The Interim Constitution (2004) initiated a more liberal information regime. This was expanded in the Constitution (2006), giving citizens rights of access to (i) any information held by the State and (ii) any information held by another person required for the exercise or protection of any rights. The Promotion of Access to Information Act (2000) gave effect to the Constitutional rights to access and extended the right of access to privately held information, regarded as highly unusual, as most freedom of information laws in other countries only cover governmental bodies.[3]

(b) **Formative national anti-corruption policies**: South Africa ranked 43rd of 149 countries in Transparency International's (TI) 2007 Corruption Perception Index. The CPI Score of 5.1 was an improvement over the 2002 CPI score of 4.8.[4] South Africa openly discusses corruption. In 1997, a national anti-corruption initiative was launched that became the cornerstone of an official National Anti-Corruption Strategy, endorsed in the National Anti-Corruption Summit in 1999.[5]

Box 2.1. European Investment Bank: Perspective on why the EIB supported the Berg Water Project

"The EIB is considering support for a dam project in South Africa. Two elements contributed favorably in this sense: (1) a process for the early-on involvement of stakeholders in option assessment and project development existed since the mid-1990s, pre-WCD Report; and (2) the legal and institutional framework in the country already incorporates many of its recommendations and is moving farther in this direction, driven by the (South African) Multi-Stakeholder Initiative on the WCD launched in 2001. In this context, a thorough review of the project was carried out (by the EIB) to assess the compliance of its planning and development with WCD guidelines. During appraisal, the Bank also asked the promoter (TCTA) to further update the comparative analysis of relevant options to confirm that the project is still the preferred option. With respect to the implementation of the mitigating measures, an Environmental Monitoring Committee (EMC) was appointed by stakeholders to follow the preparation and monitor the implementation of an Environmental Management Plan (EMP), which must be compiled prior to construction and will be controlled by an Environmental Control Officer (ECO). The Bank will use its loan covenants to require that it be kept regularly informed about the progress in implementing the EMP and the involvement of the EMC and the ECO."

Source: Dam and Development Project-EIB Staff Paper submitted to the post-WCD, UNEP hosted Dams and Development Project Financing Workshop, London, 2004.

The main themes in the strategy were (i) combating and preventing corruption, (ii) building integrity, and (iii) raising awareness of the impacts of corruption and the threat it represents to development in the new South Africa. A 30-member cross-sector National Anti-Corruption Forum (NACF) was formed. The third National Anti-Corruption Summit was held in 2008.[6] TI comments that South Africa's independent judiciary is one of the most widely recognized strengths and important anti-corruption weapons that the nation has (TI).

(c) **Corporate governance transformation**: South Africa's corporate governance transformations also shape how broader water governance reforms and infrastructure strategies are implemented through public enterprises in South Africa (TCTA, in particular). A key background development was the King Commission (II) Report on Corporate Governance for South Africa (2002).[7] In this report, the South African government sought to translate its overarching policy agenda into the public enterprise and corporate sectors. Named for the respected individual who headed it, the King Commission established a corporate governance protocol focusing on six themes:

- Boards and Directors—includes their accountabilities
- Risk Management—contains risk management frameworks for anti-corruption
- Internal (corporate) Audit—as an internal control on top of project-level audits
- Integrated sustainability reporting—where an organization publicly communicates its economic, environmental, and social performance, including ethical practices and organizational integrity
- Accounting & Auditing—includes accessibility of financial information, and
- Compliance & Enforcement—including disclosure and the media role

The relevance of the King Reports to the BWP was its influence on the corporate governance values, systems, and procedures that TCTA applied while implementing the BWP project, and to a lesser extent, the Development Bank of South Africa (DBSA) when it was considering whether to lend R600 million for the BWP.[8, 9]

Other primary legislation introduced by South Africa in the late 1990s was relevant to what happened on the BWP. The National Environment Management Act (1998), for example, prescribed the participation of all interested and affected parties in environmental governance. From the communication perspective, it specified, " . . . all people must have the opportunity to develop the understanding, skills, and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured. Decisions must take into account the interests, needs and values of all interested and affected parties, including recognizing of all forms of traditional and ordinary knowledge."

Governance Diagnosis

The diagnosis looks in turn at each of the aspects mention at the start of the section: (i) setting priorities, (ii) integrated risk management, (iii) project-level governance framework, and (iv) the development effectiveness of water infrastructure.

Setting Priorities

On this theme, the BWP shows that contemporary political economy, plus cultural and technical factors need to be addressed sufficiently for political levels to reach an informed

decision about large water projects, especially in complex, water-stressed situations with many competing rights and interests at stake. The BWP story shows the governance framework facilitated a positive convergence of these factors, through the inclusion of several steps:

Explicit prioritization of demand and supply options: Demand-side management and supply-side augmentation priorities were generated in parallel planning processes.

- Technical prioritization started in 1989 when twenty-four options to reconcile demand and supply in the Berg CMA were ranked on the basis of technical and financial criteria, taking into account environment and social factors. The Skuifraam Dam (BWP) ranked highest, however, the outcome was not considered politically legitimate, as this was in 1994 in the pre-apartheid era where governance was noninclusive.
- Post-1994 a multi-stakeholder Process Design Group (PDG) was established to formulate a public participation program on broader water matters in the Western Cape, which led to a public participation process to expand the prioritization criteria for looking at options in the form of the Western Cape Analysis Evaluation of Options (1995/6).
- A short list of priority schemes was approved by consensus by an elected Task Group, where the BWP again ranked highest as the preferred supply augmentation scheme.
- Political priorities to reach a decision were clearly set out in 1998 when Professor Kadar Asmal as Minister for DWAF advised the National Assembly that BWP approval would only follow the prioritization of demand-side management measures (as noted in section 1.3), consistent with the new statutory provisions in the WSA (1997).
- Demand-side priorities were eventually identified in the Integrated Water Resource Planning (IWRP) study the CCT initiated in 1999. In 2000 the city (newly amalgamated) also commissioned a Bulk Water Supply Study to prioritize supply augmentation options beyond the BWP.[10] Consolidating findings of both studies in early 2002, the CCT formally proposed advancing the BWP in parallel with the WDM packages.

These actions met the 1998 political priority and aligned with the wider political economy of water consistent with aspirations in legislation where demand-side management options receive the highest propriety before supply-side augmentation options are considered.[11]

Taking decisions at the lowest appropriate level: South Africa's Constitution (1996) makes the national government custodian of water resources. Responsibility for specific water management decisions is to be delegated to the lowest appropriate level (i.e., reflecting the subsidiary principle of IWRM).[12] Decisions in the BWP case followed accordingly:

- The political decision linking supply augmentation to demand management was taken at the ministerial level, informed by interested and affected party dialogue in the Western Cape Region.
- Decisions on the design and operation of the BWP were informed by interested and affected party negotiations around the Berg River Reserve and IFR determinations in basin-level processes.
- The BWP Technical and Coordination committees ensured that government-level decisions were harmonized for implementation stages of the BWP, in accordance with the Project Agreements endorsed at Ministerial and Cabinet levels.
- The multi-stakeholder EMC composed of interested and affected parties helped to ensure that implementation decisions taken by TCTA were informed by local

knowledge, geared to local expectations, and complied both with the spirit and intent of conditions attached to approval of the BWP, as set out in the ROD (1999).

This shows the appropriate decision level was interpreted as the level needed to balance the competing interests (and needs) affected by the decision at hand, while observing rights. At the same time, there was a flow of information between decision-making structures at different levels, by informal and formal channels, and the media.

Using structured processes to inform priority setting: South Africa has embraced integrated planning and options assessment as one basis for improving public services. The BWP reflects the following:

- Comprehensive options assessment was used to identify priorities for demand and supply reconciliation and stakeholder views on options. The key aspect here was to move the options assessment "upstream" in the planning process from project-level EIAs to strategic planning, which leaves less scope for bias toward a particular project.[13]
- Strategic planning tools explicitly incorporate options assessments to justify priorities (e.g., WSDP, CMS, and guidelines issued by DWAF).
- Multi-criteria decision analysis (MCDA) was used to bring multi-disciplinary specialists and interested and affected parties together to rank and select options or recommend options to higher decision levels.[14]
- Structured processes were adopted to promote co-operative planning so people knew when they were expected to provide inputs and respond to proposals.

The BWP also showed how structured processes provide a platform to reconcile varied interests and expectations (see additional information in Box 2.5 Guiding principles for assessing water options emerging from the Western Cape multi-stakeholder conference in 1996).

Using approval conditions as safeguards: The conditions of approval sought to maintain consensus by supporting the political legitimacy of decisions, and in equal measure, to empower interested and affected parties for roles in compliance monitoring. The approval conditions also ensured that project measures to enhance the sustainability of the project were taken seriously and otherwise set the tone for partnerships:[15]

- The Letter of Commitment (LOC) issued by DWAF in 1997 was the genesis of what evolved into the Franschhoek First Policy (FFP). The FFP became a key innovation to incorporate measures that maximized local community benefits from the project and to promote social sustainability (see discussion in section 3.2). The LOC responded to issues raised by local stakeholders in interested and affected party consultation in system analysis options ranking (1994–1996) that prioritized the BWP.
- The ROD issued by DEAT in 1999 (summarized in Box 2.2) reinforced the key understanding (the commitment by DWAF on behalf of government) that an adaptive management philosophy would be followed to manage downstream water releases from the Berg River Dam based on monitoring, especially water quality and ecosystm functions.[16]
- The ROD stipulated that interested and affected party dialogue inform project implementation and operation decisions, in particular the multi-stakeholder EMC and public participation processes "to the satisfaction of interested and affected parties."

Some observers also suggest that these conditions of approval helped to raise the bar in terms of empowering innovative thinking on ways to improve the project's sustainability

Box 2.2. Key aspects of DEAT's Record of Decision (ROD) on the EIA

Project Governance

- Environment Management Committee (EMC) to (i) ensure effective environment management of project and (ii) all aspects of the EMP (the "M" in EMC later changed to monitoring);
- Appointment of an environment control officer (ECO), in agreement with the EMC

Sustainability: On the Reserve flow and IFRs:

- Design the weir and dam to meet the Reserve and not foreclose options to release flows in excess of the Damage Control IFR (arrived at in workshop discussion).
- Institute a monitoring program to ensure compliance with the Reserve
- In operation modify IFRs if monitoring showed an unacceptable effect on the river or estuary—in compliance with laws.

Communication:

- Public consultations to the satisfaction of interested and affected parties.

(social and environmental). They gave unequivocal guidance to TCTA on the implementation and operation philosophy.

Sufficient time: Different views exist on the 14-year timeframe required for the BWP decision—and even on when it was reached: 1998, 2000, or 2002. Some argue the time was excessive. Others argue more time was needed to do baseline monitoring to better understand river transformation and ecological impacts—and especially to prove the potential that demand-side measures offered as an alternative investment to the BWP.

It is clear that a realistic timeframe is needed to build political and public consensus on priorities, especially where large dams are involved. In the BWP case,

- It took five years to establish an inventory and prioritized list of demand and supply interventions at the WMA level, i.e., Western Cape analysis (1989–1994);
- Once the options inventory was established, it took two years to repeat the system analysis options ranking (1994–1996), building on the previous database adding the Public Participation Process (PPP). It took almost two years (1997–1999) for Cape Town to respond to the ministerial call to prepare a first blueprint its WC/WDM strategy and budgets;
- The detailed WC/WDM priorities took a further two years to develop (in the IWRP, 1999–2002), again not starting afresh, but building on demand management measures the city had previously initiated. It was not until 2006 that a more comprehensive WC/WDM was completed, and only after DWAF issued the national WC/WDM strategy model in 2004.
- Another project-specific timing issue concerned the baseline-monitoring program proposed by DEAT in the ROD (May 1999). This started after formal cabinet approval of the BWP in 2002, a delay of two years. This is criticized by the NGOs as not giving sufficient time for pre-project baselines and a missed opportunity. There was inadequate communication from the project authorities in this regard, as the Berg River monitoring program extended over 3 years and was conducted before impoundment and Dam operation. The design of the monitoring program was submitted by the EMC for scientific peer review to one of South Africa's leading water quality and water resources experts. In addition there is a long historical record of water quality, hydrological and biological monitoring data for the Berg

River. However, the main purpose of the Berg River monitoring program was to develop a conceptual model to describe in detail hydraulically linked systems (i.e. estuary, floodplains and groundwater). The baseline monitoring was also to establish the impact of the Dam altered flow regime on the chemical, physical and biological characteristics of the Berg River. The baseline monitoring was submitted to TCTA's Panel of Experts and the reports were found to be comprehensive and provided sufficient detail for the entire Berg River system—from the Berg River Dam to the Berg River estuary—including important riparian and groundwater aspects.

- Finally, the process to establish the Berg Catchment Management Authority was slower than expected, starting seven years after the NWA (1998). One reason is emphasis was placed on improving access to water supply as a political priority.

Overall, despite a perception of a long approval timeframe (extended by perhaps two to three years), it can be argued that Cape Town is much better off with the combined 20% reduction in projected demand and an 18% supply augmentation.

Integrated risk management

The second major governance theme brought out by the BWP is the notion that a holistic, integrated risk management approach is needed on dam projects—one that encompasses sustainability and governance aspects. Broadly this means the following in practice:

- Ensure that risk exposures perceived as important to all interested and affected parties are identified, properly assessed, and reasonably addressed in project preparation stages. This is a broader definition of risk, which together with traditional risks encompasses risks of sustainable performance (social, environmental, and economic dimensions) and corruption.
- Bring risk assessment and quantification methodologies that are developing independently in the financial, engineering, communication, governance, environment, and social disciplines together in a common risk management framework, and develop strategies to make risks transparent and understood.
- Facilitate greater accountability for risks, and better identification of risk concentrations, unexpected loss, among potential benefits, etc.
- Obtain a better aggregate perspective on risks to inform decisions at the appropriate level.

Another dimension of integrated risk management is "recognition of rights" and "assessment of risks" (particularly rights at risk), which formed the basis of the WCD approach to more effective participatory processes, starting with needs and options assessment in up-front planning.[17] The "rights at risk" formulation has practical relevance when laws recognize rights as a reference for decisions on water allocation and public service provision (as they do in South Africa).

Roberts (2005) looks at what the BWP offers in terms of expanding the notion of risk assessment in relation to the project cycle. The author highlighted risk mitigation strategies in ten categories, namely finance, engineering, procurement, governance, contractual issues, construction matters, force majeure, environmental/social, and communication risks. Table 2.1 is a synthesis that builds on Robert's work to illustrate the scope of risk mitigation on the BWP.

How the BWP was handled makes a strong case for managing the risks holistically, not each risk element in isolation.

While no explicit risk framework was used in project preparation phase that was led by DWAF, DEAT, and CCT, risk criteria or the notion of risk and uncertainty were

Table 2.1. Risk mitigation approaches as reflected in the Berg Water Project

Types of risk	Risk mitigation approaches/strategies	
	Project preparation	**Implementation and operation**
Political and Cross-cutting	■ Open, transparent planning ■ Mandatory I&APs engagement ■ Comprehensive options assessments ■ Appeals mechanisms (that were used) ■ Decision taken by cabinet of democratically elected government	■ Clear project governance arrangements ■ Clear apportionment of risks ■ Independent EMC with I&APs ■ Information access ■ Published project agreements ■ TCTA using integrated risk framework
Project Governance	■ Clear legal framework ■ Clear roles in regulation, implementation and operation	■ Strategic Committee with all concerned govt. stakeholders ■ Project Co-ordination Committee
Engineering	■ Outsourcing on competitive tender ■ Explicit engineering risk analysis ■ Compliance to international standards ■ Panel of experts	■ In-house contract management ■ Independent design and supervision of contractors
Procurement and Contractual	■ DWAF/CCT contracting procedures followed ■ Audit ■ Uses of facilitators and process managers with established relations and I&APs trust and continuity	■ Pre-qualification process & competitive procurement ■ No-corruption disclosures and penalties ■ Performance clauses ■ Remedies for nonperformance, e.g., performance bonds, retention and indemnity insurance
Environment and Social	■ I&APs engaged in EMP design informed by specialists and scientists ■ I&AP endorsement before formal approvals ■ Consensus reaching workshops agreement on IFR ■ Monitoring and compliance mechanisms and standards in ROD	■ EMC and ECO ■ 3-yr baseline monitoring pre-project ■ Ongoing IFR & Reserve monitoring ■ Legal requirement to change downstream releases if adverse impacts ■ Environmental obligations in contracts with service providers. ■ Franschhoek First Policy ■ Sustainable Utilization Plan ■ Ecological and social panel of experts
Financial	■ Project cost assessed against alternative options (e.g., unit reference value and confidence) ■ Cost estimates scrutinized by I&AP ■ Tariff impact assessments	■ TCTA financial management (e.g., hedges, interest rate risks) ■ Various project-related insurances ■ Tariff adjusted based on final implementation costs. ■ In operation, tariff adjusted annually with agreed parameters (e.g., inflation)

Table 2.1. ***(Continued)***

Types of risk	Risk mitigation approaches/strategies	
	Project preparation	**Implementation and operation**
Force Majeure	■ Specified in project agreements ■ Fundamental agreements that DWAF absorbs risk of disaster	■ Suspension of capital cost repayment by CCT if supply is disrupted ■ Limits to TCTA liquidity risk
Communication	■ Mandatory public consultations and I&AP engagement ■ Independent media scrutiny and reporting ■ Project communication strategy	■ Multiple communication mechanisms local newsletter, website, community meetings, etc. ■ TCTA declaration of open and factually correct communication with I&APs

underlying factors in interested and affected party dialogue, namely in prioritizing options and identifying measures for the EMP, Reserve, and IFR determinations and in terms of sources of risk, how risk was quantified, allocated and shared, and what people deemed to be an acceptable level of risk.

The multi-stakeholder EMC mechanism itself was a de facto integrated risk assessment platform by virtue of the fact the EMP and environment audits were all scrutinized by interested and affected parties in an open process. It is interesting also that in 2004 personal indemnification was a contributing factor in resignations from the EMC in regard to this role as particularly the local EMC members felt that there was a risk, albeit small that they in their individual capacities could be held liable for any damages or impacts suffered by third parties, as discussed in section C.[18]

A formalized approach to integrated risk assessment was more discernable in project financing aspects. TCTA notes also that clarity in the apportionment of financial and force majeure risk was key to concluding the public-public agreements between DWAF, CTC, and TCTA. This in turn was instrumental in securing the favorable AA+ international credit rating.[19] Equally the presence of clear steps to mitigate the political, environment, and social risks as a whole was a major factor in the EIB's decision to lend TCTA R800 million (see Box 2.2 in previous section).[20]

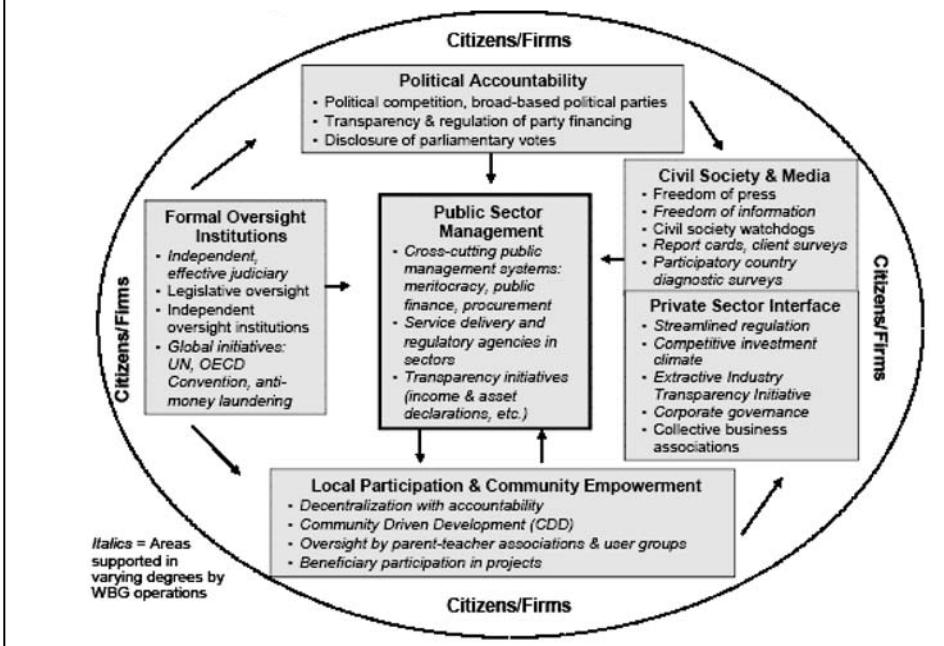
Handling corruption risks: In today's development discourse, good governance is generally synonymous with fighting corruption, especially on infrastructure. It is not, however, just about laws and sanctions.[21] Figure 2.1 illustrates the range of actors that broadly comprise the public sector governance system around infrastructure presented in the World Bank discussion paper, "Strengthening Bank Group Engagement on Governance and Anti-corruption (GAC)."[22]

Using this diagram as a point of reference, it shows the many governance elements needed to fight corruption that were present to a greater or lesser degree in public decision making on the BWP:

- Political accountability
- Formal oversight institutions
- Public sector management
- Local participation and community empowerment
- Civil society and the media

Clearly, given all the actors and different roles effective communication is essential to ensure success.

Figure 2.1. Stakeholders in the public sector governance system for infrastructure



On the BWP accountability was clear.[23] For example in respect to procurement, all this was handled by a single agency (TCTA) using consistent procedures. TCTA mitigated procurement risks through a traditional pre-qualification process to identify technically competent tenderers, a competitive procurement process, and additional measures identified in Table 2.1 previously. These included stipulations for bidding contractors to make upfront declarations of any previous corruption prosecutions in construction and procurement contracts with a penalty for false declarations. TCTA also used internal corporate audit processes to verify that procurement standards were met.

One indicator of the vigilance in applying these anti-corruption measures is that the BWP (as of mid-2008) was largely on schedule and within budget, as noted Box 2.3.[24] Compared to emerging good practice today, what was lacking on the BWP was an explicit corruption risk assessment prepared independently, in an open and transparent manner during the project preparation phase. The second element found in good practice is a formalized governance improvement plan (GIP), focused on anti-corruption. The key is this must be developed with stakeholder participation because of the roles that civil society, for example, has to play.[25]

Reputational Risk: Risk to what is often called an organization's primary intangible asset, its reputation, is connected with corruption risk. In major water projects, reputation is a concern of all parties, developers, contractors, and financing institutions, as well as CSOs and NGOs participating in project consultation process or as partners.

The major financing partners (i.e. EIB, DBSA, and ABSA the commercial bank) did their due diligence and applied their own corporate risk assessment and anti-corruption policies before the loan agreements with TCTA were authorized in 2004 and 2005. But these are not static policies. The EIB and DBSA routinely update their internal procedures to stay current with international trends. Like changes in internal whistle blower protection

Box 2.3. DWAF states the Berg Water Project is within budget

The Berg Water Project (BWP) will be completed within the original budget, according to current indications, says the Department of Water Affairs and Forestry's (DWAF) chief director in infrastructure development Willie Croucamp. He adds that the implementation of BWP has set a standard for future projects that could be funded by using funds from the financial markets.

within the EIB, many of the new anti-corruption safeguards automatically apply to the BWP lending:

(a) As the autonomous, long-term lending bank of the European Union, the EIB is subject to OECD, EU, and UN anti-bribery conventions. These provisions are periodically updated. Among the current EIB corporate requirements are
   - loan contracts between the Bank and a state-owned borrower must contain provisions against fraud and corruption;[26]
   - project promoters, bidders, contractors, suppliers, and consultants under Bank-financed contracts must observe the highest standard of ethics during the procurement and performance of contracts;
   - bidders must sign a "covenant of integrity" whereby directors, employees, and agents commit to not engage in any prohibited practices and inform the Bank of any prohibited practice brought to their attention.

(b) The DBSA adopted the South Africa's King II recommendations on corporate governance about the same time it was considering the BWP loan. Today DBSA emphasizes anti-corruption in its code of ethics, linking integrity to poverty reduction and sustainable development. DBSA notes in its internal audit polices " . . . we see governance (anti-corruption) and poverty reduction as deeply intertwined and interlinked. . . ."[27] Aspects of DBSA anti-corruption policy are (i) no involvement with any entity convicted of illegal activities on public/private projects, (ii) whistle-blowing safeguards, and (iii) declaration of assets and conflicts of interest, particularly for board members[28]

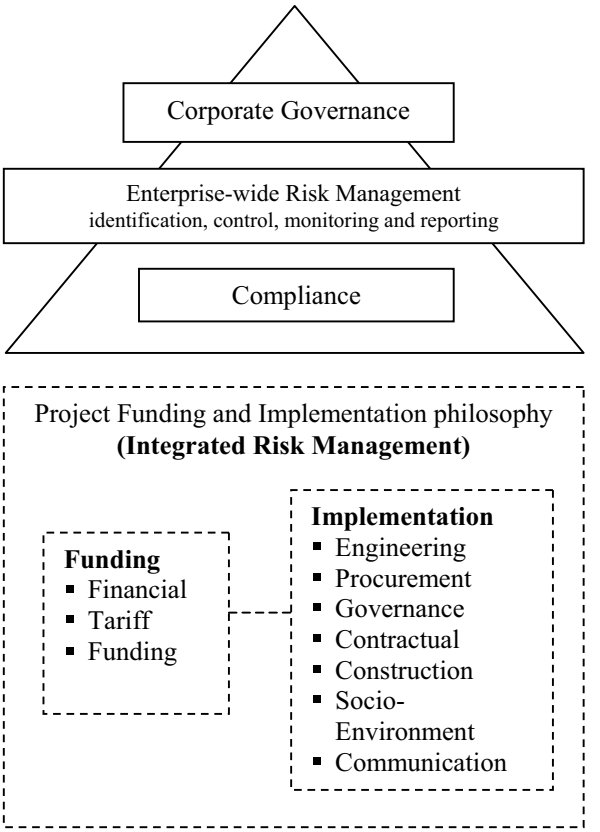
Corporate governance and risk management: TCTA is an autonomous public entity specializing in liability management. As such it falls under the Public Finance Management Act (1999). The Act requires TCTA to adopt governance practices relevant to financial institutions, including access to information, audit procedures, and ensuring value for money for stakeholders. How TCTA adapted the King II Committee recommendations to the bulk water supply business also offers lessons. Two central messages in its corporate communications are that TCTA applies an integrated risk management philosophy (a conservative one) to enhance stakeholder value, and it places sustainability at the core of its corporate philosophy.

Figure 2.2 is a simplified illustration of how TCTA links corporate governance, risk management, and compliance objectives to projects. A prominent feature is the enterprise-wide risk management framework (EWRM) to "respond to all types of risk in all parts of the organization and business."[29]

As noted in TCTA's 2006 Annual Report, the goal is to build an ethical culture into its corporate "DNA" and "support the overall governance objective of meeting stakeholder objectives." International professional bodies promoting EWRM for ethical business operations, say it helps an organization to decide its appetite for risk as demanded by stakeholders.[30]

At the project level, TCTA initially used integrated risk management to look at financial and nonfinancial implementation risks on its three projects (the Lesotho

Figure 2.2. TCTA's integration of corporate and project risk management



Highland Water Project (LHWP) followed by the BWP and more recently VRESAP, a water pipeline project).[31] Financial risk assessment and mitigation strategies are brought together (e.g., credit risk, interest risk, liquidity risk) in risk identification, control, monitoring, and reporting steps.

Nonfinancial risks that relate to the political, social, environmental, geo-technical, supervisory, and construction aspects are considered systematically in each domain (as noted previously in Table 2.1) then linked holistically to the overall project goals. For these tasks, TCTA also relies on independent review and legally mandated co-operative governance processes, like multi-stakeholder EMC scrutiny on the BWP.

These matters are relevant to fighting corruption in infrastructure provision in two main respects. First, they highlight that anti-corruption risk assessment needs to be part of the corporate risk management structure. The EWRM approach, for example, demonstrates it is not enough just to rely on project-level controls for any type of risk. Second, it is important to have a mechanism to routinely update anti-corruption procedures at the corporate and project levels as part of continuous improvement in risk management. This is illustrated in the manner TCTA periodically benchmarks its EWRM practices against what is generally accepted in risk management as best practice. As noted in TCTA's 2007 Annual Report, a benchmarking exercise for its EWRM was done in 2006 using national and international protocols, updating previous benchmarking exercises.[32]

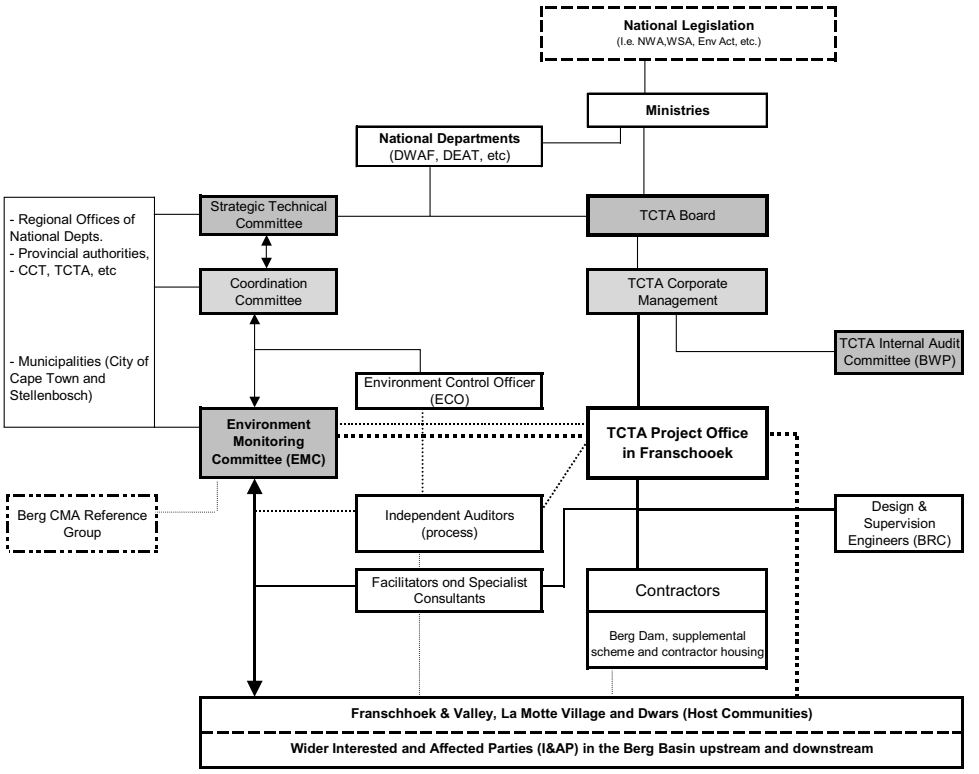
One lesson is that benchmarking would be a logical point of entry to strengthen anti-corruption measures by agencies implementing water projects, as part of a continued process of updating risk management tools and techniques. It also reflects thinking of international financing institutions like the EIB, which supports benchmarking for corporate governance improvement of clients undertaking infrastructure projects. For example, the EIB's Public Information Policy for Quality Assessment initiative promotes benchmarking as a way for clients to develop corporate policies on issues like confidentiality requirements, "overriding public interest for information disclosure" and policies on releasing information in agreements with contracting parties.[33]

TCTA's corporate communication strategy is also aligned to the South African government's agenda for sustainable development. Since 2002 it has aligned its corporate annual report to the sustainability reporting provisions in the King II report (2002). As TCTA suggests in the sustainability reporting on the BWP on its corporate website, there was " . . . the need to devise innovative processes and structures to ensure project sustainability."

Project governance structure

A third major governance theme highlighted by the BWP is the importance of the project governance structure to facilitate effective communication among the project participants with the contextual challenges this may entail. The governance framework for the implementation phase of the BWP is illustrated in Figure 2.3.

Figure 2.3. Berg Water Project governance framework—implementation



This was the first time such co-operative governance and planning arrangements for participatory decision making and compliance monitoring were used on a large dam project in South Africa. TCTA is on record as saying the governance structure "accommodates participation of all of its partners in implementing the project and ensuring all economic, social, and environmental requirements are met."[34]

Perhaps the most relevant governance issue, as set of lessons, is what happened with the EMC in its first two years (2003–2004). The EMC was envisaged as the main vehicle to bring interested and affected parties directly into project governance and hold the project promoters publicly accountable. The EMC origin was the EIA (1996) recommendation to form a committee of interested and affected parties.[35] This became an administrative and environmental governance requirement under the Record of Decision (1999).

From late 2002, TCTA oversaw establishment the EMC in a collaborative process as part of the Environment Management Plan (EMP) compilation (see section 4, table 10 for the steps and the communication aspects). This culminated in a public nomination process where stakeholder interests nominated a representative (and an alternate). The EMC held its inaugural meeting on 16 January 2003 facilitated by an independent consultant hired by TCTA, when a draft constitution for the EMC was tabled. Members could nominate candidates for chairperson and voting was done by ballot. Otherwise, all members had equal voting rigts.[36]

The EMC subsequently elected an independent chairperson. The first task was to agree on the constitution and procedures, aspects of which are noted in Box 2.4.[37] While the EMCs mandate was oriented to monitoring, in practice the EMC became the main communication platform for many environmental and social issues important to communities in the Franschhoek Valley, including matters with the Franschhoek First Policy and Sustainable Utilization Plan, as discussed in section 3.

Seven task groups (some with sub-task teams) were established and a convenor and members selected to deal with the different components of the EMP:

(1) Franschhoek valley task team
(2) Downstream task team
(3) Natural environment task team
(4) Engineering and contractual task team

Box 2.4. EMC role as elaborated in its constitution

- Participate actively in monitoring the social, economic, and environmental impacts of all processes related to the implementation of the BWP;
- Report to and exchange information with the constituent stakeholder sectors on the functioning of the EMC and the implementation of the project;
- Provide input into, review, and recommend approval of the EMP to the environmental authorities, and once approved, monitor compliance with the EMP and report non-compliance;
- Ensure continued involvement of stakeholder constituencies in the environmental, social, and economic aspects of project planning, construction and operational phases;
- Ensure dissemination of relevant project information to and from TCTA and to and from stakeholder groups; and
- Release a statement on the level of compliance with the EMP and the standard of environmental management on the project as and when necessary.

From: Constitution and Procedures of the EMC (EMP, 2003)

(5) IEDF (Integrated Environment and Development Framework) task team
(6) Media task team
(7) An EMC special committee, dealing with matters like the EMC secretariat

In late 2003 the EMC endorsed the EMP and appointment of the Environment Control Officer (ECO).

But it was not totally smooth sailing thereafter. Much has been written about the change in the "M" in EMC from "management" to "monitoring," which was proposed by TCTA at the first EMC meeting in January 2003. This affected the perceptions some EMC members had of the EMC role and their own motivation to be an EMC member (see section 4 discussion of communication on the EMC and also the EMC Chairperson's statement below).[38,39] Events came to a boil in August 2004, when the 10 members and their alternates who formed the Franschhoek Valley Task Team (FVTT) resigned. They and three others represented half of the 20-person EMC.

A regional circulation newspaper (i.e. the Cape Times) in the Western Cape reporting on this mass resignation said at the time:

" . . . a major fear (of those members of the EMC who resigned) is that if water quality downstream of the dam deteriorates, as (some) predicted, the multi-million-Rand export grape industry, dependent on good quality water from the Berg River, would sue all those involved in the dam, including the committee (as individuals). Downstream industries like Namaqua Sands and Saldanha Steel would also be affected if water quality deteriorated and would have to build expensive water purification plants. Another major reason for the resignations is claims that the developers, the government-owned Trans Caledon Tunnel Authority (TCTA), have reneged on promises that they would train and employ members of poorer Franschhoek communities."[40]

In their resignation letter addressed to TCTA, the ten FVTT signatories said simply they resigned because the final revisions of the MOU (one that FVTT required TCTA to enter into, beyond the provisions provided in the EMP and EMC Constitution), " . . . do not, and could not form the basis for a meaningful and mutually beneficial relationship, and therefore does not form the basis for future negotiation." An immediate result was that after the resignations only Stellenbosch Municipality directly represented the local Franschhoek valley interests on the EMC.[41] Representatives of downstream water use interests remained on the EMC.

The EMC chairperson, a respected professor in conflict resolution and former senior communication official in government identified the three major issues that "bedeviled the EMC since inception as " . . . (i) issues of water quality, (ii) the issue of indemnity of committee members against possible future legal action by disaffected communities or individuals, and (iii) socio-economic issues around livelihoods and the environment."[42] Most observers the case-study team spoke to in 2008 suggested that the main factor was FVTT representatives felt the host community was not receiving enough benefit from the project—they had high expectations in that regard—as implied in their resignation letter.

DEAT reporting on the strengths and weakness of the first generation of EMCs set up in South Africa in its Environment Report Series later in 2004.[43] Referring to the BWP experience, the report concluded there was no one approach or recipe for the successful establishment and functioning of an EMC as a key project structure. The factors that led to successful functioning of the EMCs as a co-operative governance and planning model include

- clarity on the EMC mandate from the start;
- a process that is fair, and perceived to be fair, to nominate members to represent all I&AP interests;

- an independent chairperson who has the respect and confidence of the stakeholders and project authorities;
- all members entering the EMC process in good faith, understanding that negotiation and give and take is a prerequisite for the effective functioning of the committee;
- avoidance of an all-or-nothing or adversarial approach that will stalemate and cause the polarization of views;
- open and honest interaction and deliberation between the EMC and project authorities; and
- regular flow of communication within the EMC (among members representing different interests) and between the EMC and the project authorities.

Most observers of the BWP indicated the main constraint to a fully effective EMC was the breakdown of trust between some EMC members and TCTA and DWAF. A contributing factor was annoyance that civil society members had to bear most of the cost their participation, when government EMC members were salaried.[44]

Development effectiveness

The fourth governance theme illustrated by the BWP relates to today's debate about the development effectiveness of water infrastructure. There are strongly divergent views on the central question of whether large dams should be viewed as physical assets to be optimized either for service provision (while mitigating adverse environment and social impacts) or as wider development interventions.[45]

On this issue, South Africa's water legislation clearly sees both perspectives are needed. The philosophy is set out in the 24 principles in the White Paper on Water Resource Management (1996), reinforced in the National Water Resources Strategy (2004). Narrative from these documents relevant to this theme include the following:

- Scarce water is not just used productively, but "optimally" to advance the country's strategic agenda of equity, poverty reduction, and sustainable growth and development;
- Social and economic benefits are considered together; those options and uses that contribute more to a desired social need, such as a reduction in unemployment, better health, or more attractive recreational use, will be selected;
- People and the environment have to be kept at the center of concern for sustainable development; sustainability and poverty reduction are intertwined; and
- The price of water needs to reflect the real economic cost, including the indirect costs to society and the environment for its development and use; and beneficiaries of the water management system shall contribute to the cost of its establishment and maintenance on an equitable basis.[46]

People came from different perspectives on this issue on the BWP. Clearly the host community and many downstream users saw the BWP as a wider development intervention. While complicated by several issues, this was clear in the statement that EMC members made when they resigned, indicating the lack of "mutually beneficial development."

An illustration of how the development effectiveness question played out on the BWP can also be seen in part in decision outcomes at different stages:

- ***At project selection and preparation:*** The principles and criteria for ranking water demand and supply options from the two-day multi-stakeholder conference in 1996 revealed what local governments and interested and affected parties valued in terms of the performance of infrastructure and expected benefits (see Box 2.5). Subsequent dialogue among the interested and affected parties on the design and

Box 2.5 Guiding principles for assessing water options agreed to in the Western Cape multi-stakeholder conference in 1996

- Will the water be affordable?
- Will the option cause the price of water to change in a dramatic or unpredictable fashion?
- Will the supply meet the needs of informal settlements?
- Will the water be of good quality for formal settlements?
- Will there be tangible job creation opportunities?
- Will the option provide accessible water for emerging farmers?
- Will the option create self-sufficient communities?
- Will the donor basin's needs be met before the water is transferred?
- Does the option affect the quality, availability, and reliability of water for ecological functioning?
- Will the option allow smaller towns and larger towns to receive equitable attention?
- Does the option affect areas of exceptional environmental characteristics, such as water sources or high biodiversity, in the criteria for international conventions?
- Does the option use environmentally efficient technology?
- Have the options been ranked by financial cost, yield, longevity, and environmental and social economic effects?
- Is there sufficient comparative information for each option?
- Does the option contribute a long-term solution to demand?

From the Western Cape Evaluation of Options (1995) as reported by NS in the Berg Review Paper 2002

operating parameters of the BWP was mostly concerned with balancing wider development interests, like balancing impacts on downstream users and the environment with water transfers to consumers in Cape Town (via the IFR debate) and the host community seeking community development benefits;

- ***At project implementation:*** The government required many measures to maximize the contribution of the project to local development aspirations, overseen by the EMC. There were many social enhancement measures in the construction phase EMP to integrate the project with the local culture and economy "harmoniously" though there were the difficulties with the resignations discussed earlier. Section 3 goes into more detail on the local benefits that were delivered.
- ***For project operation:*** There were mandated arrangements to manage downstream water releases adaptively to ensure a wide range of river values and the development interests downstream over time, scrutinized by the EMC. There was also the Sustainable Utilization Plan (SUP) to link management land resources for the mutual benefit and needs of the project and host community.

It was clear that on the BWP most of the contentious issues were about the wider development effectiveness of the project and the local sharing of benefits. In discussing these aspects with stakeholders and observers in 2008, the case-study team arrived at two views: first, while more can always be done, many of the wider development opportunities pursued would not have been—if the BWP had been narrowly defined as a bulk water supply project, and second, had the ROD issued by DEAT in 1999, and TCTA itself from 2002, not adopted a wider definition of sustainability.

As discussed in section 3, what the case study authors felt was missing from the development effectiveness equation was a mechanism, agreed to up front, for long-term

benefit-sharing with the host community. Again in the view of the case-study team, this might have be done either through funding of the Sustainable Utilization Plan (SUP) or via additional measures funded by tariffs (see related discussion in the sustainability section). This may have responded, in part, to underlying reasons for the breakdown of communication on the EMC in 2004. Clearly among the nongovernment EMC members (FVTT especially) there was less appetite to invest time in future dialogue when expectations for local development effectiveness were perceived as not being met.

The question of local benefit sharing was also raised in processes where the BWP was compared to international best practice recommendations generated in South Africa, as noted in the following paragraphs.

The influence of external factors: The World Commission on Dams (WCD) in its final report, "Dams and Development: A New Framework for Decision Making" issued in 2000, was clear that large dams should be seen as a development intervention. There in fact was a strong connection between the WCD and BWP. Cape Town was host for the international Secretariat of the WCD from 1998 to 2001. Professor Kadar Asmal, then Minister for Water Affairs and Forestry responsible to the South African Cabinet for decisions on the BWP was appointed Chairman of the 12-person international commission (WCD) early 1998. Because the WCD actually operated from Cape Town, cross-fertilization of ideas between the WCD and BWP planning was inevitable.[47]

An account of the influence of the WCD on the BWP process is in Appendix B indicating also a chronology of the key links between the BWP and WCD processes. Appendix B also includes an account of the subsequent multi-stakeholder initiative to contextualize the WCD to South Africa that involved many senior figures in the water community from the government, civil society, and the private sector. In its summary, "Applying the World Commission on Dams Report in South Africa" (2005) the Coordinating Committee's saw priorities in three main areas: (i) addressing social impacts, (ii) enhancing governance of water and energy resources development, and (iii) promoting river health and sustainable livelihoods. These priorities are summarized in Table 2.2.[48] Perhaps what is most relevant in the retrospective look at the BWP was the call for more attention to benefit sharing in connection with the WCD Strategic Priority 5: "Recognizing Entitlements and Sharing Benefits." Among the specific recommendations the Coordinating Committee made on this aspect were[49]

Table 2.2: Multi-stakeholder priorities adapting the WCD to South Africa

Social impacts/sustainability	*Enhancing governance of water and energy resources*	*River health & sustainable livelihoods*
■ Explore and implement mechanisms for recognizing entitlements and sharing benefits for *new* dams ■ Address unresolved social concerns from *existing* dams	■ Improve integration of water resources in macro planning ■ Enhance public participation ■ Build capacity and allocate finance to facilitate empowerment ■ Develop and implement M&E systems ■ Promote demand management ■ Promote regional good governance (southern Africa)	■ Prioritize resources needed to sustain rivers ■ Maintain existing pristine rivers ■ Monitor river systems against objectives of the Reserve (ecological & basic human needs) ■ Agree methodologies to determine environmental water requirements on a regional scale

Source: Final Report of the South Africa Multi-Stakeholder Initiative on the WCD (2005)

i (Recommendation B 6.6.2)
"Legally binding contracts between dam affected communities, developers and government should be entered into. An important issue to consider here is the best mechanism by which to ensure that communities actually benefit over a period of 10–20 years."

ii (Recommendation B 6.6.5)
"Develop mechanisms to implement the principle that affected people should be entitled to a reasonable share in benefits from a dam, which could include a share in revenue or benefits from tourism, electricity generation, industry, mining, agriculture and all other benefits. Affected people also require access to dams—for instance where graves are under the water. Explore the feasibility of establishing a Community Trust Fund system as a project benefit sharing mechanism, through a levy that would go through the water pricing structure."

Benefit sharing mechanisms are very much connected to the question of how to finance social sustainability measures in the operation phase of dam projects.

Summary Observations on Governance

Summary observations on the governance dimension that have wider applicability in other settings include the following:

On water governance reform: South Africa implemented sweeping water governance reforms in parallel with introducing a participatory democracy. Water service provision and water resource management reforms have separate, but related policies and institutional arrangements.

- The water services reforms were put in place more rapidly than water resources management (IWRM) reforms. In part, this reflected the constitutional and political priority to address unserved communities lacking basic water and sanitation access.
- Key driving forces of reform were empowerment of interested and affected parties and political support for genuine engagement. Undoubtedly the political cost of failure to demonstrate progress in equitable expansion of water services was high; and therefore, visible targets were set for water service delivery improvements at the municipal and aggregate national level.[50]
- The importance of having an apex organization with strong leadership to guide the water reform process stood out. Without the DWAF's interventions, many reforms may have languished (like IWRM reform elsewhere) and water service improvements may have been delayed or been inconsistent across the nation.

On setting priorities: The BWP shows that a positive convergence of political, economic, technical, cultural, and other factors is needed to reach decisions that have political legitimacy, especially when large dams are involved. The BWP shows the South African governance framework incorporates a number of essential elements to set priorities.

- Prioritizing explicit demand and supply options, using comprehensive options assessment in parallel with basin level supply-demand reconciliation studies (led by DWAF) and municipal water service development plans (led by the City of Cape Town);
- Decision making at the lowest appropriate level, interpreted as the level appropriate to balance the competing interests, rights, and needs of those affected by the decision;

- Using statutory planning tools with structured processes that employ multi-disciplinary approaches and interested and affected party dialogue to inform priority setting;
- Using conditions of project approval as safeguards to maintain the political legitimacy of decisions during implementation and operation, and in equal measure, to empower interested and affected parties to ensure compliance and to raise the bar to improve sustainability and local benefits.
- Allowing a realistic timeframe to build political consensus and public support on priorities, while establishing a clear schedule for what needs to be achieved.

On integrated risk management: The BWP reinforces the need for holistic approaches on risk in water infrastructure to underpin the shift to integrated water management. Because of the inherent participatory nature of decision making, this enhances conditions for public trust in decisions and strengthens partnership approaches.

- Broadly this ensures that risks important to all interested and affected parties are identified and addressed, and that each aspect relates to sustainability.
- It brings together existing risk assessment and quantification methodologies developing independently in different disciplines and creates transparent strategies to assess and mitigate risks and to incorporate the recognition of rights, particularly rights at risk.
- Integrated risk management is an important trend in project financing and among public financing institutions that support good governance, serving as a first line of defense against corruption on water projects.

On corporate and project-level governance: The BWP illustrates the importance of the project governance structure in facilitating effective participation and communication. It also shows how corporate governance improvements are an essential part of the strategy to fight corruption in infrastructure.[51]

- The public-public project agreements (i.e. the Raw Water Supply Agreement between DWAF and CCT (2003) and the Implementation Agreement between DWAF and TCTA (2003)) provided a clear governance framework for the BWP. These agreements were in the public domain; the clarity, specificity, and transparency enabled the project to secure a favorable credit rating and access to project financing at preferable rates (ultimately reducing tariffs).
- The EMC mechanism provides insights empowering the host community and interested and affected parties to participate in implementing decisions and to scrutinize compliance on matters that directly affect them. At the same time, the resignations from the EMC in 2004 reinforce the importance of establishing a clear mandate from the outset and for constant vigilance to avoid misunderstandings about responsibilities and roles in project governance structures.
- The BWP illustrates how the overall presence of "good governance" reduces corruption vulnerability on infrastructure projects.[52] Corruption on the BWP would have seriously undermined the infrastructure strategy in South Africa in general and set back investment in water service improvement—a high political priority.[53] But beyond that, corruption risks, like financial and environment risks, need to be assessed explicitly and mitigated through strategies openly discussed and agreed to in stakeholder processes.
- While legislation is important, TCTA's actions clearly show that benchmarking corporate governance practices is an ideal a point of entry to introduce and improve anti-corruption measures in implementing agencies, using international

anti-corruption guidelines as part of continued processes to enhance risk management.

On water infrastructure as a development intervention: On the central issue of whether large water infrastructure projects should be optimized primarily for service provision attributes, while mitigating adverse environment and social impacts, or optimized as wider development interventions, the BWP experience is unequivocal.

- Dialogue with local government and interested and affected parties shows clearly that people want to leverage investments in infrastructure and public service provision to support a local agenda of equity, poverty reduction, and sustainable livlihoods.
- They placed high value on optimizing the development effectiveness of water uses in the river system in decisions on the design and management of the infrastructure, as well as ensuring the project contributes to the local host community development needs.
- This is consistent with the view in the National Water Resources Strategy (2004) "... to bridge the divide between the first and second economies, whilst maintaining existing beneficial water uses and encouraging the greater efficiencies needed in our dry country."
- As a final observation, looking at the BWP through a governance lens, it is clear that WCD core values developed through an international process based in Cape Town (Box 2.6) were wholly relevant to the stakeholders on the BWP.

Box 2.6. Core values of the WCD are contextually relevant to Berg Water Project development effectiveness

Equity

Efficiency

Participatory decision making

Sustainability

Accountability

Notes

[1] In this case illustrated by unique steps to analyse the BWP decision processes using the World Commission on Dams (WCD) as a point of reference, and a multi-stakeholder initiative to contextualize international thinking on the development effectiveness of large dams to the South African situation.
[2] The WFD is also regarded as an assimilation of the Aarhus Convention, the UNECE Convention on Access to Information, Public Participation in Decision Making, and Access to Justice in Environmental Matters, signed in 1998 in the Danish city of Aarhus. http://www.unece.org/env/pp/.
[3] http://www.article19.org/pdfs/publications/southern-africa-foi-no.-16-.pdf.
[4] The TI CPI relates to perceptions of the degree of corruption as seen by business people and country analysts, and ranges between 10 (highly clean) and 0 (highly corrupt).
[5] http://www.tisa.org.za/index.php?option=content&task=view&id=11&Itemid=36.
[6] http://www.nacf.org.za/
[7] http://www.iodsa.co.za/king.asp.
[8] The King Protocol, together with the international Global Reporting Initiative (GRI), are two powerful references for establishing corporate governance and corporate communication in water entities dealing with anti-corruption and sustainability.
[9] http://www.globalreporting.org/Home.

[10] The City of Cape Town apparently wanted to evaluate the environmental acceptability of desalination, Voëlvlei Dam augmentation and exploitation of the Table Mountain Group Aquifer and thus appointed Ninham Shand to undertake this work.
[11] While this analysis is somewhat simplified, these events led to Cabinet endorsement in May 2002 of the joint strategy. As part of the NWRS (2005) DWAF has since issued a national WC/WDM Strategy, which mandates demand-side management options receive the highest propriety before supply-side augmentation options are considered. DWAF promulgates prioritization the procedures in ongoing WSA Regulations and guidelines and models for Water Services Development Plans and the Water Board Business Plans.
[12] In keeping with the view that in order to achieve efficient, equitable and sustainable water management within the IWRM approach, the principle of subsidiary drives down action to the lowest appropriate level.
[13] This combined with multi-disciplinary approaches reinforced the thinking that a complementary mix of options is needed to achieve sustainability. No single option on its own will be the solution.
[14] The MCDA technique is based on a performance matrix, which relates the performance of different options against specified criteria (e.g. yield and technical, socio-economic, financial, acceptability, environment). These analyses are prepared in a series of expert group workshops and evaluated and revised interested and affected party meetings. The CTC also used MCDA as the basis for the IWRP and Bulk Water Supply.
[15] Several factors came into play. For one, TCTA had not been involved in the complex negotiations leading to BWP decisions. TCTA, as implementing agency, needed guidance and time to establish trust with local stakeholders. There were in fact some start-up communication problems, as discussed in section 4 that TCTA attributed to a "gap" in communication with the host community between 1999 and 2003–04.
[16] This recognized first, that while interested and affected party dialogue on the Reserve and IFR determination was informed by scientific study, there was still some controversy and also some risk and uncertainty; moreover, multiple and complex pressures would change the quantitative and qualitative status of water in the basin overtime, requiring adaptive management.
[17] Moving beyond a traditional focus on financial risks faced by the developer or investor (voluntary risk takers) to include the far larger group of interested and affected parties that often have risks imposed involuntarily (involuntary risk bearers, including the environment). While the "rights and risk" framework the WCD offered is relevant, recent thinking is to extend the framework to 3-Rs (rights, risks and responsibility). The responsibilities dimension encompasses duties of governments and all role players (IUCN, 2004; and World Bank, 2002).
[18] The perception of some nongovernment members of the EMC they could be sued for recommendation they made which impacted on water quality, for example. See the discussion on project governance in section C.
[19] Fitch Ratings, the international credit rating service. The credit rating took into account the agreements, risk allocations and mitigation strategies proposed.
[20] TCTA and the DBSA adopted integrated risk management approaches just before the BWP loans were negotiated, partly in response to the King II Report. About the same time the EIB Board, in response to international trends in risk integration and aggregation consolidated its management of credit, market, and operational risk functions in a Risk Management Directorate (RM).
[21] Some broader measures of reform that combat corruption include the following:

- Basics of good governance are in place such as the rule of law; participation and accountability; and defining basic legal rights, including access to defined public services standards; the roles of various branches of government; and ensuring performance-based accountability.
- Assessing service delivery performance, as an important means to detect corruption—one that is far more effective than are performance audits.
- Empowering citizens by supporting bottom-up reforms.
- Disseminating information and rights to information.

[22] This paper was widely circulated to international civil society, government, and the private sector interests prior to its presentation to the World Bank's high-level Development Committee. Civil society and private sector feedback on the draft paper on Strengthening Bank Group Engagement On Governance and Anticorruption is also included on the same website, http://www.worldbank.org/governancefeedback. It is one basis for structuring the World Bank's current GAC initiatives.
[23] The engineering contract was awarded to the Berg River Consortium, which includes Knight Piesold, Goba, and Ninham Shand. The contract for the construction of the dam was awarded to Grinaker-LTA, Group Five, WBHO, and Western Cape Empowerment Contractors.
[24] http://llnw.creamermedia.co.za/articles/attachments/08069_pip2007second.pdf and "The Berg Water Project (BWP) will be completed within the original budget, according to current indications, says the DWAF Chief Director in Infrastructure," http://www.engineeringnews.co.za/article.php?a_id=121756.

It is important to note the NGOs and CSOs contest this view stating the original Skuifraam budget in the 1990's was approximately R750 million (in money at that time), which was in the early civil society objections. It then went up to about R1.4 billion, partially as a result of the IFR design.

[25] In bulk water infrastructure projects, GIPs not only apply to procurement matters, but also need to be integrated with sustainability mechanisms like the EMP that manages various risks impacting on I&APs, for example, analogous to the program of IFR assessments to determine IFR releases (risk mitigation measures that are important to all I&APs), and the subsequent monitoring, audit, and I&AP scrutiny to ensure compliance, taking corrective action when needed. Other issues need to be addressed in service delivery.

[26] Or borrower, when commercial risks are assumed by a state, http://www.eib.org/projects/publications/eib-guidelines-on-fighting-corruption,-fraud,-money-laundering-and-the-financing-of-terrorism.htm.

[27] DBSA public statement "So we see governance and poverty reduction as deeply intertwined and interlinked…; there cannot be sustainable, large-scale, effective poverty reduction without a strong developmental state and a regulatory system supporting activities, including private sector activity, to fight poverty." http://www.asgisaskillsbase.info/Discover/News/Pages/OverseeingthespoilsofdevelopmentAspx.

[28] Communication with DBSA in meetings with the case-study team.

[29] EWRM is an international framework developed in response to growing concerns globally for more robust capacity to manage multiple risks that public and private enterprises in most countries face today. Committee of Sponsoring Organizations of the Treadway Commission, Enterprise Risk Management—Integrated Framework, Executive Summary September, 2004, see http://www.coso.org/Publications/ERM/COSO_ERM_ExecutiveSummary.pdf.

[30] Rather than replacing previous systems of internal controls (e.g., the corporate audit functions) EWRM incorporates those frameworks and functions.

[31] VRESAP is a 124km pipeline to deliver water from the Vaal Dam into the Vaal River Eastern Sub-System (VRESS). The implementation agreement with DWAF was signed in 2005.

[32] The guidelines and best practice for enterprise risk management as drafted by the Treadway Commission (COSO), the ERM Framework as drafted by National Treasury, the requirements for risk management as contained in the PFMA, and guidelines provided by the Institute of Risk Management of South Africa.

[33] EIB Public Information Policy, "Benchmarks for Quality Assessment," http://www.eib.org/Attachments/general/events/ngopres_koehler.pdf.

[34] http://www.tcta.co.za/news_article.jsp?article_id=20.

[35] Perhaps it was also in anticipation of the statutory requirement introduced in environment legislation in 1998. DEAT subsequently mandated establishment of the Berg EMC in its 1999 ROD.

[36] Stakeholder groups represented on the Berg Water Project EMC are agriculture, water users, directly affected landowners, directly affected community (i.e., La Motte village), local civic organisations, local business, local tourism sector, local authorities, local environmental groups, regional environmental groups, Integrated Development Planning (IDP) structure (which has been replaced by the municipal ward structures), Cape Nature, and down stream stakeholders. From the EMC mandate: An independent chairperson shall be elected by members of the EMC and all members shall be entitled to nominate candidates for the position. Voting shall be done by ballot at a designated EMC meeting. (Source: TCTA)

[37] Presented as Annex B of the draft EMP dated June, 2003.

[38] Integrated Environmental Management Information Series, Environmental Monitoring Committees (DWAF) http://www.environment.gov.za/Documents/Publications/2005Jan7/21EnvironmentalMonitoringCo.pdf.

[39] Since 2000, all EMCs in South Africa on development projects have been called monitoring committees and it is clear EMCs do not have executive or decision-making power; hence they have no legal liabilities.

[40] Berg River Dam oversight committee members resign over fears they will be liable for problems January 12, 2005, Edition 1, Melanie Gosling.

[41] Also the view members of the FVTT stated that DWAF had not satisfied a number of the conditions subject to which the EMP was endorsed by the EMC and approved by DEAT.

[42] From the EMC Chairperson's communication to the remaining EMC members

[43] "Environmental Monitoring Committees," Principal Author Nigel Rossouw for DEAT, 2004.

[44] Members of the EMC had to volunteer for the BWP which "was fine for bureaucrats but much more difficult for civil society and private sector groups. Some members felt like they were being used as 'free consultants.' They claimed "Remuneration even for the costs of getting to the meeting was problematic." (IDS 2006).

[45] This has implications for the infrastructure strategies of countries, including where and how to set boundaries in different situations (i.e., different development contexts, for public-public, public-private, and private sector development models).

[46] Where direct financial costs, including catchment management costs, can easily be calculated, all significant water resource use will be charged for, regardless of where it occurs.

[47] On one hand, you had the first test of perhaps the most progressive enabling water legislation in the developing world (with the BWP), and on the other, a precedent-setting international exercise based from Cape Town explicitly established to consider the development effectiveness of larger dams (with the WCD). The inevitable outcome was a cross fertilization of ideas and two-way flow of information. The international practice assembled and digested in the WCD process was available and could inform implementation of South Africa's water reform agenda, and South Africa's considerable water experience and exceptional governance transitions could also inform thinking in the WCD process.

[48] Applying the World Commission on Dams Report in South Africa http://www.emg.org.za/documents/SA%20Initiative%20on%20the%20WCD%20-%20Summary%20Report.pdf.

[49] Contained in the report as above.

[50] Targets are set in public consultation processes and captured in the municipal water services development plans. By 2005, roughly 10 years after the change of governance it is estimated that 3.7 million people out of the countries 48.1 million people were without some access to water (DWAF Annual Report 2004–2005).

[51] In bulk water infrastructure projects governance improvement plans (GIPs) not only apply to procurement matters but also need to be integrated with sustainability mechanisms like the EMP that manages various risks impacting on interested and affected parties. For example, analogous to the program of IFR assessments to determine IFR releases (risk mitigation measures that are important to all interested and affected parties) and the subsequent monitoring, audit, and interested and affected parties scrutiny to ensure compliance and taking corrective action when needed. Other issues need to be addressed in service delivery.

[52] Corruption is hidden and by definition is unethical behavior the participants do not want to have out in the open, and certainly not transparent. Integrity as it is defined in South African law is not just the old definition preventing and detecting acts that are clearly unlawful, such as bribery, it is also about openness to ensure fairness and trust in the way in which decisions are arrived.

[53] Such as a re-occurrence of the corruption issues experienced on the Lesotho Highlands Water Project.

CHAPTER 3

Sustainability Dimension

Sustainability Context

The relationship between sustainability and achieving value for stakeholders is a prominent message in TCTA's corporate communication on the BWP.[1] This message requires defining stakeholders in an inclusive manner, treating the host community as a partner in local actions that impact the sustainable performance of the project, especially social sustainability. It also means adding value according to stakeholder expectations and needs. The direction for sustainable development in water resource projects was set by South Africa's progressive water legislation. As discussed in other sections of this case study, this legislation helps to achieve sustainable water resource management and the wise and efficient use of water, reflecting IWRM principles. Water demand-supply reconciliation and equitable access to infrastructure services are overarching themes in the South African context.

Sustainability Diagnosis

Viewing the BWP through a sustainability lens reveals that different aspects of sustainability are intertwined in the development and management of water infrastructure; namely the environmental, social, economic dimensions, as well as the financial, physical, institutional and other project elements. To look at the viability any one dimension, for instance environmental sustainability, all dimensions of the project must be considered in an integrated approach.

Overall the BWP story reinforces contemporary thinking on the value that integrated sustainability assessment (ISA) processes offer to structure analysis and dialogue on improving the sustainable performance of development interventions, such as dams that cut-across many sectors.[2] This embodies a shift in thinking—not only focusing on impact avoidance, minimization, and mitigation but also on improving the environmental, social, and economic performance of long-life infrastructure. Sustainable performance must also be contextually defined. Measures to provide sustainability need to be interpreted and implemented in multi-stakeholder processes within a specific context, informed by new thinking and experience gained elsewhere. Integrated approaches (like IWRM) help implementing agencies deal with the practical issues and complexity that arise in delivering sustainable performance and accommodating the key role players in partnerships.

Contemporary infrastructure strategies must "create more value with fewer resources and less impact, or do more with less," as the United Nations argues.[3] This is consistent with the description of sustainability provided in South Africa's Water Resource Strategy (2006) as "people and environment centered."

Environmental sustainability

EIAs for the Berg River Dam and Supplemental Scheme respectively (DWAF, 1996 and 1997) identified the main environmental and social impact issues as (i) impacts on forestry, (ii) impacts on the local community, (iii) disturbance of downstream reaches of the Berg

River, and (iv) cumulative impacts on the estuary already under multiple pressures.[4] The environment management plan (EMP, 2003) was developed as a "living document" by the consultants hired by TCTA in 2002 and encompassed a number of sub-plans under natural environment and socio-economic themes (scrutinized by the multi-stakeholder EMC in 2003 who recommended DEAT approve the EMP).

The main environmental sustainability question revolved two related environmental flow aspects (i) the Instream Flow Requirement (IFR), which determined the downstream water releases regime from the Berg River Dam, and (ii) the determination of the ecological component of the Reserve flow that had to be maintained in the Berg River. While the IFR was defined in the EIA process and the Reserve determination was a basin level study process the two were connected. Related aspects included the arrangements for multi-stakeholder monitoring, compliance, and re-validation of the IFR and Reserve over time.

It is important to note that the Reserve determination and IFR were also a "proxy" for how the project benefits and costs were shared (e.g., between water consumers in Cape Town and downstream river users and the environment), accounting for direct and indirect costs.

Process to set the Instream Flow Requirement (IFR): Environmental flow assessments for the Skuifraam Dam had actually started in the late 1980s, well before legislation in South Africa required consideration of IFR releases from dams.[5] A proposed IFR for the Skuifraam Dam was incorporated in the draft EIA (1995). The IFR regime was later endorsed in interested and affected party workshops for the EIA. These brought together water use interests from the entire basin.[6] The outcome of debate on the IFRs was captured in the Record of Decision that DEAT issued in 1999 (see Box 2.2 in the previous section). It was then reflected in detailed design of the project (design of structures and operating procedures) when TCTA became involved in 2002.[7]

Box 3.1 from the Berg EMC minutes in 2004 provides some contextual background, where DWAF responds in writing to the question, "Is the Reserve determination taking due cognizance of all ecological impacts and is it being done as a matter of urgency?"

The Ecological Reserve Determination: Separate to the BWP study, DWAF commissioned studies for the first Berg Reserve determination in 2001. This was an objective-based approach to set the desired status of the river. The starting point was an ecological management target DWAF set in its four-tiered national ecological classification system for rivers.[8] The Berg River was in ecological category C—meaning "moderate modification from natural conditions and especially intolerant biota may be reduced in number and extent."

Box 3.1. Berg River IFR determination process

"The IFR determinations were undertaken for the BWP prior to the Reserve legislation enshrined in the National Water Act (1998) being promulgated. These determinations covered the Berg River down to Herman. During the planning studies for the BWP the impacts on the entire river system and the estuary were evaluated. A public workshop was held (in 1997) to determine the desired future state of the Berg River. Scenarios detailing the effects of four future management scenarios varying from a zero IFR release to a "Maintenance IFR" which, in effect, would improve the state of the river above its existing State. The public workshop resulted in preference being given to scenarios, which placed a strong emphasis on preserving the environment (called a damage control scenario). The investigations covered the biophysical impacts down to the estuary (i.e. impacts on invertebrates, fish, vegetation, mammals, birds, water quality and sedimentation) as well as the socio-economic impacts (e.g. impacts on canoeing, fishing, eco-tourism, etc). In 2003, Ecological Reserves were completed at 3 points on the Lower Berg River at an Intermediate Level. Comprehensive Reserves will have to be undertaken in the near future. The Berg River Baseline Monitoring Study, which is due for completion at the end of 2005, will provide a useful database for the Reserve determination process."

Source: EMC Meeting No: 11 (06–2004) DWAF in a written response to EMC questions

By 2003 the ecological component of the Reserve had been agreed to set for stretches of the river judged to have the highest ecological value (in the Berg Dam EIA, 1996). The regime of flows was based on ensuring continued functioning of critical aquatic ecosystems.[9] General features of the IFR regime were then adjusted set.[10] And as DWAF stated at the time (in Box 3.1), the comprehensive Reserve determination for the whole river system would, in future, be led by Berg CMA after it was operational. The Reserve is to be validated as an ongoing process to reflect the evolving basin management strategy and water allocation policies and operation of the Berg project would be modified accordingly.[11] In the CMA establishment report (2007), the Reference Group indicated that one challenge was to modify the operation of other existing infrastructure (other tributary dams) in the Berg River system to comply with new Reserve requirements.

Impacts on the BWP design: The IFR was important as a key design parameter and factor influencing the costs of the project. After the initial IFR (EIA 1996), a multi-stakeholder workshop was held to confirm public preferences for a desired state of the river, as referred to in Box 3.1. But controversy remained over the high flow IFR component (maximum flood release) that was needed to size and design the multi-level intake and outlet works.[12] The Directorate of Civil Design of DWAF, for example, questioned the ecological impact of having such a high peak release (as indicated in the EIA), as well as its practicality.[13] It meant the BWP outlet works needed to be far larger and costlier than one to comply with dam safety regulations, and it was much larger than what would be needed to meet ecological IFR requirements in OECD countries for a dam in similar circumstances. Independent specialists supporting the interested and affected parties dialogue on the EIA and IFR determination process, on the other hand, refused to discuss a maximum flow lower than what became known as the Damage Control Scenario (160 m^3/s flood release) based on their judgment of ecological effects and concerns about maintaining the physical integrity of the river channel, taking into account likely sediment transport, deposition patterns, and other river management issues.[14]

Consensus was sought at a subsequent interested and affected parties workshop in August 1998, attended by water users interests from the entire basin and environmental NGOs. The workshop report issued in February 1999 indicated that after considerable debate, participants endorsed the damage control IFR scenario.[15] The consensus was enforced in the ROD issued by DEAT later in 1999 (with conditions previously noted in Box 2.2, e.g., a pre-project baseline monitoring program, strengthening operational monitoring and linking adaptive management of downstream releases to monitoring results that were scrutinized by the EMC, etc.).[16]

Table 3.1 shows the incremental cost to accommodate the various IFR scenarios that were considered in the interested and affected parties workshops. The preferred scenario

Table 3.1. IFR regimes and incremental costs of the Berg Water Project[17]

Berg Dam Intake Design and Maximum (High Flow) Outlet Capacity		Cost (1998)		% of Total Dam Cost
Option / Purpose	**Flow (m^3/sec)**	**Rand (millions)**	**USD (millions)**	**%**
1. Dam safety purposes alone	30	53.6		11%
2. Feasibility study design incorporating for larger releases	70	63.5		13%
3. Required IFR releases (damage control)	160	100		20%
4. Maintenance IFR	200	Not available	-	About 25%

Figure 3.1. Berg Dam 63 m high intake structure upstream of the dam

(the damage control scenario) cost R47 million (US$5.7 million) more than structures required for dam safety releases alone and approximately R36.5 million more than what was provided in the feasibility study.[18] This cost increase was due to the larger diameter bottom outlet pipes with connection to multi-level intake.

The photo in Figure 3.1 shows the 63 m high variable level intake structure under construction in 2006. The photograph shows the south section of the intake tower, which is an open vertical shaft (known as the wet well) with multi-level (four) gates for drawing water from the Dam for high flows/floods (up to 200m^3/s) as required by the Ecological Reserve. The north section of the tower is a dry shaft with multi-level inlets, which provides for drawing water into the Cape Town supply system and also provides for low flow (under 12 m^3/s) environmental releases.

The incremental cost and value of environmental sustainability: The additional cost of the structures to provide the IFR needs to be seen in a proper light. While it may be difficult to disentangle all the effects, it is not just the cost of meeting the Reserve for environmental sustainability, i.e., the cost of environmental sustainability. The one-time investment of R47 million to build in physical flexibility to accommodate high-flow releases and adaptively manage the downstream water releases also protected the sustainability of high-value agriculture production and other river values.[19]

As noted in section 1.4, in 2004 before start of construction, the Berg CMA Reference Group was concerned about the threatened loss of agriculture exports to EU countries due

to poor water quality in the Berg River. Potential losses were between R128 and R385 million per year, plus large and significant job loss among low-wage agriculture workers.

Equally it is important to understand the economic value of IFR provision in deciding whether, and how much, to invest physical measures to re-operate existing dams and flow regulation schemes to meet the Berg Reserve.

Otherwise people can challenge the investment in IFRs as not affordable in different development settings, when the investment is actually key to increasing the value of water for all stakeholders in the basin.

The messages the public receives from the media are important in shaping public perceptions on this aspect—as water users must pay in the end. Box 3.2 illustrates how the message about the IFRs was conveyed to the public by media in 2003, reporting on the views of the Skuifraam Action Group (SAG). SAG perceived the BWP as a threat to both the environment and the agriculture economy. It argued the diversion of water would increase river salinity (when DWAF and others saw the BWP as having a marginal impact on salinity concentrations; moreover, it was part of a comprehensive salinity management strategy as discussed in section 1.4).[20] Other messages given to the public by the media suggested that cost of providing the IFR was solely for environment protection (as in Box 3.3) and not for broader water quality-quantity management, as government communication began promoting the water quality message to the public (as in Box 3.4).

This observation is made because the case-study team noticed many stakeholders were not familiar with the broader economic rationale and justification for IFR investments. This is potentially an important lesson the BWP offer, if it is to serve as a viable model for handling IFRs for other basins and projects.[21]

Box 3.2. Media reporting of environmentalist concern over the Berg River Project

Cape Town - Western Cape environmentalists and farmers are increasingly concerned about the multi-million Rand proposal to build the Skuifraam Dam near Franschhoek, saying it was a "looming disaster." They are concerned that the construction of the dam could increase salinity in the Berg River and damage the river's ecology (with reference to downstream flow impacts that IFRs address).

Interview with the SAG

Cape Argus, March 2003

Box 3.3. Media attributes incremental cost of IFRs to the environment

….It is estimated that about 30% of the new cost of the dam is because it has to store enough water to then be released in volumes which will maintain the ecosystem—sometimes as floods peaking at 160 cubic meters a second.

Cape Argus, March 2005

Box 3.4. BWP improves Western Cape's water quality

The improvement of the quality of water in the Western Cape is one of the main benefits that has arisen from the Berg Water Project (BWP), the Minister of Water Affairs and Forestry Lindiwe Hendricks said at a media briefing at the Berg River dam site earlier this year.

Engineering News, December 2007

Another lesson worth a closer look in future is how the cost of providing the IFRs is shared among river users, particularly in dam diversion schemes and what also irrigators pay. For example, in the BWP case, it appears the cost of the IFR (capital cost) will largely be borne by urban consumers in Cape Town via the Berg Water Capital Charge (BWCC) amortized over 20 years.

The question is whether all water users in the Berg River system should contribute to the IFR costs on diversion projects like the Berg. Similarly, in future, whether all users should contribute (and in what proportion) to investment in the re-operation of existing infrastructure to meet the Reserve and IFR determination through mechanisms like water fees and charges (that the Berg CMA will eventually put in place once it is functional).[22] What is done on the Berg system will be an important precedent for South Africa.

From a communication perspective it is important to get the message right on the issue of cost: not to justify investment in dams, but rather to justify the investment in IFR provision and associated monitoring and adaptive management capacities if a dam is selected as a supply augmentation option. With the benefit of hindsight, observers and stakeholders on the case-study team met and raised a number of related environment sustainability isues:

- Some observers felt that downstream flow impacts during the initial construction diversion could have been addressed more quickly, or more comprehensively, and more attention paid to reporting about this aspect in the construction phase EMP.
- Some held the view that the EMC as a nontechnical body found the IFR issues very complex. Additional support to help members understand, process, and interpret the monitoring results was suggested as something that requires further thought. For instance, the EMP can have a clearer list of things to monitor with descriptions of why they are important, for example, the different water quality parameters and sediment loads. Also a judgment of the status or quality of the river on a monthly basis would be helpful, such as a short report from a river scientist on what the monitoring results mean in terms that were comprehensible to lay people. The same procedure could be established for the Berg CMA committee responsible for the river monitoring program.
- Lastly, some people were concerned the independent environment audit focused on process auditing only, not outcomes. And some who resigned from the EMC in 2004 expressed strong views that independent auditor's reporting relationship with TCTA was a problem. In theory, such concerns can be dealt with readily, but certainly the perception reinforces the need to ensure open and transparent discussion of audit reports and ECO reports. The underlying concern is really to identify what contextual steps are needed to maintain good faith and trust in the audit arrangements for reporting on and accountability for action taken on the results.

Social Sustainability

The BWP did not involve resettlement. The EMP provided a framework for social mitigation and enhancement measures, largely focused on the host community. The measures were later expanded and brought together under a social-responsibility program. This was informed by further social monitoring which was reviewed and scrutinized by the EMC. Rossouw and Malan (2007) wrote about lessons the BWP offers on social impact monitoring, for example, the need to move beyond checklist approaches and to focus on the quality and value of social outcomes.[23]

Two social sustainability instruments with wider applicability on dams in South Africa and abroad were piloted on the BWP: the Franschhoek First Policy for the 3-year implementation phase and the Sustainable Utilization Plan for the long-term operation phase.

Franschhoek First Policy (FFP): As noted previously, the genesis of the FFP can be traced back to the two-day multi-stakeholder conference in 1996 that was part of the Western Cape demand-supply reconciliation options study that identified the BWP as the preferred supply option. This was facilitated by DWAF. Local job creation and employment impacts were among the "guiding principles" stakeholders proposed for selecting options (see previous Box 2.5 in section 2). Citing a response to these concerns DWAF issued a public Letter of Commitment on BWP in February 1997, that set out a number of commitments to the host community, among which included:

- "Where ever possible and practical those employed during the construction phase will be drawn from the local community, and the interested and affected parties committee (which later became the EMC) should be involved in determining a fair and equitable employment policy;
- Labor intensive construction techniques shall be employed as much as possible (In the letter these were noted to be limited in scope); and
- Housing, if required, for imported staff and labor will be planned in consultation with local community representatives. After construction, houses would be removed or retained for sale, but streets and services would revert to the municipal authority."

The FFP that eventually emerged had the objectives described by TCTA in Box 3.5. It was implemented through an employment strategy, sub-tasks of which included TCTA supervised preparation and EMC scrutiny of (i) a recruitment strategy, (ii) a local skills audit, (iii) preparation of a Recruitment Manual, (iv) establishment of an employment information desk in Franschhoek, and (v) a training and skills transfer strategy. All institutional partners and interested and affected parties represented on the EMC and all levels of government strongly endorse the principles and objectives of the FFP.

The perception of most observers that the case-study team met in 2008 was the FFP targets were met. Monthly progress reports were given to local stakeholders via the EMC. And TCTA notes in its annual sustainability report to wider stakeholders on its corporate website that contractors exceeded the targets for local procurement (e.g., Black Empowered (BE) R117 million[24], Black Economic Empowerment (BEE)[25] enterprises R109 million; local enterprises (LE)[26] R44 million; small, medium, and micro enterprise (SMMEs)[27] R67 million).[28] As of 2006, contractors had provided 11,102 person days of training, of which 9,908 days was for local persons, and a total of 5,890 local people had site safety training, which met targets. Specific construction skills training amounted to 3,093 person days.

Box 3.5. Franschhoek First Policy

The Franschhoek First Policy (FFP) was developed and subsequently endorsed by the BWP Environmental Monitoring Committee (EMC) to achieve the following objectives:

- To maximize employment opportunities for the local communities;
- To minimize the utilization of imported labour within the ambit of applicable legislation;
- To maximize contracting, training, and development opportunities for local businesses, HDI-owned businesses, and SMMEs so as to ensure maximum procurement opportunities;
- To give effect to the Franschhoek First Policy, each contract awarded on the BWP stipulates employment, training and procurement targets; and the performance of the contractor against the targets is monitored on a monthly basis.

Source: TCTA

Different views on the success of the FFP were mostly about delivery timing, quality, effectiveness of construction training, and type of jobs and support provided.

- Most observers agreed the initial skills audit and training needs assessment targeting disadvantaged communities in the Franschhoek Valley had weaknesses.[29] TCTA sent the skills assessment to contractors preparing bids, who then incorporated the assessments in their cost bids. But when it was later established that many of the skill sets were not actually present locally, it led to costs increases and unfulfilled expectations in the community about not getting the higher skilled jobs (with higher wages).[30]
- Contractors argued there was not sufficient time to train local people in some of the higher skill jobs, like heavy equipment operators, due to the construction schedule and the cost of such training. Thus contractors brought in more skilled workers to the Valley than was originally expected, resulting in further frustration on hiring policy and social tension.
- There were complaints from members of the local community about the quality and duration of training (e.g., too short, too limited, etc.) and limited coordination with the Sector Education Training Authority in South Africa, such as obtaining training certificates that would help people look for work outside the valley or for other jobs.
- There were disagreements on how improvements could be made to the FFP as events unfolded, as cited in the resignation letter of some EMC members in August 2004 (noted in previous governance section). Other flash points concerned whether and how much support to give to local companies who, after competitively bidding for contracts (housing contracts mainly), ran into difficulties with cost over-runs. The EMC had a different interpretation from TCTA about who had to pay for costs related to building to construction specifications and finishing standards and who had to pay for professional project management within the contractor's team. The black companies contracted to build the houses did not price for having a professional project manager, which TCTA insisted on. In the end TCTA paid for and allocated a professional project manager to work in the contractor's team. TCTA's view was that the legal contract was quite clear, in that it was the contractor's responsibility to construct the housing to specification and to ensure finishing to the satisfaction of the supervising engineer.

TCTA will undoubtedly provide contextual lessons from the FFP in its project completion report. The FFP issue raised most often by people the case-study team met in 2008 was the training aspect. TCTA conducted an internal review and assessment of the effectiveness and impact of training. The specific lessons learnt from this review is summarized in Box 3.6. Based on interviews and meetings conducted by the case-study team, it is suggested that future approaches might incorporate some of the following elements:

- Clear specifications on the type and level of training to be provided; whether it can be provided up-front before construction or as on-the-job training;
- Contractors incorporate bids on training as discrete packages in their tenders;
- Up-front training creates expectations and there can be no guarantee of employment of those trained Training needs to be experiential and ideally trainees need to be assigned to a supervisor who monitors skills development progress.
- Allow contractors to select those for work based on training performance, and
- Provide contractors performance incentives to maximize the number hired, link to the local hiring targets and set a minimum threshold for different skill categories.

Box 3.6. Berg Water Project Sustainable Utilization Plan: Lessons learned

It is critically important to recognise that there are key success factors to achieve training outcomes. These are:

1. Training needs to form part of a long-term education process and should not be planned in isolation from the National Qualification Framework system and standards
2. Training is a social process and it's success depends to a large degree on the relationships formed between trainees and their supervisors
3. The trainee needs to possess the aptitude to learn the core cognitive skills required for a particular course
4. The attitude and passion of the trainee is probably the single most important factor in success

The key lessons learnt for TCTA from this review study is that:

1. The expected outcomes in terms of ability and proficiency of trainees should be realistic
2. Communication about the value of "just-in-time" and "on-the-job" training should be clearly communicated
3. Widespread training of unemployed people creates unrealistic expectations of job prospects
4. Specific construction skills training courses should be clearly identified in the contract specifications
5. A basic industry training review or needs analysis should be undertaken before drafting the employers training policy and specification, so as to ensure that training outputs and outcomes are aligned to the areas in the industry where skills are scarce
6. Recognition of prior learning and the assessment of competence should form an integral part of the training program, as most workers do not possess formal qualifications or have had the opportunity to undergo formal skills training
7. The training program should be integrated into the construction schedule and flow of work on site

TCTA contractual specifications for training can be improved by specifying the following:

1. All courses to be South African Qualifications Authority accredited
2. All training service providers and all the trainers need to be accredited with the relevant Sector Education and Training Authority
3. Contractors should ensure that the training credits of all trainees successfully completing training courses should be registered on the National Learner Register Database and that the trainees should be informed of this
4. Measurable minimum training outputs, in terms of specific courses and number of trainees
5. All training courses delivered needs to strictly comply with the National Qualifications Framework training unit standards

Wherever possible, the upfront and on-job training would be linked to the skill certification system in the country. Otherwise, the ex-post assessment of the FFP (and assessments built into future initiatives) would add value if all the convergent and divergent views are presented in the assessment report. This would be available to inform stakeholder discussions for the design of such initiatives on future dam projects, including rehabilitation and upgrading projects.

Sustainable Utilization Plan (SUP): DWAF have developed guidelines and planning procedures for the development of Sustainable Utilization Plans (SUP) or Resource

Management Plans for state dams. The development of a SUP aims to facilitate local institutional and economic capacity building and enhancement and enable long-term sustainability. SUPs are currently not a statutory requirement in South Africa but are being implemented to give effect to the principle of local benefit sharing from Dams. DWAF issued a preliminary guideline for SUPs in 2001 entitled, "Summary Planning Procedure: Sustainable Utilization, Access and Development of Water Resources for Recreation, Tourism and Socio-Cultural Purposes"[31] In the guidelines DWAF states the aim of the SUP is to " . . . compile functional, workable sustainable access and utilization plans for water resources . . . through a process based on the attainment of harmony within the natural and cultural environment, while addressing the needs and requirements of the community, users and visitors." The preliminary guidelines were later updated based on experience and in 2003 a report was issued on establishing institutional arrangements (DWAF, 2003) and in 2005 further guidelines were issued on using water for recreational purposes (DWAF, 2005). Draft regulations for the use of water for recreational purposes were issued for public comment on 1 December 2006 (DWAF, 2006).

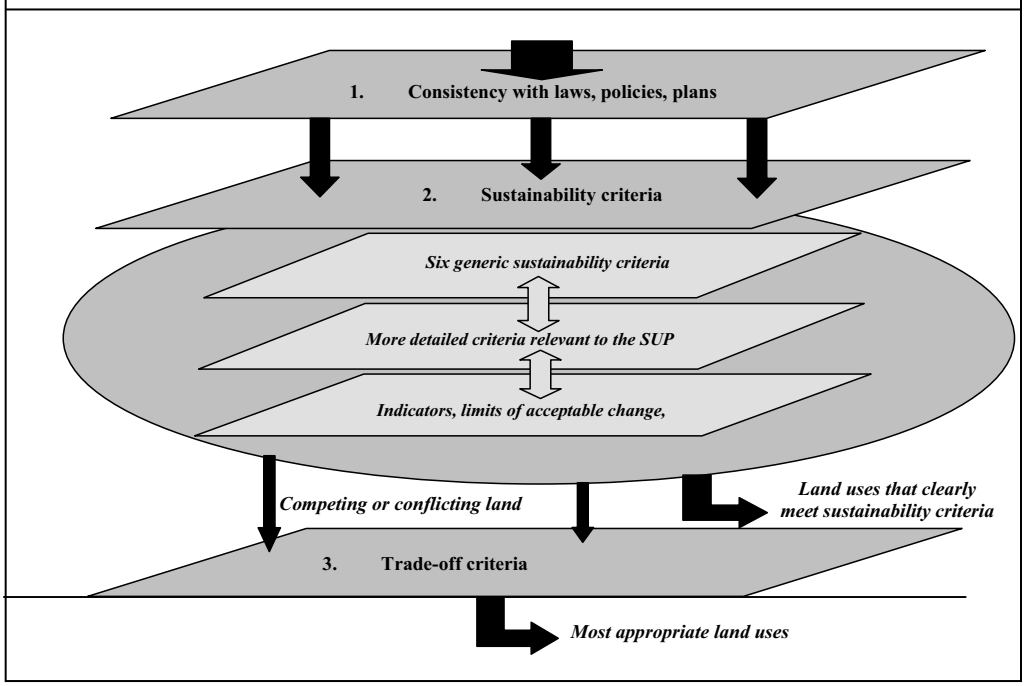
A sustainability framework has been developed to ensure an optimum mix of land uses. The framework consists of the following elements:

- A filtering process for determining ***consistency with laws, policies and plans***
- A set of common ***sustainability criteria*** to 'test' and inform potential land/water use, and
- A set of ***trade-off criteria*** to evaluate competing or conflicting land/water use options.

The six generic sustainability criteria that are being used to inform the SUP include:

1. Integrity and resilience of socio-ecological systems
2. Social and livelihood sustainability
3. Equity and environmental justice within and between generations

Figure 3.2. Sustainable Utilization Plan-(SUP) process for the Berg Water Project



4. Efficiency
5. Democracy and good governance
6. Precaution and adaptation
7. Immediate and long term integration

Development within the Berg River Dam catchment area would be limited to tourism and recreation facilities and infrastructure. Development on steep cliffs and slopes (greater than 1:4) would be prohibited. Low intensity activities in the high-lying areas are envisaged with; hiking, overnight tented accommodation and indigenous plant harvesting; with more intense activities in the low lying areas; fishing, mountain-biking, hiking and picnic areas. Agricultural areas are identified on the fringes of the Berg River Dam catchment area where they abut existing farms. A wide range of traditional and indigenous crops are proposed in the agricultural areas including essential oils, buchu, proteas, stone fruit and wine grapes. However, in keeping with the sustainability criteria it is proposed that all these farming activities should be aligned to organic farming principles.

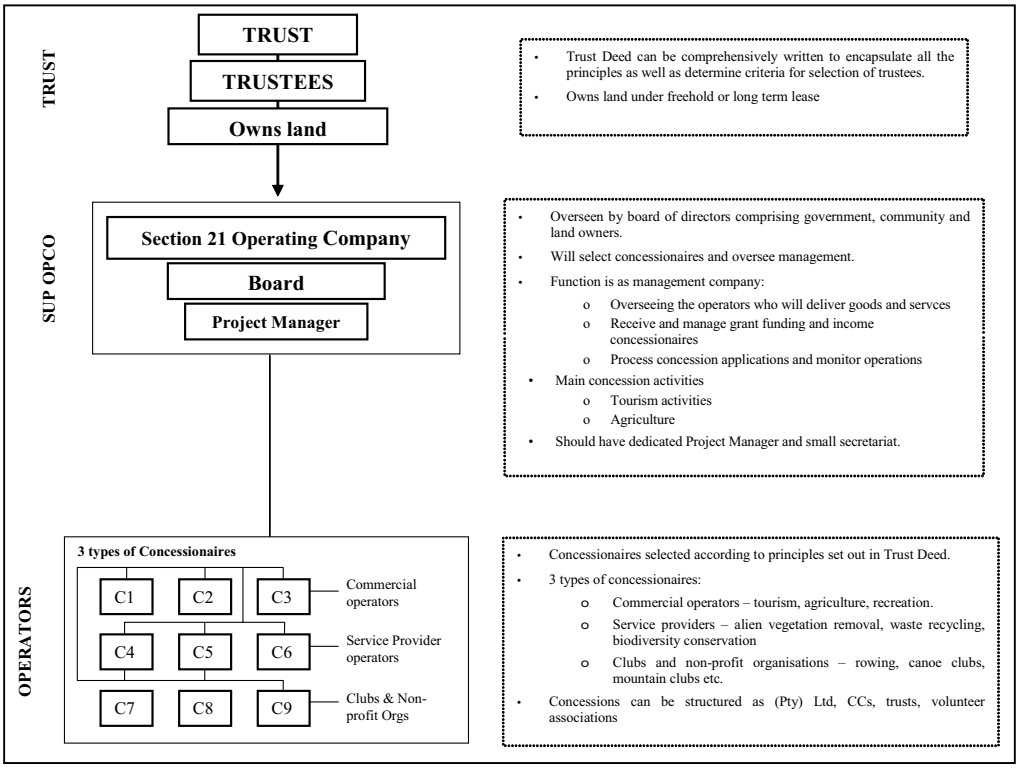
Recreational use of dam would be limited to low intensity nonmotorized activities, such as sailing, angling, canoeing, rowing or similar activities. Areas safe for swimming and in close proximity to tourism and recreation use areas will be demarcated. There is a possibility that a rowing and dragon boat racing course can be established. A 2000 meter 8 lane Olympic size rowing facility could be accommodated.

A number of options for SUP implementation have been identified and investigated.

Catchment Management Agency (CMA)	A CMA could manage recreational use of the water body.
Water User Association (WUA)	The WUA would manage access, and/or development of land and water resources, and for monitoring authorizations. This alternative would be appropriate for intensively utilized water resources with several concessions. The WUA may collect charges from the users to cover its costs.
Declaration of nature reserve	The Minister or MEC may declare an area to be protected if that area has significant natural features of biodiversity; is of scientific, cultural, historical or archaeological interest; or to provide for nature-based recreation and tourism opportunities
Declaration of a protected environment	The Minister or MEC may declare any area as a protected environment to protect the area if it is sensitive to development due to its biological diversity, natural characteristics, scientific, cultural, historical, archaeological or geological value, scenic or landscape value, to ensure that the use of natural resources in the area is sustainable, and/or to control change in land use in the area.
Co-management	A co-management agreement may provide for: ■ Delegation of powers by the management authority to the other party to the agreement ■ Apportionment of any income generated ■ Use of biological resources in the area ■ Access to the area ■ Development of economic opportunities
Trust with operating company	The objectives for establishing a Trust with an operating company is for it to: ■ Be capable of implementing government policy agendas with respect to land reform, BBBEE, and economic growth particularly in the agricultural and tourism fields

- Allow oversight by relevant government departments, land owners and community groups
- Able to receive local and international grant funding
- Able to let concessions for long enough periods to mobilize capital investment
- Enable mentor participation in operations
- Allow equity participation in business operations by established land owners and private business
- Allow for a model where the land is treated separately from the business or land use.

The preferred institutional model for the management of the Berg River Dam catchment area is illustrated below.



The SUP is a planning framework that will guide the long term management and land use of the Berg River Dam water body and surrounding state land. The objective of the SUP is to maximize local economic development opportunities. The SUP, once finalized, will provide guidance on:

- Recreational and sporting use of the dam water body;
- Opportunities for economic activities on the state land surrounding the dam;
- Sustainability criteria for land use decision making; and
- Institutional arrangements for land management.

The SUP was under preparation when the case-study team visited in 2008, thus the outcome was pending when the case study was written.

There is some guidance in legislation when preparing the specific SUP strategies, for example, to conform to government regulations on public-private partnerships. Many of the local income opportunities the BWP would create during the operation phase would lend themselves to public-private partnership approaches, such as tourism. As the SUP area encompasses state land, concessions would need to be granted to facilitate activities that observed government's objectives, such as in the national Treasury PPP Toolkit for Tourism.[32]

DWAF will undoubtedly draw lessons from the BWP to make future revisions of the procedural guidelines on SUPs. Along this line of thinking (in the opinion of the case-study team in 2008), the SUP tool could be further developed in response to the social sustainability recommendations of the South African Initiative on the WCD, which cites the need for a mechanism for long-term benefit sharing (See Appendix C and the discussion in governance section).

The following are further observations on the local benefit-sharing from the BWP:

- Sustainable financing of the measures in the SUP is important. At present one underlying assumption is that local municipalities would agree to fund most SUP measures (DWAF guidelines are silent as to the source of money). Certainly some measures may be self-financing, such as tourist visitors centers but other measures may need seed financing.
- The question in South Africa, as in most developing countries, is whether already overstretched municipal budgets can be relied upon to finance social sustainability measures related to dam project impacts (not only adverse impacts, but also to take advantage of new opportunities created) and for how long. In reality there is a risk of delivery failure when municipalities lack the financing or have other priorities. Moreover, lack of any sustainable financing places a restriction on the type of measures that can be envisaged from the start.
- It is also clear from discussions the case-study team had with observers that the case for a longer-term local benefit sharing has to be made convincingly. The analysis provided in the South Africa Initiative report contextualizing the WCD is a starting point. There is also a growing body of worldwide experience with revenue sharing on hydropower projects, though perhaps fewer examples on single-purpose bulk water supply projects to contextualize.[33,34] Explicit benefit sharing arrangements developed in a collaborative way create room for constructive dialogue on social sustainability and partnership approaches. Benefit sharing can reduce social risks, while empowering people to take advantage of local development opportunities the project brings.
- As noted in the South African initiative on the WCD, one approach is establishing a Community Trust Fund system as a project benefit sharing mechanism, by means of a levy that would go through the water pricing structure (Recommendation B 6.6.5). There is, of course, the question about how to operationalize this in different basin settings.[35]
- One other aspect is whether downstream users (irrigators primarily) and others who benefit from water quality-quantity management measures should also contribute to benefit sharing with the upstream community that host projects. Conceptually, it is a step to internalize the environmental and social costs of water supply and equitably share the benefits and costs.[36]

The La Motte Housing Trust Fund is a modest, but otherwise interesting innovative financing mechanism on the BWP that serves to enhance local benefit sharing.[37] It also is

important as a policy precedent, as it recognizes the principle that local benefit sharing should continue during the operation phase of dam projects (in this case, in the form of an revolving fund initially expected to be around R30 million to finance future housing amenity improvements for the La Motte Village residents and other disadvantaged communities in the Franschhoek Valley).

Financial Sustainability

This dimension concerns the financial viability of water services in Cape Town and the operation and sustainable management of the BWP, including EMP measures and monitoring, and funding for the various institutional structures and social sustainability measures.

The ability of the Cape Town's water consumers to collectively service the capital and operating costs of the BWP was in little doubt. The project agreements (between DWAF, TCTA, and CTC) contributed substantively to ensuring financial sustainability, as reflected in the AA+ international debt rating on the BWP.[38] The financial risk management and financial audit procedures that TCTA adopted reduced risks of cost overruns, which reflects on tariff levels.

Two interesting aspects are (i) the Berg Water Capital Charge (BWCC) will be adjusted to reflect the final project cost, and (ii) the city chose to phase in the capital charge over a four-year period (starting in 2003). The phasing was seen as having multiple benefits: an additional price signal for water demand management; a prudent financial step; and a politically acceptable measure reflecting consumer preference to avoid a sudden, sharp tariff increase when the BWP came on-line.

Box 3.7 illustrates how the first 5% tariff increase was explained to consumers via the media and how it linked to water demand management in 2004. What is perhaps missing from this particular message is how it would impact different icome groups.

Further observations made by the case-study team on the financial sustainability issue follow:

- In Cape Town water tariff policy is complex.[39] It is linked achieving basic levels of service, the free basic water policy, and other issues like controversial pre-payment meters and servicing informal settlements. The importance of these issues was underlined by community protests over lack of provision of basic services (which included domestic water supply) in the informal townships of Cape Town in 2001–2002.[40] SAG argued that in the early discussions with the BWP proponents, civil society was told that the impact of Skuifraam Dam on water prices for lower income groups would be negligible.
- These concerns reinforce the importance of providing clear, unambiguous public communication on how water tariffs link to infrastructure strategies, and specifically the effect on the poorest consumers. Otherwise the scope of government action

Box 3.7. Phased introduction of the Berg Water capital charge

City water tariffs increased this month by 7.5%, of which 5% will go toward funding the new dam (BWCC). There will be further tariff increases of 5% a year until 2007, when the new dam will come into operation.

Water Affairs says making the consumer foot the bill for the new dam is designed to make them "feel the cost" of water provision in an arid country with escalating demands.

Cape Times - July 29, 2004

Melanie Gosling

can be seriously undermined. A relevant part of the message DWAF advocates is "consumers who drive the marginal supply need should pay a marginal cost of supply."[41]

- City of Capetown studies show the WC/WDM can contribute significantly to financial viability of water service providers by postponing capital expenditure on supply infrastructure, reducing the direct operating costs, and reducing nonrevenue demand. In 2006, the city estimated the financial benefit of implementing WC/WDM over 10 years to be approximately R1,694 million—roughly equivalent to the cost of the BWP.[42]
- On a more general point, the investment in the environmental sustainability and water quality-quantity measures (i.e., including incremental cost of the intake and output structures of the Berg River dam as discussed previously) contributed to sustainability of the agriculture base, hence contributing to growing the economy of the region.[43]

Institutional Sustainability

South Africa's legislation is explicit about the separate institutional structures for water resource management and water services delivery, though the institutional transition will take a number of years. In respect to their roles in the BWP, the longer-term responsibilities of the three major institutional actors (DWAF, CTC, and TCTA) were clearly set out in the two main project agreements (the Raw Water Supply Agreement and Implementation Agreement).[44]

The question of institutional sustainability, as it impacts the future operation of the BWP, extends to management of water resources in the Berg Catchment Management Authority (Berg CMA) and municipal capacities for water service delivery outside the CCT service area. There are many generic challenges to building local capacity within the new water institutions in South Africa.

Box 3.8 illustrates the sort of risks the new Berg CMA now faces, as seen by the multi-stakeholder CMA Reference Group. While these challenges derive in part from South Africa's political history, most are similar to the changes that other developing countries face. One of these risks is not sufficient funding for communication, education, and capacity building. Otherwise, the enforcement and collection of water use fees is seen as a major challenge. This requires a communication strategy and dialogue mechanisms to work with

Box 3.8. Stakeholder views of the risks to institutional sustainability and efficient functioning of the Berg CMA

- Under-estimation of the salary structure
- Estimation of operational costs
- Resistance to registering water use and waste discharge because of a perceived lack of true value—not understanding the benefit of paying
- Inability to collect charges effectively
- Escalating water costs
- Lack of financial capacity in CMA
- Too little funds for communication, education and capacity building
- Environmental risks associated with water use charges
- Control of outsourcing

Source: CMA Establishment proposal (2007)

water user associations to explain convincingly how registration of their water uses and payment for water use is a social responsibility and in the commo interest.

The Berg CMA Reference Group suggested the following aspects as crucial to the sustainability of the Berg catchment management strategy (CMS):[45]

- Establishing catchment forums and committees, providing them with guidelines;
- Highlighting the effect of climate change and giving priority to microbiological monitoring of rivers;
- Not allowing political interference as decisions on strategic resources (such as water) cannot be popularized;
- Monitoring the CMA's performance by an external committee; and
- Starting the CMA not as a small organization, but rather on a high note with as many staff members as possible (especially enforcement staff).

Physical Sustainability

The physical dimension is receiving more attention recently due to the link between water infrastructure and increased climate variability and climate change adaptation. The Western Cape has always experienced a high degree of year-to-year variability and drought cycles. Generally, the water security issue as a factor in the Berg decisions is seen in relation to (i) cyclical drought, (ii) the physical shortage of raw water storage capacity, and (iii) the need to bring the demand and supply into balance. The more fundamental limitation in available water resources makes the Western Cape region more vulnerable to longer-term shifts in the climate system.[46]

As noted previously in Table 2.1 (on risk mitigation), TCTA mitigated risks to the longer-term physical integrity of the BWP structures from any changes in climate extremes, like extreme flood events, by adopting international design standards, an expert technical review panel, and construction supervision. Reservoir sedimentation is not a major issue due to the relatively small catchment, the geology and sedimentation rates.

DEAT produced a National Climate Change Response Strategy for South Africa in 2004. It notes the range of vulnerabilities in the water sector, for example, where a reduction in the amount or reliability of rainfall or an increase in evaporation would exacerbate the already serious lack of surface and ground water resources. Most important, it concludes that the NWRS (2004) is sufficiently flexible and robust to accommodate the anticipated effects of climate change, without the need for special programs or projects—the response is more an acceleration of current and planned IWRM activity.[47] This is consistent with thinking in the Mediterranean region in northern Africa. There the framework for climate change adaptation is based on the premise that climate change adds pressure to water resource systems already under multiple-stress due to over exploitation, manifested as water quantity-quality and ecosystem degradation. The strategy calls for a mix of short-term "least regret" measures and serious attention to IWRM.[48]

Some general observations on climate variability and climate adaptation in the Western Cape Region follow that inform dam planning and management:

- In the Western Cape, as elsewhere, there is growing interest in the direct and indirect relationships between climate variability, water demand, and storage, not just surface water storage but also increasing infiltration and reducing evaporative loss by ecosystem functions. South Africa is a world leader in dealing with water-intensive invasive plants.
- As part of the capital budget for the BWP the Working for Water Programme was awarded a R21 million contract to remove alien vegetation from the Berg river dam catchment area, significantly increasing the amount of water available for storage in the dam and to re-establish vegetation in the catchment area.

- The City of Cape Town's long-term WC/WDM strategy says its investments in WC/WDM reduce vulnerability to climate variability and longer-term climate change.[49] It notes that climate variability prompts the need (i) for enhanced water use efficiency to make the same amount of water go further, (ii) reduce pollution impacts to keep the same water cleaner for further use, and (3) significant infrastructure and technical changes in order to increase water storage.
- The demand-supply reconciliation (DWAF, 2006) recommends the City of Cape Town conduct studies to consider the impact of climate change on future demand-supply balances and desalination as a supply option least vulnerable to climate variability.
- The City of Cape Town also incorporates a section on climate change in its water services development plan (CCT, 2006 /2007). It notes the strategy to reduce over exposure to climate change and lower system yield due to environmental Reserve requirements is to diversify supply to lessen dependence on surface water schemes, such as deep aquifers and desalination.
- Researchers are now looking at optimization of the size of the Berg reservoir in the context of evaluating alternative coping strategies under different scenarios and water demand growth and climate variability, taking into account the best available knowledge of the impact of climate variability on agriculture and urban demand.[50] These studies are also to inform the initial policy discussion about shifting from water allocations to water markets.

The BWP offers a few examples of how climate variability was factored into the infrastructure design aspects. For example, the IFR determination has two regimes: one for drought and one for average hydrology. The annual release is reduced in a drought year by 50% (15.4 million m^3 in drought as compared to 31.3 million m^3 in average hydrology), and there are fewer and lower freshets and flood simulations. Other infrastructure responses are anticipated in the Berg basin: certain new water resource developments that give a higher level of supply assurance have been advanced, while the refurbishment and upgrading of existing works are receiving higher priority than before, such as proposals to raise the height of existing dams.[51]

Summary Observations on Sustainability

Stepping back, summary observations on sustainability in infrastructure strategies and the wider applicability of the BWP experience are as follows:

On the value of integrated sustainability assessment: The BWP shows the central role that interested and affected parties dialogue plays in bringing different aspects of sustainability into infrastructure strategies and infrastructure planning and management. It argues for an integrated sustainability assessment (ISA) process to structure analysis and dialogue on making infrastructure more sustainable and add value for stakeholders according to the way they perceive sustainability.

- This approach brings together environmental, social, economic/financial dimensions, as well as governance, physical performance, and institutional aspects of sustainability. In practice, an integrated assessment would initially be undertaken as part of project preparation, then inform interested and affected parties dialogue to look more systematically and holistically at the different sustainability elements to determine gaps and possible enhancements.
- This conforms to South Africa's Water Resource Strategy (2004), which defines sustainability as necessarily "people and environment centered" and also the

purpose of sustainability reporting that TCTA has adopted in its corporate governance reform—demonstrating increased stakeholder value through sustainability.

- A further contextual objective of ISA-type thinking, "creating more value with fewer resources and less impact, or do more with less," is an important part of the sustainable infrastructure paradigm today.
- What it also shows is sustainability must be contextually defined and take into account those aspects of sustainability that stakeholders perceive to be important.

On the distribution of cost and benefits: The BWP sheds light on the importance of looking carefully at the distribution of benefits *and* costs of infrastructure provision. This not only helps to empower dialogue, it also sharpens thinking about contextual opportunities to enhance sustainability and the overall development effectiveness of infrastructure. It is an integral part of building trust, demonstrating that all different stakeholders will be treated fairly. On the BWP it was apparent:

- Considerable time and effort were spent on the distribution of benefits during the planning and project preparation phase. This was in terms of balancing current and future development gains and losses (i) among the various downstream water users in the Berg River basin (ii) between the downstream river users collectively and water consumers supplied by the diversion (primarily in Cape Town), and (iii) the host community.[52]
- The distribution of costs received somewhat less scrutiny (how the direct and indirect costs were shared). This aspect was not apparent in the reports made available to the case-study team on the dialogue that took place, and it is not seen in looking at outcomes retrospectively. Going forward, it would be important to explicitly analyze the distribution of costs as well as the benefits on future projects and in establishing fees or charges on tariffs for water resource and environment protection.[53]
- A simple distribution analysis nevertheless suggests two questions. Should there be an explicit mechanism for benefit sharing with the host community as the long-term partner? Should downstream irrigators who benefit from the water quality-quantity status contribute?

On benefit sharing with the host community: The BWP shows that considerable time and effort went into enhancing benefits the local community received by leveraging the project investment funds through the Franschhoek First Policy (FFP); and also setting in place longer-term social sustainability measures in the Sustainable Utilization Plan (SUP). These represent a step toward benefit sharing with the host community through all stages of the project, although there were limitations.

- On many levels the Franschhoek First Policy was a success. All levels of government and all stakeholders accepted the approach. Contextual recommendations based on the implementation controversies will undoubtedly be drawn by TCTA and the EMC in the project completion report. As previously noted, some people involved in the process have already offered opinions on the training aspects, such as the optimal time to start on-job training and consensus that contractors should deliver training in a specified manner, rather than simply indicating quotas for training.[54] As a policy, the FPP goes a long way toward international best practice model for local benefit sharing during the implementation phase of infrastructure.[55]
- Similarly the Sustainable Utilization Plan (SUP) is a platform for long-term benefit sharing with the host community. The one missing element is a clear indication of

sustainable financing of the measures, as the national SUP guidelines appears to rely on overburdened municipal budgets to finance agreed measures. Moreover, the lack of sustainable financing circumscribes and limits thinking on the type of measures that could be considered. One point of entry to enhance local benefit sharing is to revisit the recommendations of the South African multi-stakeholder initiative on the WCD, together with recent international practice to provide feedback to DWAF on further improvement of the SUP guidelines it has issued. This is specifically in relation to financing of measures and explicit incorporation of local benefit sharing principles.

On paying for sustainability: South African's water law recognizes that water is an economic good that users should pay for.[56] Leaving aside the Free Basic Water Policy that is discussed in section 1, this means water consumers and river users must contribute to the cost of sustainably managing water resources in their basin, in a fair and equitable way. Events around the BWP also suggest the following:

- Legislation requires water users to pay for catchment management and water resource protection measures through water use fees, including funding the catchment management authority (CMA) and the supporting governance and interested and affected parties dialogue mechanisms.[57] Ultimately they must also pay the cost of ensuring that water infrastructure (existing or proposed) is designed and/or modified as needed to provide IFRs that achieve agreed water quality-quantity status objectives and the Reserve. On the BWP, this up-front cost represented approximately 25% of the cost of the new dam.
- The important point is the cost of providing IFRs should and can be fully justified on the basis of wider water resource protection and economic sustainability grounds, not just environmental sustainability. As the BWP shows, the IFRs enhance the value of water for productive downstream uses, especially irrigators, while contributing to river management functions.
- From a communication perspective, it is important to get accurate messages across to the general public, and especially to water users groups in their dialogue mechanisms to justify investment in IFR provisions, not only for bulk water supply projects like the BWP, but also for any physical modification of existing water infrastructure that may be needed in future to meet the Reserve and IFRs.
- It is interesting to note that, in this case, urban water users pay the full cost of physical provision of the IFRs on the Berg Dam via the 20-year capital charge (BWCC). No arrangements are apparent in the two main project agreements to share this cost with downstream abstractors, who may benefit from IFRs (irrigators—urban and industrial—while they also see no change in water access from before the BWP).

For this reason in the project communication strategy, objective and clear communications on the causes of salinity and pollution and on the role of the infrastructure in managing downstream water quality would be important, as well as in the CMA communication strategy to inform complex discussions to set water user charges in the basin.

On ensuring flexibility for adaptive management of dams based on multi-stakeholder monitoring: A fundamentally crucial aspect is that the project physical design must be integrated into the major Project Agreements to provide flexibility for adaptive management that is key to deliver sustainable performance—not constrain adaptive management. This would be based on multi-stakeholder monitoring within the framework of the regulations (in this case the EIA Record of Decision)

- The BWP clearly demonstrated the effort and cost that went into to designing the physical structures (e.g., the variable level intake and higher sized outlets) to enable flexibility in downstream releases.
- But at the same time the Raw Water Supply Agreement (2003) between DWAF and CCT that covers payments for water service delivery and the Implementation Agreement between DWAF and TCTA (2003) enabled flexible operation.
- Finally the ROD issued by DEAT provided the legal basis for multi-stakeholder monitoring and adjustment of flows according to the Reserve parameters (ecological and social) set by the Berg CMA.

On adapting climate change: Integrated water resources management (IWRM) approaches, incorporating demand-supply reconciliation, were seen as providing the conceptual basis for identifying the anticipated effects of climate change and how adaptation actions may be mainstreamed in water resource sector and basin-level systems, including infrastructure strategies.

Notes

[1] From TCTA website and Annual Reports on Sustainability.
[2] Developing new tools and methods for the Integrated Sustainability Assessment of water. The Matisse project and the Ebro River Basin J. David Tàbara1, Elisabet Roca, and Cristina Madrid http://www.macaulay .ac.uk/PATHconference/outputs/PATH_abstract_6.2.1.pdf and Methods and Tools for Integrated Sustainability Assessment, at http://www.matisse-project.net/projectcomm/index.php?id=643.
[3] Adapted from Sustainable infrastructure and Asia, UN, 2007 http://www.unescap.org/esd/publications/ st/2448/Sustainable%20Infrastructure%20in%20Asia.pdf.
[4] The EIAs undertaken for both schemes, in terms of the Integrated Environmental Management (IEM) procedure developed by DEAT (1992) did not identify any impacts so significant so as to suggest the dam should not be built.
[5] Some observers say this reflects progressive thinking by the parties involved, including DWAF, but it also was a political necessity. It reflected the direction legislative consultation process was taking. Another factor is the Western Cape is home to many researchers in the fresh water ecology and related fields counted among the world's leading specialists in the environmental flow assessment and provision.
[6] Skuifraam Dam: Outlet Works-DWAF Discussion Report, Submission to the WCD, August 1999 also Statement by the Minister of Water Affairs to the National Council of the provinces, 26 April 2002, http://209.85.135.104/custom?q=cache:htn9suDDRe8J:www.dwaf.gov.za/communications/Q%26A/2002/ NCOPwrit-40.doc+EIA+of+the+Skuifraam+Dam&hl=en&ct=clnk&cd=1&client=google-coop-np.
[7] After the final EIR was issued, controversy still remained around the IFR leading to political pressure that prompted more interested and affected party workshops. The eventual interested and affected party consensus was reflected in the ROD issued in 1999 (by DEAT under the new 1998 environment legislation), requiring the "damage control IFR scenario" referred to in Box X. DWAF in fact played a leading role commissioning the EIR, as well as specialist studies and facilitators for interested and affected party dialogue on the IFR.
[8] The determination and implementation of the Ecological Reserve thus enabled the water resource to be maintained in its set category.
[9] (Rossouw and Groblerm, 2007) The Ecological Reserve provides for the maintenance of critically important aquatic attributes, goods and services (such biodiversity, dilution capacity, habitat integrity, prevention of sedimentation, etc.) and associated social services (such as fishing and water for river dependent users and communities).
[10] Adapted from Rossouw and Groblerm (2007) (i) releases comprise the summer and winter base flows of 4 m^3/s on average in June, July, August and September and the winter high flow releases up to 160 m^3/s; (ii) high flow releases will be no greater than the inflows into the reservoir, and simulate the natural inflow patterns, including floods with an average daily peak of 65 m^3/s and a maximum instantaneous peak of 160 m^3/s; (iii) in drought years high flows will be released unless no natural flood inflow occurs at the appropriate time of the year, and(iv) on average 6 million m^3 will be allocated each year and 27 million m^3 for low flow releases.
[11] There is a need for ongoing validation of the ecological component of the Reserve. Western Cape River and Catchment Signatures Report No. 1303/1/05, October 2005. http://www.fwr.org/wrcsa/1303105.htm combination of maintaining habitats and identifying the invertebrates to species level.

[12] The controversy was over two of four annual flood component options: (i) maintenance IFR of 85 m^3/s maximum daily average with a peak of 200 m^3/s and a volume of 12.8 million m^3 over seven days, and (ii) the damage control IFR of 65 m^3/s maximum daily average with a 160 m^3/s peak and volume of 9.8 million m^3 over seven days. It was interesting to note the key determinant of the high flow component was actually the flow to maintain fluvial processes at a critical section near Paarl, and not the ecological integrity of the Berg River specifically.
[13] See the High Flow Report, 1999. DWAF, for example, argued that a sudden influx of a large quantity of water into their habitat might cause irreversible damage to some species or habitat, especially in upper reaches before the effects are attenuated by due to local rainfall events and the discharge from further tributaries.
[14] Among the primary motivations for the Damage Control flood release as set out in the Outlet Works Flood Release Workshop Proceedings included (i) rotation of the river bed cobbles to remove algae and "re-set" the system, (ii) wetting of river banks to arrest growth of alien vegetation and to flush organic matter into the channel, (iii) recharging of groundwater in the riparian zone, and (iv) maintaining the width and volume of the river channel. The DWAF submission to the WCD in 1999 argues some of these effects like the wetting and ground water charge are over estimated and will not be significant.
[15] Though former members of SAG the mission team met in 2008, they said there was no consensus.
[16] Berg River Baseline Monitoring Programme: The objective of the baseline monitoring program was to describe the natural and present state, including the natural variability, of those chemical, physical, and biological characteristics of the river and its hydraulically linked systems (i.e., estuary, floodplains, and groundwater) most likely to be affected by changes imposed after the construction of the Skuifraam Dam. The study (stated in 2001) and spanned a period of three years and required a multidisciplinary approach, involving specialists from a wide range of disciplines including hydrology, hydraulics, fluvial geomorphology, sediment transport, geo hydrology, water quality, sociology, macro invertebrates, fish, avifauna, vegetation, and algae. Source: WRC 2006.
[17] The costs given are estimates but indicative of the proportional amounts than need to be allocated to provide for environmental flows.
[18] The high flow release was increased from 160 to 200 m^3 / sec during detailed design in 2004, mainly after reconsideration of the need to flush sediments around Paarl during the Reserve Determination.
[19] This is consistent with the principle of water as an economic good, as reflected in the NWA (1998).
[20] Prior to that the view of the Skuifraam dam debate in the media focused on salinity impacts on the estuary (where natural flows in the upper Berg represented 10–15% of the flow at the estuary). The analysis shows salt intrusion was more a question of cumulative impacts of river abstractions.
[21] A series of media articles in Cape Town newspapers.
[22] The legislative and policy framework suggests it is not simply saying existing downstream users do not have to pay for IFR measures because they currently enjoy water access from an unregulated river (primarily irrigators who account for 54% of water abstraction from the Berg River System). There are a number of factors to consider, for example, (i) the policy of water as an economic good, (ii) the system is under stress and all users need to pay for water resource protection, (iii) some irrigators may be worse off in terms of access to water after the BWP, (iv) inappropriate pricing signals as regard to water efficiency in the irrigation sector, and (v) the broader reality that as the population grows the proportional allocation of raw water to irrigation will need to reduce as well as accommodating the Reserve.
[23] Nigel Rossouw (2007).
[24] A BE (Black Empowerment) is a business that is 50.1% owned by black persons and where there is substantial management control
[25] A BEE (Black Economic Empowerment) is a business that is at least 25.1% owned by black persons and where there is substantial management control
[26] LE is a local enterprise or local business
[27] SMME is a small business and refers to a separate and distinct business entity, including cooperatives and NGOs managed by one owner or more, which is carried out in the sectors mentioned in the Schedule of the Small Business Act (1996) and which can be classified as a micro-, a very small, a small, or a medium enterprise by satisfying the criteria outlined in the Schedule of the Small Business Act (1996).
[28] http://www.tcta.co.za/news_article.jsp?article_id=20.
[29] The questionnaire, data collection method and analysis was not technically valid. In addition the information was not verifiable. The deduction from the flawed skills audit was that sufficient local skilled labour could be found. This was not the case and consequently there was an increase in project cost to bring in skilled labour.
[30] In the January 2005 edition of the Cape Times, "Berg River Dam oversight committee members resign over fears they will be liable for problems" it was inferred that some people had overstated their skills in the hopes of getting a job.

[31] Summary Planning Procedure: Sustainable Utilization, Access and Development of Water Resources for Recreation, Tourism and Socio-Cultural Purposes, July 2001, prepared by The Directorate Social and Ecological Services, DWAF.
[32] http://www.ppp.gov.za/Toolkits/Tourism_Final/toolkit.htm.
[33] The policy rationale includes the equitable sharing of benefits and costs. This includes indirect costs of varying degrees of significance that the local community bears in the long term.
[34] A recent Vietnam study on hydropower benefit sharing says, "Experience shows that local benefit sharing is positive from all stakeholder perspectives. It allows project-affected people and traditional resource users to become partners in the hydropower project that they effectively "host" in their local community, or in their wider river basin community; and most important, to be among the first beneficiaries. From the government perspective, benefit sharing is a practical policy tool to achieve greater social inclusiveness and to balance social, economic and environmental factors in the planning, design, implementation and operation of projects. From the hydropower operator perspective, benefit sharing increases capacity to work effectively with local communities. Good community relations are important for a number of reasons, ranging from cooperation in land management measures that improve the operational life and performance of the reservoir, to cooperation with implementing environment mitigation measures as prescribed by law. From the perspective of potential investors, either from the public or private sectors, the presence of an explicit policy framework and practical provisions for benefit sharing is an indicator that locally affected communities are likely to support the project—all things considered. As a consequence, the investor's risk exposure is reduced and investors are more inclined to become financing partners." Asian Development Bank TA on benefit sharing in Vietnam.
[35] On the Western Cape system, for example, raw water is derived from a number of sources. Isolating the supply from the BWP specifically to provide a unit fee is problematic. A small charge attached to the capital change for the repayment period could be considered, after which the payments would either cease, or be a fixed annual amount related to capacity to supply water (i.e., the infrastructure in place).
[36] Perhaps the most difficult question is what to do about benefit sharing on existing infrastructure projects in the same basin. This question must be resolved in a context specific manner. There are a number of different approaches worldwide, though most of the experience is associated with large dams for hydropower.
[37] The handover, estimated at a value of R30 million, will be followed by the sale of the houses to qualifying locals, while the funds raised by the sale are intended for reinvestment in further subsidized housing or community infrastructure projects to benefit disadvantaged communities in the Franschhoek and Dwars river valleys, thereby creating a revolving fund that would help alleviate the housing shortage in the immediate BWP project area. Source: TCTA website http://www.tcta.co.za/news_article.jsp?article_id=18.
[38] They were written after the main project design decisions were made and most of the major costs were known. All the institutional actors were fully aware of the major obligations for operation of the project because of the open and transparent way the decisions were taken.
[39] The City's pledge to consumers in its 2006-7 WSPD is to establish a fair tariff that ensures all residents have access to basic water and sanitation, including indigent households.
[40] This caused rioting in 2001 and 2002 in the townships of Cape Town and the growth of the social movement organisations—Anti-eviction Campaign and Anti-privatization Forum.
[41] Meetings of the case-study team with the Western Cape Regional Office of DWAF.
[42] Others included reducing the operating cost of revenue demand (not significant); increasing income from consumers through more equitable tariffs; increasing income by capacitating nonpaying consumers (reducing consumption to affordable levels) to pay for water and postponing capital infrastructure requirements.
[43] The Water Resource Strategy policy says both these sectors (urban and irrigation) will have to re-evaluate their use of, and impact on our water resources, and will have to pay a price for water that reflects the real economic cost, including the indirect costs to society and the environment for their water use.
[44] Though there is some uncertainty the role of TCTA in the infrastructure arm of a restructured DWAF.
[45] Berg CMA Establishment Report, 2006.
[46] The CCT says lack of storage capacity coupled with three years of below average rainfall 1998–2000 led to DWAF to impose the 10% restrictions on users of water supplied by the Western Cape system (e.g., lawn watering). Two successive years of well below the long term average rainfall in 2003 and 2004 led to DWAF imposing 20% restrictions in 2004/2005) (CCT, WSDP 2006).
[47] http://unfccc.int/files/meetings/seminar/application/pdf/sem_sup3_south_africa.pdf.
[48] See the brochure and supporting reports on the Adaptation Framework for Action for the Mediterranean Region: Views from the Athens Roundtable; Athens Round Table on Water, Wetlands and Climate Change http://iucn.org/places/medoffice/CDCambio_climatico/contenido/index_2.html. To effect real change new planning instruments are needed, and further (i) Many existing water policies, planning procedures and practices need to be re-orientated or reinforced (e.g., methods for calculating the flood return periods and

over reliance on structural interventions); (ii) Maladaptive policies and practices need to be eliminated, or phased out, which in many cases they are not (e.g., settlement in vulnerable flood plains and over pumping of groundwater beyond sustainable yields); and (iii) Additional steps are needed purely to moderate specific climate change effects, such as to deal with rising sea levels (e.g., with a selection of retreat, accommodate, protect strategies in affected areas by storm surges and flooding).

[49] A counter point is the claim (IDS, 2004) the BWP case was particularly interesting in the way the participatory processes, which legitimatized the BWP, created public acceptance of the scientific notion of water scarcity. IDS argue instead it should be viewed as over consumption rather than a scarcity. In the view of the case-study team, from a communications perspective, it is not an either-or situation. Both perspectives (i.e. water scarcity and over-consumption are equally valid).

[50] The Berg River Dynamic Spatial Equilibrium Model: A New Tool for Assessing the Benefits and Costs of Alternatives for Coping With Water Demand Growth, Climate Variability, and Climate Change in the Western Cape, by John M. Callaway, Daniël B. Louw, Jabavu C. Nkomo, Molly E. Hellmuth and Debbie A. Sparks, http://www.aiaccproject.org/working_papers/Working%20Papers/AIACC_WP31_Callaway.pdf

[51] TCTA, for example, in looking at risks to BWP revenues from drought reports that the 2005 drought cycle highlighted the need for water supplies at a reasonable level of assurance.

[52] The balancing of current development interests (and future opportunity) was apparent in the basin demand-supply reconciliation studies and other preparation studies that led to the decision to proceed with the BWP, as well as the associated I&AP dialogue processes, and particularly in the Reserve and IFR determinations that led to finalizing the physical design and operation parameters of the Berg dam.

[53] This comment is made in recognition of the fact that mechanisms for recovering the costs of water protection from all users in the Berg CMA is in formative stages, linked to the establishment of the CMA and its functions.

[54] Some members of the local community continue to insist the on-the-job training should start during the project preparation phase in anticipation of the project and to allow time for skills development. Implementing agencies remain convinced the appropriate time for skills development is closer to the time of project implementation when arrangements are fixed with contractors.

[55] The BWP illustrates how cultural heritage aspects are highly important, despite the fact they may not be on the radar of the main project proponents. These measures provide an opportunity to link tourism and other income diversification sources to future income generation of the host community. Preserving the cultural heritage of the Franschhoek area was a major driving factor for community interest in the Berg project, and convincingly demonstrating that it was not a major threat was key to community acceptance.

[56] The NWA(1998) says water use charges will (i) fund water resource management; (ii) fund water resource development (i.e., supply); and the operation thereof, and (iii) achieve equitable and efficient allocation of water.

[57] Apart from income from water use charges, the CMA will also obtain set-up or seed funding from DWAF during the establishment phase of the CMA.

CHAPTER 4

Communication Dimension

Communication Context

South Africa's notion of cooperative governance encompasses building partnerships between the government and public to expand access to public services and infrastructure provision.[1]

In the context of the BWP, this cooperation initially translated into more inclusive and genuine involvement of tourism and other income diversification sources in water resource planning in the Western Cape. It also meant engaging more comprehensively with the media to better alert the public to key decisions and to stimulate public and media debate around choices. The shift was clearly illustrated in the different arrangements for the pre- and post-apartheid strategic options assessment for Berg WMA that short-listed the BWP and eventually led to its approval. The first System Analysis exercise (1989–1994) had rudimentary public consultation and limited media engagement. When the same exercise was repeated in 1995–1996, however, the process was enriched by the following:

i. Transparent up-front identification of interested and affected parties in all areas of the Berg River basin (i) to understand better who needed to be engaged and (ii) to allow interests to self-declare;
ii. Formation of a multi-stakeholder task group composed of interested and affected parties representatives to drive the options assessment work, as opposed to leaving this work to department officials and then publicly presenting and defending the outcome;
iii. Capacity building workshops and site visits for the interested and affected parties task group members to inform their discussions on demand and supply options;
iv. A two-day, multi-stakeholder conference to stimulate wider debate among local government, civil society, and water use interests in the Berg River basin and Cape Town. The conference participants proposed criteria to prioritize bulk water supply and demand management interventions, in addition to debating specific BWP concerns;[2]
v. Press releases and media coverage of the outcome of the task group dialogue and stakeholder conference;[3] and
vi. A formal response by government to the public consultation outcome. The response included DWAF's open letter of commitment in 1998 to all interested and affected parties that sought to address the key concerns raised in consultations related to the BWP (see discussion in sections 2 and 3).

This more open, inclusive, and by definition "communication intensive" approach was a major factor in gaining public acceptance of the project. Public participation processes (PPP) in the planning stages clearly helped to enrich the project design, particularly improving environmental and social performance, and most observers would agree, laid a foundation for partnership approaches in implementation. But this new collaborative approach by no

means ended opposition to the BWP. As noted in section 1, many environment NGO and CSO interests who had long been organizing resistance to dams felt their movements were co-opted in the way the PPPs around the BWP were managed. They also argued there was no level playing field to make their case to the public.[4]

Communication strategies and capacity building

Most public agencies in South African routinely prepare a communication strategy for the major development planning exercises, programs, and projects that they lead, so that local communities can be involved in development decisions that affect them, in keeping with the national commitment to co-operative governance and planning. DWAF's Generic Public Consultation Guidelines (2001) for water projects and establishment of new water institutions (especially catchment management agencies) saw formal and informal communication as key to "achieve durable solutions . . . facilitate understanding and dialogue . . . reaching the most marginalized . . . and build trust among stakeholders."[5] Many observers who spoke to the case-study team thought that DWAF is pro-active on communication, and evidence supports this. For instance, the models for municipal water services development plans (WSDPs) and catchment management strategies (CMS) that DWAF prepared to guide the new water institutions consistently emphasize that communication strategies are integral to the successful implementation of water reforms and effective functioning of these organizations.[6] To be practical, DWAF promotes a step-wise approach to building communication capacity within the new water institutions. [7]

Criticisms of the communication approach are mostly linked to notions of cooperative governance. For example, CSOs contend that DWAF's public consultation guidelines place almost no accountability on how municipalities deal with participation outcomes that differ from government's "preferred" solution.[8] In fact, it is difficult to assess how widely such views were held across interested and affected parties involved in different stages planning and implementation of the BWP, and whether controversies that arose were the result of poor communication or something else.[9]

BWP Communication strategy context

A key factor in how TCTA initially approached communication for the implementation phase was the lengthy project approval process.[10] As TCTA noted in its media releases when it assumed responsibility for the project in late 2003, " . . . the (stakeholder) consultation process had to, for all practical purposes, commence from scratch, with (many) interested and affected parties having changed," as five to six years had elapsed between the completion of interested and affected party consultations around the EIA in 1996–97 to when Cabinet formally gave the project go-ahead in May of 2002.[11] In particular, there had been no real engagement of the host community of Franschhoek over that period—where the biggest problems in trust in partnerships later emerged.

The project communication strategy had to address a complex mix of built-up anxieties and expectations among the different groups not only in Franschhoek but also in the wider Berg River Basin, as well as position TCTA as a fair and credible new player. It also had to connect to communication strategies of other water reform and development initiatives in the Berg WMA[12] to the CCT's public communication on implementing WC/WDM measures and tariff increases from 2003 due to the introduction of the Berg Water Capital Charge (BWCC).[13]

Other contextual factors

Other factors relevant to how communication unfolded on the BWP include the following:

(a) **Openness, capacity and responsiveness of the media:**[14] Regional and local broadcast and print media played an active role improving public understanding

of demand-supply reconciliation issues in the Western Cape (as illustrated in Boxes 15 to 17 in section 3.2). Media coverage influenced public attitudes on how the CCT handled drought restrictions and how water security was linked to demand management. Equally when the BWP was implemented, local media coverage informed people in Franschhoek and the basin community of the project status and presented different views on the unfolding implementation controversies (e.g., via interviews on local radio, articles in local print media, arising from media briefings by TCTA and independent reporting by the EMC).

(b) **The role and capacity of civil society**:[15] Pressure from environment NGOs and rights-based CSOs organized under the Skuifraam Action Group (SAG) is credited with helping to open-up decision making on the BWP, starting with the second Western Cape Systems Analysis in 1995–96.[16] SAG helped raise the profile and spark media debate on issues, while participating in the formal interested and affected parties' dialogue structures. Throughout CSOs cautioned others there were limits to what civil society could actually achieve in partnerships without fair and equal access to financing, especially to participate meaningfully in scientifically informed and evidence-based decision processes.[17] This issue came up time and again at the planning stage and was cited as a factor in the resignation of some EMC members in 2004.[18]

(c) **Cultural diversity in the Western Cape**: In studies connected to the BWP, the ability to reach people in culturally appropriate ways was an important aspect of communication strategies that DWAF and the CCT used to facilitate interested and affected parties engagement. Analysis and targeted messages were needed to respond to attitudes and perceptions. And, as stated in the national water resource strategy (2004), the larger challenge was to close the divide between the two economies—rich and poor—with their many cultural dimensions. In Franschhoek, for example, there was a mix of extremely wealthy international residents and previously disadvantaged groups with vastly different interests and expectations. Efforts to ensure diverse interested and affected parties representation on the EMC in terms of ethnicity, age, gender, and cultural groups were not always successful.[19]

There is a dichotomous situation in communications. On the one hand specific strategies need to be put in place to ensure the voices of the disadvantaged are heard and acknowledged. These voices need to be balanced with a vociferous sector (i.e. issues focused NGO's) who are in comparison well resourced and have the ability to highlight their issues to the print and radio media. One of the lessons learned is the concept of a still divided world of information (also highlighted in EMC information document by DEAT 2005). Too often a western-centric approach to this prevails. Even if the information divide is changing rapidly we must acknowledge that in the majority of developing countries access to information is still a privilege of the few, whereas the poor remain reliant on very traditional forms of information and are often left in an information vacuum. For these types of projects, communication strategies must ensure adequate efforts to unpack information to a level that is meaningful to the less privileged and is delivered to them using the available channels regardless whether they are rudimentary, informal, or traditional.

From communication theory to practice

The BWP case also illustrates the relevance of three branches of modern communication practice today: development communication, corporate communication, and advocacy communication.[20] These are all relevant to infrastructure provision because of challenges due to complexity, partnership approaches, co-operative governance, and public-public

and public-private ventures.[21] The following briefly summarizes how these were relevant on BWP.

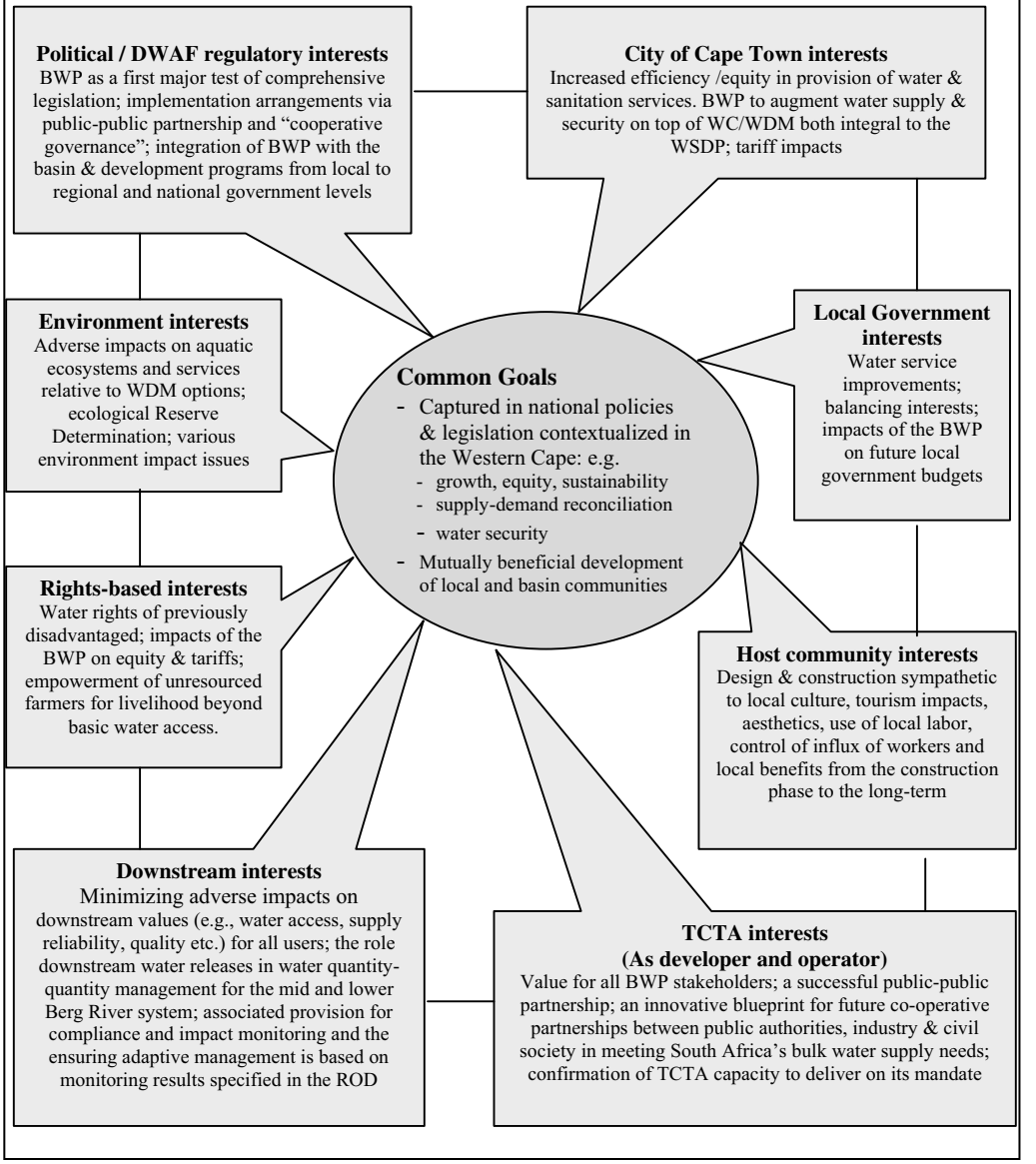
Development communication	■ Systematic use of analytical tools, like surveys, in-depth interviews, focus groups, opinion polls, to better understand perceptions, behaviors, and political dynamics of complex water projects ■ More comprehensive communication strategies with emphasis on grassroots and local media, targeted messages, more creative and broad based communication implementation, and evaluation ■ On the BWP this aspect supports all streams of communication, including grass roots and local media
Internal communication	■ Effective communication/communication capacity within organizations and multi-stakeholder governance structures to efficiently exchange information and views and arrive at understandings for functional partnerships ■ Within the BWP, namely the EMC; Skuifraam Action Group (SAG) as a coalition of NGOs and CSOs; entities comprising the CMA; TCTA internal departments, etc.
Corporate communication	■ Communicating what a public or private sector enterprise or CSO does, its code of ethics, how it seeks to build trust and public confidence to engage in dialogue on projects (or in partnerships that it joins) and how it will respond to relevant public policy and governance reforms ■ On BWP, TCTA, DWAF, and CTC corporate communication
Advocacy communication.	■ Communicating key issues effectively to raise awareness and to win support with the public and/or to influence relevant policy-making according to the interest, whether it is a civil society, private sector, or government entity ■ SAG, DWAF, TCTA, CTC in terms of their positions on the BWP

2. One final aspect was the contextual mix of interests, anxieties, and expectations on the BWP. Figure 4.1 is a simplified illustration of this mix arrayed around common goals.[22] As events unfolded it was not simply a question of finding the greatest confluence of self-interest. The principal of "sufficient consensus" came into play, when positions became irreconcilable on specific issues.

A practical example of applying development communication in the BWP is when a selection of children from the local communities directly affected by the Dam were asked to draw the dam as part of the Rapid Rural Appraisal method. Their drawings reflected the following:

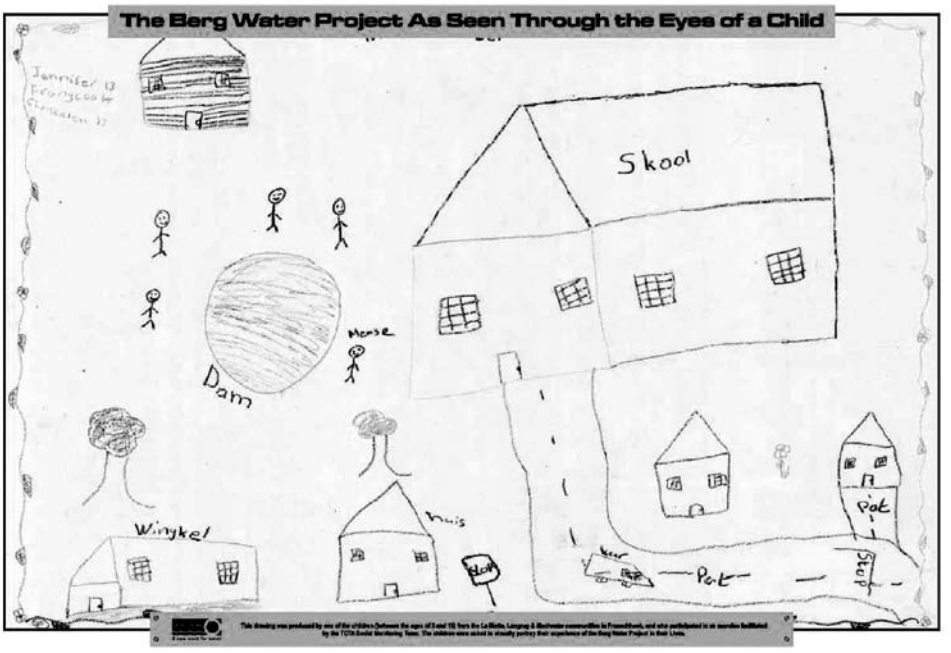
- It appears that the Dam is a conceptual reality for these children.
- Most children who drew the dam gave the dam a place of importance indicated by the placement of the dam, the size of the dam or the intensity with which it is colored in. It indicates that the dam is of importance to their communities.
- Some drawings depicted the dam as an integral part of their communities, with the dam being placed next to or in between houses and other buildings. This also indicates that the home is a central aspect of the realities of the children

Figure 4.1. Illustration of different interests and expectations about the Berg Water Project



- Children drawings had a strong emphasis on roads and cars. This indicates that the child feels connected to the world, but that his frame of reference is defined by his world of immediate experience.
- Many drawings had natural elements in them, indicating a relationship with the natural environment.
- Several children drew the school as the main building on their drawing. This is indicative of the fact that children spend much time at the school and that their social identities get shaped by schooling.

Example of development communication used on the Berg Water Project: The Rapid Rural Appraisal tool was utilised to get an understanding of the local communities perceptions of the project. This was done by focusing on children and asking them to make drawings of the dam and how it affects their community.



Communication Diagnosis

This diagnosis is structured around four themes selected to give a practical orientation and to draw relevant lessons:

(A) *Communication strategies must add value and build trust:* Fundamentally the communication strategy must establish good faith and trust for co-operative governance mechanisms and partnership approaches to work. All stakeholder interests need to be reflected.
(B) *Consistent messages and information for interested and affected parties and the public*: Clear, consistent, and reinforcing messages must be targeted to concerns of different interested and affected parties via channels in which they prefer to receive information and dialogue with project authorities and other partners.
(C) *Beyond the communication strategy—adaptive implementation:* The project communication strategy must adapt flexibly to situations on the ground and must have sufficient resources.
(D) *An overarching sector communication strategy:* The project communication strategy needs to complement communication strategies for advancing the wider water reform agenda.

Communication strategies must add value and build trust

TCTA was responsible for developing the communication strategy for the implementation and operation stages. This included developing mutually agreed procedures to ensure the various government actors who routinely communicated with the media and public (i.e., DWAF, CTC, DEAT) had up-to-date, accurate information.

The strategy was structured around three overlapping steams of communication:

(i) *Routine Project Communication*: disseminating information on the project and implementation issues to the public and stakeholder interests via newsletters, media, and various channels;
(ii) *The Public Participation Process (PPP)*: facilitating communications integral to interested and affected parties engagement in ongoing decisions about design and implementation of the project, largely organized around the EMP and social aspects; and
(iii) *Multi-stakeholder EMC Communications*: facilitating the functioning of the multi-stakeholder Environment Monitoring Committee (EMC) as a co-operative governance mechanism and two-way dialogue between EMC members and their constituencies.

TCTA saw itself as the custodian and facilitator of these three interrelated streams of project communication, linked also to its corporate communication strategy.

Routine Project Communications: This first component was managed by TCTA's Public Relations Department from its headquarters near Pretoria, implemented in cooperation with TCTA staff at the project office in Franschhoek. Underlying the approach was TCTA's announced ethical principles for communication (see Box 4.1). TCTA committed to provide regular, open, and factually correct communication relevant to all stakeholder interests.

Other aspects of the project communication stream included

- Feeding information to government entities and water institutions at national, provincial, and local levels on those aspects of the project for which they were concerned, including the project's integration into the local economy and Berg River basin;

- Consolidating TCTA's role in managing relations with various public, civil society, and private sector interests (as custodian and facilitator of open dialogue processes);
- Ongoing implementation of the following core project communication activities:
  - A monthly project newsletter in three languages;
  - Media packages and briefings; placing paid media notices when required; maintaining of project information on TCTA's corporate website;
  - Database for mailing project information to interested and affected parties; "knock and drop" distribution in the host community areas;
  - Maintaining a project presence at various community functions in the Franschhoek valley;
  - Holding open days at TCTA's Franschhoek offices and staging media events at milestones in project completion on-site;
  - Holding public meetings and convening special meetings with interested and affected party interests as needs arose.
- Regularly feeding project information, status reports, and briefings to the EMC and PPP dialogue processes and responding to specific requests for information.

TCTA linked the project communication strategy to its corporate communication strategy through information and messages it conveyed to shareholders via its website, media statements, and its annual report. This promoted TCTA in terms of (i) its mandate to implement bulk water projects conforming to international principles for sustainable infrastructure development and management, while recovering capital and operating costs from tariffs, (ii) alignment of its behavior in the bulk water supply business to relevant public policy, like co-operative governance and planning, access to information, and black empowerment, and (iii) its corporate socially responsible policy and philosophy of implementing projects in partnerships.

TCTA stated its aim was to grow its reputation, not only to enhance collaboration with local partners on the BWP but also to build public support for its involvement in future bulk water supply projects in the Western Cape and nationally. Its public messages explained that maintaining a good reputation helped TCTA to maintain a good credit rating for projects.[23] This in turn helped reduce borrowing costs (reducing water tariffs for consumers) and gave South Africa better access to financial markets for future bulk water supply investments.

Box 4.1. Communication principles TCTA adopted as the implementing agency

- TCTA will communicate in an ethically responsible manner with all stakeholders.
- TCTA will communicate effectively with all stakeholders:
  - Factually correct and up-to-date project information, in an understandable language and style to ensure informed stakeholder groups;
  - Establish mechanisms for participative communication;
  - An open, transparent communication process through several and relevant channels to ensure participation of stakeholders;
  - Where necessary, stakeholders will be capacitated to facilitate symmetrical, bi-directional communications between them and TCTA;
  - TCTA will customise its communications to the specific stakeholder needs, within the constraints of capacity and costs.
- TCTA will promote the alignment of messages to stakeholders.

Source: TCTA Internal Communication Strategy for the BWP (2003)

Public Participation Programme (PPP): The second component of the communication strategy focused on empowering public participation in the project design and implementation processes from 2002 onward. This responded to the ROD issued by DEAT, to " . . . maintain an ongoing process of public participation within the framework of the EMP" and " . . . (ensure) public consultations to the satisfaction of interested and affected parties." It operationalized the notion of providing interested and affected parties with an opportunity to shape decisions that affected them, monitor compliance with the EMP provisions, and transparently hold authorities accountable for adaptive management.[24] The PPP was refined by the consultant group that TCTA hired to compile the EMP, while working in close collaboration with the EMC. PPP communications activities were then implemented in parallel with EMC communications and the project communications activities, as noted earlier.

The EMP Report (2003) endorsed by the EMC shows the PPP (by consensus) focused on environmental and social risks that could delay the project, as well as (i) performance issues vital to meet the IFR and Reserve conditions and (ii) issues vital to maintain the consensus formed during approval of the project. Most of these issues had been discussed extensively during the public review of the EIRs for the dam and supplement scheme in 1996–97.[25] The issues were revisited and discussed with fresh insight from late 2003 when interested and affected parties were re-engaged to establish the EMC (in steps illustrated in Table 10 later in this section). The PPP communication also encompassed the Franschhoek First Policy (FFP) and Sustainable Utilization Plan (SUP).

The EMP report observed that as most interested and affected party groups were represented on the EMC, the PPP communication, "underpin(ed) the EMC communication process (message-channel-delivery-channel-feedback) to ensure that communities and the individuals within the communities (had) every possible means to be engaged in the development process, instead of only receiving information."[26]

A further aspect was the PPP design was benchmarked against DWAF's Generic Public Participation Guidelines (the 16 principles it contained) and against the World Commission on Dams.[27] This was partly done as a confidence building measure for the stakeholders to demonstrate their processes and its integral communication aspects compared favorably with what was generally accepted best practice in the international and South African context.[28] EMC members endorsed the benchmarking outcome by vote. The major weakness it revealed was under representation of women and previously disadvantaged communities on the EMC.[29]

In the interest of balance (in relation to pro-dam and anti-dam perspectives), it is important to point out some EMC members categorically rejected the PPP benchmarking, as well as several environmental NGOs and CSOs who had been affiliated with SAG. Their strongly held view was it was an extension of the earlier government-led PPP processes that were flawed, ending in the decision to build the BWP, and it did not conform to national water and environment policy.[30] Equally, they vigorously denied the PPP respected the WCD (2000) recommendations.[31]

Multi-stakeholder EMC communication: The third component of the communication strategy was designed to provide interested and affected parties with a legally recognized, collective voice and capacity for independent public and media communication. The EMC was also, in effect, a platform for representatives of the different interested and affected party interests to exchange views and collectively debate what they felt to be contentious issues in an open, structured, and facilitated process. As a co-operative governance mechanism, the EMC was also envisaged as a way to reduce the risk that any one entity, or interest group, could dictate the agenda including TCTA as implementing agency.[32]

From the outset it was clear the EMC mandate plus steps to establish it would determine whether the EMC (i) could function as envisaged, (ii) add value to project outcomes, and (iii) have non-salaried interested and affected parties willing to donate personal time. One of the first tasks that TCTA assigned to the EMP consultants in late 2002 was to prepare an

Establishment Protocol that was acceptable to the main parties, and on that basis, start a collaborative process to establish the EMC.[33]

Table 4.1 shows the process steps adopted, highlighting the communication aspects.

At the first meeting, members debated a constitution and procedures based on a draft prepared by the EMP communication consultants.[34] The constitution contained a communication protocol, aspects of which are noted in Box 4.2. One key feature was the EMC chairperson was solely authorized to make public announcements on behalf of the EMC. Individual members were free to speak to the media in their personal capacities about

Table 4.1. Process steps to establish the EMC for the Berg Water Project in 2002–2003

Step	Purpose/Description
1. EMP consultants tasked by TCTA as implementing agency to establish the EMC	■ To operationalize the EMC role outlined in the ROD from the project EIA (issued by DEAT 1999) ■ For the EMC to participate in compiling the EMP and then to make recommendations based on it to DEAT (the approval authority)
2. Preparation of an initial database of I&APs in the basin	■ Based on preparing a stakeholder analysis ■ Build on planning stage I&AP participation ■ Identify a provisional list of key sectors for EMC representation
3. One-on-one interviews with representatives of the key sectors and I&AP interests	■ To profile the community and determine key people and organizations in the area ■ Identify political dynamics that could influence the PPP process ■ Record key concerns different I&AP had about the project
4. Background information document (BID) prepare	■ Bring I&APs up-to-date with the project, implementation process, and the development of the EMP, outlining ■ Decision making process leading to approval of the project ■ TCTA's profile and its implementation role ■ Integrated Environmental Management (IEM) process ■ Process to establish the EMC and compile the EMP ■ Prepared in the three main languages for the project area: English, Afrikaans, and isiXhosa
5. Community awareness and information and feedback in the BID	■ Present, discuss and get feedback on the BID ■ Presentations to La Motte and Simondium communities ■ Meeting of representatives from the local authorities and government departments
6. Advertisements in regional and local press	■ Inform the public of the availability of the BID ■ Advertise forthcoming public meetings to discuss formation of the EMC and preparation of the EMP
7. Series of public meetings on the BID	■ Information and public feedback ■ Franschhoek, Velddrif, and Bellville
8. Public nomination process for EMP Members	■ Enable different stakeholder sectors to put forward nominations for representation on the EMC
9. EMC establishment protocol document	■ Documentation of the process for establishment of the EMC for the record and ex-post evaluation ■ Confirmation of the nominations
10. EMC established in January 2003 at its inaugural meeting	■ EMC constitution and procedures drafted and discussed in first EMC meeting ■ EMC elects independent chairperson ■ Financial support from the BWP project budget

Box 4.2. Aspects of the EMC communication protocol agreed by members in 2003

- EMC chairperson is responsible for all official communications of the EMC, subject to the approval of the media sub-committee.
- Media sub-committee vets all official written or printed communications by any constituent bodies.
- EMC chairman tasked with issuing a brief communiqué after each meeting to assist constituents in reporting back to their constituencies and makes information available to the media to inform interested parties who are not represented directly or do not receive detailed feedback from their representatives on relevant matters.
- The EMC members communicate project progress through meetings and other communication channels to their constituencies.
- Individual EMC members may speak to the media in their personal capacity provided they abide by the code of conduct.
- Any member of the public or media may attend an EMC meeting on condition that the chairperson has agreed to such attendance.

Source: Summarized from EMC constitution and procedures (attached to the draft EMP, 2003)

the project, provided they abided by the code of conduct. Otherwise they could forfeit their EMC membership.

Other aspects of EMC communication protocol and strategy were the following:

- The EMC had a primary responsibility to communicate with its constituents in their various groupings on all matters concerning implementation of the BWP and the concomitant plans, impacts, opportunities, and structures;
- EMC meetings were open to the public and media, except where the EMC chairman considered matters to be confidential (observers would be asked to leave the room for that aspect);
- The EMC had power to seek independent expertise when necessary, and for this assistance to be funded by TCTA, with measures to ensure that was not abused;[35]
- Official written and printed communications by any constituent bodies or their members that include or affect the EMC, individual members, or its functioning had to be vetted by a media task team before publication;
- The chairperson was authorized to meet formally with stakeholders to discuss the implementation of the BWP;
- Minutes of EMC meetings were not to be disseminated widely, as this might limit frank discussion and debate in EMC meetings.[36] Instead an information sheet (one-page summary of key issues and resolutions taken) was to be prepared from the minutes, translated into Afrikaans and isiXhosa and distributed to all interested and affected parties. TCTA undertook to distribute these information sheets widely (e.g., in Franschhoek, La Motte, and Simondium) and make copies available to the members to distribute directly in meetings with their interest constituencies;
- TCTA provided a budget for EMC communication, office facilities, and staff for a small EMC Secretariat (hired by and reporting to the EMC chairman not TCTA). Expenditures were decided by the EMC chairman reporting to the EMC and were subject to audit.

The constitution gave each EMC member a mandate to report to their constituents and feedback views from their constituents to the EMC platform. EMC members had to provide minutes and attendance registers of feedback meetings they had with their constituents. This was done to avoid potential problems, such as situations where members were not active, or not accurately representing the diversity of views in their interest group. Assistance and

capacity building for outreach was to be provided by the EMC secretariat where needed. As explained in section 2, there were many successes and some notable failures around EMC communications in the first two years.

Consistent messages and information for the public and interested and affected parties

The second diagnostic theme is about the need to ensure that the project communication strategy provides consistent information and messages. Because of the many complex issues on the BWP, it was important that all institutional role players, the media, interested and affected parties, and the public had clear, up-to-date, accurate information on the project status. Many interests were at stake, and it was important to avoid unnecessary confusion. In fact, a hierarchy of messages was developed by TCTA in an evolving communication approach: core messages for the overall project context and objectives and messages to address with specific implementation issues, like the salinity management question and the FFP controversy that emerged.

The central message TCTA advanced for the project communication strategy was "the Berg Water Project was an effective partnership between TCTA, DWAF, and CCT that delivered on its promises: a high quality water supply project, associated social development, ongoing demand management, as well as integrated water resource management." The project was implemented in accordance with the new South African water legislation and conformed to the recommendations of the World Commission on Dams (WCD).

TCTA saw its role as "first among equals" in coordinating government communication on the BWP project. For this, TCTA proposed an internal project communication strategy as a protocol on how the three partner institutions would cooperation on communication aspects. DWAF and CCT agreed to the following:[37]

- "The partners convey a singular message in various formats and through various channels to their (respective) stakeholders.
- The core messages would be adapted and focused to suit the needs of various audiences. The message (alignment) does not preclude the dissemination of information regarding delays, problems and failures. The message promotes a positive, open, and enthusiastic approach to communications regarding the BWP by all the partners.
- Each partner will select the most appropriate channels and frequency of communications with its individual stakeholders. Together, the partners will participate in public announcements through the media, advertisements of major events, sponsorships of surveys, participation in national campaigns, or any other process deemed beneficial and in the mutual interest of the partners. TCTA's role will include the coordination and management of such activities.
- Although some divergence in conveying the message can occur during the implementation of the project, convergence should be agreed between the parties during the (unlikely) event of a crisis. This agreed process and content would be defined by a crisis communication plan to be drafted and managed by TCTA.
- Synergies and divergences in the messages of the other stakeholders should be pursued one-on-one where possible, but without undue pressure on their conformance. Message content of the engineering consultants and contractors, as well as the EMC chairperson and members, and service providers should be submitted to TCTA before going to print."[38]

The independent EMC communication originating from the EMC chairman would reinforce, qualify, or contradict the government statements. The EMP consultant group also suggested three key messages relating to BWP implementation activities:

- "Firstly, to control the migration of job seekers into Franschhoek the strategy was to convey the message within the Stellenbosh municipality and surrounding areas that jobs will only be given to local people, that a registration system is in place to prevent jobs going to outsiders, and that there is no accommodation (for workers other than those hired by the contractor) available in Franschhoek;
- Secondly, the eradication of alien species along watercourses as a key measure in catchment management (i.e., the wherefore and the why and the mobilization of community participation under the Working For Water Campaign); and
- Thirdly, (the need for) water demand management particularly (messages directed to) to the agriculture sector in the Berg River basin (for those abstracting water from the Berg River downstream of the dam) and in relation to the CCT services (CCT communication)."

The EMP also stated these messages (especially the first two) should be communicated intensively to water user groups represented on the EMC and reinforce through various media and in the BWP newsletter.

Again not all went well in the first few years. There were hiccups in TCTA's initial meeting with EMC members, as discussed later in this section. By September 2004, crisis communications around the EMC resignations were necessary to explain to the host community, the public, and also corporate stakeholders, including the financing partners (i.e., EIB, DBSA, and ABSA) the reasons for the EMC resignations, and what this meant going forward (see section 2.3).

Beyond the communication strategy: Critical challenges of implementation

This third diagnostic theme addresses what can happen when communication strategies are implemented. This is presented in the form of anecdotes, based on what the case-study team heard from stakeholders in 2008. The anecdotes simply illustrate the sort of challenges that can be faced when implementing even the best-conceived communication strategy.

Get off on the right foot: In 2003 TCTA hired professional communicators to assemble the project communication strategy in a collaborative approach. EMC members agreed to dialogue mechanisms and communication protocol. But it soon became clear TCTA's real challenge was building trust with the local community and managing expectations.

- *Anecdote*:

Perspective of EMC members	TCTA perspective
The first time the CEO of TCTA addressed the EMC in January 2003 a blunt message was conveyed to the effect that TCTA would drive all decision making. Perhaps by announcing the intention to change the EMC's name (from a management to a monitoring committee), the CEO wished to reinforce the fact TCTA alone had executive authority. Some EMC members the case-study team met in 2008 say it was counterproductive—disempowering rather than empowering.[39] Other observers confirmed that it alienated many people in Franschhoek unnecessarily; especially those EMC members who had expected to have a strong voice in shaping project implementation decisions.[40] The address was clearly "off-message" in terms of the project communication strategy and not in the interest of building a long-term partnership with the host community	There was a big gap in communications following the EIA approval and project implementation (i.e. four years). Local interested and affected parties had until the first EMC meeting no forum or mechanism to voice issues or concerns. Local expectations in terms of decision-making authority were not aligned to TCTA's views. Whereas TCTA considered itself to be the sole implementing agent, it appears that EMC members considered their role to be partners in implementing the project.

- *Lesson*: Clearly the CEO or manager of project implementing authority must take responsibility for the project communication strategy. But they must be thoroughly briefed by communication and public relation staff on local expectations before meetings that can set the tone going forward. Moreover, it is incumbent on the CEO to be either fully briefed for the all important first contact, or otherwise play a strong listener role, or restrict themselves to protocol events until they have a better feel for the situation on the ground.[41] Personalities and individual skills determine the type of communication experience as perceived by local communities/ stakeholders. This underscores the need to look at the right curricula for this type of proximity and interpersonal communication approaches. Equally important is the understanding of the communication scope: to inform, to influence, to empower, etc., and how this applies to the occasion and relevant socio-political context.

Respond to problems by improving communications: Whether TCTA quickly recovered by getting back to its communication strategy and two-way dialogue is perhaps a moot point. Otherwise, when problems arose, additional effort was put into increasing dialogue and communication to move beyond the conflict to collaborate on ways to resolve problems.

- *Anecdote*:

EMC perspective	TCTA perspective
The EMC chairperson was a professional communicator who provided ample space for debate when problems arose. TCTA also appointed a resident environment manager with strong communication skills after September 2004. As section 4 notes, downstream salinity was a contentious issue and even featured in parliamentary discussion when the cabinet had endorsed the project in 2002. The EMC continued to entertain discussions on salinity even after the relevant project design decisions were made (i.e., IFR provisions, salinity impact monitoring arrangements, and the adaptive management measures). Most of the EMC Meeting 8, August 2003 was also dedicated to this issue. In parallel, TCTA committed to wide dissemination of monitoring results and to modifying downstream releases if salinity concentrations increased above specified levels, in the manner set out in the ROD issued by DEAT	The role of the EMC chairperson is to act at all times as an “honest broker”. The challenge during periods of conflict is to maintain open communication channels and dialogue.

- *Lesson*: Some issues are intractable and cannot be resolved, either because of inherent complexity, uncertainty, or vastly different perceptions of risk. In all such cases, it important not to shut down dialogue. Communication messages and information need to look beyond the controversy and communicate solutions. In this case, DWAF also sought to increase awareness and public communication about the integrated salinity management program under the new Berg CMA.

Culturally sensitive communication counts: A common criticism of multi-stakeholder processes is that local participants must either become proficient in the language of development planning and scientific discourse, “on functionality of ecosystems,” or remain silent. Otherwise they may be overwhelmed by technical information and two-way dialogue breakdown.

- *Anecdote:*

	TCTA perspective
TCTA project communication materials were produced in English, Afrikaans, and isiXhosa. But cultural sensitivity is considerably more than producing material in different languages. For example, the La Motte community living in close proximity to the site needed information that spoke to their own hierarchy of needs and allowed them to decide how they could take advantage of the immediate and longer-term income opportunities the project created for them. TCTA's contracts with local BEE contractors for housing had to be re-written with non-legal jargon to be understood. When problems arose between the non-local and indigenous members of the construction work force (e.g., fights in local bars.) conflict had to be defused by recognizing cultural factors behind the conflict, as well the perceptions about who got the highest paying jobs and why	Communication tools and media had to adapt to the needs of the different interested and affected parties. For stakeholders such as municipalities and elected local ward committees, formal presentations with question and answer sessions were appropriate. The La Motte (previous forestry village) community had a strong identify and preferred open public meetings. Landowners, business people and professionals (who had resigned from the EMC) preferred one-on-one meetings. The communications challenge is to ensure ongoing formal and informal dialogue.

- *Lesson*: It is relatively easy to swamp stakeholders with information that they cannot process (technical studies and reports), or which they cannot act upon. While good representation on mechanisms like the EMC can overcome some of the barriers, culturally sensitive communication must be targeted in language and form, responding to what different groups value and demand. For affluent stakeholders the message was largely how the project design and construction works would respect heritage, recreation, and tourism values; for lower income members of the community, the messages were largely concerned with job creation. At the same time, it was important to say participation on construction training was not a guarantee of a job on the project itself. Unpacking information is critical.

Create trust, add value: Trust is an essential part of co-operative governance and key to successful partnerships. Value is something communication strategies must add for all stakeholders.

- *Anecdote:*

EMC perspective	TCTA perspective
Conflicts that arose on the BWP, like those behind the EMC resignations, could usually be traced to a misunderstanding, a breakdown in trust among different interested and affected party interests or with project authorities. Failure to deliver on promises (or even the perception of failure) also erodes trust in authorities and planning processes. In this case, many environmental NGOs involved in the demand-supply reconciliation debate in the Western Cape still perceive that the CCT (and by extension DWAF) has failed to deliver on water demand reduction promised, or the extent achievable. In Franschhoek, both the affluent and disadvantaged local communities were willing to partner in the project as long as they felt the project offered value for their constituency, or community. People were less inclined to engage when they saw little immediate or longer-term benefit.	For the local community there were two key issues they felt were not adequately addressed, i.e. training and economic opportunities. Upon review, there was a communications failure to adequately engage with and ensure community representatives fully understand the magnitude, complexity and risks involved in dam building. For example, the community firmly believed that they could provide business services for the production of aggregate (i.e. stone crushing) and bush clearing. Issues related to production rate, quality and technical specifications were not adequately communicated.

- *Lesson*: Trust has to be gained and is difficult to recapture when lost. Two key factors in creating trust include (i) understanding what different interests expect of the project up-front, and (ii) adopting non-adversarial approaches to dialogue and communication. Dialogue needs to bring out how interests are aligned and potential for mutual sharing of benefits. If there is no apparent sharing of benefits, the policies on that issue may need rethinking. Everyone has to feel their investment in communication is justified by the value it adds, whether it is the project manager drawing up and seeking approval for the project communication budget, or the personal time that interested and affected parties must spend in meetings. There are three key ingredients of success: (i) trust, (ii) listening, and (iii) local benefits. The law of reciprocation holds: for stakeholders to accept to take an interest in others' interests, a show of commitment to listening and a willingness to serve the stakeholders' interest is necessary.

Don't forget about the construction work force: Interactions between the contractor's workforce and the local community are important to social outcomes, particularly how the local community perceives the project. The main interaction the local community has with the project is often through the construction work force. This aspect should not be overlooked in the communication strategy.

- *Anecdote:* Apart from employment and social infrastructure needs, the type of social issues the BWP project was connected to, or at least perceived to be connected to, in the Franschhoek Valley included HIV, teenage pregnancies, security, drug abuse, alcoholism, and the lack of recreational facilities—whether there was any evidence of a cause and effect relationship with the project, or not. The project social-anthropologist, for example, suggested simple measures could help deal with AIDS, like allowing the non-local workforce to visit their families at appropriate intervals, instead of requiring them to stay on site for extended periods. Published analysis of the social monitoring on the BWP is also extremely helpful.[42] It indicates how important it is to have a wide frame of reference for communication on social issues. Moreover, that social monitoring through a "deficit" model of social development has an unintended consequence of disempowering and objectifying people. Among other factors, communication and social assessments should encompass direct interviewing of core (i.e. non-local) workers to better understand the impact of the project on the social capital of local communities.
- *Lesson*: Every project has its own socio-cultural context. A common concern is to gain a clear and accurate understanding of the interaction between the contractor work force and the local community. The lesson from the BWP experience is that the local community is not the only social community who needs to be monitored. The migrant workforce of the contractor is also affected by project implemented and needs to be conceptualized as a defined community. Measures to avoid social conflict between local communities and non-local workers need to be devised. This differs from normal practice in that it requires (i) interviewing people from work force in addition to community members, (ii) the contractor to prepare a communication strategy for dealing with the workforce, addressing the issues that arise in interviews (other social and communication analysis, and on other projects in similar contexts), and (iii) the project authority must ensure this is done to a good standard, and in this case, the EMC would sanction it. Specific information campaigns are necessary to highlight issues that are directly attributable to project processes (e.g. employment), those issues that the project can cause but are latent (e.g. HIV/AIDS) and those issues which result from unintended consequences (e.g. increase in domestic violence from alcohol abuse caused by greater disposal income).

Table 4.2. Communication and public relations budget on the Berg Water Project

Description	Grand Total	
	Rand	$US
CAPITAL COST	500,000	60,976
Information Centre[a]		
Equipment	200,000	24,390
Total Capital Cost	700,000	85,366
OPERATING COST		
Events & Functions	1,815,102	221,354
Printing & Visual Media	4,393,974	535,851
Information Centre & Exhibitions	422,156	51,482
Site Visits	1,738,971	212,070
Stakeholder Liaison	383,330	46,748
Marketing, Sponsorships & Gifts	247,642	30,200
Public Relations Adminstrative Cost	4,874,448	594,445
Total Operating Cost	13,875,624	1,692,149
PUBLIC PARTICIPATION		
Environmental Monitoring Committee (EMC) - (administration cost e.g. travel, printing, etc.)	548,842	66,932
Remuneration: EMC Chair & Secretary	1,866,330	227,601
Total Public Participation Cost	2,415,171	294,533
Total Project Public Relations Cost	16,990,795	2,072,048

BWP Communication budget

Table 4.2 illustrates the communication budget for the implementation phase of the BWP from 2002 to 2008, which was approximately US$2 million and represents approximately 1% of the total project budget.

An overarching sector communication strategy is essential

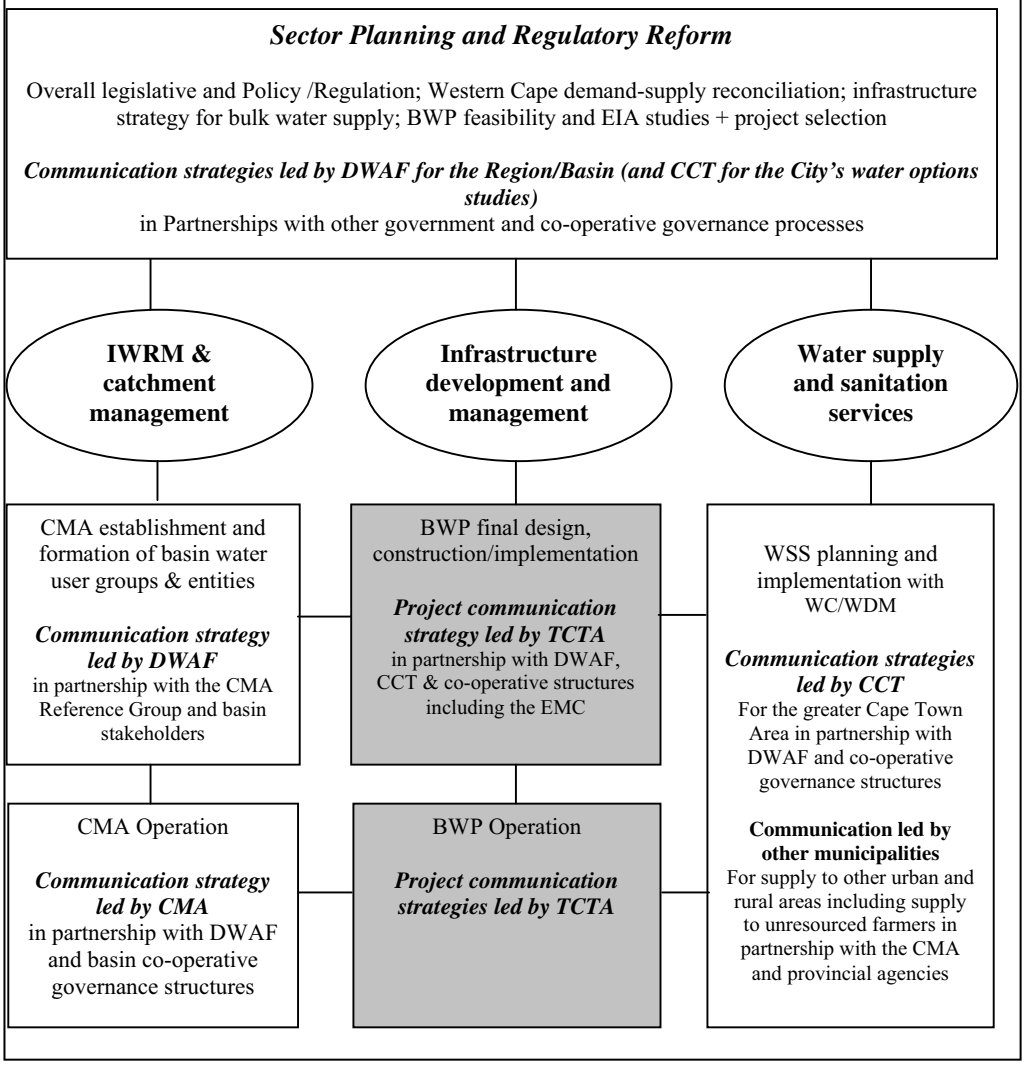
The final diagnostic theme addresses the notion of large water projects being optimized as development interventions beyond the provision of water services. This message was embodied in the BWP communication strategy.

To achieve this goal, the project communication strategy needed to be contextually integrated with other communication strategies to advance the water sector development agenda, including a vertically integrated communication strategy for planning and implementation of regulatory reforms and a horizontally integrated communications strategy for water sub-sector programs and projects connected to BWP outcomes in varying degrees.

Figure 4.2 is a simplified illustration in terms of the following communication aspects:

- *Sector planning and regulatory reform:* Initially DWAF led communications for the sector planning (demand-supply reconciliation studies) and analysis to formulate

Figure 4.2. Overlapping communication strategies for stages of planning, the project cycle, and parallel development processes



the infrastructure strategy from which the BWP decision emerged; at the same time it coordinated public communication on the new legislation and regulatory framework.

- *Infrastructure development and management*: TCTA led communications for the implementation and operation phases of the BWP, starting with the collaborative process to establish the multi-stakeholder EMC, compile the EMP, secure project financing, and communicate with industry to engage contractors and service providers for various components of project.
- *Water and sanitation service provision*: CCT (and the former CMC) was responsible for public communication on the various municipal roles in water service provision that related to the BWP (i) Cape Town's bulk water supply planning, which confirmed the BWP, (ii) defining and implementing the WC/WDM programs, and

(iii) addressing the BWCC impact on water tariffs.

- *Berg River Basin Catchment Management*: DWAF focused on supporting the dialogue process and communication to empower the new Berg CMA and water entities to eventually become responsible for optimizing the operational performance of all water infrastructure in the basin of the CMS (IWRM principles).

The integration aspects were especially important in the BWP for several reasons discussed previously: (i) a first implementation test of legislation and development of a working model, (ii) an innovative blueprint for co-operative partnerships in bulk water supply between government authorities, industry and civil society, and (iii) a part of an integrated response to reconcile water demand and supply. Moreover, BWP's approval and its successful operation were contingent on implementing parallel water reforms.

The BWP illustrates that not just one process but several public participation processes (PPPs) may run in parallel to arrive at strategic decisions about the infrastructure strategy at the planning stage.[43] Appendix D highlights how the project communication strategy links to the WC/WDM communication strategy and to the Berg CMA communication strategy during project implementation.

Most institutional actors the case-study team spoke to felt there was coherence in the communication approaches adopted by the different agencies, partly because role players were involved in more than one process, like DWAF. Again, however, there were sharply divergent views in the academic literature about how the concept of cooperative governance and planning worked out in practice. As IDS (2006) stated in an ex-post evaluation of public communication during the BWP planning stages, "examining these formal participatory spaces and the processes and dynamics within them highlights how activism and social mobilization may be watered down by what are perceived to be democratic governance practices." Others saw PPP communication as informing the public on issues to enable sufficient consensus be formed to allow the political decisions to be made (Roberts, 2005).

Summary Observations on Communication

Observations on the BWP communication experience illustrate its applicability to a wider range of water infrastructure projects:

On communication strategies: Communication strategies for large and complex water projects need to provide clear, consistent messages to enable the public and interested and affected parties to see clearly how the project fits into the policy of government and to form their own views. The socio-political context really defines how you design the communication strategy.

- Every dam project needs a comprehensive communication strategy. The project communication strategy needs to be contextually integrated with other communication strategies that advance the wider water sector development agenda and communications strategies of related programs and projects.
- The demand and supply reconciliation analysis that South Africa uses to structure public participation in water management delivers a powerful and appropriate message in the context of most water-stressed countries. It signals a major challenge is to change behavior on water use and to indicate the limits to supply. A further challenge, one that South Africa identified as key to going forward with progressive water reforms, is to invest in building robust, modern communication capacity in new water institutions.[44]
- Strong leadership is essential to drive improvements in communication and imbedding communication in the model planning tools that are used to devolve

water services to municipal levels and in water resource management of new catchment management institutions.[45]

- On project-level communication, the BWP showed (i) if there are time lags resulting in prolonged drop-off in engagement with interested and affected parties, especially the host community, communication efforts need to be redoubled; (ii) it is possible to recover from a communication breakdown, but it is not easy if trust has been destroyed; moreover, recovery is predicated on having (or bringing in) staff with strong communication skills and on demonstrating that lessons have been learned and an open, responsive communication approach has been adopted; and (iii) no matter how good communication strategy, execution ultimately decides success or failure. Communication strategies need to be flexible and living strategies, not rigid.
- Executive, managerial, and field staff of the project implementation agency all need to understand that NGOs and CSOs represent partnerships and take a lot of messages back to the local communities. At the same time, CSOs and NGOs easily recognize attempts at manipulation and place emphasis on equitable sharing of benefits. Care must also be taken to monitor what CSOs and NGOs are communicating to their constituencies, to balance or correct misinformation spreading.
- Politicians, both on the national and local levels, will always make promises, some of which may run counter to the project communication strategy (e.g., promising local jobs beyond what is to be provided or giving highly optimistic community benefits. The best defense is to involve the local community in the evolving the communication strategy and to ensure the project is perceived as a source of accurate, balanced, and up-to-date information. Intervention by the minister at the early stage during project feasibility also had a positive impact on the interaction with local government officials, making the dialogue between the people and the local authorities much more stable.

On tools and communication-based assessment: A large number of tools are available today to assist the preparation and implementation of communication strategies.

- The BWP shows modern communication theory and practices (development communication, corporate communication and advocacy communication fields) have a role in advancing water reform and promoting sustainable forms of infrastructure development and management.
- Communication-based assessment (CBA) as part of the development communication discipline helps process managers (e.g., TCTA, DWAF, and CTC) to prepare communication strategies on a range of initiatives (e.g., stakeholder analysis, opinion surveys, interviews, socio-political analysis, and other qualitative and quantitative techniques). CBA is especially important in forming new water organizations and understanding their expectations. A lot of analysis related to the BWP and Berg CMA establishment is still available from South African websites.
- Communication-based assessment is closely linked to social assessment in development theory and practice. Both fields are concerned with understanding dynamics between the community and the project, behavioral change, and contextual factors to achieve social sustainability.
- Communication strategies must add value in the eyes of all stakeholders, link to risk reduction strategies relevant to all stakeholders, and help the project or process manager understand and manage stakeholder expectations. In development communication managing expectations is not a public relations exercise.

- An assessment of the capacity of water institutions to communicate is essential to identify deficits and prepare training modules and/or a technical assistance strategy tailored to local needs.

On communication structures and processes: Organizational structures for projects and water institutions need to facilitate a mix of different forms of communication, namely traditional, media, official, and crisis communication, using formal and informal channels. Public relations (PR) activities were perceived by local stakeholders as only partially useful when not properly integrated into project communication and participation strategies. Communication processes need to be integrated with project governance arrangements and support shared learning. It is important to document the entire consultation process.

- In cooperative governance and partnership arrangements dealing with water infrastructure, interested and affected parties tend to see communication as a bottom-up process connected to empowerment. Government agencies tend to see communication as top-down to ensure cooperation and information flows among different levels of government and interested and affected parties engagement to inform decisions.
- Structures for inter-agency cooperation (e.g., technical and co-ordination committees for the BWP) and structures for interested and affected parties empowerment (e.g., EMC and CMA Reference Group) need to have clearly defined mandates for communication and information flows. Special mechanisms like the EMC need constitutions with framing agreed upon through consensus procedures.
- Internal and inter-institutional communication is important and challenging as many institutions get involved in the project at different stages with different approaches and work style. Time lag in information flows may have a negative impact on stakeholders' perceptions. Handover processes are necessary if/when there are interruptions in information flows, particularly from feasibility to implementation and operation and maintenance.
- It important not only for managers and staff of infrastructure projects and for managers and staff of public participation processes to have the communication skills and tools to bring people together for constructive dialogue but also for representatives of the various interested and affected parties' interests involved in the governance structures to have communication capacity and support.
- Larger projects need a communication unit that is properly resourced. The EMC, as an independent governance mechanism empowered for independent communication, had a media task team.
- Communication with the construction workforce is an important area that is often ignored or left to the contractor on his own for false reasons—why should we get involved when it's the contractor responsibility. It should be recognized that construction workers frequently are the main interface of the project with the local communities. Lessons from the BWP are that the social processes related to construction workers and their interactions with the community need to be monitored. Communication forums with non-local workers need to be established to facilitate communication flow and dialogue. Minimum requirements in tender documents must insure minimum standards of living conditions for project's workers.

On media engagement on projects: Local media have an important role in shaping public attitudes toward water governance and anti-corruption policy reforms and in promoting sustainable forms of infrastructure.

- As shown in the BWP, media was instrumental at all stages to inform the public of both positive and negative aspects of the project and tradeoffs involved. While events related to drought got coverage, coverage of the BWP could not always be taken for granted in the mainstream press and needed to be stimulated.
- A single point for official communication on the project with the media and a communication protocol is useful—underscoring the importance of one credible communication interface for the project. TCTA took the lead communicating with media on behalf of government institutions and worked out a protocol for institutional stakeholders who regularly interact with the media. The EMC representing interested and affected parties authorized the EMC chairperson as their media spokesperson and had a media task team and communication protocol.
- Accurate, up-to-date, and timely information needs to be given to the media around events. Consistent messages are important to structure contacts with the media but overly complex messages don't work.

On communication on capacity: The notion of sustainability is context bound and needs to be interpreted and implemented by a range of stakeholders within a specific basin and development setting.

- Water institutions need communication capacity to work effectively with their constituencies. The CMA Reference Group, for example, felt that one risk to institutional sustainability and its effectiveness was underfunding of communication and capacity building activities.
- The experience around the IFR and Reserve Determination and the subsequent compliance monitoring with the EMP emphasized the need for clear communication, on what are otherwise complex technical issues, in a way that makes the issues digestible to non-technical people.
- Emphasis is essential on the importance of incorporating communication-based assessments for each sustainability issue as a routine part of the technical assessments and monitoring studies that inform interested and affected parties discussions. This would be reflected in the project communication strategy. Certainly in countries where there is limited use of interested and affected parties' dialogue processes, the analysis would inform the approach that project managers adopt to begin discussion on the sustainability issues.

Notes

[1] See discussion on co-operative governance in the Generic Public Consultation Guidelines, DWAF, September 2001; commenting on the constitution (1996).
[2] See Box 2.5 previously in the governance section.
[3] From 1996 to present day many media articles, and the CCT, DWAF, and TCTA media releases refer to the multi-stakeholder options process.
[4] Lisa Thompson, "Managing mobilization? Participatory processes and dam building in South Africa, the Berg River Project," Working Paper 254, IDS, November, 2005.
[5] Generic Public Consultation Guidelines, DWAF, September 2001.
[6] Generally a step-wise approach is followed to build communication capacity into water projects and within the new water institutions. This is seen, for example, in how the public consultation guidelines for CMAs issued by DWAF in 1999 were reflected in deliberations of the multi-stakeholder Reference Group empowered to develop the Berg CMA establishment proposal in 2007. The capacity building and empowerment strategies were a point of departure for preparing the communication strategy. Similarly, a communication strategy was an integral part of Cape Town's Water Services Development Plan.
[7] For example, "communication-based assessments" (CBAs) are routinely undertaken to support the

preparation of more robust communication strategies, such as the attitudinal survey of DWAF headquarters staff (2001) that informed the preparation of the national WC/WDM strategy, referred to previously.

[8] IDS 2006. Those opposed to the BWP argue, that in fact, the creation of formal participatory spaces both subverted and neutralized resistance to the building of the dam among the environmental movement, as well as civil society.

[9] One point of reference is the 2007 Report on establishing the Berg CMA. The documentation shows that interested and affected parties in the Berg CMA Reference Group (many of whom were involved in BWP dialogue) saw the PPP process and its integral communication as both inclusive and genuine (see section 2.4 discussion).

[10] The delay was for the reasons cited in the governance section, including demonstrated progress on WC/WDM by CCT according to the three conditions set by the minister in 1998 (See section 2.3).

[11] TCTA website.

[12] Especially the Berg CMA establishment process and development initiatives to expand water access to unresourced farmers in the Berg River Basin.

[13] This coincided with public debate on the Free Basic Water Policy. All these concerns, plus the reintroduction of drought restrictions, converged to shape public attitudes to the BWP and its role in addressing the Western Cape's water nexus-and thus shaped the communication environment.

[14] Most observers suggest South Africa has a relatively independent media, though press freedom has had a chequered history. Today some argued the media has a fairly strong pro-ruling party orientation.

[15] After 1994, civil society played a significant advocacy role in shaping South Africa's water policy framework and water reforms. This view is widely held and reported in the literature. Civil society in South Africa was not only dedicated to democratising natural resource management but also committed to ensuring that water management strategies were brought into line with international environmental concerns on managing water scarcity.

[16] According to Ninham Shand, 1996.

[17] As discussed in section 2 from (IDS 2006).

[18] SAG disbanded after 2002, giving way to CSO and NGO representation on the EMC at that time.

[19] As discussed in the EMP Minutes from 2003.

[20] Communication theory is closely related to public participation theory. The communication disciplines include *Internal communication:* within organizations or within multi-stakeholder governance structures to enable efficient exchange of views and information among the various units, committees, departments or staff. *Development communication:* assessing situations and applying analytical tools to develop communication strategies in order to build consensus and enhance project effectiveness and sustainability for all stakeholders. *Corporate communication:* communicating what a public enterprise, civil society or private sector entity does, its code of ethics, how it builds trust and public confidence to engage in dialogue on projects it undertakes and how it will respond to relevant governance reforms. *Advocacy communication:* communicating key issues effectively to raise awareness and to win support with the public and/or to influence relevant policy-making according to the interest, whether it is a civil society, private sector or government entity. Adapted from the World Bank's DevComm reports on communication support to operations http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/08/10/000310607_20070810124552/Rendered/PDF/405610Communic18082137165701PUBLIC1.pdf.

[21] Which also included internal communication: Effective communication/communication capacity within organizations and multi-stakeholder governance structures, efficient exchange of information and views, arrival at understandings for functional partnerships, namely within the EMC; Skuifraam Action Group (SAG) as a coalition of NGOs and CSOs; entities comprising the CMA; TCTA internal departments, etc.

[22] I&APs are more comprehensively identified in the communication-based assessments (CBAs) undertaken by consultants TCTA hired. For instance, a stakeholder analysis indicated, "the local business sector (needs) clear and concise information on opportunities to provide services and supplies to the BWP, and will need to be notified of tender opportunities, the tender system, preferential procurement policy and points systems, and any pre-qualification criteria. The local small, medium and micro-enterprises (SMMEs) sector will also require information on issues such as tender training, business skills training, on the job mentoring possibilities."

[23] TCTA used its Annual Reports to consolidate relations with its domestic and international financing partners (e.g., EIB, DSBA, and parties like the international credit agency, Fitch). These referred to the latest international themes like sustainability, project and enterprise risk management, and corporate ethics.

[24] The communication aspects included tasks specific to different I&AP needs delineated in TCTA's strategy as (i) facilitating continued meaningful involvement of interested and affected parties in the BWP planning and

implementation process, (ii) providing adequate and relevant channels for communication to interested and affected parties, and (iii) developing strategies to ensure that sufficient information is made available in clear and understandable language.

[25] As discussed in the draft EMP (2003).

[26] EMP Report (2003).

[27] Provided in the EMP Report (2003), Annex 2, presenting the Public Participation Process (PPP).

[28] At that time also, the multi-stakeholder contextualiation of the WCD was underway and had political profile.

[29] Although gender and balanced demographic representation was stressed throughout the process to establish the EMC, there is still under representation of women and PDI communities on the committee. Co-option of additional members from these sectors should therefore be considered.

[30] EMC meeting no. 8 in Franschhoek 28/08/2003, presentation by member Martin Fourie.

[31] The basis for these views was offered earlier in sections 1 and 2 in discussion of water demand management and environmental sustainability.

[32] In South African Law, as in most countries, government has ultimate responsibility for the regulatory framework and decision making on projects even if it delegates specified decisions and accountabilities.

[33] Annex C of the EMP, July 2003

[34] The EMP Constitution is provided as Annex B to the EMP, dated July 2003 (see Box 2.2 in section 2.2).

[35] The EMC minutes state, "the process to be followed must ensure that this power is not abused and everything is not referred for review by independent consultants. It was suggested that such assistance should be provided when the majority of EMC members (i.e. 50% + 1) request independent advice. It was pointed out that the EMP consultant would provide capacity building to ensure that the EMC is able to carry out its tasks as required."

[36] The minutes should be used for record keeping purposes and copies should be given to the principal and alternate members only.

[37] Extracted from TCTA's internal project communication strategy (2004), courtesy of TCTA.

[38] The latter point on the EMC chairman submitting public communication to TCTA was interpreted in practice as informing but not seeking approval, as this would violate the EMC constitution.

[39] This was a consistent view that emerged in the discussions the case-study team had with EMC members.

[40] Some EMC members said they went into the first meeting with TCTA expecting to hear how they could work together but instead emerged contemplating how they might fight the project.

[41] Perhaps another lesson is not everyone is a good communicator. The implementing agency and the project team must put its best foot forward to ensure critical initial meetings with the host community are well prepared and use the skills on the team utilized to their full advantage.

[42] Nigel Rossouw and Shakti Malan, The Importance of Theory in Shaping Social Impact Monitoring: Lessons from the Berg River, Dam, South Africa; Impact Assessment and Project Appraisal, 25(4), December 2007, pages 291-299 DOI: 10.3152/146155107X246305; http://www.ingentaconnect.com/content/beech/iapa.

[43] Both at the municipal level, where Cape Town was developing its water supply management plan under the water service provision legislation, and regionally as DWAF was preparing the Berg WMA water resource management plan. The third dimension was the project EIA process managed by DIET. Communication among the three parallel streams of activity was important, though many of the actors were similar.

[44] New entities in municipalities responsible for service provision, and those responsible for water management under the newly devolved structures under the CMAs.

[45] When it was promised that stakeholder issues would be taken to the minister, and not only dealt with by project technocrats, the expectations of the consultation process were met. The minister's involvement was the key to establish trust with the stakeholders.

CHAPTER 5

Lessons Drawn on Communication along the Project Cycle

This case study has considered lessons that the Berg Water Project offered on governance, sustainability, and communication with communication as the connecting thread. This final section provides a few observations on some of the ingredients for improving communication at different stages of the planning and project cycle, as a way to advance governance and sustainability reforms around infrastructure provision. This relates directly to the mission of the BNWPP project, as discussed in the Foreword, to improve water security by promoting innovative approaches to Integrated Water Resources Management (IWRM) and thereby contributing to poverty reduction.[1]

For Macro Policy and Strategic Planning Stages

Macro Policy: This stage refers to communication that supports legislative and macro policy reforms. Target groups include legislators, politicians, and representatives of the government, civil society, media, and private sector interested in the political economy of water and development.

- *Provide enabling conditions:* A strong culture of communication backed by adequate legislation is needed to promote water governance reforms led from the top. The cooperative governance and planning theme that was written into the constitution (1996) was an enabling factor in South Africa's situation.

Communication strategies at the macro level were framed around the following:

a. White Papers—as a basis for parliamentary debate and wider discussion that led to the Water Services Act (WSA, 1997) and the National Water Act (NWA, 1998).
b. The National Water Resource Strategy (NWRS)—as a basis for an extensive (two-year) process of public debate and discussion at all levels of government on challenges faced implementing the new legislative agenda, and periodic updates of strategies going forward (both as a live document and in five-year cycles).

- *Support behavioral change:* Communication strategies for these macro processes need to bring the public along and to facilitate the sort of fundamental behavioral shifts necessary for water reforms that go to the heart of attitudes and perceptions about water. One example is the slogan, "Some, For All, Forever," to sum up the new approach of access to a limited water resource (some), on an equitable basis (for all) in a sustainable manner, now and in the future (for ever). There is a challenge in managing the tension between local interests versus national imperatives or national policy achievements. Full democracy and participation in terms of project governance for local interested and affected parties can in some instances result in

local interests working against national policy or wider sustainability objectives. There is an implicit assumption in democratic participation that promoting local values and preferences promotes sustainability. The role for the public sector is to make trade-off decisions where issues of sustainability needs to be evaluated at different levels from local to regional to national and international.

- *Bring corporate and public enterprises along:* The ethos must be reflected in how public and private enterprises that are responsible for implementing reforms and infrastructure provision actually behave, and how these behavioral changes reflect in corporate communication strategies. This was shown not only when the TCTA adapted the King Commission Report (2002) on corporate governance, including corporate communication, sustainability reporting, and anti-corruption aspects but also when they benchmarked these practices periodically to emerging international practice. These actions enhanced a culture of quality assurance.

Strategic planning: This stage refers to communication in sector and basin-level strategic planning processes (referred to in South Africa as public participation processes) that lead to the identification of programs and projects. Target groups include representatives of the various interested and affected parties groups and water institutions in the river basin:

- *Reinforce political legitimacy of decisions:* Communication strategies around strategic studies and comprehensive options assessments must help to reinforce the political legitimacy of decisions reached, clearly explaining convergent and divergent views and how tradeoffs were reached.
- *Clarify infrastructure strategies:* The infrastructure strategy, on which decisions for particular project is based, must not only be clearly articulated but also must explain how it derived from basin-level water resources planning and especially how it impacts on water service provision for different consumer groups, highlighting impacts on expansion of service provision to low income groups and tariffs.
- Show entry points and provide feedback on dynamic processes: Communication strategies for public participation processes (PPP) must show the different entry points for public input and otherwise seek to maximize opportunity, voice, and participation. They must then ensure government feedback is provided on the results of public participation, otherwise trust in the outcome and future participation will be jeopardized. The benefits of the dialogical processes are organic, as they cross fertilize business development procedures with other sectors.

For Project Preparation Stages

This stage refers to communication strategies for project-level studies that confirm the design of infrastructure projects and the steps to secure final project approval and financing. Target groups again include basin residents and communities receiving water and energy services from the project, but at this stage, more emphasis is placed community hosting the project.

- *Understand and manage risks and expectations:* Communication and social analysis need first to understand how different groups actually see the project—their attitudes, perceptions, anxieties, and expectations—and, thereafter, what each group of interested and affected parties needs to facilitate two-way communication. For example, if pre-project training is provided then expectations should be proactively managed with regards to employment opportunities.
- *Build trust with early stakeholder involvement:* Communication strategies involve interested and affected parties early to establish trust and add value.

- *Show progress:* Share information regularly by involving stakeholders in knowledge management activities.
- *Address issues relevant to all interested and affected parties:* The communication needs to be relevant to the issues and concerns of each interested and affected parties group and to accommodate their concerns. After feasibility phase, the project can experience an important phase of "refinements" wherein stakeholders' expectations require adaptive management, for example, scientific reports unpacked and translated into local languages to avoid misunderstanding; clarification of policy statements and their links to contractual documents and obligations.
- *Communication intensity:* Some stakeholders require much more attention than others. Some groups are more dynamic than others.

For Project Implementation

This stage reflects project communication strategies after approval and through construction, implementation, and commissioning. Target groups are the same as those involved in the previous stage but expanded to include the suppliers of goods and services, contractors, and construction workers involved in the project.

- *Maintain trust and expand partnerships:* Sustain dialogue, establish trust and add value. Respond to the host community needs for communication function. Demonstrate the importance of effective dialogue mechanisms and need for clarity in mandates.
- *Ensure compliance to add value for all stakeholders:* Communicate importance of maximizing jobs and convey some of the mechanisms. Increase transparency on key decisions relating to project preparation, design, and operating strategies by the use of open, participatory mechanisms and preliminary steps to reduce corruption risks in procurement contracts.
- *Set a foundation for partnership in the operating phase:* Continue partnerships within project teams and with government officials to adopt modern communication principles and tools relevant to their work.

For Project Evaluation and Operation Stages

Project evaluation: This process looks back at previous stages formally, and with the benefit of hindsight, draws lessons regarding communication strategies.

- *Evaluate communication resources, processes, and outcomes against objectives:* Comprehensively and critically consider the effectiveness of the communications strategy and the extent to which the project communication added value to outcomes for the resources provided. Monitoring and evaluation should include yearly report on performance of project communication.
- *Capture convergent and divergent views:* Take into account the views of all stakeholders and project partners and present the convergent and divergent views about the success and failures of the communication strategy.
- *Draw lessons for the operation stage and other projects:* Recommend enhancements to the communication strategy for the operation phase of the project, and highlight successes and failures that could help improve communication on other projects.
- *Nurture a culture of communication:* Where possible, use multimedia to reflect on the development process in the public sphere.

Project operation: These communication strategies relate to the operational phase of infrastructure projects and ongoing water reform. Target groups include the host community, basin communities, water institutions, and consumers, as well as regulatory oversight bodies.

- *Integrate the project with the local community and basin:* Communication at this stage relates to sustainable integration of the project with the culture and economy of the host community. Similarly communication around issues relate to the integration of the operation within the evolving catchment management strategy.
- *Support compliance and adaptive management:* Provide transparent and effective communication to empower interested and affected parties dialogue around compliance monitoring processes and adaptive management of the facilities and downstream releases from reservoir within the framework of the regulations.
- *Support long-term capacity for communication:* Communication strategies must address the needs and measures to build communication capacity in new water institutions.

Better integration of public relations and development communication practice will be featured in TCTA's next generation of projects. The development communication approach will be integrated more broadly and adapted throughout the life cycle of the project in a variety of approaches, participatory ethnographic conversations, informal group meetings, and other interpersonal techniques that stakeholders perceive as more pertinent both to them and to their communities.

Notes

[1] It responds to a call by the World Bank's Development Committee to improve communication on large infrastructure projects to promote governance reforms, linked also to sustainability. The discussion paper endorsed by the World Bank's Development Committee "Strengthening Bank Group Engagement On Governance and Anticorruption" in 2006 offered the following views on how to improve communication on infrastructure projects for anti-corruption and generally sustainability "Because of the importance of an effective dialogue on issues of fraud and corruption, it is important to develop an effective communication strategy that covers all phases of the project. The communications plan must provide for consistent messages to be conveyed to all of the relevant stakeholders: government officials in the implementing agency; contractors, suppliers, and consultants who may be involved in bidding on the project; members of civil society affected by the project; and (as appropriate) the local press. The role of the media (and civil society) may be especially important if the plan includes the use of publicity—both positive and negative stories—as a tool for reducing the level of fraud and corruption in Bank projects. The objective would be to highlight both noteworthy achievements in quality, cost-effectiveness, and sustainability, as well as any incidents of alleged collusion, fraud, or corruption."

APPENDIX A

Berg Water Project Implementation Arrangements and Budget

Project Implementation arrangements: Many different government departments and interested and affected parties played roles on three sequential planning processes that informed the cabinet decision to proceed with the BWP in 2002, as highlighted in section 2.1.[1] From 2002 the following three organizations were the main institutional partners:

- *Department of Water Affairs and Forestry (DWAF)*: DWAF was the regulator and national department responsible for water policy and overseeing the BWP implementation. DWAF also owns and operates other bulk water infrastructure assets in the Western Cape System, though these will be transferred to a new water infrastructure agency as DWAF completes its transition to a policy/regulatory role.[2]
- *Trans-Caledon Tunnel Authority (TCTA)*: The state entity mandated by the Water Affairs Ministry in 2003 to fund and implement bulk water infrastructure to supply water users recovering costs from the tariff when feasible. TCTA was initially formed in 1988 for the Lesotho Highlands Water Project works on South African soil. In 2003 responsibility to fund, implement, and operate the BWP was transferred from DWAF to TCTA by a decision of the Minister of Water Affairs.[3]
- *City of Cape Town (CCT)*: As the principal beneficiary of the water transfer scheme, the city identified the BWP in its water services development plan (WSPD). The city is also responsible to plan and implement water demand management initiatives, on which approval of the BWP was conditional (as discussed in section 1.3).

The main arrangements for project governance and stakeholder engagement in the implementation and operation phases of the BWP included the following:

- *Technical Committee (TC)* formed between TCTA and representative stakeholders of DWAF and CCT, which as mentioned in the two agreements between the parties, is a strategic committee chaired by a TCTA Board Member. Its function is to make recommendations to the TCTA Board on technical matters and project execution.
- *Project Co-ordinating Committee (PCC)* is essentially an operational committee among the TCTA, DWAF, and CCT, chaired by TCTA staff reporting to the CEO of TCTA. Its role was to raise issues and exchange information concerning the level of risk associated with the engineering, natural environment, social environment, and cost components of the BWP during implementation.
- *Environment Monitoring Committee (EMC)* is a mechanism to formalize the role of interested and affected parties in the project governance structure around the EMP, facilitated by an independent, elected chairman. Membership on the 20-person EMC is comprised of the project authorities, local and provincial government representatives, and mandated representatives from different interested

Table A.1. Capital cost breakdown of the Berg Water Project (in 2002)

No.	Component	Capital Cost		
		Rand Million	USD Million	%
1	Berg River Dam	1,071	$124	71.8%
2	Dam pump station	78	$9	5.2%
3	Pipeline to Dasbos tunnel entrance	37	$4	2.5%
4	Dasbos tunnel inlet structure	35	$4	2.3%
5	Supplement Scheme abstraction works	25	$3	1.7%
6	Supplement Pump Station	116	$13	7.8%
7	Pipeline to Berg River Dam	130	$15	8.7%
	TOTAL	1,492	$173	100.0%
1	Exchange Rate in 2002: ZAR to USD	8.65		
2	Cost as estimated in 2002 at 2002 price levels			

and affected parties groups including ratepayers, previously disadvantaged communities, irrigation boards in the process of converting to multi-user water users associations, farmers, business people, other downstream water users like industries and towns, conservation groups, and those involved in Franschhoek's tourist trade.

Capital Budget breakdown: When the BWP project agreements were signed in 2003, the capital cost was estimated at R1.5 billion (US$173 million), as noted in Table A.1.

BWP Financing Arrangements: The DWAF-TCTA agreement specifies TCTA will independently raise funds to implement the BWP. Financing partners included the European Investment Bank (EIB) as the largest single lender, the Development Bank of South Africa (DBSA),[4] and a major South Africa-based commercial Bank (ABSA), as noted in Table A.1.[5]

Under the two main project agreements, the BWP debt will be repaid over 20 years through the Berg Water Capital Charge (BWCC). This will be added to the existing tariff the CCT already pays DWAF for each unit of raw water supplied from the Western Cape

Table A.2. Berg Water Project capital budget financing sources

	Lending Agency	Type	Amount		% of Capital Budget
			Rand Millions Equivalent	USD Million Equivalent	
1	European Investment Bank (EIB)	Loan	800	$92	47%
2	Development Bank of South Africa (DBSA)	Loan	600	$69	35%
4	Commercial Bank ABSA	Loan	300	$35	18%
	Total		1,700	$197	100%

Note: Exchange Rate in 2002: ZAR to USD 8.65
Source: TCTA Website

Box A.1. Phased introduction of the Berg Water capital charge

City water tariffs increased this month by 7.5%, of which 5% will go toward funding the new dam (BWCC). There will be further tariff increases of 5% a year until 2007, when the new dam will come into operation.

Water Affairs says making the consumer foot the bill for the new dam is designed to make them "feel the cost" of water provision in an arid country with escalating demands.

Cape Times - July 29, 2004

Melanie Gosling

System. DWAF in turn will pay TCTA for the operating costs and capital repayments. Through this agreement, DWAF also levies a third-party capital charge to any other users who may be allocated water that is deemed to come from BWP yield increment (e.g., users other than CCT in the Berg WMA or adjacent Breede WMA consuming water from the BWP). CCT is to be reimbursed the equivalent amount.

The operation stage EMP measures and monitoring will be financed from tariffs that CCT pays. It is important to note also that ultimately all the catchment management costs will be financed by water fees paid by water users in the Berg CMA (e.g., fees that are levied on irrigators through abstraction licenses under arrangements that are yet to be worked out by the formative catchment management authority, and urban users from bulk water tariffs).[6] These arrangements are key to ensuring financial sustainability of IWRM measures and the operational context for the BWP.

Two interesting aspects are (i) the Berg Water Capital Charge (BWCC) will be adjusted to reflect the final project cost and (ii) the city chose to phase in the capital charge over a four-year period (starting in 2003). The phasing was seen as having multiple benefits: an additional price signal for water demand management; a prudent financial step; and a politically acceptable measure reflecting consumer preference to avoid a sudden, sharp tariff increase when the BWP came on-line. Box A.1 illustrates how the first 5% tariff increase was explained to consumers via the media and how it linked to water demand management in 2004. What is perhaps missing from this particular message is how it would impact different income groups.

Notes

[1] The three parallel processes being (i) the Western Cape System Analysis Study, (ii) the project EIA approval, and (iii) the first WSDP for Cape Town, as discussed in sections 1.3 to 1.5. Apart from DWAF and the City of Cape Town, the actors included the Department of Environment and Tourism (DEAT), provincial agencies, the national parliament (where the progress was frequently discussed), the media and the interested and affected parties associated with the three parallel processes.

[2] The historical practice in South Africa has been that a dam is either constructed by the DWAF itself (departmentally) or by a private construction company/consortium.

[3] In 2000 the Minister of Water Affairs gave TCTA the mandate to fund and implement bulk water infrastructure in South Africa. It will eventually be integrated into the National Water Resources Infrastructure Agency, as DWAF itself moves increasingly to policy and regulatory roles.

[4] The Development Bank of Southern Africa (DBSA) is an important player in the water and sanitation sector, both as a financier and as an advisor and project promoter.

[5] Note: The difference in sums is due to currency fluctuation and current versus constant US$.

[6] The WRA (1998) stipulates operation of CMAs are financed from the water tariff, which is relevant as the Berg CMA will ultimately assume responsibility for water quality monitoring programs that is key to adaptive management of the downstream releases from the Berg River Dam.

APPENDIX B

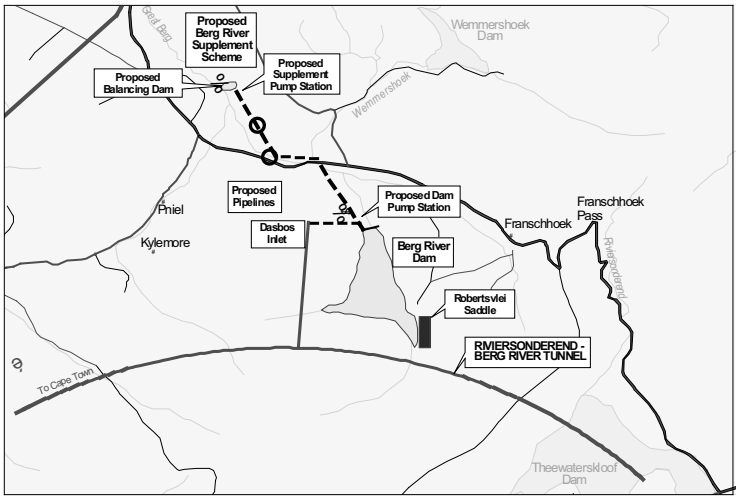
Integration with the Western Cape System and WC/WDM Link

The WCWS supply integration: The BWP is operated as part of the Riviersonderend-Berg inter-basin transfer scheme comprised of the Theewaterskloof Dam, the Riviersonderend-Berg River Tunnel System, and Kleinplaas Dam. In winter, water from the Berg reservoir (130 million m^3) is transferred via the Dasbos inlet by pipeline either directly to the CCT (if they require it) or pumped into the larger Theewaterskloof reservoir (480 million m^3), where it is stored until needed, then pumped to Cape Town to match seasonal water demands.

Figure B.1 illustrates the physical integration of the BWP into the WCWSS, an arrangement that increases total yield (supply) on the system by 81 million m^3 per annum, raising total supply to 523 million m^3 per annum.[1] Other supply components include five large dams, three of which owned by the CCT, the larger Voëlvlei and Theewaterskloof dams owned and operated by DWAF, plus a number of smaller dams and weirs and two major ground water aquifers.

After the former Cape Town authorities asked for national authorization for the Skuifraam (Berg River) Dam in 1998, the Water Affairs Minister advised the National

Figure B.1. Physical integration of the Berg Water Project into the Western Cape Water Supply System



Assembly that a positive response was predicated on (i) a review of water demand projections in Cape Town, (ii) a clear indication of the commitment of the City and transitional local and district councils to demand-side management, and (iii) provision of better technical information on demand management and budgetary support for WC/WDM programs.

Note

[1] The combined impoundments of the Riviersonderend-Berg River (RSE-BR) system currently contribute more than 80% of the total annual water yield of 450 million m^3 available to the Greater Cape Town and West Coast Region (WRC, 2006).

APPENDIX C

Integration of the Berg Water Project in the Berg River Basin

A key element of South Africa's approach to promote sustainable water infrastructure is to make decisions about large dams in the context of the catchment management strategy (CMS). From 1984, South Africa was organized into 19 water management areas (WMAs) each comprising a number of larger and smaller catchments.

Under the NWA (1998) all WMAs were required to transform to catchment management authorities (CMAs) in a gradual process. Each CMA is to become a legal entity managed by a multi-stakeholder, elected governing board. CMAs will not function in water service provision. Their primary (initial) role is to develop the catchment management strategy within the framework of the NWRS, taking into account the water services development plans (WSDPs) of each municipality within the CMA geographic boundary. The CMS must set out principles for water allocation within the CMA based on national norms (by DWAF), including the Reserve determinations and IFRs in basins with existing or proposed dams and water transfer schemes.

The Berg River is the only major river in the Berg WMA, though it also contains several smaller rivers and streams. There are eight tributary systems along 160 km BWP main stem from its headwaters in the Franschhoek and Jonkershoek mountains to the estuary at Laaiplek, where it enters the Atlantic. The estuary has major conservation importance for birdlife.[1]

Figure C.1 is a base map of the Berg WMA indicating the BWP site in the upper reaches.

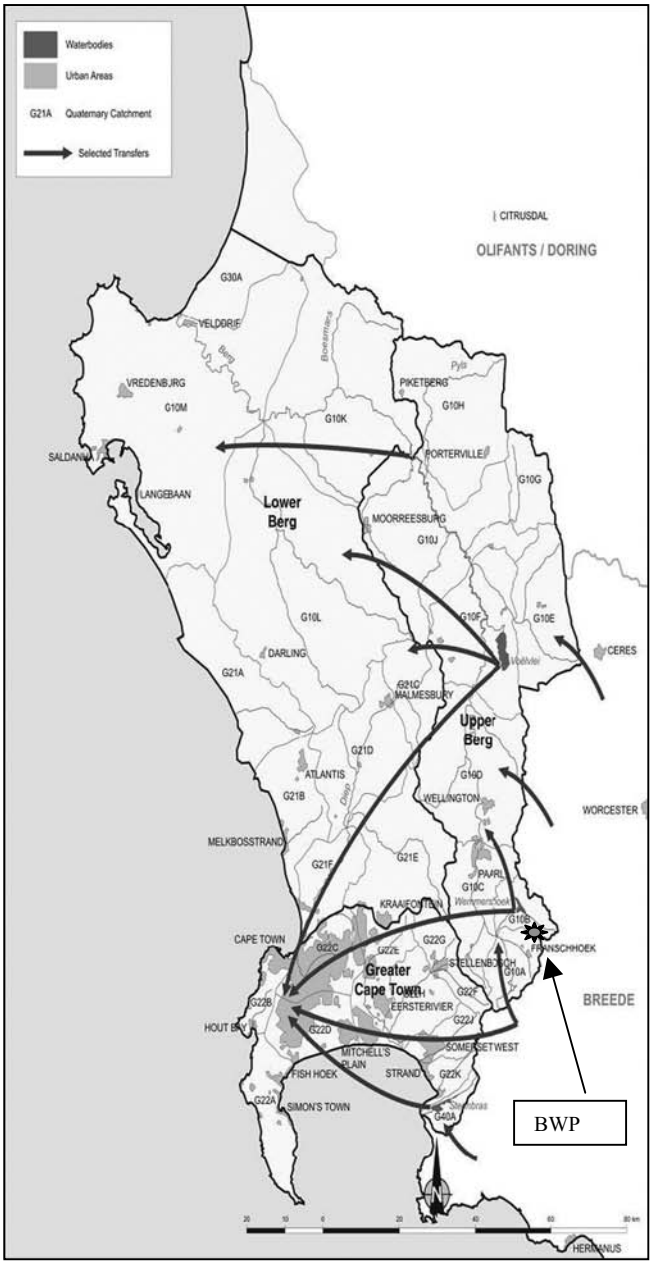
Agriculture accounts for 65% of land use in the Berg WMA and over half (54%) of the water demand. Historically irrigation demand has grown between 1% and 2% per annum.[2] Various crops are under irrigation along the mid and upper reaches of the Berg River, where estates and smaller farms produce high value table grapes, fruit and wines. Land around lower reaches of the Berg River has poorer soil conditions and is mainly cultivated for dry-land wheat production.

The story of irrigation water access in the middle and upper Berg River reaches is complex due to several contextual factors:[3]

- Upper Berg River Irrigation Boards used less than 60% of the allocated water from the system in 2005;[4]
- Agriculture operates on a 91% assurance of supply, as compared to 97% for the urban sector;
- Resource-poor farmers need better water access; and
- Existing farm estates having off-channel farm dams filled by pumping from the Berg River during winter, which makes scheduling and seasonal timing of irrigation uptake an important factor in allocations.[5]

Apart from water access, water quality is a primary concern to the commercial agriculture sector.[6]

Figure C.1. The Berg WMA map identifying the Berg Water Project location



Source: DWAF (First Edition of the NWS 2002)

Box C.1. Value of irrigated agriculture from the Berg River downstream of the Berg Water Project

Approximately 22,000 ha of farmland (more or less 600 farming units) rely on the Berg River for irrigation water supply. In 2006 water use entitlements equaled 128 million m^3/a.

Exports from these farms generate in the region of R462 million a year (over US$50 million/yr). On average 14,000 permanent and 16,500 seasonal workers are employed by the sector. Permanent employees in the agricultural sector represent 13% of the Western Cape's formal employment sector. According to recent studies, the agricultural sector adds on average a factor of 10.9 to every Rand of farm produce sold.

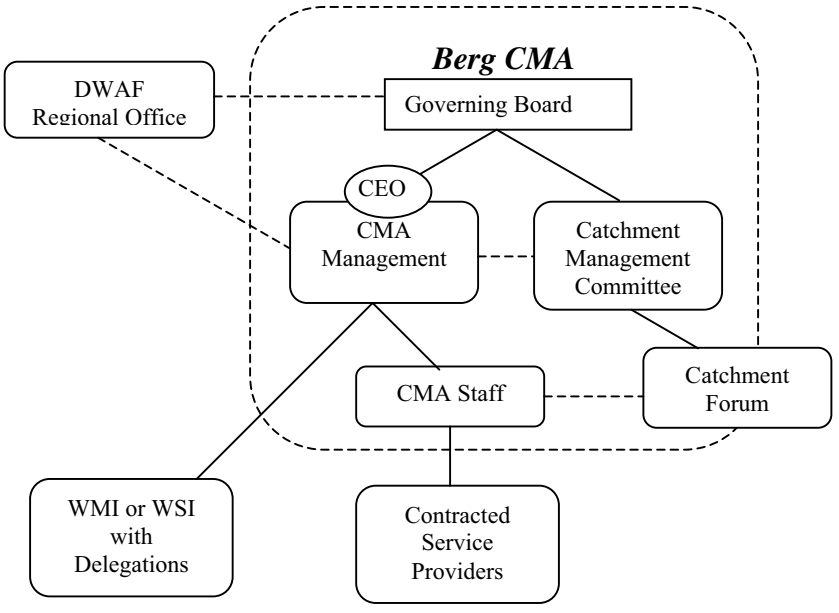
Source: Proposal for Establishing the Berg CMA (DWAF 2007)

The market context is that Berg River irrigators export primarily to Europe, where import standards are extremely sensitive to water quality at produce origin. In 2006 the CMA Reference Group dialogue indicated that, " . . . during the 2004/05 season, the export market was under severe threat when retailers and importers (in Europe) became aware of the many pollution spills in the river and seriously considered cancelling imports from the region. Should these (EU) countries stop imports, it could mean a loss of between R128-R385 million a year (over US$50 million a year). Box C.1 notes that irrigated agriculture otherwise make a substantial contribution to employment and the economy of the Western Cape. The multiplier effect of losses of export the economy could be devastating (Berg WMA, Reference Group notes 2006)."[7]

Berg Catchment Management Authority (CMA) establishment process

When construction of the BWP began in 2005, DWAF initiated a public participation process to establish the Berg CMA. This process was linked to the Berg reconciliation study initiated by DWAF looking concurrently at post-BWP scenarios for water demand and supply reconciliation.

Figure C.2. Organizational structure proposed in 2007 for the Berg CMA



Members of the multi-stakeholder CMA Reference Group elected by their respective interest groups also served on the interested and affected party committee for the Reconciliation Study, so that issues arising in each process could be cross-referenced.[8,9]

The proposal to establish the Berg CMA was submitted to DWAF for consideration in July 2007. It followed generic national guidelines disseminated by DWAF and advice offered by the DWAF Western Cape regional office. The proposal set out the proposed functions of the CMA, its organizational structure, and how the CMA would be funded (via water use charges on water users in the WMA).

Figure C.2 illustrates the institutional structure proposed. The CMA would have up to 60 fulltime staff when fully functional, initially operating with a small core staff and outsourcing as many operational functions as possible to existing and emerging institutions in the area. The initial task of the Governing Board and CEO was to develop a catchment management strategy—regarded as a process rather than a single event.

Notes

[1] Includes the Steenbras River catchment, and catchments of other smaller rivers in the draining into Table Bay and False Bay. The main stem of the Berg is about 160 km from headwater to the delta in the Atlantic. It rises in the Franschhoek and Jonkershoek mountains and flows northwesterly to the sea forming a delta at Laaiplek. There are 10 main tributaries in the 9,000 km2 catchment of the Berg. The lower reaches are flat, so salt water intrusion can reach up to 100 km upstream during high tide.

[2] Historically up to 2000. There was a decline in agriculture exports in the early 2000. The Reconciliation study (DWAF, 2006) suggests limited increases in irrigated areas along the Berg River will probably take place, perhaps growing at between 1% and 2% per annum.

[3] See the Berg CMA establishment proposal, 2006.

[4] Irrigation Boards are converting to WUAs will include all water users and uses in their area of operation. "Membership on a WUA Management Committee will therefore include farm labourers, resource-poor farmers, commerce and industry and municipalities. Depending on the delegated functions, WUAs will control surface and groundwater use in their area—one of the reasons why it is extremely important that all water users be represented on the Management Committee." Source: Proposal for the Establishment of the Berg CMA, submitted to DWAF, July 2007.

[5] The 19 Irrigation Boards in the Berg WMA that operated pre-1994 are now in various stages of transforming into multi-user WUAs.

[6] Namely registration of all surface and groundwater users, establishment of quotas and deciding whether in future permits will be tradable or not, etc., and on-farm water demand management.

[7] Proposal for Establishment of the Berg Catchment Management Agency, prepared by the stakeholders of the Berg WMA and facilitated by NOSIPHO Consulting (Pty) Ltd., DWAF, 2007.

[8] This part of DWAF's national program to accelerate preparation of CMS for WMAs that incorporated the counties major metropolitan areas. See "Planning The Water Supply For Growth And Development: A Situation Analysis By Chief Directorate: Integrated Water Resource Planning," DWAF 2007.

[9] The CMA Establishment Proposal notes, "…It further enabled both processes to focus on the best possible solutions for additional water supply to the Berg WMA be it the transfer of water from neighbouring WMAs, more effective water conservation measures within the WMA, or development of alternative water resources such as desalination."

APPENDIX D

World Commission on Dams (WCD) and Its Influence on South African Policy and the Berg Water Project

Many decision actors in Department of Water Affairs and Forestry and among interested and affected parties involved in the unfolding BWP public participation processes also became involved in the WCD process from 1998.[1] Immediately after the final WCD Report in November 2000, South African NGOs called for a moratorium on new dams (including the BWP) and for DWAF to issue a public statement of acceptance of the WCD Report.[2]

Coalitions of anti-dam NGOs and public-private sector bodies involved in dams each proposed hosting conferences to discuss South Africa response the WCD recommendations. Eventually a two-day multi-stakeholder symposium was agreed on and held in July 2001, jointly organized by the South African National Committee on Large Dams (SanCOLD), DWAF, the Environmental Monitoring Group (EMG), and IUCN, the World Conservation Union.

The Symposium concluded that South African's wider water governance framework was broadly supportive of the strategic priorities outlined in the WCD report, but many felt there was value to add contextualizing the WCD to South African situation (as the WCD report suggested all countries should consider). It was agreed to establish a multi-stakeholder Steering Committee (SC) for this purpose.

Looking at the BWP as a dam "in the pipeline," there was debate and disagreement on how the BWP planning compared to the WCD.[3] It might be said that the public, media, and political decision makers were further informed by the multi-stakeholder debate at the symposium. What followed was in a statement to the National Assembly in May 2002, the Minister for Water Affairs and Forestry cited consensus that the BWP conformed to the WCD when the cabinet endorsed the decision to start BWP construction and authorized TCTA to be implementing agency.[4] TCTA subsequently committed to implement the BWP, "…(with) every effort to comply with the Department of Environmental Affairs and Tourism (DEAT), DWAF, and World Commission on Dams (WCD) guidelines (TCTA, 2004).

South Africa Multi-Stakeholder Initiative on the WCD: Many senior figures from the government, civil society, and the private sector participated in the initiative. The Develompent Bank of South Africa also actively supported the initiative. A DBSA staff member was chairman of the Coordinating Committee and DBSA funded the civil society attendance at annual forum meetings.[5] Detailed recommendations were then provided in the Substantive Report (2004).[6] In its summary, "Applying the World Commission on Dams Report in South Africa" (2005) the Coordinating Committee's saw priorities in three main areas: (i) addressing

Box. D.1 Berg Water Project and World Commission on Dams links

BWP Project Preparation Phase (up to 2000)

- DWAF minister appointed WCD chair (1998)
- WCD formulates a development effectiveness (case study) based on Orange River Project pilot
- Various Submissions on the BWP to WCD
- National NGOs call for moratorium on dams when WCD Report is issued (Nov 2000)
- Presentation of BWP comparison with WCD recommendations at WCD Forum (Feb 2001)
- SA multi-stakeholder symposium on the WCD (July 2001) with further discussion of BWP.

Final BWP Approvals Phase

- Minister formally links approval of the BWP to conformity to the WCD (May 2002)
- National Assembly statement links approach on BWP to WCD recommendations (June 2002)
- Set up of the South African Multi-Stakeholder Initiative on WCD, funded by the DDP-UNEP

BWP Implementation Phase

- TCTA commits to implement BWP in the framework of the NWA reflecting WCD
- EIB cites consistency with WCD as a major factor in financing the BWP
- Three multi-stakeholder initiative forms (from July in 2002 to 2004) on contextualization of WCD to South Africa policy and practice
- Substantive Report of the Initiative (2004)
- Final South Africa Report on WCD (2005)

social impacts, (ii) enhancing governance of water and energy resources development, and (iii) promoting river health and sustainable livelihoods. These priorities are summarized in Table D.1.[7] Perhaps what is most relevant in the BWP was the call for more attention to benefit sharing in connection with the WCD Strategic Priority 5: "Recognizing Entitlements and Sharing Benefits." The following were among the specific recommendations made by the Coordinating Committee:

(iii) (Recommendation B 6.6.2) "Legally binding contracts between dam affected communities, developers and government should be entered into. An important issue to consider here is the best mechanism by which to ensure that communities actually benefit over a period of 10–20 years."

(iv) (Recommendation B 6.6.5) "Develop mechanisms to implement the principle that affected people should be entitled to a reasonable share in benefits from a dam, which could include a share in revenue or benefits from tourism, electricity generation, industry, mining, agriculture and all other benefits. Affected people also require access to dams—for instance where graves are under the water. Explore the feasibility of establishing a Community Trust Fund system as a project benefit sharing mechanism, through a levy that would go through the water pricing structure."

Table D.1. Multi-stakeholder priorities adapting the WCD to South Africa

Social Impacts/ sustainability	Enhancing governance of water and energy resources	River health &sustainable livelihoods
■ Explore and implement mechanisms for recognizing entitlements and sharing benefits for *new* dams ■ Address unresolved social concerns from *existing* dams	■ Improve integration of water resources in macro planning ■ Enhance public participation ■ Build capacity and allocate finance to facilitate empowerment ■ Develop and implement M&E systems ■ Promote demand management ■ Promote regional good governance (southern Africa)	■ Prioritize resources needed to sustain rivers ■ Maintain existing pristine rivers ■ Monitor river systems against objectives of the Reserve (ecological & basic human needs) ■ Agree methodologies to determine environmental water requirements on a regional scale

Source: Final Report of the South Africa Multi-Stakeholder Initiative on the WCD (2005)

Notes

[1] As a first step, the Secretariat prepared a pilot study of South Africa's Orange River Development Project, focusing on the Gariup and Vandekloof dams between October 1998 and March 1999. The purpose of this pilot was to look at the South African's experience both through an international lens and through eyes of local stakeholders, then develop consensus on the approach the WCD's own program of worldwide case studies to assess the development effectiveness of large dams in different settings. These informed the Commission about global thinking on the development effectiveness of large dams and alternatives, and issues associated with the planning, design, appraisal, construction, operation, and decommissioning of dams.

[2] An initial comparison of the BWP to the WCD was presented by DWAF at the third and final WCD Forum in Cape Town, Feb 2001.

[3] "John Taylor of Skuifraam Action Group (SAG) detailed the need for a multi-stakeholder review of the BWP as a dam in the pipeline. Environmental NGOs put forward in a letter to Minister Kasrils in Feb 2001 by EMG arguing the WCD proposal should be strictly followed and proposed a ëCollaborative Research Project Analysing the Skuifraam Dam Proposal against the Recommendations of the World Commission on Dams.' The proposal from SAG was to have a joint or collaborative study of the Skuifraam Dam using the WCD Report and re-visiting whether or not the dam was needed in light of the WCD recommendations. That noted that if a joint study clearly and unambiguously illustrates that the dam is indeed the last resort and is the best option, then SAG would support it. Alternatively, if this collaborative study highlights the feasibility and true economic viability of alternatives, then these should rather be pursued. They argued this would really demonstrate the power of the WCD, and the commitment of the South African Government to implementing the WCD Recommendations. This responded to a radio interview where DWAF's Regional Director invited groups to send proposals and ideas on responding to the WCD" (source communication with Liane Greeff, SAG member).

The opposite view was taken by Ninham Shand (on behalf of DWAF), the consulting firm that handled many of the project preparation studies stakeholder dialogue processes under contract to DWA. This submission reviewed the planning, environmental, and public processes undertaken to ascertain the degree of compliance with each of the 26 guidelines, and thus identify any shortcomings in the process, and secondly, to comment on the applicability of the guidelines to the Skuifraam scheme (given the environmental and legislative context in South Africa). With regard to the applicability of the Guidelines to the Skuifraam Scheme, it was concluded that not all have general applicability, and that there was inadequate cognisance of the local legal and institutional aspects. Furthermore, the guidelines are difficult to relate to the various stages of the planning cycle, variable in level of detail and open to interpretation. Nonetheless, they comprise a sound basis for decision making and promote best practice, integrity, accountability and the adoption of holistic perspective. Source http://www.shands.co.za/04recent.html#03.

[4] Consensus that the BWP conformed to the WCD was cited in the ministerial statement to the National Assembly in May 2002, announcing its approval, endorsed by cabinet. TCTA subsequently committed to implement the BWP, "…(with) every effort to comply with the Department of Environmental Affairs and Tourism (DEAT), DWAF, and World Commission on Dams (WCD) guidelines" (TCT, 2004).
[5] Brian Hollingworth from DBSA was chairman.
[6] http://www.unep.org/dams/files/SA_Initiative_Final_Report.pdf
[7] Applying the World Commission on Dams Report in South Africa http://www.emg.org.za/documents/SA%20Initiative%20on%20the%20WCD%20-%20Summary%20Report.pdf.

APPENDIX E

The WC/WDM and Berg CMA Communication Strategies

The Berg Water Project emerged as the first bulk water supply project in waste-stressed South Africa directly linked to water demand management. At the same time South Africa was establishing the Berg Catchment Management Authority. Linking communication strategies of the three exercises was important to reinforce the role each activity played in water management reform.

The following is a brief description of the communication strategies for WC/WDM and establishing the Berg CMA respectively.

WC/WDM Communication strategy: It is generally accepted that a comprehensive communication strategy is required to successfully implement demand-side management. Behavior change and actions of many people are required, not just the actions of the water utility. Initially the CCT communicated its WC/WCD strategy internally to various city departments involved in supply-side efficiency measures (e.g., pressure reduction and investments to control technical and non-technical leakage). In parallel, social intervention programs were developed with five components:[1]

- Awareness
- Communication
- Education
- Public participation
- Introduction of an indigent plan

As noted, today there are still dramatically different perceptions about what the CCT has accomplished in this area. On one hand, CSOs claim the CCT is not visibly promoting demand-management, and on the other hand, the CCT has won awards for its Water Awareness campaigns, the most recent being the Green Trust Award in 2008.

Communication-based analysis (CBA) was particularly important to better understand communication needs and weaknesses in advancing WC/WDM strategies. One example of CBA analysis in macro planning was the perception audit that DWAF undertook as input to the WC/WDM component of the NRWS first edition in 2002. This audit evaluated the attitudes, perceptions, and behavior of head and regional office staff toward the paradigm of water conservation and water demand management. It aimed to gain a better understanding of how well the concept was entrenched within DWAF and on that basis, design a communication and capacity building plan to improve DWAF support in implementation of sector WC/WDM strategies.[2]

The audit concluded poor internal communication constrained the entrenching of WC/WDM in operational activities. It recommended a communication strategy setting out clear roles and responsibilities to ensure DWAF internally made the paradigm shift from traditional supply-side management to demand-side management. The analysis Box E.1 illustrates communication objectives DWAF set.[3]

Box E.1. Short-term internal communication objectives to advance Water Conservation and Water Demand Management within Department of Water Affairs and Forestry

1. To create awareness and understanding of WC/WDM
2. To influence the water demand attitude of stakeholders
3. To influence the culture of non-payment of some stakeholders
4. To promote successful WC/WDM initiatives both nationally and internationally
5. To incorporate WC/WDM information into national communication initiatives
6. To capacitate WC/WDM staff (in DWAF headquarters and regional offices) with regards to general communication and marketing principles
7. Integrated communication & marketing strategy, DWAF 2001

Catchment management authority (CMA) communication strategy: In the discussion of the steps to form the institutions that comprised the Berg CMA and prepare the first catchment management strategy, the multi-stakeholder CMA Reference Group was the formal platform for interested and affected parties dialogue, similar to the Berg CMC at the project level.

In respect to the Reference Group's composition and communication, the following are relevant:

- The Reference Group (and ultimately CMAs) must have appropriate community, racial, and gender representation agreed upon by all stakeholders and parties (WRA, 1998);
- The first function of the Reference Group was to consult with all organizations involved in water matters to identify representation appropriate to community participation and stakeholder empowerment in the full spirit of the legislation;
- Fifteen different water-use and water interest sectors were invited to the establishment meeting of the Reference Group in 2005. The representatives from these sectors subsequently elected 63 members to continue (see endnotes for the sectors represented).[4]
- From 2005 to 2007, there was a gradual process of awareness building (via meeting and link to work on the Berg CMA demand-supply reconciliation study.[5] A communication strategy was prepared for the CMA establishment processes and for the subsequent CMA operation.

DWAF's regional office provided the communication support in the CMA formulation stage. The communication strategy sought to "align stakeholders and the public to a common vision for Integrated Water Resource Management (IWRM) and develop, capacitate and empower the new water entities to best practices," and (ii) "co-ordinate development and implementation of the catchment management strategy, compliance audits and ensure well-informed staff and stakeholders." The budget to prepare the communication strategy was R50,000, part of R36 million business plan for communication, training, and capacity building component for the 2005/06 and 2006/07 period.

CBA was used in evaluations to calibrate the strategy going forward. For example, one such analysis looking at representation, participation, and power relations on the CMA Reference Group found (i) interested and affected party interests were well represented on the Reference Group, (ii) although there were indications that participation was uneven at times, it got better as the process continued, however, there was still room for improvement, and (iii) where sectors dominated proceedings it was unintentional; power relations between

the different interests in the Reference Group seemed to be non-conflicting and the power distributing cleavages were decreasing. This helped inform the process managers.[6]

Reference Group members who helped establish the budget priorities for the CMA in the final version of the establishment proposal saw communication capacity as key for the "effective functioning of the new water institutions in the basin."[7] They did not underestimate the challenges they would face ahead in reaching consensus on difficult water management issues, including tradeoffs in the management of existing water infrastructure. With full knowledge of difficulties the Berg environment monitoring committee faced in its first years, they recommended, " . . . the CMA should make a concerted effort to resolve any disputes within the WMA . . . using outsourced services such as the Centre for Conflict Resolution in Cape Town."[8]

Notes

[1] Final Draft, Dec 05 Social interventions.
[2] "Evaluation of the DWAF Head Office staff—Pretoria, Attitude, Perceptions and Behavior toward the Paradigm of Water Conservation and Water Demand Management." 2001.
[3] http://209.85.135.104/custom?q=cache:MeTur1siS4sJ:www.dwaf.gov.za/WaterConservation/WordDownloads/AddendumA.doc+communication+guidelines&hl=en&ct=clnk&cd=13&client=google-coop-np
http://209.85.135.104/custom?q=cache:uDwBocrDHtcJ:www.dwaf.gov.za/WaterConservation/WordDownloads/DWC_communication_strategy.doc+Communication+strategy&hl=en&ct=clnk&cd=8&client=google-coop-np.
[4] The meeting of the Berg CMA Reference Group in 2005 identified the various sectors that would be represented, including three representatives each from the following:

- Aquaculture;
- Commercial farmers;
- Community Organisations;
- Emerging Farmers;
- Environment and Conservation
- Forestry
- Industry and Commerce;
- Local Government;
- Provincial and National Government;
- Research and Education
- Tourism and Recreation;
- Urban Water Users;
- Water User Associations.

[5] People were then elected to also participate in the Reconciliation Study.
[6] This enabled the Reference Group to understand better what each interest saw as key water management issues and also to see the performance issues around water infrastructure in the basin. Then as a body the Reference Group considered proposals from sub-specialists supporting the dialogue on the functions of the CMA. They either endorsed these or formulated new proposals.
[7] Specifically linking adaptive management of the downstream releases from the BWP to a dynamic process for validating the ecological component of the Berg Reserve and water quality-quantity status.
[8] Berg CMA Proposal, April 2007 and http://www.dwaf.gov.za/Masibambane/documents/strategies/pwsp/wc/wc-business%20plan.pdf.

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Note

[1] http://www.dams.org/docs/kbase/submissions/env199.pdf.

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