A POLITICAL POLICY ANALYSIS OF THE INTEGRATED WATER RESOURCE MANAGEMENT APPROACH IN SOUTH AFRICA'S WATER POLICY (1998 – 2001)

by

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ABBREVIATIONS/ACRONYMS

ANC	African National Congress
CEO	Chief Executive Officer
CMA	Catchment Management Agency
CMS	Catchment Management Strategy
COAG	Council of Australian Governments
DPLG	Department of Provincial and Local Government
DSE	German Foundation for International Development
DWAF	Department of Water Affairs and Forestry
EC	European Commission
EU	European Union
GIS	Geographic Information Management System
GNI	Gross National Income
GWP	Global Water Partnership
ICM	Integrated Catchment Management
IO Water	Organisation of Water Management in France
IRC	International Water and Sanitation Centre
IWMI	International Water Management Institute
IWRM	Integrated Water Resource Management
LHWP	Lesotho Highlands Water Project
MDBC	Murray Darling Basin Committee
MRC	Mekong River Basin Commission
NSW	New South Wales
NWRS	National Water Resource Strategy
OIEAU	Office International de l'Eau
O&TS	Operational and Technical Support
PRC	People's Republic of China
SADC	Southern African Development Community
SDAGE	Master Plan for the Development and Management of Water Resources
TRAC	Transvaal Rural Action Committee
UK	United Kingdom
UNCED	United Nations Conference on Environment and Development

UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USA	United States of America
WB	World Bank
WHO	World Health Organisation
WMA	Water Management Area
WMO	World Meteorological Organisation
WUA	Water User Association
WWC	World Water Council

CHAPTER 1

INTRODUCTION

1.1 GENERAL INTRODUCTION

South Africa is an arid country with limited water resources. Prior to the discovery of gold and diamonds in South Africa during the second half of the nineteenth century, the availability of water resources had a significant influence on the demographic patterns of the population. With the arrival of the first European settlers during the early 1650s, they brought with them cultures, values and norms that had a determining effect on the use of water resources. Access to and the use of water resources were linked to the ownership of land (i.e. property rights) adjacent to a water resource — known as the riparian principle. This principle and the progressive legislative entrenchment of racial segregation since 1913 resulted in investment in and development of water resources that were detrimental to the majority of the population residing in the so-called black townships and the nominally independent homelands. Since property rights were primarily confined to the racially defined white minority group of the population, their access and use of water resources were utilised to stimulate agricultural development, economic growth and addressing basic human needs.

On 27 April 1994 South Africa had its first democratic elections. The African National Congress (ANC) won by a considerable margin. The newly elected government subsequently committed itself to address all the past injustices associated with colonialism and the policy of apartheid. After intensive research conducted by the Department of Water Affairs and Forestry (DWAF) and other local and international research institutions, the South African government adopted a new water policy. The policy objective is to ensure a more equitable allocation and redistribution of water to all end-users. The essence of the policy is primarily legislated in the *National Water Act, 1998* (Act No. 36 of 1998). The *National Water Act* (hereafter the 1998 *Water Act*) abolished the riparian principle, defined water as a common-pool resource and government assumed the role as the self-appointed trustee of the country's water

resources. The main feature of the water policy is the incorporation of the integrated water resource management (IWRM) approach in the 1998 *Water Act*.

The IWRM approach is characterised by the integration of society and natural resources. The integration of society refers to the active involvement of water users in water institutions at the level of scientifically defined catchment areas. A catchment area is a natural geographical area where the surface and groundwater naturally flows or drains into a common watercourse such as a river. The integration of natural resources refers to the management of water, land and other related resources without endangering the sustainability of the ecosystem. Water is regarded as a finite and precious resource that ought to be managed in such a way that it is beneficial to social welfare, economic development and ecological sustainability. Two essential features of the IWRM approach are the classification of water as an economic good and the holistic element (stakeholder participation in the political decision-making processes and the role of women) in its application (World Bank 1993; GWP 2000; Van Hofwegen 2001; WMO 2004).

Without going into the historical development of the IWRM approach it suffices to state that it is the product of water policies in developed countries such as Australia, France, Germany, the United Kingdom (UK), Canada and the United States of America (USA). Concerns by environmentalists and the scientific community during the early 1990s about the deterioration of water quality (caused by human activities and industrial pollution) and the limited quantity of water resources, subsequently led to widespread support for the IWRM approach (Schlager and Blomquist 2000, 3). At the June 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, governments in developed and developing countries were encouraged to incorporate the IWRM approach in their water policies (UN 1997).

Although the practical incorporation of the IWRM approach in the aforementioned developed countries is relatively successful, developing countries appear to encounter numerous obstacles. These obstacles include, amongst others, aspects such as the lack of adequate financial resources, the absence of scientific and technical knowledge,

inadequate data and a general lack of capacity. The prevailing cultural norms, values, political structures and the level of economic development also contribute to the challenges facing developing countries that have adopted the IWRM approach.

1.2 THE RESEARCH PROBLEM

The development and operational successes of the IWRM approach in developed countries can be contributed to numerous factors. These countries have predominantly homogeneous societies that embrace similar norms, values and institutions. Their adherence and commitment to democratic principles, individualism, the market system and the perceived role of the state to enhance public welfare are significant elements to support the IWRM approach. Apart from possessing high levels of technological and scientific knowledge, the water institutions of developed countries are either financially self-sufficient institutions or receive appropriate financial support from the state. It is doubtful whether developing countries share the same attributes as developed countries.

1.2.1 The problem statement

With the promulgation of the 1998 *Water Act* the South African government embraced a new water policy that signifies a paradigm shift. The riparian principle was abolished, water is defined as a common-pool resource and there is legislative commitment to the progressive implementation of the IWRM approach. Since the IWRM approach has its foundation and application in developed countries with homogeneous societies, it raises the following research question: Is the incorporation of the IWRM approach in South Africa's water policy politically appropriate from a policy perspective?

The level of economic development and the cultural values of society in a country will influence the political appropriateness of the IWRM approach. The World Bank (WB) utilises the *per capita* gross national income (GNI) of a country as a criterion to classify states as either developed or developing countries. South Africa is accordingly classified as a developing country (WB 2004). It has a multicultural society that represents two

dominant cultures, namely a modernised Western culture and a traditional African culture. As a result of this the different segments of society embrace different norms, values and institutions. The prevailing cultural differences are also exacerbated by an income disparity along the lines of the dominant cultural groups.

Due to the multicultural nature of society and the income disparity within society, two sub-problems emerge. The first sub-problem relates to the question as how to ensure the commitment and impartiality of all the stakeholders that partake in the decision-making processes of water institutions at all levels (the stakeholders include water users, interest groups, scientists and institutions representing local, provincial and central government). The second sub-problem relates to the establishment of small, efficient and financially viable bureaucratic structures (water institutions) at the level of water management areas (WMA). The water institutions to be established could develop into large bureaucratic structures.

1.2.2 The hypotheses

The research problem and its sub-problems hinge on three hypotheses. The first hypothesis is that the level of cultural homogeneity within a society influences the degree of commitment and the impartiality of the stakeholders involved in the decision-making processes of water institutions. The second hypothesis is that the level of economic development as well as the status of technological and scientific knowledge within developing countries determine the bureaucratic structure, efficiency and financial viability of water institutions. The third hypothesis is that if the first and second hypotheses are valid, the incorporation of the IWRM approach in South Africa's water policy needs to be contextualised to reflect the prevailing economic and multicultural characteristics of society in order to be politically appropriate and feasible.

1.2.3 The delimitation of the research problem

The study primarily focuses on the first implementation phases of the IWRM approach during the period 1998 to 2001. Prior to the 1998 *Water Act,* DWAF played a significant

role in the development of South Africa's water policy. Preliminary studies were conducted to establish a legislative framework for the new water policy. After the promulgation of the 1998 *Water Act*, DWAF was able to take the initiative and begin with the preliminary investigations that paved the way for the progressive implementation of the IWRM approach. Although no water management institutions were established during the period 1998 to 2001, progress was made with the drafting of proposals for the establishment of water management institutions for certain geographical areas. Hence the study covers this period only; an operational demarcation justified by the fact that at the end of 2004, none of the proposed institutions had yet been established.

Based on the assumptions that South Africa is a developing country, has a multicultural society (dominated by the modernised Western and traditional African cultures) that reflects a marked disparity in income, the preliminary studies of DWAF and the 1998 *Water Act* provide valuable information to analyse and assess the IWRM approach. Specific aspects related to the application of the IWRM approach in France, Australia, Indochina and Sub-Saharan Africa are also used to identify and compare some major policy challenges facing South Africa as a developing country. Information prior to 1998 and after 2001 is only used for background and concluding purposes. It is strongly believed that this does not affect the outcome of the study. The aforementioned period, namely 1998 – 2001, is therefore the primary focus to analyse and assess the general principles of the IWRM approach as incorporated in the South African water policy.

1.3 THE IMPORTANCE OF THE STUDY

South Africa is a young democracy. Although the government has committed itself to democratic principles and the free market system, the individuals within society representing different cultures do not necessarily share the same norms and values. Whereas the modernised Western culture emphasises individual rights, freedoms, implicit free market rules and the limited role of the state, the African culture does not necessarily subscribe to the same norms and values. The economically influential segment of society,

which is not the majority of the population, not only appears to subscribe to Western cultural values but still influences national politics. Given the fact that the IWRM approach is a product of developed countries, it has to be contextualised to reflect the prevailing political, economic and cultural realities of South Africa.

Various aspects of the IWRM approach in the water policy need to be analysed. The first deals with the jurisdiction areas of water institutions. South Africa is geographically divided into nineteen catchment management areas without taking into consideration the current national, provincial and municipal boundaries. Who will be responsible for what? The second aspect is the holistic element of the IWRM approach. To ensure an active and constructive participation in the decision-making structures of water institutions and the management of water resources, cognisance has to be taken of the multicultural values of society and the different interest groups. Who will represent whom in the proposed water institutions?

Closely related to the issue of representation is the decision-making power of water institutions. Although the powers, functions and duties of catchment management agencies (CMA) have been defined in the 1998 *Water Act*, the question of decision-making is not addressed. Since every catchment management area will have its own unique political, economic, cultural and physical characteristics, the decision-making arrangements will have to reflect these realities. If the principle of consensus is observed in the decision-making process, it implies that everyone affected by or affecting a water resource, irrespective whether they reside in or outside the 'naturally defined boundaries' of a catchment area, must be involved in the decision-making process. There is also the hidden risk that the stakeholders could lose interest in the functioning of water institutions if they negatively perceive representation and the role of representatives in the decision-making activities of CMAs as ineffectual or inefficient.

A third aspect is the significant role that DWAF plays in the establishment and functioning of CMAs. Given the predominant role of scientific and technical knowledge in the implementation of the IWRM approach, the various water agencies at catchment

level could impede the proposed policy making abilities of the institutions if technocrats dominate them. Such domination could lead to the establishment of large bureaucratic structures that require adequate financial resources. There is also the risk that large bureaucratic CMAs may focus on their own needs without paying sufficient attention to the water related needs and economic challenges of society.

The fourth aspect relates to the financial aspects of the IWRM approach. The CMAs have to be financed by the state as well as the stakeholders. Will market rules be used to determine the price of water and who will be responsible for the financing of the CMAs? There can be no doubt that communities may eventually have to provide the financial support for the functioning of the CMAs. If the financing costs of the water institutions as such overshadow the benefits for society, their structures or existence may have to be reconsidered by the policy makers. The reluctance or inability of individuals to pay for the water that they enjoy — also referred to as the free-rider problem — may also have a negative impact on the financial aspects of water management. This problem is exacerbated by the cultural values attached to water as a common-pool resource as well as by perceptions among society about the role of the state in the management of water resources.

From the aforementioned aspects it is clear that there is indeed a need to analyse the political appropriateness of the IWRM approach in South Africa's water policy. To be effective it has to be contextualised so as to reflect the political, economic, cultural and geographic realities of South Africa.

1.4 METHODOLOGY AND DATA SOURCES

1.4.1 Methodology

The research methodology is influenced by the fact that the IWRM approach was generated in developed Western countries where individualism, free market principles,

democratic values, the rational way of organising the state and its role in public welfare are embraced by the body politic. The public choice theory is therefore employed to analyse the IWRM approach in South Africa's water policy. Public choice has its roots in Western culture. It regards water as a common-pool resource with unrestricted access. Since property rights are not clearly defined, the unrestricted access to water resources may result in overexploitation, pollution and the development of the free-rider problem. Since the aforementioned results constitute market failures, the public choice theory purports that the state has a definite role to play in the management and protection of common-pool resources to avoid or minimise the collective problems affecting society at large.

The methodological approach is of a qualitative and descriptive nature that employs the public choice theory to examine the political appropriateness of the IWRM approach in South Africa's water policy. It is used to analyse and assess specific elements of the IWRM approach against the background of the cultural, economic and political differences between developed and developing countries.

In order to provide an overview of the use of the IWRM approach in both developed and developing countries, as a background to its introduction in South Africa, limited use is made of selected albeit representative case studies. The case studies of the IWRM approach in France and Australia are described and compared with the implementation of the IWRM approach in Sub-Saharan Africa and Indochina. The study is theoretically deductive, but the case studies and the South African applications are dealt with in an inductive manner. Since the IWRM approach is being implemented progressively in South Africa over a period of time[*], the study will identify the most probable obstacles that may inhibit the anticipated economic and political benefits for various communities.

1.4.2 Data sources

For the general exposition of the public choice theory, the study used information obtained from various academic publications such as Mueller's *Perspectives on public*

[*] At the end of October 2004 no CMA has been officially established.

choice (1997); *The economics of public choice* (McNutt 1996); *Government by the market? The politics of public choice* (Self 1993); *Current issues in public choice* (Pardo, José and Schneider 1996); and *Policy choices and public action* (Bonser et al. 1995). Other basic sources regarding the expansion of bureaucratic structures to promote self-interest include Tullock's *The economic theory of bureaucracy* (1997); *Modern bureaucratic theory* (Wintrobe 1997); and *The positive theory of public bureaucracy* (Moe 1997).

Primary data regarding the common-pool resources were obtained from various papers presented at the 7th and 8th annual conferences of the International Association for the Study of Common Property that were held in June 1998 in Vancouver, Canada and in June 2000 in Bloomington, United States of America (http://www.indiana.edu). The study used the following papers that were obtained from the World Wide Web: *Assessing Common Property Institutions* (Kolavalli, Shashi and Brewer 1998); *Assessing common property institutions in the South African countryside* (MacDonald 2000); *Rethinking Key Assumptions in Natural Resource Management: Drawing Lessons from the Case of Water* (Metha 2000); and *Local communities, prescriptions, and watershed management in Arizona, California and Colorado* (Schlager and Blomquist 2000). Other valuable sources include *Analyzing Policy Reform and Reforming Policy Analysis: An Institutional Approach* (Oakerson and Walker 1997); and *Institutional Rational Choice: An Assessment of the Institutional Analysis and Development Framework* (Ostrom 1999).

With regard to the different modes of thought between Western developed homogeneous societies and traditional societies in Sub-Saharan Africa, the study made use of the following academic publications: *How not to compare African thought with Western thought* (Wiredu 1998); *Human Nature and the quest for community* (Wolfe 1995); *Afrocentric or Eurocentric? Our task in a multicultural South Africa* (Van der Walt 1997); *"Kultuur, lewensvisie en ontwikkeling: 'n Ontmaskering van die gode van onderontwikkelde Afrika en die oorontwikkelde Weste"* (Van der Walt 1999); *Aids in Africa: the socio-cultural roots of disease* (Serpa 2002); *The Curious Coincidence of Feminine and African Moralities* (Harding 1998); *African Philosophy: An Anthology*

(Eze 1998); and *Government confronts culture: The struggle for democracy in Southern Africa* (Fuller 1999).

Information regarding selected cultural characteristics of the South African society was obtained from Berold's (2004) article entitled "*Women and Water: How is Gender Policy Working on the Ground";* the case study "*Worldviews and decision making: Natural resource management of the Laka of Mapela in an anthropological perspective*" (Eckert, De Beer and Vorster 2001); the Transvaal Rural Action Committee's written submission to Parliament regarding the proposed *Communal Land Rights Bill* in November 2003 (http://www.uwc.ac.za/); and numerous preliminary studies regarding the proposed establishment of water management agencies that were conducted on behalf of DWAF (http://www.dwaf.gov.za) and the International Water Management Institute (IWMI) (http://www.iwmi.org).

The Internet was extensively used to obtain primary data on the official websites pertaining to the IWRM approach as such and the implementation of the IWRM approach in France (http://www.oieau.fr/anglais); Australia (http://www.mdbc.gov.au); the Mekong River Commission (http:// www.mrcmekong.org) in Indochina; and DWAF. Primary data regarding South Africa's water policy was obtained from the official website of DWAF; the *White paper on a national water policy for South Africa* (1997); and the *National Water Act, 1998* (Act No. 36 of 1998). The study also consulted the official websites of the Global Water Partnership Forum (http://www.gwpforum.org); the Global Water Partnership (http://www.comsci.org); as well as the World Water Council (http://www.worldwatercouncil.org); and the World Water Commission (http://www.worldwatercommission.org).

1.5 REVIEW OF LITERATURE

Since the public choice theory and the IWRM approach are entrenched in Western developed countries where individualism, free market principles, democratic values and the role of the state are embraced by the body politic, the study employs the public theory to analyse South Africa's water policy. The proponents of the public theory postulate that

self-interest is the major incentive for bureaucrats in government institutions (Gunning 2002; Self 1993). In the process to promote their own interests, McNutt (1996) and Tullock (1997) argue that government bureaucracies tend to expand. The ultimate objective is not to provide goods and services merely for the benefit of the intended beneficiaries, but to promote own status, power and influence (Parsons 1995; Self 1993). The proposed water institutions in South Africa could lead to the establishment of large bureaucratic structures that are not financially viable and therefore from a public policy perspective, inappropriate.

The major proponents of the public choice theory (Gunning 2002; Self 1993; Dye 1995; Pardo and Schneider 1996; Tullock 1997) argue that the role of governments should be limited; and that the functions of government should be guided by market concepts of competition and efficiency. However, Fuller (1999) argues that the opposite applies for developing countries since the state is viewed as the provider of goods and services.

The public choice theory classifies water as a common-pool resource freely available to society at large. However, the overexploitation of it could result in a depletion of the natural resource. Ostrom and Walker (1997) posit that the free-rider problem is one of the major collective action problems experienced by governments responsible for providing public goods (Dunn 1994). According to Gunning (2002); Schneider and Ingram (1997), this problem can be addressed by appointing an outside agent to manage the resource.

A brief survey of the literature on water as a common-pool resource has revealed that policy scholars such as MacDonald (2000), Ostrom (1999), Lam, Lee and Ostrom (1997), Oakerson and Walker 1997), tend to focus on homogeneous societies sharing the same values and institutions. These values and institutions are reflected in their decision-making activities and rules in relation to the management of water resources. Metha (2000) therefore argues that cognisance must be taken of the indigenous knowledge systems of communities. It seems that Western scholars tend to base their arguments on the assumption that nature is an entity to be subdued and managed in such a manner as to further the interests and improve the livelihood of individuals. According to Harding

(1998) the traditional African culture views man and nature as one – i.e., man must live in harmony with nature. According to Van der Walt (1997) water in the African culture is not just regarded as an economic good but also has other cultural characteristics that need to be observed.

What appears to be neglected in most of the studies is the fact that the cultural differences between Western and African societies permeate all human activities and ways of thought. Van der Walt (1997) postulates that whereas the African culture in general emphasises the importance of the community, the emphasis in the Western culture is on the individual. Support for this is found in the works of Harding (1998), Eze (1989) and Wiredu (1998).

The review of the literature has indicated that most of the studies regarding public goods were conducted in cultural homogeneous societies. The conclusions drawn from these studies are unlikely to contribute enough to facilitate a better understanding of the prevalent institutions in developing countries. It appears as if researchers use the concept of the 'rational individual' as a point of departure. The concept of individuality is a product of Western thought. It seems as if this 'limitation' tends to be ignored by researchers. There is a need for a new approach that is based on the cultural orientations of societies in developing countries.

The political dimensions resulting from the implementation of the IWRM approach are grossly neglected by the majority of literature on the subject. Schlager and Blomquist (2000) argue that little attention has been given to the decision-making mechanisms of water institutions as well as the political and socio-economic implications of defining boundaries in terms of scientific considerations. Scholars such as Abernethy (2001); Chenoweth (1999); Shah, Makin and Sakthivadivel (2001) attempt to validate that the IWRM approach needs to be contextualised to respond to the socio-economic problems confronting societies in developing countries.

1.6 STRUCTURE OF THE RESEARCH

The first chapter briefly introduces the development of South Africa's water policy prior to the first democratic elections in April 1994 and the subsequent adoption of the current water policy that incorporates the IWRM approach. It focuses on the research problem, the hypotheses, the delimitation of the research problem and the importance of the study. Reasons are provided for using the public choice theory to analyse certain elements of the IWRM approach in the water policy. It also gives a concise review of the literature regarding the public choice theory, the application of the IWRM approach in developed and developing countries, as well as the data pertaining to South Africa's water policy and the multicultural characteristics of society at large.

The second chapter focuses on the basic assumptions of the public choice theory, collective problems affecting society as a result of the overexploitation of water as a common-pool resource and the expansion of bureaucratic institutions. It also defines the IWRM approach and certain IWRM elements that may have political implications for society at large. The applicability of public choice concepts with reference to the cultural differences between traditional Western and African cultures are briefly alluded to.

The third chapter describes specific elements of the IWRM approach in France and Australia and the relative successes of it in terms of the public choice theory. Since developing countries do not share the same characteristics as developed countries, the implementation of the IWRM approach in Indochina and selected countries in Sub-Saharan Africa is briefly described. This is done in order to expose some of the institutional problems, inadequate financial resources, the lack of capacity and cultural aspects that inhibit the efficiency and effectiveness of the IWRM approach in developing countries.

The fourth chapter analyses selected aspects of the legislative framework for the implementation of the IWRM approach in South Africa. It focuses on the prelude to the policy change, the partitioning of the country in nineteen water management areas, water institutions and interdepartmental co-operation.

Given the economic and diverse multicultural realities of society, the fifth chapter focuses on selected cultural aspects of the historically disadvantaged segment of society that may have an influence on the implementation of the IWRM approach. It looks at the concept of public participation in water institutions, the possible development of large bureaucratic institutions and the financial aspects associated with the proposed establishment of the water management agency for the Inkomati River basin.

The final chapter evaluates the appropriateness of the IWRM approach as adopted in South Africa's water policy against the background of economic, political and the selected multicultural characteristics of society at large. The expected challenge regarding public participation, gender representation, and the establishment of efficient and financially viable bureaucratic structures (water institutions) at catchment level are highlighted.

1.7 CONCLUSION

To ascertain the appropriateness of the IWRM approach in South Africa's water policy, the following chapter focuses on the public choice theory, the IWRM approach and the different modes of thought that are evident in Western and traditional societies in Sub-Saharan Africa. This constitutes the study's theoretical point of departure.

CHAPTER 2

PUBLIC CHOICE, INTEGRATED WATER RESOURCE MANAGEMENT (IWRM) AND DIFFERENT MODES OF THOUGHT

2.1 INTRODUCTION

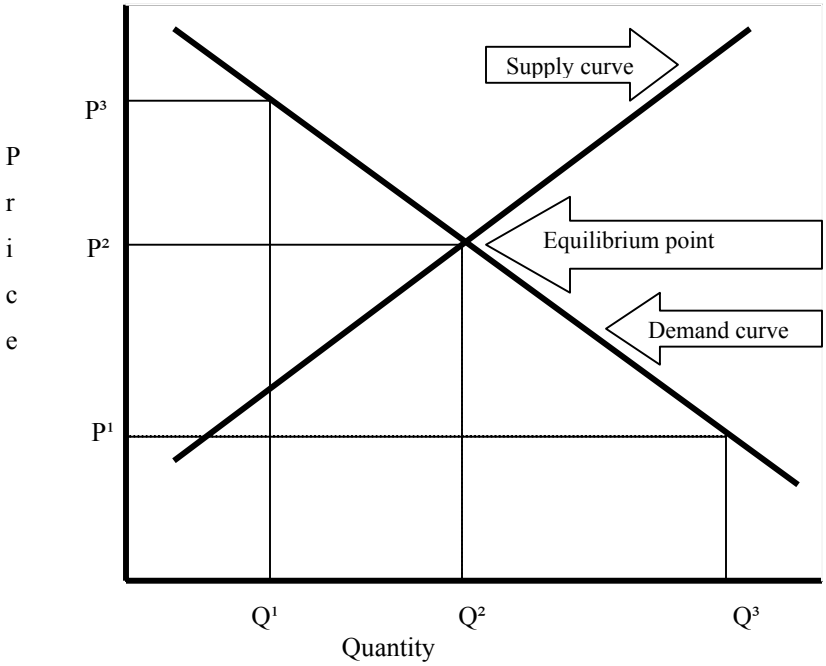
This chapter has three sections. The first section focuses on the basic assumptions of the public choice theory with the emphasis on collective action difficulties, the free-rider theorem, the expansion of bureaucratic institutions and the role of the state to rectify market failures — i.e. the protection of water as a common-pool resource against overexploitation and pollution. The second section briefly describes the development of the IWRM approach, the elements that constitute the IWRM approach and general comments on selected IWRM elements. Since the public choice theory and the IWRM approach have their roots in Western developed societies where individualism is highly regarded, the last section briefly compares the different modes of thought prevalent in Western and African cultures. The comparison provides a background to the reasons as to why the IWRM approach in developing countries ought to be contextualised to reflect the cultural, economic and political characteristics of society.

2.2 PUBLIC CHOICE THEORY

Public choice can be defined as the economic study of non-market decision-making, i.e. the application of economic principles to public policymaking (Dye 1995, 35; Mueller 1997, 1). The mainstream public choice proponents use a neo-classical economic model of a perfectly competitive market where 'voluntary exchanges' between individuals pursuing their self-interests take place (Self 1993, 2). The primary aim of a business that produces goods for the markets is to make a profit, i.e. to "maximise the difference between the total revenues earned by selling a product and the total costs required for its production" (Dunn 1994, 291). The market prices in a 'perfectly competitive market' are determined by supply and demand. By definition market equilibrium is reached once there is mutual consensus among the participants (a willing buyer and a willing seller) for

a transaction to take place — the market supply and demand for goods and services are thus theoretically equal to each other (Self 1993, 3). Figure 2-1 represents the supply and demand curves and the point of market equilibrium. In a perfect market situation the price of a good (P^1, P^2 and P^3) will influence the quantity (Q^1, Q^2 and Q^3) demand of consumers. If a producer reduces his production costs, say from P^3 to P^1, consumers will purchase Q^3 goods. The point where the demand and the supply curves intersect is the equilibrium price-quantity combination, also referred to as the point of market equilibrium. Knowing the equilibrium price-quantity combination for a certain good, it is possible to determine the profit of an investment by deducting the total production costs from the total revenues received from selling the good at the equilibrium price - P^2 (Dunn 1994, 292).

Figure 2-1 Supply and demand curves and market equilibrium



Source: Adapted from Dunn (1994, 292)

In terms of the public choice approach the logic of profit maximization in the private sector can also be applied to public policy:

> "Instead of using profits (total revenue minus total cost) as a criterion for recommending alternatives, we can use net benefits (total benefits minus total costs). We can also apply the concept of opportunity costs by viewing public programs as investments in the production of

> goods that might have been made by private firms … Opportunity cost refers to the benefits sacrificed by investing resources to produce one product when another more profitable alternative might have been chosen" (Dunn 1994, 292 and 293).

In the market system the point of equilibrium continues to change because internal as well as external factors influence the supply and demand levels for specific goods and services. Theoretically it is assumed that the ongoing market adjustments will result in a just distribution of values within society because of their responsiveness to changing demands (Self 1993, 3; Schneider and Ingram 1997, 49). Public choice describes this phenomenon in terms of the Pareto principle. The principle refers to a situation where "one social state is better than another if at least one person is better off, and no one is worse off " (Dunn 1994, 330). If a change in the distribution of resources would be detrimental to an individual, no changes should be made to the distribution of those resources. However, if policy changes are made these have to be accompanied by some kind of compensation for those who lose. If the aggregate benefits of a policy change outweigh its aggregate costs, a potential Pareto improvement has occurred and the changes can be regarded as being justified (Schneider and Ingram 1997, 36). Since everyone is theoretically better off as a result of the changes, there was a just distribution of values in society.

2.2.1 Self-interested individuals

Public choice theorists postulate that an individual, also referred to as *homo economicus*, is a rational self-interested person. Before making any decisions *homo economicus* obtains all relevant information, compares it with all the available options and only then selects an option that would be beneficial to his or her self-interest (Parsons 1995, 272). The penultimate motivation behind an individual's behaviour in an economic sense is material welfare. It is about the maximization of personal benefits (Dye 1995, 35).

Since the European Enlightenment the proponents of neo-classical economics postulated that when individuals pursue their self-interest in a perfect competitive market system, their benefits also contribute to the benefits of society as a whole (Mueller 1997, 10). The

subsequent 'spill-over' of individual benefits to society is known as the invisible hand theorem: the idea that in a private property system individuals are guided by an invisible hand to promote the interest of others in the quest to act and satisfy their self-interest (Gunning 2002). Just as self-interest is accepted as the motivational factor for the behaviour of individuals in the market system, the concept of self-interest is also applied to the behaviour of individuals in the political arena. In the process of pursuing their self-interest in both the political arena and the marketplace, individuals can mutually benefit through collective decision-making (Dye 1995, 35).

Self (1993, 5-6) cautions against the notion to regard self-interest as the only motivational factor in the market and political systems. If full competition really existed in markets, individual traders would have been forced to act out of self-interest in order to survive. The rational *homo economicus* would not have been able to choose freely because he or she would have been "controlled by external forces." Other motivational factors that have a significant influence on behaviour in the political arenas are altruism, moral rules, standards and ideology.

Regarding the value of the applicability of the 'economic' concept of self-interest to politics it is argued that:

> "the concept of 'homo economicus', while perhaps 'descriptively less relevant in the political setting than in economic markets' is still a 'useful fiction' for reasoned speculation … The value of the public choice approach lies in its ability to generate testable hypotheses and predictions about political behaviour which have been found to hold in a variety of cases" (Self 1993, 7).

Proponents of the public choice theory thus equate *homo economicus* with *homo politicus*. As a result of the bargaining process between self-interested individuals to maximise their self-interest, society also benefits from it. The behaviour of the self-interested individual is thus linked to the behaviour of the public. This raises the question as to who the public really is. There are two contrasting views: the communitarian view and the individualistic or cosmopolitan view (Bonser, McGregor and Oster 1996, 27). According to the individualistic view communities and publics are composed of

numerous different publics, governments and bureaucracies. They are "tailored to the particular circumstances of production and consumption" (Bonser, McGregor and Oster 1996, 27).

The communitarian perspective is:

> "holistic and unitary and conceives of a corporate public served by a rigorous government and bureaucracy that actively work on behalf of the community … it is a public ideology that defines an individual as an inseparable part of a community in which civic rights and duties are determined by the needs of the common good. In this concept, government plays a pivotal role as the planner and implementer of community needs" (Bonser, McGregor and Oster 1996, 27)

Etzioni (1995, 17), a well-known communitarian, argues that:

> "individuals and communities are constitutive of one another, and their relationship is … mutually supportive and tensed. The mutual character of the relationship … suggests that any effort to advance one at the expense of the other is likely to undermine the important benefits that arise from keeping these two essential factors in proper balance."

Based on the assumption that public choice has its roots in the development of capitalism in Western societies where individualism and the protection of individual rights are of prime importance, it is worth mentioning the general view of the communitarian school of thought in the USA. There it is argued that self-interest and individualism continue to prevail to the detriment of the community. There is a need to restore the balance between individuals and communities (Etzioni 1995, 19-20).

It is important to note that individualism is highly regarded in the cultures of developed countries such as the USA, Canada, the UK, Germany, France, Australia and New Zealand. In the cultures of developing countries such as those in Africa, South America, South East Asia and India, the emphasis is on communalism. According to Macleod (2002, 9) these societies place a high value on teamwork, conformity and collective unity.

The aforementioned distinction between individualism and communalism should not be construed as being solely representative of the different cultures. Examples of both kinds of culture exist in developed as well as developing countries (Van der Walt 1997, 28, 33-34; Macleod, 2002, 9). Both '-isms' can be found among different groups in different countries and to different degrees. It must be emphasised that no assumption should be made that a specific culture is superior to another culture. The distinction is made purely for analytical purposes. A better understanding is needed to assess the applicability of institutions of developed countries in developing countries, especially when they are the products of a culture were individuality is highly rated. The general differences between communalism (as evident in traditional African cultures) and individualism (as evident in Western cultures) are outlined in Table 2-1.

Table 2-1 African communalism and Western individualism

communalism	**individualism**
Communal self-concept	Individual self-concept
Interdependence	Independence
Survival of the community	Survival of the individual
Group assurance	Personal gratification
Co-operation and harmony	Competition and conflict
Affiliation	Ownership
Shared duties	Individual rights

Source: Adapted from Van der Walt (1997, 28)

Harding (1998, 364) posits that an individual develops a "sense of self through his relationships" within his community. The individual's interests and welfare depend on that of the community and not the other way around. From the aforementioned it appears that there is a definite relationship between the communitarian view and communalism.

2.2.2 Role of government

In a modern Western democracy it is generally accepted that once a political party has been elected to govern a country, the primary role of the representative government is to make authoritative decisions that are binding on the whole public. There is thus a "set of relationships" between the electorate or body politic and the elected representatives,

including the officials of government agencies, who are "authorised to act on behalf of the community through rules (either written or understood) that govern the entire community" (Bonser, McGregor and Oster 1996, 14). To fulfil its 'contractual obligation' a government has to devise policies that would enhance the public welfare by addressing the perceived problems within society. These policies are executed in the public domain by providing specific services. Parsons (1995, 10) notes that markets do not dictate the nature of the services and the manner in which these are delivered. The "political judgements about economic and social priorities" will influence the balance between public expectations and the level of service provided by government.

2.2.3 Market failure

Although the policy choice theorists believe that the market system supposedly always outperforms government and its role should be limited, markets are unable to deliver certain goods and services. In this regard the government has a role to play in correcting the market failures through various public policies (Dowding 1996, 53). The market failures are due to the process of maximising self-interest that tends to cause 'collectively irrational results' that need to be rectified by government intervention. Apart from the inability of markets to produce certain goods and services, externalities are another aspect of market failure that warrants government intervention. An externality occurs when the activities or actions of individuals and interest groups impose "uncompensated costs on others" (Dye 1995, 36). With reference to environmental problems Bonser, McGregor and Oster (1996, 281) describe an externality as the result of individual behaviour that "confers an unintended and uncompensated" effect on another individual. Externalities can also be either negative or positive. Although it could be argued that it is not the intention of industry or the agricultural sector to pollute the environment, they have little incentive to reduce it. From an economic perspective government intervention will only be appropriate if the benefits exceed the costs (Bonser, McGregor and Oster 1996, 281-283).

2.2.4 Public and private goods

Self (1993, 38) posits that the modern government has three basic functions: "to regulate, to redistribute income and to provide goods and services" to the body politic. The power to regulate may in some circumstances be delegated to a private agency without affecting the ultimate coercive sanctions vested in government. Government also has the coercive power and capacity to redistribute resources obtained through various forms of taxation. Redistribution is usually achieved by the provision of subsidies to target groups and or industries. If the role of government — in the context of rectifying market failures — is to be primarily confined to the provision of goods and services, then the nature and characteristics of these goods and services need to be clarified. The two characteristics of all goods and services are represented in Table 2-2.

Table 2-2 Classification of goods and services

	Individual Consumption (Rivalness)	Joint Consumption (Non-rivalness)
Feasible Exclusion	Private Goods	Toll Goods
Unfeasible Exclusion	Common Pool Goods	Public Goods

Source: Adapted from Bonser, McGregor and Oster (1996, 28)

In general terms a distinction is made between private goods and public goods, also referred to as collective goods:

> "public goods are non-excludable and non-rivalrous in consumption while private goods are sold to those who can afford to pay the market price. The market price excludes some consumers while the property of rivalrous consumption ensures that not all consumers who can afford to pay the price, actually purchase a private good … The distinguishing feature of public goods is that provision for one individual entails provision for all and each individual's consumption of the good does not impinge on others' use or consumption of the good" (McNutt 1996, 180).

The property of *exclusion* determines whether potential users can be denied access to a good or not. The presence or absence of *rivalness* is determined by the character of a good and to the "extent to which a good or service is divisible or not" (Bonser, McGregor and Oster 1996, 27). Whereas the consumption of a divisible good prevents others from using it, an indivisible good will not exclude others from using it. Some public choice

theorists differentiate between 'pure' public goods and 'pure' private goods. Pure public goods are produced by the state and pure private goods are "consumed by choice and only those who pay for them may consume them" (Parsons 1995, 10; McNutt 1996, 181).

According to the neo-classical economists, the provision of public goods may be justified under the following circumstances:

> "1. If through economies of scale or other technical reasons, public provision is more cost-effective per unit supplied. Some consumers will still suffer a loss in terms of their private preferences, but this result can be accepted provided that individual gains are sufficient to compensate individual losses (the Pareto principle). Many public utilities could be or anyhow were justified on this basis.
> 2. If there are substantial 'externalities' resulting from private decisions which affect many other people. A similar example is the control of pollution.
> 3. If the public considers, on moral or social grounds, that some forms of consumption are good or bad. Education is a 'merit good' because it is believed to contribute to economic growth and civic responsibility…
> 4. If a redistribution of wealth would increase the utilities of poor individuals by more than the losses to rich individuals, after allowing for any consequent 'disincentive' effects" (Self 1993, 37).

Self (1993, 38) defines public goods as those goods that "are or may be demanded and supplied through the political process." In effect this means that the provision of public goods and services should not be solely based on the market system where demand and supply eventually determine the equilibrium point. Societies are not homogeneous in nature. The different segments of society have different needs and resources. Due to the characteristics of goods such as water and air, society cannot be excluded from these goods. One of the major functions of representative governments is therefore to promote the public good.

2.2.5 Collective action problems

It is generally accepted that it is difficult or even impossible to sell public goods on the market where transactions are based on the ability of consumers to pay for them, hence a market failure. As a result of this it is expected that an institution such as the government has to provide public goods. However, for government to succeed in providing public

goods and common-pool resources, collective action problems should be minimised as far as possible. Collective action problems occur when individuals decide on strategies where the outcomes are not beneficial to the public as a whole (Ostrom and Walker 1997, 35).

One of the classical examples used to describe collective irrationality and the subsequent collective problem is the common property meadow where many herdsmen have the right to use it for their sheep (Schneider and Ingram 1997, 41). By increasing the numbers of his flock, every herdsman will improve his material welfare. However, the problem appears when everyone is pursuing the same goal without considering the fact that only a certain number of sheep can be accommodated on the meadow. The end result would be a depletion of the common-pool resource. To address this problem an outside agent can be appointed to manage the resource. This agent could be either a government agency or a private business concern. If it were a private concern, the common-pool resource would be 'privatised' and regulated in terms of economic principles.

One of the major difficulties associated with public goods is the free-rider problem. Given the 'non-excludable and non-rivalrous' characteristics of public goods, individuals tend to misrepresent their preferences for the goods. Based on the assumption that the behaviour of individuals are motivated by self-interest, they will be inclined to provide more negative externalities than positive externalities and public goods. The subsequent results will be detrimental to the well being of society (Hoffman 1997, 413). To put it in a different way, a free-rider problem exists when a 'rational individual' makes no positive contribution, financial of physical, to a public good from which he or she and society benefits. If an individual knows that revealing his or her preferences towards a public good may have negative consequences, there would be no incentive for the individual to reveal his or her preferences (Ostrom and Walker 1997, 35-72). Dunn (1994, 329) defines the free-rider problem as follows:

> "A problem that occurs when persons indicate no willingness to pay for a public good but later use the good at a price lower than they are actually willing to pay."

Water is regarded as a common-pool resource that should be available to everyone. Theoretically everyone should contribute to the enjoyment of the resource. Despite the coercive powers of a government it would be difficult or even impossible to address the free-rider problem associated with common-pool resources. It can therefore be concluded that markets as well as governments are "subject to weaknesses and failures" (Ostrom and Walker 1997, 36). To understand how institutions other than markets and governments cope with collective action problems, it is important to focus on the transformation process between the provision of the good and its consumption.

According to Ostrom and Walker (1997, 38) there are four processes associated with markets, viz. production, distribution, appropriation and use. If the government is responsible for the production and distribution of a public good and society for the appropriation and use of it, the "key linking transaction occurs at the point of appropriation" – receiving the good. Similar to a market situation the appropriators have to pay or compensate for the goods received and enjoyed by them. If not, they would be penalised in a negative way.

As indicated previously, the free-rider problem is not conducive to the common good of society. A major collective action problem concerns the maintenance of natural resources and the appropriation of the benefits. Ostrom and Walker (1997, 39-41) argue that individuals must be able to reach consensus about the monitoring, the sanctioning of individuals' contribution to the "provision of a public good with positive (negative) value" and the appropriation patterns from a common-pool resource. If not, the public good will be either underprovided or overprovided and the common-pool resource will be overused.

To address problems related to the appropriation of common-pool resources and to prevent or minimize the possibility of overexploitation, Ostrom and Walker (1997, 41-45) favour the development of institutions other than that of the market and the state. In this regard institutions in general are defined as the invisible "shared concepts" or "implicit knowledge" within a community and employed by them in repetitive situations (Ostrom 1999, 37). The repetitive situations are the day-to-day decision-making activities

that are governed by various norms, strategies and written or unwritten rules. These rules refer to the "prescriptions commonly known and used" by a community "to order repetitive, interdependent relationships." The institutional arrangements are the "cultural attributes" of communities (Lam, Lee and Ostrom 1997, 55-56). Therefore:

> "When turning to policy prescriptions, the importance of the complex mixture of variables that exist in distinctive settings is substantial. The particular features of a natural setting that might effectively be used by participants in selecting rules cannot be included in general models. The likelihood is small that any set of uniform rules for all natural settings within a large territory, such as developing marketable rights or imposing state regulations, will provide optimal results … It is important to keep these differences in mind when making policy prescriptions. Slogans such as 'privatisation' or 'regulation' may mask important underlying principles rather than provide useful guides for reform" (Ostrom and Walker 1997, 71-72).

From the aforementioned it is clear that some Western scholars base their arguments regarding the management of public goods — such as water resources — on the assumption that nature is an entity to be subdued and managed in such a way to further the interests and improve the livelihood of individuals.

2.2.6 Expansion of the bureaucracy

Any theory or model of a bureaucracy in a modern democracy must have at least two sets of actors: the bureaucrats who implement the policies and the elected political actors who are theoretically responsible for devising public policies (Wintrobe 1997, 431-432). An important element is who controls whom? It also raises the question regarding the motivated behaviour of bureaucrats. Regarding the latter Tullock (1997, 87) argues as follows:

> "The theory of a bureaucracy should be based upon the assumption that bureaucrats are as self-seeking as businessmen, and it should concern itself with the design of constraints which will make the bureaucrats' self-interest identical with the interests of society."

The theory developed by Tullock is one of authority relationships. It is based on assumptions about the actors, the context in which they behave and it focuses on the motivations of bureaucrats (Moe 1997, 457). As a general rule it can be postulated that

the status and power of bureaucrats increase in tandem with the expansion or enlargement of the whole bureaucracy. This proposition is subject to the presence of a reward structure that favours individuals when "their burden expands" (Tullock 1997, 89). An important limitation on the profit-maximisation that also applies to the "size-maximisation for bureaucrats" is the fact that people in general do not like to work hard — that is according to Tullock (1997, 89). As a result more time will be devoted to efforts to expand his or her office than to provide a product that is sought by many others.

If a bureaucracy is able to conceal its own costs from the legislature, it can misrepresent the actual costs for providing certain goods and services. The legislature would then not know the real 'production' function. The result would be that more money is received for less goods and services. The 'extra' funds represent a 'net social waste' (Tullock 1997, 90). Based on the assumption that a government department is not a profit-maximising institution, the only benefit lies in the expansion or enlargement of its structure. By being able to "exploit the full monopoly gains in all-or-nothing bargaining from the legislature", the department would theoretically be able to maximise its budget for its own interests (Tullock 1997, 91).

Just as Tullock worked with self-interest as the motivating factor of bureaucrats to further their careers, Downs (Moe 1997, 457) identifies five motivational types of individuals viz. climbers, conservatives, zealots, advocates and statesmen. These individuals would be motivated by either "pure self-interest" or mixed interest (Parsons 1995, 310).

According to Moe (1997, 457) the models developed by Downs and Tullock have the following in common:

> "Rational bureaucratic behaviour promotes inefficiency, excessive growth, capture, weak accountability, and related problems that undermine effective government."

Based on neo-classical economics Niskanen formalised the notion of bureaucratic empire building (Parsons 1995, 310; Wintrobe 1997, 433). The model is based on two

assumptions: The first assumption is that the head of a department or bureau always wants to have the largest possible budget. The second assumption is that since the budget-maximization bureaucrat is 'monopolist', he or she succeeds in obtaining the desired budget, "subject only to the constraint" that the budget doesn't "exceed the total value to citizens of the bureau's services" (Wintrobe 1997, 433). Since the head of a department or bureau knows the preferences (the demand curve) of the legislature and the latter does not have the appropriate skills and expertise to know the bureau's costs of production, the legislature can be manipulated to the advantage of the bureau. Without going into detail it suffices to state that if the head of a department or bureau is successful in pretending that the public services cost more than they actually do, the "bureau supplies exactly twice the output that would be produced by a competitive industry facing the same demand and cost conditions" (Wintrobe 1997, 435).

2.2.7 Evaluating government performance

Whereas companies in the private sector are measured in terms of their overall profits and losses at the end of a financial year, governments are measured in terms of their inputs and outputs: the resources used in producing government goods and services and the activities of a government department (Bonser, McGregor and Oster 1996, 419). One of the major difficulties is the high number of actors that are involved in the implementation of a government policy. They may also have different views on the ultimate goals of a government policy, i.e. differences of opinion about the goals of a program. If the priorities of a policy are not clearly specified, different goals could result in different approaches and different measures of success (Bonser, McGregor and Oster 1996, 420). Even if the goals are clearly understood, government departments can usually describe and measure their outputs or activities. However, the problem is to translate these outputs or activities into monetary values because there are usually no markets against which government activities can be measured (Bonser, McGregor and Oster 1996, 420). How is the value of providing free water to the community measured?

> "Performance measures may be useful within the categories in comparing alternative approaches to a specific goal, but not in making choices between basic policy areas." (Bonser, McGregor and Oster 1996, 420).

To evaluate achieved outcomes, or expected outcomes with alternative institutional arrangements on the community level, Ostrom (1999, 48-49) identifies the following criteria: economic efficiency, fiscal equivalence, redistributional equity and accountability. Economic efficiency is determined by the "magnitude of the change of flow of net benefits associated with an allocation or reallocation of resources." When alternative institutional arrangements are considered, it is crucial to take into account how revisions in the rules that affect participants will change the behaviour and hence the allocation of resources (Ostrom 1999, 48).

There are two principal means of assessing fiscal equity: on the basis of equality between individuals' contributions to an effort and the benefits they derive and on the basis of differential abilities to pay.

> "The concept of equity that underlies an exchange economy holds that those who benefit from a service should bear the burden of financing that service. Perceptions of fiscal equivalence or a lack thereof can affect the willingness of individuals to contribute toward the development and maintenance of resource systems" (Ostrom 1999, 48).

Regarding redistributional equity it is argued that although efficiency dictates that a scarce resource must be used where it produces the greatest net benefit, the equity goals may temper the objective when the redistribution of resources to poorer individuals is high on the agenda of a policy. The result could be the provision of facilities that benefit a particular needy segment of society. "Redistributional objectives may conflict with the goal of achieving fiscal equivalence" (Ostrom 1999, 48).

On the issue of accountability regarding the development, use and conservation of natural resources, Ostrom (1999, 49) states the following:

> "achieving efficiency requires that information about the preferences of citizens be available to decisionmakers, as does achieving accountability. Institutional arrangements that effectively

> aggregate this information assist in realizing efficiency at the same time that they serve to increase accountability and to promote the achievement of redistributional objectives."

Since it is presumably difficult to choose between the goals of efficiency and redistributional equity, the efficiency-pricing principle could be used as a guideline. In effect it means that the use of an existing resource or facility should only reflect the "incremental maintenance costs and any external or social costs associated with its use". The principle is problematic in the case of goods with nonsubtractability attributes. In such instances the

> "marginal cost of another user's utilizing the good is zero; hence, the efficient price is also zero. Zero user prices … require that all sources of resource mobilisation be tax-based and thereby induce other kinds of perverse incentives and potential inefficiencies" (Ostrom 1999, 49).

The suggested criteria to evaluate the outcomes or expected outcomes of a government's water policy will most probably be influenced by the socio-economic level of development, the religious attributes of a society as well as the adopted policy. As a response to the aforesaid, an internationally sanctioned approach incorporated in the water policies of numerous countries since the early 1990s, is integrated water resource management (GWP 2000).

2.3 INTEGRATED WATER RESOURCE MANAGEMENT (IWRM)

As indicated previously the public choice theory classifies water as a public good — also referred to as a common-pool resource — the use of which society cannot be excluded from. One of the essential elements of IWRM is the active participation of stakeholders in water institutions. These institutions have, among other functions, decision-making responsibilities that have significant consequences for society, more particularly for the stakeholders.

2.3.1 Development of the IWRM approach

The development of the IWRM approach is linked to the rising concerns about the 'limited' quantity of freshwater and the degradation effects of human activities on the quality of water resources since the early 1900s. According to Barraqué (1999a, 5) the

institutionalisation of the conservation movement in the USA during the 'progressive era' of President Theodore Roosevelt, not only initiated integrated planning and development but also provided "an empirical basis for ecology, a hardly born science in Europe, to develop and structure itself."

An article that had a significant influence on the environmental movement and stimulated intellectual interest in the natural and social sciences was that authored by Garrett Hardin (1968) entitled "The Tragedy of the Commons", published in 1968 in *Science*. In essence, the 'tragedy' is caused when the free and uncontrolled usage of a common-pool resource endangers its sustainability (Dietz *et al*. 2003, 3 - 11). In reaction to Hardin's article as well as other environmental concerns such as pollution, global warming and the depletion of water resources, the scientific interest in the commons grew throughout the 1970s and early 1980s. According to Dietz *et al.* (2003, 3) the 'tragedy of the commons' is a central concept in human ecology and the study of the environment.

An event, pivotal to the international endorsement of the IWRM approach, was the January 1992 International Conference on "Water and the Environment: Development Issues for the 21st Century", held in Dublin, Ireland. The Conference called on the international community to adopt a new approach in the assessment, development and management of freshwater resources on all levels of government, including the "smallest communities" (WMO 2004). It was recommended that all actions regarding water resources should be based on four guiding principles — also referred to as the *Dublin Principles*:

> "Principle No. 1 - Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment … Principle No. 2 - Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels … Principle No. 3 - Women play a central part in the provision, management and safeguarding of water … Principle No. 4 - Water has an economic value in all its competing uses and should be recognized as an economic good " (WMO 2004).

The first principle links the "effective management" of water and land uses "across the whole of a catchment area or groundwater aquifer" (WMO 2004). The participatory approach of the second principle implies that the water users "at the lowest appropriate level" must be involved in the decision-making process regarding the planning and implementation of water projects. According to the third principle water policies ought to address the specific needs of woman and empower them to play an active role in the decision-making processes. The fourth principle is based on the assumption that if water were recognised as an economic good among users, it would encourage "efficient and equitable use" as well as the "conservation and protection of water resources" (WMO 2004). The *Dublin Statement* that includes the *Dublin Principles*, was subsequently endorsed by the world leaders at the June 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil (World Bank 1993, 24).

The *Dublin Principles* constitute the core elements of the IWRM approach. According to Jønch-Clausen (GWP 2000) there are two categories of integration: the natural system and the human system. The integration has to occur within and between these categories.

> "Within the human system, integration entails mainstreaming water in national economies, ensuring cross-sectoral co-ordination of water management, fostering partnership between public- and private-sector management and, not least, involving everybody in resource maintenance and decision-making" (GWP 2000).

Accordingly, the Technical Advisory Committee of Global Water Partnership (GWP) defines IWRM as

> "a process, which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems" (GWP 2000).

Similarly, Van Hofwegen (2001, 137) defines IWRM as

> "the management of surface and subsurface water in a qualitative, quantitative and ecological sense from a multi-disciplinary perspective, and focussed on the needs and requirements of society at large regarding water."

Taking into account Jønch-Clausen's view that the IWRM has "never been unambiguously defined" (GWP 2000) and based on the aforementioned description, the following own stipulative definition of the IWRM incorporates the *Dublin Principles*: It is a science-based planning process — involving the co-ordination and participation of a broad array of stakeholders and governmental agencies — that promotes the coordinated development and management of water, land and related resources on the national and catchment level to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

The holistic element of the IWRM approach finds its expression in the establishment of water management institutions at the level of water catchment areas — also termed watershed areas or river basins (Hooper 1998; Schlager and Blomquist (2000, 3). A river basin or catchment area can be scientifically defined as a natural geographical area where the surface and groundwater naturally flows or drains into a common watercourse such as a river or a spring (World Bank 1993, 6). This definition, therefore, takes no cognisance of the political boundaries, administrative jurisdiction boundaries as well as socio-economic realities.

2.3.2 Boundaries

There is an assumption among proponents of the IWRM approach that once the boundary of a catchment area has been scientifically determined, water related problems within that area could be adequately addressed by the stakeholders. Schlager and Blomquist (2000, 16) disagree. They argue that if water users were given the opportunity, based on their own experiences and choices, they would most likely define and redefine the multiple boundaries dealing with water allocation. The choices made about water and other natural resources are "value choices that involve local communities of interest" within the interdependent context of shared resources. Schlager and Blomquist (2000, 16) conclude that a catchment boundary cannot adequately capture the diversity of interests, problems and opportunities of the stakeholders within a catchment area. The definition of a catchment area with its boundaries is a matter of choice:

> "as soon as the matter of choice is present, there is a role for politics – which … is about who decides and how and with what effects" (Schlager and Blomquist 2000, 14).

Wester and Warner (2002, 65) agree and state that the delineation and maintenance of boundaries are in essence "political processes that revolve around matters of choice."

2.3.3 Decision-making

The World Water Council (2000, 27, 28) propagates the establishment of water management agencies at catchment level where all the stakeholders will "have a voice in the decisionmaking" at the "lowest appropriate level, known as the principle of subsidiarity." The decision-making processes and the accountability arrangements for those making the decisions must be clarified.

> "Effective river basin management … walks on two legs: parliaments, where users make policies and decide on the raising and spending of money, and excellent technical agencies, which provide the parliaments and users with the raw and processed information necessary for management" (WWC 2000, 29).

The assumption can therefore be made that catchment management areas are 'political units' where the decisions of the water agencies will affect all the stakeholders. Every institutional structure for water resource decision-making has its own characteristics that will reflect the socio-economic values of a particular community. According to Schlager and Blomquist (2000, 17) different communities are likely to have different policy orientations, vary in terms of their "accessibility and responsiveness" to specific interests, have their own preferences for certain solutions to problems, and have their own "capacity to generate a specific flow of information."

Not much attention has been given to decision-making arrangements in watershed literature. References to these arrangements usually refer to consensus and elite decision-making (Schlager and Blomquist 2000, 17). Logic has it that if the principle of consensus is observed in the decision-making process, then it implies that everyone affected or

affecting a water resource must support all decisions, irrespective whether they reside in or outside the "naturally defined boundaries" of a catchment management unit.

Elite decision-making has wide support among the proponents of integrated watershed management. It is argued that elites have the required skills to evaluate the relevant information and to consider all alternatives "in order to reach reasoned conclusions about which choices will best serve social gains" (Schlager and Blomquist 2000, 18).

Some of the most obvious criticisms against this approach include:

> "(1) it unjustifiably presumes that social goals are known with some precision and remain constant over the relevant period; it also unjustifiably presumes that the number of social goals to be pursued is limited and that those goals do not contradict one another; and (3) it places unreasonably high information demands upon decision makers, who must comprehend everything from land use planning to biological systems and their responses to economic and political dynamics. Ultimately, the search for a more rational decision-making structure may be misguided for a sort of bloodless organisation" (Schlager and Blomquist 2000, 18).

Any type of decision-making that is based on non-consensus could have a detrimental effect on minority and other powerless interest groups within a society. Procedural guarantees of public hearings and the participation all stakeholders may not be adequate.

Although individual rights and values are protected by the consensus, it could be a time-consuming process with high financial and human costs. Elite decision-making could minimise costs but be detrimental towards individual rights and values. Because of the "inherent tension" between individuals and societies, trade-offs have to be made (Schlager and Blomquist 2000, 18-19).

Should any particular decision-making rule or an aggregate rule be required for IWRM? Schlager and Blomquist (2000, 10) argue that a single type of decision-making will constitute a "fragile form of governance" that would be unable to address possible conflicts among competing interests and values adequately. An "aggregation rule will open opportunities for some individuals or groups to ignore, exploit, or oppress others."

From the aforementioned the conclusion can be drawn that the IWRM approach and the public choice theory are based on the philosophical foundations and socio-economic culture of the Western world. This raises the question as to whether there are differences in thought between Western and African values — Eurocentric and Afrocentric — in the application of the IWRM approach to developing countries.

2.4 THE INFLUENCE OF AFROCENTRIC AND EUROCENTRIC VALUES ON WATER RESOURCES

The concepts of Eurocentric and Afrocentric refer, amongst others, to different sets of values or worldviews that were mainly developed and applied in either Europe or Africa. It is important not to equate these concepts with Eurocentrism and Afrocentrism.

> "Eurocentrism and Afrocentrism … indicate two –isms, the one-sided absolutisation of a specific culture, which is wrong because every culture is a human creation, flawed and mostly one-sided" (Van der Walt 1997, 52).

The differentiation between the concepts of Eurocentric and Afrocentric is solely made for analytical purposes. It contributes to a better understanding of the applicability of institutions of developed countries in developing countries, especially when they are the products of a culture were individuality is highly rated.

To compare the differences a distinction has to be made between the pre-scientific pattern of though in Africa and the 'modern' scientific mode of thought in the West. Pre-scientific knowledge — also known as traditional thought — can be defined as the type of thought that "tends to construct explanations of natural phenomena in terms of the activities of gods and kindred spirits" (Wiredu 1998, 192). Van der Walt (1997, 77) describes pre-scientific knowledge as the "everyday way of knowing" and it is typical of all people. However, the assumption must not be made that pre-scientific knowledge is inferior to science-orientated knowledge. In the West there is a tendency to regard scientific knowledge as being more reliable and of greater value than pre-scientific knowledge.

Although the way of knowing is different, it is not necessarily better. The example in Table 2-3 is the pre-scientific mode of thought in Africa before it came under the influence of Western science. The different modes of thought must be understood in terms of African communalism and Western individualism.

Table 2-3 A summary of the two modes of thought

African thought (communalism)	Western thought (individualism)
Spiritual powers important	Material entities important
Focus on knowledge of the spiritual world	Focus on knowledge of the material world
Power-oriented	Truth-oriented
Spiritualistic-organistic	Materialistic-mechanistic
Quest for supernatural causes	Quest for physical causes
Divination	Verification
Magical	Technological
Emphasis on human interaction	Emphasis on non-human things
Holistic, integral, totality knowledge	Reductionist, fragmented knowledge
Close to concrete reality	Abstract, removed from reality
Warm, personal, individual knowledge	Cold, businesslike, universal knowledge
Pragmatic	Neutral
Symbolic	Theoretical
Affective	Objective
Emotional	Intellectual
Closely involved with object of knowledge	Observes object of knowledge at a distance
Less analytical, more synthetic	More analytical, less synthetic
More intuitive	More reflective
More experience-orientated	More experimental and technical
More cyclic	More linear-systematic, methodical
Expressive	Instrumental
Elementary distinctions	Complex distinctions
Ideas bound to events/situation	Ideas bound to ideas
Flexible and flowing	Fixed and rigid
And – and logic	Either – or logic
Complementation of differences	Duality of opposites
Consensus important	Competition important
Past-orientated (traditional)	Future-oriented (progressive)
More protective and closed	More critical and open
Does not easily accept coincidence probability and other factors which render knowledge	Accepts coincidence and probability of knowledge more easily

Source: Van der Walt (1997, 80)

Without going into detail it suffices to conclude that according to the first seven differences listed in Table 2-3, the traditional African way of thought is very much concerned with the spiritual world and its influence on events. There is no distinction between the ‘natural’ and the ‘supernatural’ (Van der Walt 1997, 82-93). Serpa (2002, 45) postulates that the traditional African view of the universe is based on religious values:

> "Life is of little value unless integrated in a dynamic relationship with both visible and invisible components of the cosmos, including the ancestors, God and nature. Life-in-community continues beyond death, when one's participation becomes spiritual – as an ancestor, with greater authority than a fleshly human" (Serpa 2002, 45).

From the aforementioned it is clear that in terms of the traditional African culture, nature and its resources have a specific value. It is also believed that man and nature is one and man must therefore live in harmony with nature. Harding (1998, 363) argues that a balance is needed. If the balance is disturbed "troubles such as human illness, drought, or social disruption" will follow.

According to the traditional Western way of thought, mankind has a 'man-to-object' relationship with the environment. In this relationship individuals separate themselves from nature and other people (Harding 1998, 363). As indicated previously, nature is regarded as an entity to be subdued and managed in such a way to further the interests and improve the livelihood of the individual.

2.5 CONCLUSION

According to the public choice theory the state has a specific role to play, through public policies, to correct market failures caused by two phenomena. The first phenomenon relates to collective irrational results caused by individuals in the process to maximise their self-interest either individually or through bureaucratic institutions such as government departments or agencies. The second phenomenon concerns externalities, i.e. pollution and/or the overexploitation of natural resources, as a result of activities by individuals and interest groups that inflict uncompensated costs or cause unintended and uncompensated effects on others. If the benefits of an intervention by the state through a public policy exceed the costs, such an intervention is appropriate. In terms of the Pareto principle a policy change would be appropriate if the results caused a just distribution of values within society. This occurs when the aggregate benefits of a policy change outweigh the aggregate costs. Every individual is thus theoretically better off as a result of the policy change.

Water is classified as a common-pool resource (also referred to as a public good) available to society at large. The role of government regarding public goods is multidimensional. To address either positive or negative externalities that affect public goods, it has to develop incentives to minimise or inhibit among others the free-rider problem, overexploitation and pollution, i.e. collective action problems.

Public choice proponents argue that the maximisation of self-interest by individuals in government departments or agencies tends to lead to the establishment and continuous expansion of large bureaucratic structures. Large bureaucratic structures do not necessarily serve the interests of the public or contribute to the efficiency and effectiveness of the institutions.

The performance of a government is measured in terms of its inputs and outputs, i.e. the resources used in producing a government goods and service and the activities of a government department. The policy goals, priorities and their implementation must be clearly specified. Although it is relatively easy for government departments or agencies to describe their outputs, it is difficult to translate these into monetary levels because there are no markets to measure them against. A possible solution is to assess the achieved outputs in terms of the following four criteria: economic efficiency, fiscal equivalence, redistributional equity and accountability.

IWRM is in essence a scientific based approach with economic and holistic elements woven into it. Its main objective is to manage and develop the quality and quantity of water resources without disturbing the ecological equilibrium. It is an interdisciplinary approach because it takes cognisance of the interdependence and interaction between natural resources as well as human society. Although the holistic element embraces the concept of public participation in the management of water resources, it appears to neglect the prevalent cultural orientation, economic practices and political institutions of societies.

Given the fact that the IWRM approach and the public choice theory originated in Western societies that embrace concepts such as individualism, democracy and capitalism, it is significant that the cultural values of traditional societies in Sub-Saharan Africa differ from those embraced by Western societies. This raises the question whether the IWRM approach can be successfully applied to developing countries, especially in Sub-Saharan Africa and South Africa. If there is a need to contextualise the IWRM approach, it has to reflect the prevailing cultural, economic and political values embraced by societies in developing countries in order for the public (water) policy to be politically appropriate.

CHAPTER 3

THE IWRM APPROACH IN FRANCE, AUSTRALIA, INDOCHINA AND SUB-SAHARAN AFRICA

3.1 INTRODUCTION

This chapter has three sections. The first section describes the functioning of the IWRM approach in France and Australia. The overview of the IWRM approach in France focuses on the role of water institutions, public participation and the authority of these institutions (also referred to as Water Parliaments) to levy taxes in order to finance their management activities. In Australia the focus is on the advanced and resilient institutional characteristics of the Murray-Darling River basin water institution. The second section touches on 'institutional leapfrogging' that takes place when policies, generated in developed countries such as France and Australia, are implemented in developing countries. The third section describes some of the practical difficulties and problems that developing countries experience with the implementation of the IWRM approach. It focuses on the Mekong River Commission in Indochina, an inter-state institution, as well as on selected individual countries in Sub-Saharan Africa. Specific elements of the IWRM approach are identified to highlight some of the prevalent economic, political and cultural characteristics in Sub-Saharan Africa that may influence the application of the IWRM approach in South Africa.

3.2 FRANCE

As a result of the administrative decentralisation process in France since the early 1960s, the management of water resources was scaled down to water institutions at the level of catchment areas (Barraqué 1999a, 9). The 1964 *Water Act* divided France into six catchment areas in which the six water institutions endeavour to reconcile the management of water resources with economic development and the protection of the environment (IO Water 2002). The *Water Act,* as revised in 1992, confirmed the role of water as a common-pool resource. It also created the legislative parameters within which the water institutions function.

The usages of catchment areas as administrative units, the involvement of stakeholders in water institutions, and the financing of these institutions through a cost recovery mechanism known as the 'polluter-user-pays' principle, are some of the essential features of the French water policy. As a result of the successful application of the approach in France, the principle of integrated catchment area management has been accepted in numerous developed and developing countries since the early 1990s (Barraqué 1999b, 35; IO Water 2002).

3.2.1 Water institutions

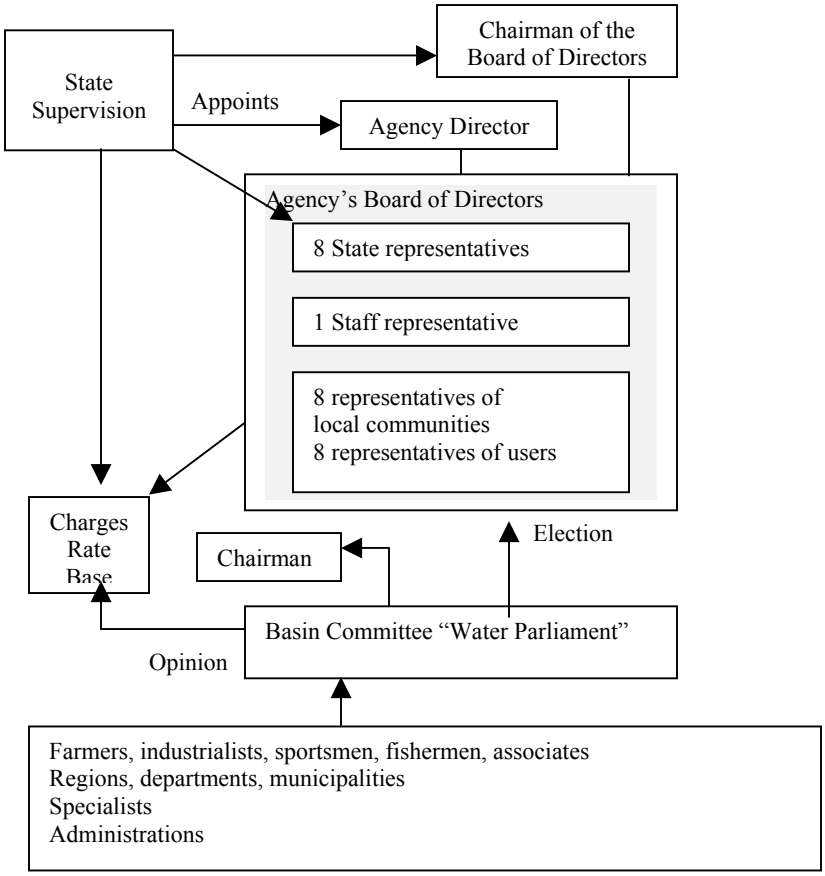
Although the management of water resources has been decentralised, the national water policy in France is determined by the central government through a National Water Committee "in partnership with all local communities and users" at the level of the water institutions within the six catchment areas (IO Water 2002). The National Water Committee, chaired by an elected Member of Parliament, is composed of representatives of the National Assembly, the Senate, and the water institutions of the six catchment areas (IO Water 2002). It is important to note that all deliberations regarding the national water policy, legislative drafts and regulatory texts take place in the National Water Committee (IO Water 2002). The role of water institutions is confined to strengthening of an ongoing dialogue among all the stakeholders, the management of water resources, the development of proposed policy plans, and to levy taxes in terms of the 'polluter-user-pays' principle (Barraqué 1999a, 9).

3.2.2 Catchment area institutions

The water institutions of catchment areas consist of a water agency and a river basin committee. The basin committees, also referred to as 'Water Parliaments', consist of appointed representatives from national state departments, elected regional and local councillors, and selected individuals representing the stakeholders or interest groups within a catchment area (IO Water 2002). It is within the 'Water Parliaments' where local communities can debate issues of concern and make recommendations regarding the planning, development and management of water resources. All the decisions and

proposals of the basin committees are subject to French laws and the directives of the European Union (IO Water 2002). The organisational structure of a water institution is illustrated in Figure 3-1.

Figure 3-1 Organisational structure of a catchment area water institutions

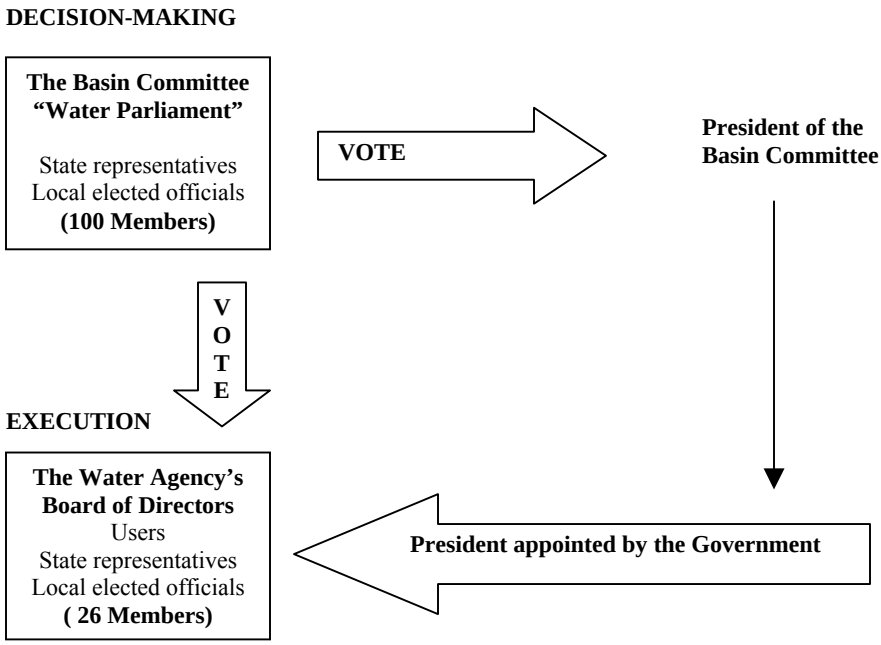


Source: Adapted from IO Water http://www.oieau.fr/anglais/gest_eau/part_a.htm [Accessed 8 January 2002].

The six water agencies in France are managed by a Board of Directors composed of representatives from local communities, different categories of stakeholders and government departments. The objective of representation is to get all the stakeholders involved in the decision-making mechanisms of water institutions. The Chairman of the Board and the Director of the Agency are appointed by the Government (IO Water 2002). Being public institutions of the state, the water agencies are responsible for the implementation and monitoring of the national water policy and the water programmes as

adopted by the basin committees and approved by the Minister for the Environment. Although the water agencies act under the supervision of the basin committees, they are only accountable to the government (IO Water 2002). The decision-making structure of the 'Water Parliament' is illustrated in Figure 3.2.

Figure 3-2 Decision-making in water institutions



Participating in the Board of Directors with consultative voice:

- The staff representative
- The Director of the Agency
- The financial auditor
- The accountant

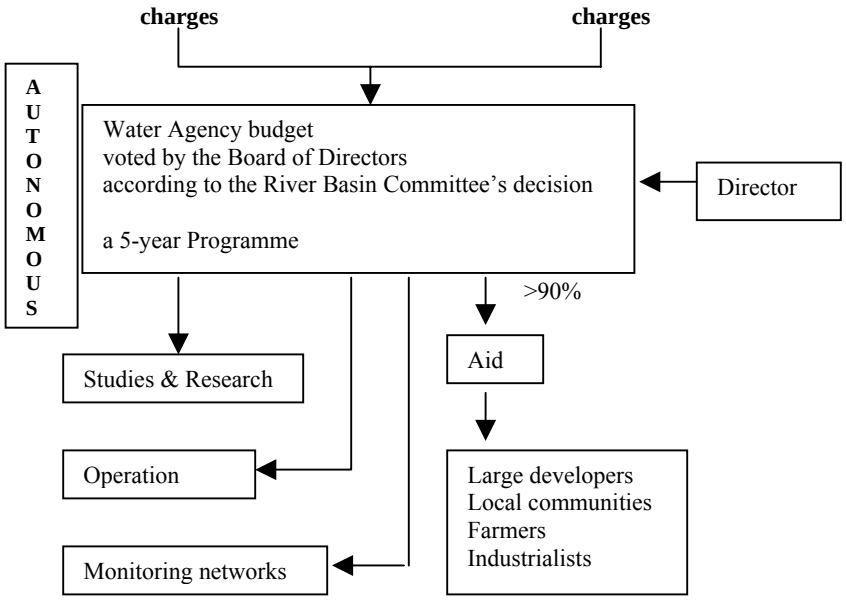
Source: Adapted from IO Water <http://www.oieau.fr/anglais/gest_eau/part_a.htm >[Accessed 8 January 2002].

3.2.3 Water taxation powers

The water agencies, in conjunction with the basin committees and ministerial approval, have the power to levy taxes from water users in catchment areas. These funds are used to finance the construction and operation of water projects and programmes, to safeguard the quantity and quality of water resources, and to ensure the financial sustainability of water institutions. The water charges and tax rates are influenced by the costs of maintaining the existing systems and investments for improvements (IO Water 2002).

The 'polluter-user-pays' principle is used to determine the rates of water charges levied for water withdrawals and discharges. The water charges for industrialists are calculated by "using various parameters appropriate … and the amount of pollution produced by each establishment" (IO Water 2002). The 'polluter-user-pays' principle is represented in Figure 3-3.

Figure 3-3 The 'polluter-user-pays' principle



Source: Adapted from IO Water http://www.oieau.fr/anglais/gest_eau/part_a.htm [Accessed 8 January 2002].

The water charges for domestic users are "calculated for each community" and water flow meters are used to determine the quantity of water used by water users (IO Water 2002).

3.2.4 Comment

The basin committees have no operational or policing powers. In practice they only have a bargaining and mediation role. According to Barraqué (1999a, 11) the basin committees are the "locus of collective learning processes" which helps to "lower what economists call the transaction costs." He further states that:

> "the French case acutely raises an issue of political philosophy: whether one should give sovereignty to institutions which are not the product of general elections. The promoters of the Agencies are some-times over-enthusiastic when they say that they are water parliaments. Being set up in a neo-corporatist way, they could be accused (and they are) to be giving too much weight to lobbying and not enough to democracy" (Barraqué 1999a, 11).

The agendas of influential interest groups could thus be biased to the detriment of other water users. Another argument advanced by Barraqué (1999b, 35) is that the geographical catchment areas are too heterogeneous and too large. The result is low levels of interest and consensus among water users regarding the management of water resources.

Regarding the vested powers of water institutions to levy water taxes, it appears that the appropriate mechanisms are in place to manage the quality and quantity of water resources in France without endangering the environment and affecting economic development. The principle of usership rather than the principle of ownership is used to levy water charges (Barraqué 1999a, 5). From a public choice theory perspective the application of the 'polluter-user-pay' principle can therefore be regarded as an economic incentive to discourage externalities affecting water as a common-pool resource.

3.3 AUSTRALIA

3.3.1 The Murray-Darling River basin

The water institution of the Murray-Darling River basin in Australia is often regarded as a model of a "highly advanced and resilient institutional regime" for integrated water resource management. Although developing countries are encouraged to adopt the same model, it took several decades to develop (Shah, Makin and Sakthivadivel 2001, 89 and 90). The institutional arrangements must be understood in terms of the physical and geo-political characteristics of the basin.

The Murray-Darling basin is situated in South-eastern Australia and covers an area of more than one million square kilometres. It comprises of two major rivers — the Murray River and the Darling River — that drain the region of northern and southern New South

Wales (NSW), Queensland, and a large area of Victoria (MDBC 2002). It covers 75 percent of NSW, 56 percent of Victoria, 15 percent of Queensland, eight percent of South Australia and the entire Australian Capital Territory (MacDonald and Young 2001, 253).

The Commonwealth of Australia consists of six autonomous federal states (South Australia, Western Australia, Northern Territory, Queensland, NSW, Victoria) and two territories (Australian Capital Territory and Tasmania). The federal states have jurisdiction over the management of natural resources. The administration of water resources therefore varies from state to state (MacDonald and Young 2001, 257). The Commonwealth government has the constitutional right to intervene in matters of national interest, should the need arise. In terms of section 96 of the *Commonwealth of Australia Constitution Act*, financial assistance can be given to the federal states and territories as an incentive to promote federal co-operation with the implementation of policies and agreements within their respective jurisdictions (MacDonald and Young 2001, 257). The water policies of the Commonwealth of Australia are determined and implemented by various institutions: the Council of Australian Governments; the Murray-Darling Basin Ministerial Council; the Murray-Darling Basin Commission and other committees involved in water management.

3.3.2 Council of Australian Governments

The Council of Australian Governments (COAG) is an intergovernmental forum comprising the prime minister, federal state premiers, territory chief ministers and the president of the Australian Local Government Association (MDBC 2002). Australia's national water policy, known as the 'Water Reform Framework', was developed by the COAG and in February 1994 it was decided to implement the water policy throughout the country (MDBC 2002). With the endorsement of the National Competition Policy for Australia in April 1995, payments by the Commonwealth government can be made to those federal states and territories that have implemented amongst others, the national water policy that embraces the IWRM approach. Payments are subject to the National Competition Council's annual assessment of the status of the implementation progress and observance of the water policy in the different federal states and territories (MDBC

202). It is important to note that every federal state or territory may adopt its own approach to implement the water policy, "depending on its own unique institutional and natural characteristics" (MacDonald and Young 2001, 259).

There are two Commonwealth acts central to IWRM approach, namely the *Catchment Water Management Act,* 1995 and the *Water Resources Act,* 1997. The *Catchment Water Management Act* makes provision for the establishment of local catchment management boards in the federal states and territories. The application of this act varies throughout Australia. The *Water Resources Act* focuses on the integration of ecological, environmental and economic considerations on a geographic basis (Tellus Institute 2002).

To implement the IWRM approach in the Murray-Darling basin, provision is made for the establishment of the Murray-Darling Basin Ministerial Council, the Murray-Darling Basin Commission (MDBC) and a community advisory committee.

3.3.3 Murray-Darling Basin Ministerial Council

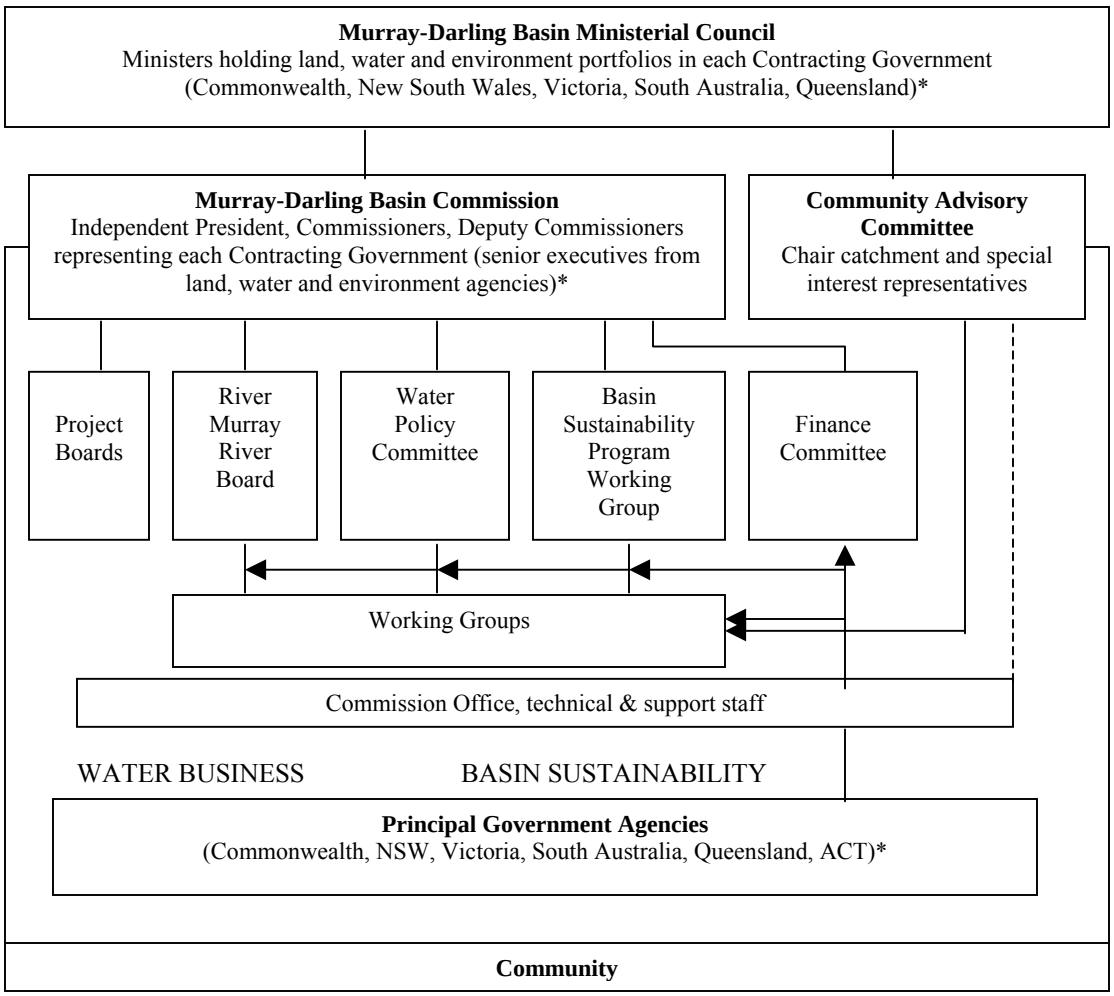
The establishment of Murray-Darling Basin Ministerial Council in terms of the 1985 *Murray-Darling Basin Agreement* is the culmination of developments since the early 1900s. In 1915 the governments of the Commonwealth of Australia, NSW, Victoria and South Australia signed the *River Murray Waters Agreement* that subsequently paved the way for the establishment of the River Murray Commission in 1917. The Commission primarily focussed on water quantity since it affected transport and trade on the two rivers (MDBC 2002). The recognition and growing concerns about the high levels of salinity since the 1960s and subsequent environmental and resource problems resulted in the conclusion of the *Murray-Darling Basin Agreement* in 1985. It was concluded between the governments of NSW, Victoria, Queensland, South Australia, the Australian Capital Territory and the Commonwealth (MDBC 2002).

The Murray-Darling Basin Ministerial Council comprises the ministers of each of the contracting governments and territories responsible for land, water and environmental resources. The Council is thus a political forum where decision-making is based on the principle of consensus (MDBC 2002). It has the power to make decisions that are binding

on the basin as a whole. Decisions must therefore to be implemented by the federal states and territories (MDBC 2002). The other main function of the Council is to advise the COAG on all matters related to the implementation of the national water policy (MacDonald and Young 2001, 259; Shah, Makin and Sakthivadivel 2001, 92).

The institutional structure of the Murray-Darling basin, represented in Figure 3-4, illustrates the way in which the contracting governments and territories co-ordinate their activities.

Figure 3-4 Institutional structure of the Murray-Darling Basin Initiative



*Participation of the Australian Capital territory is through a *Memorandum of Understanding*
Source: Adapted from MDBC < http://www.mdbc.gov.au/about/governance/overview.htm > [Accessed 8 January 2002].

It is important to note that the COAG is responsible for the national water policy and the Ministerial Council for policies related to the planning and management of water, land

and other environmental resources of the Murray-Darling basin (MacDonald and Young 2001, 259). The Council meets at least once a year (MDBC 2002).

3.3.4 Murray-Darling Basin Commission

The MDBC is an autonomous organisation with an independent President, two Commissioners from each of the contracting governments and a representative of the Australian Capital Territory. There are also two Deputy Commissioners for each of contracting governments and one Deputy Commissioner for the Australian Capital Territory. The MDBC meets at least four times a year (MDBC 2002).

The MDBC is the executive component of the Murray-Darling Ministerial Council. It is responsible for the implementation of the decisions of the Council and the management of water resources. It also advises the Council on matters related to the planning, development and management of the basin's natural resources (MDBC 2002). It is important to note that the functions and responsibilities of the MDBC are subject to the *Murray-Darling Basin Agreement* of 1985 as amended. According to MacDonald and Young (2001, 262) the MDBC received a mandate to "initiate, support and evaluate integrated natural resources management across the Murray-Darling basin" during the second half of the 1980s.

MacDonald and Young (2001, 262) view the MDBC as an "unusual entity" that is neither a statutory body nor a government department. This is based on the fact that the MDBC is not only responsible to the contracting governments represented on the Ministerial Council but also to the Council itself.

3.3.5 The Community Advisory Committee

To facilitate an effective channel of communication between the Murray-Darling Ministerial Council, the MDBC and the communities of the basin, a Community Advisory Committee has been established. The Advisory Committee has an independent chairperson, 23 state representatives and a representative nominated by five specific interest groups: the National Farmers Federation, the Australian Conservation

Foundation, the Australian Local Government Organisation, the Australian Landcare Council, and the Indigenous Land Corporation (MDBC 2002). The Advisory Committee plays a significant role in the dissemination of information between the water users and the MDBC (MDBC 2002).

> "In the last view years, the community advisory committee has considered a number of controversial topics such as dryland salinity … floodplain management … and the committee was able to communicate the issues to the community and provide a 'reality-check' concerning the human dimension of problems. The committee has also been considering issues relating to Aboriginal involvement in natural resource management and recognition of cultural heritage in the basin" (MacDonald and Young 2001, 260).

Given the fact that the Australian states and territories embrace the IWRM approach, each federal government has established numerous committees to encourage community involvement in partnership with government departments and institutions.

3.3.6 Community Committees

As indicated previously, the Murray-Darling basin covers 75 percent of NSW, 56 percent of Victoria and 15 percent of Queensland. Given the holistic characteristic of the IWRM approach, communities across the basin are encouraged to become actively involved in the planning and management of water resources.

In NSW for example, significant water policy reforms were initiated since 1997. Several water management committees were established on which all the relevant stakeholders are represented (Tellus Institute 2002). The committees are, amongst others, responsible for the development and implementation of various creative and innovative management approaches based on a partnership between government and the community. Some of the approaches include the development of strategic planning frameworks and processes to carry out the required research and capacity building activities.

For example, in a 'Creative Village' programme rural communities, local students, professional landscape architects and artists are involved in the management of an ancient

Aboriginal fishery at Brewarrina. Creative games are used to initiate and stimulate a process for community involvement in decision-making activities. Activities such as art, storytelling and songs are used in the capacity building projects (Tellus Institute 2002). Apart from initiating social learning activities the committees provide a forum for the community to articulate their needs and resolve conflicts.

Shortly after the establishment of the Herbert River catchment committee in 1993, a lack of co-operation between government, industry and the community became evident. As a result, many of the stakeholders regarded the catchment committee as an "initiative of a specific government agency rather than an initiative of the whole" (Tellus Institute 2002). Thus the system did not function perfectly. Clearly the implementation of the IWRM approach evolved slowly. This was due to factors such as uncertainty and confusion about the objective of the integrated approach, what was required or expected from the stakeholders, and the internal and external conflicts between the stakeholders. Only after more than eight years of intensive deliberations did the stakeholders succeed in developing an acceptable decision-making process (Tellus Institute 2002).

3.3.7 Comment

Although Shah, Makin and Sakthivadivel (2001, 90) believe that the IWRM approach in Australia is a textbook example of institutional reform, it is important to take note of the views of Hooper (1998). He argues that the implementation of decisions based on accurate scientific information is hampered by the following social and institutional features: government inertia; the superiority of local above regional interests; an ignorance of available institutional arrangements to facilitate IWRM approach techniques; no knowledge of the decision-making mechanisms in catchment areas; the absence of refined "methods to incorporate differing values and expectations" about the use of natural resources in a catchment area; "ignorance about what drives regional economies"; no "social impact assessment" studies to determine the net social gains from the implementation of the IWRM plans; the absence of "ongoing financial and infrastructure support by government to community-based catchment management

committees"; and the increasing reluctance of volunteers to remain involved as "catchment management participants"(Hooper 1998).

From the aforementioned it is clear that the implementation of the IWRM approach in Australia is still in the process of development. Cognisance needs to be taken of the prevailing social and institutional features of the different communities and interest groups in Australia.

3.4 INSTITUTIONAL LEAPFROGGING

The apparent successful implementation of the IWRM approach in developed countries such as Australia and France raises the question as to what extent it could be applied to developing countries. Is 'institutional leapfrogging' possible? Shah, Makin and Sakthivadivel (2001, 94) identify four main types of material differences between the realities of developed and developing countries. They are hydrology and climate; demographics; socio-economic realities; and the organisation of the water sector. Other differences include the following:

> "Contrasting political structures and national priorities, different living standards, cultural traits, systems of land tenure, lower technological and literacy levels, and financial and infrastructural constraints can all affect readiness for change and receptivity to new practices and organisations, especially when externally driven" (Pigram 1999, 385).

The implementation of the IWRM approach in developing countries necessitates institutional reforms to accommodate the holistic element of integrated management with the establishment of catchment area organisations. This is based on the "refutable assumption" that the mere creation of an organisation will result in an IWRM approach (Shah, Makin and Sakthivadivel SMS 2001, 91). The focus of attention is confined to legal and regulatory reforms; the redesigning of economic policy instruments (prices, taxation, subsidies) to harmonise them with national policy goals; the redesigning of economic institutions (property markets, water markets, service providers); and the establishment of "some mechanism for basin level negotiation and co-ordination fortified

with adequate authority and resources, and a broad mandate considered appropriate to the basin's context" (Shah, Makin and Sakthivadivel 2001 91-92).

Since the early 1980s the restructuring of water authorities and institutions in Australia has resulted in a greater reliance on market forces linked to a system of property rights. In this regard it is important to note that Australia's 1995 *Catchment Water Management Act* makes provision for the establishment of local catchment management boards in the federal states that are funded through catchment levies – based on the property – and who have the authority to borrow money from financial institutions for large capital projects (Tellus Institute 2002). However, despite the advantages of a market-based approach, the governments of developing countries tend to be reluctant to endorse market mechanisms. For either cultural or religious reasons some governments object to the idea that life-sustaining water should be bought and sold. Hence the following opinion:

> "Another concern is that small-scale farmers, either in desperation or ignorance, will sell their rights for a pittance and lose their livelihood … Because water use often has social benefits that exceed private ones, there may be a sense that public control of water is necessary to ensure adequate investment and low prices. The final reason relates to the costs stemming from setting up a new legal, regulatory, and institutional framework; from defining, measuring, and enforcing water rights; and from making necessary changes in water intake and in the conveyance infrastructure to affect the transfers. Closely related to these costs are the difficulties of implementing the initial allocation of water rights, of ensuring that sales of water by one user do not affect the water rights of others (the return flow problem), and of establishing or strengthening public and private institutions to permit a well-functioning market. Given these costs, the potential benefits from trading water must be sufficiently large for governments to consider establishing tradable water rights." (Pigram 1999, 386).

Numerous international institutions and organisations such as the European Commission (EC), European Union (EU), the World Bank, United Nations Development Programme (UNDP), World Health Organisation (WHO), World Meteorological Organisation (WMO) and specialized institutions such as the Global Water Partnership (GWP) and the World Water Council (WWC) are involved in the implementation as well as the improvement of standards and practices of the IWRM approach in developing countries. The aforementioned organisations have also initiated numerous capacity building

programmes. The process of capacity building that represents an "essentially developed world perspective" comprises three basic elements: the creation of an enabling environment with appropriate policy and legal frameworks; institutional development that includes community participation; and the development of human resources as well as the strengthening of managerial systems (Pigram 1999, 385).

According to Shah, Makin and Sakthivadivel (2001, 110) successful institutional reforms in the water sector have the following in common: They primarily focus on the management of surface water, not groundwater; the purpose of the reforms is to improve the productivity of large water institutions; and the water users in the dominant informal sectors are ignored. A brief overview of the IWRM approach in Indochina and the application of some IWRM principles in countries on the continent of Africa shed some light as to whether mere 'institutional leapfrogging' from developed to developing countries is possible.

3.5 INDOCHINA: THE MEKONG RIVER COMMISSION

The Mekong River originates in the People's Republic of China (PRC) and flows along the border of Myanmar, Laos and Thailand, the midlands of Cambodia and the southern tip of Vietnam. The majority of water users in the Mekong River basin are rural farmers and fishermen. Their main source of income is irrigated rice-farming and fishing. The Mekong River Commission (MRC) estimates that about a third of the 60 million people living within the Lower Mekong River basin, "live on less than a few dollars per day" and the majority of them have no "access to basic government services" (MRC 2003). In a special report entitled "The Mekong River: the sweet serpent of South-East Asia", it is reported that more than 1 million people in Cambodia depend solely on fishing to make a living. In Laos, 70 percent of the rural households supplement their income by fishing (*The Economist,* 3 January 2004).

In this special report it is also stated that the idea to develop the Mekong River to enrich Indochina stems from the determination of the USA during the 1950s and 1960s to "dent

support for the region's communist insurgents". The Committee for Coordination of Investigations of the Lower Mekong Basin – the Mekong Committee – was established in 1957 with the support of the United Nations Economic Commission for Asia and the Far East (ECAFE) and the US Bureau for Reclamation (MRC 2003). The purpose of the Mekong Committee was to co-ordinate joint development projects.

Political instability in Cambodia during the late 1970s hampered the activities of the Mekong Committee. Cambodia's request for readmission in 1991 paved the way for the signing of the *Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin* between the governments of Cambodia, Laos, Thailand and Vietnam on 5 April 1995 (MRC 2003). The Mekong Committee became the Mekong River Commission. It is important to note that the upper states of the Mekong River basin, the PRC and the Union of Myanmar, still refuse to join the MRC (*The Economist,* 3 January 2004).

3.5.1 Institutional structure

The MRC is an intergovernmental body. It has three statutory organs: the Council, the Joint Committee and the Secretariat. The Council consists of one member at Ministerial and Cabinet level from each of the contracting governments. It convenes only once a year and has the overall responsibility for the governance of the MRC. It is responsible for devising policies regarding the integrated development and management of water resources (MRC 2003).

Each of the contracting governments has one official at the rank of a head of department or higher on the Joint Committee. The Joint Committee meets biannually and functions as a management board. It is responsible for overseeing the implementation of policies and decisions taken by the Council (MRC 2003). The Secretariat provides the required technical and administrative services for the aforementioned statutory bodies. It has a Chief Executive Officer appointed by the Council. The Secretariat is located in Phnom Penh, Cambodia (MRC 2003).

The MRC is also responsible for the monitoring of water quality, the management of fisheries, agricultural development, flood mitigation and hydropower planning. The National Mekong Committees in each of the member states co-ordinate the MRC programmes at the national level and provide links between the Mekong Secretariat and the relevant government departments. Government departments are responsible for the implementation of MRC programmes and projects in the Lower Mekong Basin.

An important aspect of the MRC is the fact that the contracting governments only provide a small percentage of the running costs. The international donor community is mainly responsible for the funding of the MRC (Chenoweth 1999, 372). The MRC has an annual Donor Consultative Group meeting to solicit financial support for various projects (MRC 2003). The Asian Development Bank also plays a significant role in the development of projects such as the building of numerous dams in the Mekong River and its main tributaries (*The Economist,* 3 January 2004).

3.5.2 Comment

The MRC and China are primarily engaged with flood control and the development of numerous dam-building projects. Although this "barrage of dams" is generating valuable electricity, aid irrigation projects and regulates flooding, it also causes "irreparable damage" to fisheries. Flood control, especially during the seasonal monsoon period, has caused a decline of the natural habitat for numerous fish species. It is reported that fisherman along the Mekong River are already complaining about falling catches. This is in spite of the MRC's fisheries programme that "aims to ensure the livelihood and food security of millions of people" (MRC 2003). For example:

> "The Mekong River Commission calculates that the fish catch actually doubled in Cambodia between the 1940s and the 1990s. But over the same period the number of fishermen (along with the population as a whole) has more than tripled, leading to a decline of 44% in the amount each one takes home" (*The Economist,* 3 January 2004).

An important function of the MRC that is similar to that of the Murray-Darling Basin Commission is the collection and regular exchange of data between all member states.

However, data collection is not reliable. It is outdated most of the time and the exchange of information leaves much to be desired. The MRC makes little use of its hydrologic and water quality databases. Problems related to the databases can only be rectified if managers of the MRC are made aware of it (Chenoweth 1999, 373). The main users of the data are private consultants who are mainly engaged in MRC projects. In general terms, this unsatisfactory state of affairs can be ascribed to a lack of appropriate technical capacity in some countries, weak financial support, poor administration, inefficient records and a high turn-over of staff in the MRC. Regarding the latter, the MRC is unable to develop any extensive expertise over time, i.e. institutional knowledge (Chenowerth 1999, 372 – 374).

3.6 SUB-SAHARAN AFRICA

3.6.1 Principles

As previously indicated, the four *Dublin Principles* constitute the core elements of the IWRM approach. Based on the *Dublin Principles* that were confirmed by the 1992 United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, the International Water and Sanitation Centre (IRC) developed eight principles to use as criteria to assess the degree of IWRM implementation in developing countries (Visscher *et al.* 1999). These principles are:

> "1. Water source and catchment conservation and protection are essential.
> 2. Water allocation should be agreed between stakeholders within a national framework.
> 3. Management needs to be taken care of at the lowest appropriate level.
> 4. Capacity building is the key to sustainability.
> 5. Involvement of all stakeholders is required.
> 6. Efficient water use is essential and often an important 'source' in itself.
> 7. Water should be treated as having an economic and social value.
> 8. Striking a gender balance is essential" (Visscher *et al.* 1999).

During the second part of the 1990s the IRC assessed eight water and sanitation supply projects and three IWRM projects in Africa (South Africa, Zambia and Ghana), Asia (Nepal, India) and Latin America (Colombia) in terms of these principles. The following is a summary of the IRC's findings and recommendations pertaining to projects in Sub-Saharan Africa as well as other aspects related to the implementation of the IWRM approach (Visscher *et al.*,1999 unless otherwise indicated).

Principle 1: Water source and catchment conservation and protection are essential.

It is recommended that community involvement can be enhanced if the link between the deterioration of water resources and its causes is made visible. Communities must therefore be actively involved in "both problem and solution identification. Interventions should where possible harness existing beliefs, custom and practice" (Visscher *et al.* 1999, 58). For example, in Ghana the rural villages of Nyagbo, Emli and Israel view a grove of trees in their catchment area as sacred. In this area farming activities and the disposal of waste are forbidden. Individuals are also not allowed to step into the water when collecting it. As a result of these measures, the villagers believe that neither the quality, nor the quantity of water has ever been affected.

The IRC Study found that although the communities in the district of Mbala in Zambia rely on groundwater, they did not see deforestation as a threat to the recharge of their wells or springs. They also believe that supernatural forces cause droughts. In the Northern Province of Zambia "traditional laws and witchcraft are used to deter the cutting of trees around water sources, shrines, and graveyards" (Visscher *et al.* 1999, 12-15). The aforementioned examples clearly indicate an inability amongst the communities to comprehend the relationship between cause and effect when they experience problems related to natural resources. These problems could be caused by human activities such as the overexploitation of water resources by local farmers.

Principle 2: Water allocation should be agreed upon between stakeholders within a national framework.

The allocation of water to the various stakeholders is indeed a sensitive issue. For the allocation to be equitable or perceived to be equitable, stakeholders must become involved in the decision-making process. They need to know the reasons behind the decisions. If they do not know the reasons, this could result in discontentment among some of them. However, the IRC Study found that the theoretical embracement of the concept of stakeholder involvement is not reflected in its practical application. There are different interpretations regarding the definition of a stakeholder. There is also a tendency

to involve stakeholders only at the gathering of information and not at the decision-making level. Where stakeholders are involved in the decision-making processes, "poor and diffuse users are often at the mercy of large well organised lobbies" (Visscher *et al.* 1999, 20).

Communities will be more inclined to accept decisions regarding water allocation if they were involved in a transparent decision-making process. The water allocations of the Mbala Municipal Council in Zambia were perceived by the community to be unjust because they were not involved in the allocation process.

Principle 3: Management needs to be taken care of at the lowest appropriate level.

Although governments promote the concept of decentralisation, there is no clear legal framework that enshrines the rights and responsibilities of the various stakeholders. This often leads to confusion. When the decentralisation of responsibilities is not accompanied by the decentralisation of power, communities tend to lose interest and become disengaged in IWRM.

Principle 4: Capacity building is the key to sustainability.

In general capacity building activities tend to focus on the community and national level without paying sufficient attention to the intermediate levels of local government and regional sector agencies. The effectiveness of the capacity building programs is also not monitored.

Principle 5: Involvement of all stakeholders is required.

Although there is a growth in the involvement of stakeholders, it is limited and narrow in its focus. The reluctance of communities to become involved in IWRM is due to the absence of ownership or control over decisions; the lack of real decision-making powers regarding water allocation and use; high transaction costs of involvement; and "poorly developed frameworks by which the views of large communities can be represented at stakeholder level" (Visscher *et al*. 1999, 3).

The involvement of communities at national and regional levels is generally of a consultative nature that often leads to disillusionment and the withdrawal of co-operation. "Users have multiple perspectives and agendas; the skills needed to reconcile these are lacking and where mechanisms for conflict resolution are in place they remain ineffective" (Vischer *et al.* 1999, vi).

Principle 6: Efficient water use is essential and often an important "source' in itself.

The lack of guidance at the national level on the efficient use of water resources often results in the introduction of local *ad hoc* decisions that are unenforceable. There is almost no culture of efficiency and the demand management of water resources. To improve the efficiency of water use, the following are recommended:

> "**Implement IWRM strategies.** Create a general awareness of water demand across whole catchments and adjust sectoral or geographic allocations to take account of "best practice" in terms of waste minimisation.
> **Create an enabling environment.** Include specific targets for water efficiency in distribution and use in national guidelines.
> **Develop managerial, economic and technical capacity to carry out efficiency improvements.** Capacity building has to include technology transfer of efficient water use practices, such as the expansion of pilot projects … and the dissemination of good practice methodology to a wide audience, including the private sector.
> **Adopt demand management politics.** Establish tariff structures that underpin the equitable distribution of water and sanction high water use" (Visscher *et al.* 1999, 42-43).

Principle 7: Water should be treated as having an economic and social value.

Although the principle of paying for water and the introduction of water user charges have been accepted by most communities, the social value of water needs to be taken into consideration in the planning of water charges without infringing the rights of vulnerable groups.

Principle 8: Striking a gender balance is essential.

There is a notable difference between the international policy level and the daily reality experienced by those within communities who have absorbed the principle of gender

equality. In general women are insufficiently involved within projects and agencies, especially in the staff of supporting agencies. This conclusion is not surprising. At the 6th African Regional Conference on Women held in Addis Ababa in November 1999 it was noted that six years after the United Nations Conference on Woman in Beijing, China, "women are worse off materially than they were at the start, despite considerable legal and constitutional gains" (Molokomme 2002, 43).

Even in countries like South Africa and Namibia where the principle of gender equality is constitutionally acknowledged, its implementation is compounded by the "co-existence of customary laws" and the "power of traditional authorities". In terms of the customary laws of all the countries of the Southern African Development Community (SADC), women are still subjected to male guardianship. In many cases they "still only have access to land, livestock and other productive resources through their male guardians, and not in their own right" (Molokomme 2002, 44). Therefore:

> "While political statements of commitment at the highest level are an important pre-requisite to the achievement of gender equality, this is not adequate. Clearly, society in all SADC countries has not as yet been transformed in a culture that embraces the principle of gender equality as a fundamental human right and a democratic imperative" (Molokomme 2002, 45).

According to Pearce (2000) there is a huge gap between the *de jure* and *de facto* observance of the principle of gender equality. Women continue to be under-represented at the legislative, ministerial and decision-making levels including the corporate sector and other socio-economic institutions. Their exclusion from power and decision-making can often be drawn from the way in which political concepts such as democracy, representation in politics, differences and the state are defined. These concepts were developed in the Western world and transferred to Africa through the colonial and post-independence systems, without considering the African context.

Pearce (2000, 8) believes that African women are still contending with problems "emanating from a long history of patriarchal institutions from both Western and indigenous systems." Their participation in governance systems will only improve once

society's perception of a 'female' and the way in which community life is organised have changed.

3.6.2 Comment

The IRC study reveals a number of difficulties that countries in Sub-Saharan Africa have with the implementation of IWRM projects. The concept of integrated water resource management appears to be partially in conflict with the traditional African value systems. There is also a dire need for capacity building initiatives as well as adequate financial incentives to bring about a market-driven IWRM approach. The majority of water users appear to not have realised as yet the economic value of water resources.

3.7 CONCLUSION

In terms of the public choice theory, France provides a good example of the role of government to address externalities that are caused by human activities. Water is defined as a common-pool resource. To discourage and minimise the pollution of water resources by water users, the water institutions in their capacity as government agencies, apply an economic incentive known as the 'polluter-user-pay' principle. The water institutions also have the institutional power to levy water taxes. As a result of this the water institutions in France are financially self-sufficient.

Although the principle of public participation — one of the holistic elements of the IWRM approach — is observed in the Water Parliaments, these parliaments are dominated by interest groups pursuing their own self-interests to the detriment of other water users. The subsequent result is a lost of interest among water users. It is indeed questionable whether the functioning of the Water Parliaments promotes public participation, especially since water institutions are only accountable to the government of the day.

An outstanding aspect of the Murray-Darling River basin initiative in Australia is the institutional structure of the water institutions. Elected politicians, scientists, technocrats

and representatives from selected interest groups play a significant role in the management and decision-making activities of water institutions, especially at the level of federal states and territories. Although decision-making is based on the principle of consensus, there is an acknowledgement that the decision-making mechanisms of the water institutions are not widely known. It could be that only a selected group has knowledge of the decision-making mechanisms in catchment areas. The mere existence of community advisory committees in the federal states and the territories does not necessarily mean that the communities within the catchment areas are indeed involved in decision-making activities. There also appears to be an increasing reluctance of volunteers to remain involved in water management activities at the level of catchment areas.

The Commonwealth government of Australia uses an economic incentive to encourage the federal states and territories to implement the IWRM approach within their respective areas of jurisdiction. The implementation status in the different federal states and territories determines the amount of money to which the states and territories are entitled. This incentive should be seen against the background of the fact that the Commonwealth government has a constitutional right to intervene in matters of national interest. The Commonwealth government's economic incentive and the right to intervene in certain circumstances can therefore be regarded as a positive element to enhance the efficiency and effectiveness of the IWRM approach throughout Australia.

In Indochina all the member states of the MRC are classified as developing countries. During the second half of the 1950s the USA, with the assistance of the UN Economic Commission for Asia and the Far East (ECAFE), initiated the establishment of the MRC to promote economic development in Indochina. If the observations of the special report that appeared in *The Economist* regarding the MRC are correct, it is debatable whether the use of the IWRM approach in Indochina is indeed making a positive contribution towards economic development and the environment of the region. Although it has led to infrastructural development, it has also had a negative effect on and caused irreprable damage to fisheries. The fact that the MRC has an annual Donor Consultative Group

meeting to solicit financial support for its activities, places some doubt on the viability of the inter-state water institution. Whereas the Commonwealth government in Australia has a constitutional right to intervene in the management of water resources when necessary, the MRC as an institution does not have a similar supranational right.

The IRC's assessment of some IWRM and water supply projects in selected Sub-Saharan countries has highlighted some of the cultural characteristics, socio-economic realities, different technological levels as well as the financial and infrastructural constraints that may influence the successful implementation of the IWRM approach. Given the fact that South Africa shares these characteristics with other developing countries in Sub-Saharan Africa, the IWRM approach needs to be contextualised to reflect the economic, political and multicultural realities of the South African society. This does not necessarily entail the rejection of the general principles of the IWRM approach, but rather the application of it in such a way that it is financially viable and practical. If not, South Africa may experience the same challenges as other developing countries.

CHAPTER 4

THE INCORPORATION OF THE IWRM APPROACH IN SOUTH AFRICA'S WATER POLICY

4.1 INTRODUCTION

The incorporation of the IWRM approach in South Africa's water policy has to be understood in terms of the country's hydrological realities, the historical development of water resources and policy change that came about as a result of the implementation of the negotiated political dispensation after April 1994. This chapter briefly focuses on the prelude to the policy change and the incorporation of the IWRM approach in the *Water Act* of 1998. It also analyses the establishment of water management areas, the institutional hierarchy of water management institutions, the national water resource strategy and interdepartmental co-operation.

4.2 PRELUDE TO THE POLICY CHANGE

South Africa is a water-stressed country with an average annual rainfall of less than 500mm. The rainfall pattern is erratic, seasonal and only nine per cent of it reaches the rivers. Although rivers are the main source of water for the country, perennial rivers are mainly found in the southern and southwestern areas and on the eastern plateau slopes. To address the water needs many storage dams have been constructed to regulate the flow of rivers and to facilitate water transfers between the different water catchment areas (South Africa Yearbook 2000/01). By 1994, for example, about 50 percent of South Africa's average rainfall that reaches the rivers were already captured in dams, other storage systems and water transfer systems (Muller 2001, 5).

The discovery of gold on the Witwatersrand during the 1880s laid the foundation for the industrialisation of South Africa and the establishment of Johannesburg in 1886. The significance of this development is the fact that Johannesburg and its neighbouring metropolitan areas are not geographically situated in a water rich area or close to a perennial river. The rapid urbanisation at the turn of the twentieth century necessitated the establishment of the Rand Water Board in 1903 to provide basic water and sanitation services (Turton and Meissner 2002, 41). This development can be regarded as the 'birth'

of the ever-increasing role of water agencies and of the government to address and regulate the supply and demand of water to the various stakeholders.

The economic and social developments since the early 1900s were accompanied by a continued increase in the demand for water resources. According to the 1997 *White paper on a national water policy for South Africa* (hereafter the *Water White Paper*), there is annually only 1200 kilolitres of freshwater available per person per year in a population of about 42 million. South Africa is currently using more than half in excess of the total water it can afford to use.

Prior to the promulgation of the *Water Services Act, 1997* (Act No. 108 of 1997) and the 1998 *National Water Act*, South Africa's water policy and the management thereof was subject to numerous related water laws and the principles of Roman-Dutch Law (Turton and Meissner 2002, 49). It reflected an era where the majority of the population had limited access to water resources. In the preamble of the *Water White Paper* the then Minister of Water Affairs and Forestry, Prof. Kader Asmal, stated that the "colonial law-makers tried to use the rules of the well-watered colonising countries of Europe" to develop a water law in the "interests of a dominant class and group which had privileged access to land and economic power". It was further stated that as a result of this, the majority of society had been denied either "direct access to water for productive use or access to the benefits from the use of the nation's water" (DWAF 1997).

The political system prior to 27 April 1994 thus gave a racially defined minority group the right and privilege to have access to and to manage water resources. The management of water resources was also in the hands of a technocratic elite (Turton and Meissner 2002, 48). According to Muller (2001, 5) institutions were purposively developed to intervene in the development of water resources in "favour of the white agricultural community." The white communities used the financial base of industry and commerce to serve their water needs. Black communities, especially those in the six self-governing territories (Lebowa, Gazankulu, KwaZulu, Quaqua, KaNgwane, KwaNdebele) and four nominally 'sovereign independent states' (Transkei, Ciskei, Bophuthatswana and Venda), depended on "budgetary handouts" (Muller 2001, 5)

Another factor that played a considerable role in the allocation of water resources was the adherence to the riparian system. The riparian system – developed by the courts through a combination of the Roman-Dutch Law and Anglo-Saxon jurisprudence – links the use of water and water rights to the ownership of land adjacent to a water source (DWAF 1997; Muller 2001, 4). Since property rights were denied to the majority of the population their access to water resources was limited.

The implementation of the negotiated political dispensation for South Africa after April 1994 provided a window of opportunity for the decision-makers to devise a new water policy. *The Constitution of the Republic of South Africa, 1996* (Act No. 108 of 1996) (hereafter the *Constitution*) is the foundation of all legislation. Article 27 of the *Constitution* states that all persons have the right of access to sufficient water and article 24 stipulates that everyone has a right to an environment that is not harmful to their health or well being. The state is obliged to take reasonable legislative measures to achieve the progressive realization of these rights.

DWAF was tasked, in conjunction with other major national and international role players in the water sector, to formulate a new water policy for consideration by the national Government. The consultation process began in May 1995 when DWAF distributed a booklet entitled *You and Your Water Rights.* The purpose of the booklet was not only to stimulate a public debate, but also to solicit the views of the general public. The Water Law Review Panel, instituted by DWAF, developed a set of Fundamental Principles and Objectives (hereafter the Principles) that were subsequently discussed at consultative meetings with different interest groups. The consultations ended at the Water Law Review National Consultative Conference, held in October 1996 in East London. These Principles were approved by Cabinet in November 1996 and formed the basis for the development of the 1997 *White Paper* and the 1998 *Water Act* (DWAF 1997).

It is important to note that throughout the consultation process, hydrologists and scientists from international institutions participated actively in conferences and workshops with their South African counterparts. Significant financial contributions were received from the Finnish government (R5 million), the United Kingdom, the United States of America

and other international donors (DWAF 1997). This assistance reflects the worldwide concern for the conservation of natural water resources as indicated in the previous chapters. Whereas the 1997 *Water Services Act* regulates the provision of water and sanitation services, the 1998 *Water Act,* which is the focus of this analysis, reflects South Africa's overarching national water policy as well as the basic rights of all citizens related to water resources.

4.3 THE WATER POLICY AND THE IWRM APPROACH

As indicated previously, the essence of the IWRM approach can be reduced to the 1992 *Dublin Principles* that emphasise the importance of recognising fresh water as a finite and vulnerable resource. Apart from having an economic value, water is also vital to sustain life, the environment and socio-economic development. Water therefore requires a participatory approach at all levels in the management and development of water resources. The preamble of the *Water Act* states that water is a "scarce resource" and "part of a unitary, interdependent cycle." There is a "need for the integrated management of all aspects of water resources" and the management thereof ought to be delegated to a "regional or catchment level to enable everyone to participate". The incorporation of the IWRM approach in South Africa's water policy is confirmed by article 2 of the *Water Act* which reads:

> "**Purpose of Act**
>
> **2**. The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account, amongst other factors –
>
> (a) meeting basic human needs of present and future generations;
> (b) promoting equitable access to water;
> (c) redressing the results of past racial and gender discrimination;
> (d) promoting the efficient, sustainable and beneficial use of water in the public interest;
> (e) facilitating social and economic development;
> (f) providing for growing demand for water use;
> (g) protecting aquatic and associated ecosystems and their biological diversity;
> (h) reducing and preventing pollution and degradation of water resources;
> (i) meeting international obligations; promoting dam safety;

(j) managing floods and droughts;

and, for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation."

Another significant change in the water policy is the abolishment of the riparian principle. It is replaced with a licensing system and water resources are defined as a common-pool resource available to everyone.

4.3.1 Water as a common-pool resource

In the preamble of the *Water Act* it is stated that "water is a natural resource that belongs to all people, and the discriminatory laws and practices in the past have prevented equal access to water, and the use of water resources". This is based on the aforementioned Principles that reject the riparian principle in favour of water as a common-pool resource. These principles pertain to the following:

"**Principle 1**
The water law shall be subject to and consistent with the Constitution in all matters including the determination of the public interest and the rights and obligations of all parties, public and private, with regards to water. While taking cognisance of existing uses, the water law will actively promote the values enshrined in the Bill of Rights.

Principle 2
All water, wherever it occurs in the water cycle, is a resource common to all, the use of which shall be subject to national control. All water shall have a consistent status in law, irrespective of where it occurs.

Principle 3
There shall be no ownership of water but only a right (for environmental and basic human needs) or an authorisation for its use. Any authorisation to use water in terms of the water law shall not be in perpetuity.

Principle 4
The location of the water resource in relation to land shall not in itself confer preferential rights to usage. The riparian principle shall not apply" (Adapted from DWAF 1997, *White Paper On A National Water Policy For South Africa*).

The abolishment of the riparian principle represents a paradigm shift in South Africa's water policy. It brought an end to the privately held water rights of property owners and

the state became the custodian of the nation's water resources (Stein 2002, 116). The riparian system of allocation was replaced with a licensing system that allows for the trading of 'water rights' on a market (DWAF 1997).

As indicated previously, the South African courts were mainly responsible for the development of the riparian system through a combination of the Roman-Dutch Law and Anglo-Saxon jurisprudence. This was partially codified in the 1956 *Water Act* that made a distinction between private and public water. The categories of private and public water were governed by specific rules that "disregarded the unified nature of the hydrological cycle" (Stein 2002, 116). Without going into detail it suffices to state that according to the *Water White Paper* the distinction primarily favoured the landowners.

The custodianship of the nation's water resources is based on Principles 12 and 13 and legislated in the *Water Act.* These relate to the following:

> "**Principle 12**
> The national Government is the custodian of the Nation's water resources, as an indivisible national asset. Guided by its duty to promote the public trust, the National Government has ultimate responsibility for, and authority over, water resource management, the equitable allocation and usage of water and the transfer of water between catchments and international water matters.
>
> **Principle 13**
>
> As custodian of the Nation's water resources, the National Government shall ensure that the development, apportionment, management and use of those resources is carried out using the criteria of public interest, sustainability, equity and efficiency of use in a manner which reflects its public trust obligations and the value of water to society while ensuring that basic domestic needs, the requirements of the environment and international obligations are met" (Adapted from DWAF 1997, *White Paper On A National Water Policy For South Africa*).

The custodianship is based on the doctrine of public trust. Stein (2002, 116) states in this regard that it constitutes a "revival of certain Roman, Roman-Dutch and indigenous and customary law principles". The acceptance thereof implies that water is regarded as a public good. Therefore, the state has reserved the right to "influence the country's economic and social development" by determining the management and use of water resources (DWAF 1997).

4.3.2 Comment

The public choice theory postulates that an elected government has a duty to devise policies that will enhance public welfare. The decision of the South African government to devise a new water policy was primarily based on the assumptions that water resources are limited and the riparian system of water allocation only favoured a privileged minority group. In terms of the public choice theory, a market failure had also been identified that had to be rectified by the government. This market failure was evident in the fact that the majority of the population had limited access to water resources. The market was also unable to deliver the goods and services needed to stimulate economic development and meet the basic needs of society at large.

Since an elected government has an obligation to regulate, distribute and provide goods and services to society, the characteristics of the goods and services need to be clarified. As previously indicated, public choice theorists argue that if water is defined as an indivisible public good, others cannot be excluded from using it. The decision of the South African government to abolish the riparian principle and take responsibility as custodian for the nation's water resources is therefore justified.

4.4 THE NATIONAL WATER RESOURCE STRATEGY

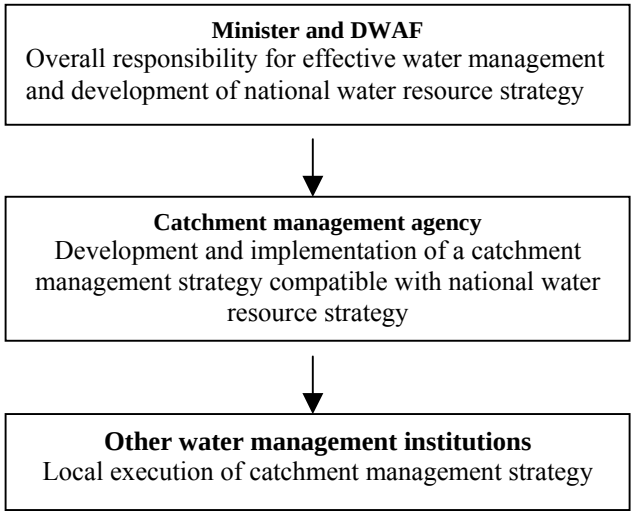
The 1998 *Water Act* provides for both a national and a regional level approach to the progressive development of water management strategies. The management of water resources at national level is guided by a National Water Resource Strategy (NWRS). Once the NWRS has been developed, it has to be implemented by the water management institutions at regional level. Each of the regional catchment management agencies (CMAs) has to develop their own catchment strategy to implement the NWRS. The *Water Act* requires that all the stakeholders must be consulted by DWAF, in conjunction with the water institutions. The stakeholders would theoretically include every water user in South Africa because water is a common-pool resource. The jurisdiction boundaries of the management areas should not exclude any water user if the resource strategy is going to impact on the interests of an individual or an interest group (Karodia and Weston 2001, 14-15).

It is important to note that to correspond with the IWRM approach, the NWRS must have an ecological, a socio-economic and an integrated management component. The ecological component of the NWRS determines the reserve of water required to maintain ecological sustainability; sets out the principles for water conservation and demand management; and stipulates the water quality objectives to be achieved. The socio-economic component determines the reserve of water required to meet basic human needs; estimates of present and future water requirements; specifies the quantity of water available in each WMA; and makes provision for inter-catchment transfers.

The integrated management component sets out the objectives for the establishment of institutions; inter-institutional arrangements; and the application of catchment management in a holistic and integrated manner (Karodia and Weston 2001, 14). The IWRM approach, as reflected in the *Water Act,* requires that the development and management of water resources should be conducted by CMAs within delineated WMAs.

Although the IWRM approach emphasises the involvement of water users, the hierarchy of water management institutions makes no reference to it. The role of water users in water institutions will therefore be minimal, especially for those groups on the fringes of society. The different levels of responsibilities for the NWRS are represented in the hierarchy of water management institutions (see Figure 4-1).

Figure 4-1 Hierarchy of water management institutions



Source: DWAF (2002a).

4.5 WATER MANAGEMENT AREAS

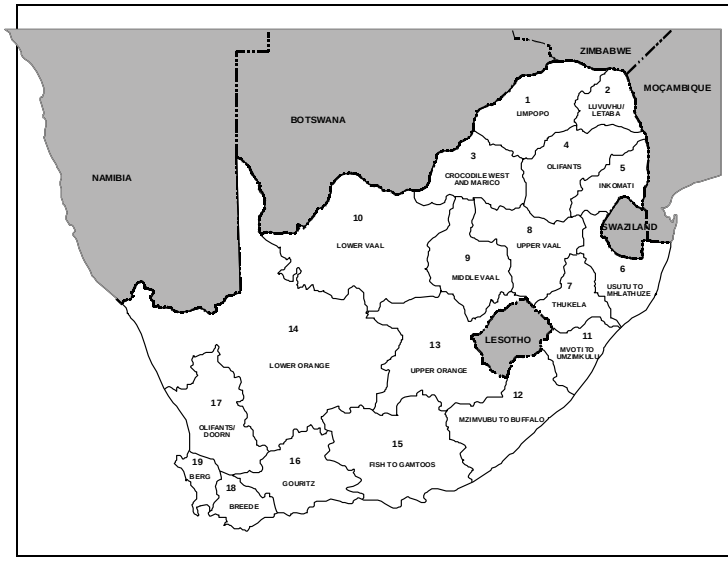
4.5.1 Background

An important element of the IWRM approach is the use of a water catchment area — also referred to as a WMA. A WMA is defined as follows:

> "an area established as a management unit in the National Water Resource Strategy within which a catchment management agency will conduct the protection, use, development, conservation, management and control of water resources"(DWAF 1999b).

Numerous workshops, forum meetings and discussions with various stakeholders preceded the establishment and eventual finalisation of WMAs. DWAF was also guided by the following criteria to identify the proposed WMAs: watercourse catchment boundaries; social and economic development patterns; efficiency considerations; and the communal interests within the area in question (DWAF 1999b). In October 1999 the South African government approved the boundaries of the nineteen proposed WMAs for South Africa (see Map 4-1).

Map 4-1 Water management areas



1. Limpopo WMA
2. Luvubu and Letaba WMA
3. Crocodile (West) and Marico WMA
4. Olifants WMA
5. Inkomati WMA
6. Usutu to Mhlathuze WMA
7. Thukela WMA
8. Upper Vaal WMA
9. The Middle Vaal WMA
10. Lower Vaal WMA
11. Mvoti to Umzimkulu WMA
12. Mzimvubu to Keiskamma WMA
13. Upper Orange WMA
14. Lower Orange WMA
15. Fish to Keiskamma WMA
16. Gouritz WMA
17. Olifants/Doorn WMA
18. Breede WMA
19. Berg WMA

Source: DWAF (1999b).

It is important to note that a WMA does not necessarily include a whole catchment area. It either coincides with a catchment that comprises a portion or portions of a catchment or incorporates an area larger than a single catchment (DWAF 1999b). As is evident from Map 4-1 the boundaries of the WMAs reveal the following facts:

South Africa is divided into nine provinces but only five of the nineteen WMAs fall within a provincial boundary, namely the Limpopo WMA, the Luvubu and Letaba WMA, the Thukela WMA, the Breede WMA, and the Berg WMA. The country is furthermore divided into 47 district municipalities with jurisdiction areas that observe the provincial boundaries (Municipal Demarcation Board 2001, 3-5).

South Africa has six neighbouring countries, namely Namibia, Botswana, Zimbabwe, Mozambique, Swaziland and Lesotho. Eleven of the nineteen WMAs share the same water resources with these countries. As a result there are eleven international river basins (DWAF 2003, 7). There can be no doubt that the decisions regarding IWRM activities and the conduct of water users within these areas will certainly affect the neighbouring countries and *vice versa*. For example, the activities of water users in Botswana, Zimbabwe and South Africa affect the water quantity of the Limpopo River and consequently neighbouring Mozambique. In respect of the Limpopo River, the following WMAs are directly involved: Lower Vaal WMA (Molopo River), Crocodile (West) and Marico WMA, Limpopo WRM, and the Luvubu and Letaba WMA. Similarly water from the Inkomati WMA and the Usutu to Mhlathuze WMA flow into Mozambique and Swaziland.

Furthermore, given the limited availability of water resources and the demographics of the country, the government and water agencies such as the Rand Water Board are obliged to transfer water between WMAs as well as from Lesotho to meet the rising demands for water in the metropolitan areas. For example, within the Inkomati Basin about 131.5 million m^3/a is transferred from the upper Komati River to the Olifants River Basin of which 104 million m^3/a is for ESKOM power stations. An extra 135.5 million m^3/a is transferred to the Mbuluzi River basin in Swaziland (DWAF 2001).

The Lesotho Highlands Water Project (LHWP) is another example. The LHWP, established in 1986, transfers water from the highlands of Lesotho to the Vaal River catchment to "augment water supplies to South Africa and to generate hydropower for Lesotho" (DWAF 1999b). These waters flow into the Upper Vaal WMA and the Upper Orange WMA. The quantity of the water resources in the Lower Orange WMA is also influenced by seasonal flows of the Orange River from Lesotho and the Nossob River from Namibia.

4.5.2 Comment

Although various criteria were used and numerous stakeholders were consulted, the final decision in delineating the boundaries of the WMAs was primarily based on scientific data. The boundaries of the WMAs do not correspond with the jurisdiction boundaries of the nine provincial governments and the 47 district boundaries. This raises several questions such as: Who will be responsible for what? What level of authority and which authority will be responsible for the management of water resources?

The transfer of water between the WMAs as well as between South Africa and its neighbouring states also changes the boundaries. The main reason for the transfers is to meet the economic and social demands of interest groups in the country. Apart from their ecological implications, these water transfers could lead to conflicts over the access to water. It is debatable whether the political implications and the possible impact of these transfers on the environment will in future receive adequate attention. Presently it is not the case.

The interconnectedness of the WMAs and the neighbouring countries in principle necessitates the involvement of the stakeholders in all the management activities of international river basins. This complicates matters even further. According to the *Water Act* integrated planning is therefore a prerequisite for management. The emphasis is thus on participative planning in which all water users and interest groups are involved and to which government inputs are applied (DWAF 2001, 18).

The establishment of nineteen WMAs requires the creation of nineteen water agencies and additional international water management institutions for the international river basins. From an economic perspective this has far-reaching financial implications for South Africa and its neighbouring states. Proponents of the public choice theory therefore correctly argue that the numerous institutions could lead to the formation of large bureaucratic structures.

4.6 WATER MANAGEMENT INSTITUTIONS

The establishment of water institutions as prescribed by the *Water Act* is based on the following principles accepted by the South African government in November 1997 in the *Water White Paper*:

> "**Principle 22**
> The institutional framework for water management shall as far as possible be simple, pragmatic and understandable. It shall be self-driven and minimise the necessity for State intervention. Administrative decisions shall be subject to appeal.
> **Principle 23**
> Responsibility for the development, apportionment and management of available water resources shall, where possible and appropriate, be delegated to a catchment or regional level in such a manner as to enable interested parties to participate.
> **Principle 24**
> Beneficiaries of the water management system shall contribute to the cost of its establishment and maintenance on an equitable basis" (Adapted from DWAF 1997, *White Paper On A National Water Policy For South Africa*).

Accordingly, and in terms of Chapter 7 of the *Water Act,* specific provision is made for the progressive establishment of CMAs, catchment management committees (CMCs), water user associations (WUAs) and international water management institutions. The purpose of these water institutions include, amongst others: playing a co-ordinating role regarding water related activities and water management institutions; developing and implementing the catchment strategies; and encouraging public participation. According

to article 2 of the *Water Act*, the water institutions must also have "appropriate community, racial and gender representation".

4.6.1 Catchment management agencies

The purpose of establishing water agencies is to delegate the management of water resources to a regional or catchment level and to involve local communities and stakeholders concerned. According to article 78 of the *Water Act,* there are two ways in which a CMA agency for a management area can be established. The Minister can firstly use his prerogative (based on the recommendation of DWAF), to act in terms of the national water resources strategy (NWRS), or secondly act after the receipt of a proposal that emanated from the community and stakeholders of a management area. Regarding the latter it is important to note that public consultation is an integral part of the preparation of such a proposal.

According to Thompson *et al.* (2001, 31) the governance of a CMA should be seen from two perspectives, viz. the narrow or traditional perspective and the broad perspective. The narrow perspective is "linked to the internal corporate structure" (corporate governance) of a CMA and the broad perspective to the "external regulatory mechanisms and control" (public governance) of a CMA. Given the composition of interest groups and stakeholders involved in the public governance of a CMA, co-operation is of vital importance to the functioning of an agency. Accordingly:

> "The concept of governance has … grown more complicated that previously. But, governance should not be too onerous with the emphasis on control because it could stifle the organization. A proper balance needs to be achieved between the freedom to manage, accountability and the interests of the different stakeholders … instruments should be in place to ensure … good public governance. This is important because … individuals in control of these organizations may proceed with their own agenda" (Thompson *et al.* 2001, 31).

Therefore, apart from managing the activities that influence water resource management in a WMA, a CMA must promote community participation.

> "This requires cooperative governance, enshrined in South Africa's Constitution, meaning the fostering of friendly relations, assisting and supporting each other and consulting on matters of common interest, coordinating actions with each other, and adhering to agreed procedures. The CMA's relationship with local and provincial government will be close since the activities of the CMA must be mutually supportive" (DWAF 1999b).

Concerning its composition a CMA is a 'body corporate', established by and accountable for its performance to the Minister of Water Affairs and Forestry through a Governing Board. The organisational structure of each CMA will be determined by the local circumstances within a WMA, its functions and its adopted working methodology (DWAF 1999b). A CMA consists of a Governing Board, a Chief Executive Officer (CEO), a secretariat and first-line managers. The CEO can be a member of the Governing Board but not chair any of its meetings. The CEO is responsible for the coordination of the administrative activities of the CMA and the provision of Operational and Technical Support (O&TS) to the Governing Board (DWAF 1999a).

The composition of the Governing Board, comprising 9 to 15 members, must reflect the relevant stakeholders, demographic and gender profiles (DWAF 199a). DWAF, the provincial and local governments as well as the historically disadvantaged communities must therefore all be represented in the CMA. The *Water Act* provides no specific guidelines as to how representatives will become members of the Board. Article 2 only stipulates that a water institution must have appropriate community, racial and gender representation. In terms of article 81 (3) of the *Water Act* the Minister will appoint the members of the Board after an Advisory Committee (established by the Minister) has made recommendations about the composition of the Governing Board. According to an official brochure of DWAF (1999a) "board members do not serve to represent their particular sector or organisation, but rather to take decisions on integrated water resource management". One of the requirements of a board member is that he or she must have the necessary experience and expertise to function effectively. The Board is only accountable to the Minister for the performance of the CMA. It has the responsibility of setting the vision, mission and strategic direction of the institution, prepare business plans and monitor the performance of the CMA (DWAF 1999a).

The functions of a CMA in terms of article 80 of the *Water Act* are as follows: to investigate and advise interested persons on the protection, use, development, conservation, management and control of the water resources in its water management area; to develop a catchment management strategy; to co-ordinate the related activities of water users and of the water management institutions within its water management area; to promote the co-ordination of its implementation with the implementation of any applicable development plan established in terms of the 1997 *Water Services Act*; and to promote community participation in the protection, use, development, conservation, management and control of the water resources in its water management area.

Even though there is a strong emphasis on the active involvement of the stakeholders in the day-to-day activities of the CMAs, their influence is expected to be subject to the scientific knowledge of the technocrats. The appointment of members to the Board will also be subject to the approval and recommendation of the Advisory Committee: Governing Board.

4.6.2 Catchment management committees

In terms of article 82(5) of the *Water Act* a CMA has the power to establish committees and consultative bodies to "perform any of its functions within a particular area or generally or to advise it". It also determines the terms of reference of a CMC. The members not only provide the required expertise but also represent the interests of specific water users and stakeholders of a specific catchment area.

For example, in the proposal for the establishment of a CMA for the Inkomati basin, the Inkomati Reference Group has recommended the creation of CMCs for each of the basin's three major catchment, viz. the Komati, Crocodile and Sabie-Sands catchments. This corresponds with the following policy prescription, namely:

> "Capturing the interests of water user and interest groups at catchment level requires the creation of a body with an identity that can operate in terms of formal procedures. Ideally, this body must have legal standing, but, more importantly, it must have clearly defined membership and

responsibilities and must be recognised as a vehicle of representation by water user and interest groups" (DWAF 2001, 28).

According to the proposed composition of the aforementioned CMCs, the following water user and interest groups will be represented: agriculture; forestry; energy; mining, industry; environment; local government; traditional leaders; civil society; government departments; and tourism (DWAF 2001, 35-41). The CMCs will make recommendations to the Minister regarding possible candidates to sit on the Inkomati CMA. The proposed candidates will be subject to the approval of the Advisory Committee: Governing Board.

4.6.3 Water user associations

A WUA is a body corporate and a co-operative association that consists of individual water users who wish to use their own resources to undertake water related activities for their mutual benefit at a restricted localised level (DWAF 1999a). It may only exercise those management powers and duties that are assigned or delegated to it by the responsible CMA. The primary role of a user association is to enable the water users to benefit from addressing local needs in terms of local priorities and resources (Karodia and Weston 2001, 17). The functions of a water user association will depend on its constitution. Although WUAs must operate within the framework of national policy and standards, the Minister may exercise control over them by giving them directives or by temporarily taking over their functions under particular circumstances. Since irrigation boards, subterranean water control boards and water boards prior to the enactment of the *Water Act* restricted public participation and had limited human and financial support, they are to be restructured as WUAs — Chapter 8 of the *Water Act*.

Every WUA has a management committee and they are primarily funded through water user charges levied on their members (DWAF 1999a). It is important to note that the establishment of a WUA is subject to the ability of members to finance the operational, maintenance and administrative costs of any capital works. A WUA could also be funded from the proceeds of water works under its control and it could, in principle, receive financial assistance from DWAF or a CMA (DWAF 1999a).

4.6.4 International water management institutions

No international water management institutions had been established by the end of 2003. The agreement for the establishment of the Orange-Senqu River Commission between South Africa, Lesotho, Namibia and Botswana is yet to be ratified by the respective governments by the first half of 2004.

It suffices to note that the 1956 *Helsinki Rules on the Uses of International Rivers* contributed significantly to the development of international law and the subsequent establishment of the 1997 *United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses* (Akweenda 2002, 103). With the exception of Zimbabwe, all the other riparian countries have voted in favour of the aforementioned Convention. South Africa ratified it on 26 October 1998 and Namibia on 29 August 2001 (Eckstein 2002, 87-96).

The neighbouring countries also subscribe to the 2000 *Revised Protocol on Shared Watercourse Systems in the Southern African Development Community* – hereafter the Protocol (Ramoeli 2002, 111). The Protocol has the following main provisions:

> "Respect for the sovereignty of member states in the utilisation of shared water courses … Application of rules general or customary international law, community of interest and equitable utilisation … Maintaining a proper balance between development and environment protection and conservation ... Co-operation in joint projects and studies. Information and data-sharing ... Equitable and reasonable utilisation of shared water course systems ... Use of discharge and abstraction permits and licences ... Obligation to notify about emergency situations, protection against pollution and the use of installations for peaceful purposes" (Ramoeli 2002, 107-109).

There can be no doubt that the aforementioned provisions have incorporated the IWRM approach. They also correspond with South Africa's water policy.

The establishment of international water management institutions is indeed a step in the right direction to encourage SADC states to develop a joint policy approach for the

management of region's water resources. However, it should be kept in mind that the introduction of these institutions would have political as well as financial implications for all the countries involved. As previously indicated, the MRC in Indochina relies heavily on international donors to fund its activities. However, there is a lack of co-operation among member states when it comes to the exchange of scientific data. Stakeholders are not adequately consulted, and the environment equilibrium appears to be disturbed by the projects of the MRC projects.

4.6.5 Comment

As previously pointed out, the implementation of the IWRM approach represents a paradigm shift. The creation of new water institutions carries within itself certain risks. In this respect Barham argues that these water institutions may:

> "sap the effectiveness of existing democratic channels of communication in the interest of finding more efficient *technical* solutions to complex problems. Social organisations (boards, committees, etc.) created for watershed planning are imposed as it were *from the outside*, overlaying natural boundaries in a new way on top of existing social and political boundaries … To use a water metaphor, authority, funding, research, and new scientific approaches can all be poured from existing social and political containers into the watershed boundary. But we can't be certain that processes of democratic deliberation that were associated with the older containers will be poured along with the rest or separated out and cast aside unless we give this careful and constant consideration" (Barham as quoted by Wester and Warner 2002, 69-70).

The aforementioned argument is also applicable to the establishment of CMAs for all the nineteen WMAs of South Africa. Once a water management institution has been established, it cannot merely play a purely administrative role. It also becomes an institution of political choice where decisions are taken that will have social, economic and political consequences for all the water users. Given the fact that no CMA has been established as yet, the co-ordination and co-operation difficulties that water institutions will have to overcome, although challenging, remain speculative.

4.7 DECENTRALISATION AND CAPACITY BUILDING

Decentralisation plays a significant role to ensure the involvement of all the stakeholders in the management of water resources by CMAs on the level of geographical WMAs. As such decentralisation definitely creates difficulties, especially when the affected stakeholders and users are from different political or administrative areas. An aspect that may also hinder the decentralisation process is the apparent lack of capacity among various stakeholders such as local authorities.

In the 2001 Report of the Municipal Demarcation Board (2001, 9-12) it was stated that there is a major lack of capacity on the level of local government. This acknowledgement is indeed an issue of major concern since the country has been divided into 47 district municipalities and they play a significant role in the management and provision of water resources. To address this challenge the national government has committed itself through DWAF to capacity building projects among officials at all levels of local government and other relevant water organisations and agencies.

The capacity building programmes focus on the "marginalised and disadvantaged groups" (DWAF 1997). Visscher *et al.* (1999, 32) note that the strategies for capacity building in developing countries tend to be conventional and under-resourced, also considering that they primarily focus on the local community. The results of these capacity building strategies are seldom monitored. In spite of the fact that many countries have introduced decentralisation measures, the realisation of these measures is minimal. In this regard Visscher *et al.* (1999, 24) state the following:

> "Unfortunately high flown rhetoric about the need for decentralisation and empowerment of communities frequently masks lacklustre implementation of policies that are often either externally driven (and contrary to the generally centralising instincts of most governments) or simply an acknowledgement of the de facto inability to carry out the expected functions."

For decentralisation to be implemented effectively it is essential that it has the appropriate legal backing that clearly determines the powers and the responsibilities of

the water management institutions. The absence of legal backing could lead to confusion. Since 1997 the local governments in Mpumalanga have the authority to manage rural water supplies. However, prior to 1997 village committees were responsible to manage water supply systems in rural areas where traditional authorities control communal land (Visscher *et al.* 1999, 25). The subsequent result is confusion about who is responsible for what.

Apart from this uncertainty, Stimie *et al.* (2001, 79) identify numerous complex water related issues that pose challenges in the rural areas. These include issues pertaining to water quality, water quantity, water services, infrastructure design and ownership, and economic affordability. As a result of emerging management systems in district municipalities and a lack of information, rural communities are confronted with local conflicts, "institutional interference, overlapping or lack of competencies". Regarding the lack of information it is noted with reference to the Steelpoort River basin as an example, that rural communities have "little or no contact" with the implementation of the water policies; they are unaware of the implications of the *Water Act*; and they do not interact with other water users. The situation and day-to-day experiences of the water users in the Steelpoort River basin "is applicable to the rest of the country" (Stimie *et al.* 2001, ix).

4.8 INTERDEPARTMENTAL CO-OPERATION

4.8.1 Assumptions

The efficiency and effective functioning of water institutions are influenced by the quality of co-ordination and co-operation with government departments, provincial authorities, interest groups and other water users. The complexity associated with the functioning of a CMA is illustrated in the number of stakeholders involved in the management of water resources. In the process to prepare the proposal for the establishment of a CMA for the Crocodile (West) and Marico WMA, DWAF interacted with various role players. Apart from interest groups that represented industry, agriculture and traditional leaders, DWAF also interacted with 20 metropolitan, district

and local municipalities, as well as with 20 national and provincial departments of the provinces of Gauteng, North West and Limpopo (DWAF 2002b, 22). Some of the local governments that will be affected by the CMA include the Johannesburg Metropolitan Council (northern suburbs of Johannesburg), the Tshwane Metropolitan Council (Pretoria), Ekurhuleni Metropolitan Council (Kempton Park), Mogale City Council (Krugersdorp), and the municipalities of Rustenburg and Bela Bela (DWAF 2002b, 5).

The uncoordinated activities of different government departments and local authorities in the past have often resulted in conflict situations. Hence the question: Who is responsible for what? A case study on the Steelpoort River basin found that at least three different government departments are involved in the provision of drinking water. Each employed its own rules but used a common pipeline. This resulted in the establishment of mistrust and confusion among rural communities (Stimie *et al.* 2001, 78). If, for example, there was a leakage in the water pipes, no institution wanted to take responsibility for the repairs. This together with lengthy bureaucratic procedures not only affected water users negatively, but also contributed to the mistrust between users and service providers — i.e. local government.

4.8.2 The Olifants River basin

Given the fact that the *Water Act* makes provision for the establishment of water management institutions, none of the envisaged CMAs had been established at the end of 2001. However, since 1998 numerous preliminary studies have been conducted to assess the viability to establish CMAs in specific areas. One of the studies focused on the hydro-institutional mapping of the Olifants River basin. It provides valuable information about the institutions involved in the water sector as well as some of the obstacles that a CMA will have to overcome once it is established.

The Olifants River basin covers an area of 54,600 km² and it falls within the provincial boundaries of Gauteng, Limpopo and Mpumalanga. It is larger than the Netherlands. There is not adequate water at the upper end of the basin, hence the need to transfer water

from the Komati River in the Inkomati WMA, for the use of the coal-fired power stations (Stimie *et al.* 2001, 11). Thompson *et al.* (2001, 41-71) identified numerous organisations, institutions, stakeholders and groups that will be affected by the establishment of a CMA. They are grouped in water users, national and provincial government departments and other institutions. Once a CMA for the Olifants River basin has been established, it will have to absorb some of the functions relating to the monitoring and regulating of activities that are expected to impact on the management of water resources. The following organisations and institutions will be affected at the national, provincial and local levels: DWAF; Department of Environmental Affairs and Tourism; Department of Minerals and Energy; Department of Agriculture; Department of Land Affairs; Department of Housing; Department of Provincial and Local Government; Department of Environment and Agriculture of the Limpopo Province; Departments of Environmental Affairs and Agriculture of Mpumalanga; numerous water boards – with some of their jurisdictional areas outside the Olifants River basin; and district municipalities (Thompson et al. 2001, 54-70). From the aforementioned it is clear that the establishment of water institutions is a complex and cumbersome process that will require high levels of expertise and financial resources.

4.9 CONCLUSION

The IWRM approach as incorporated in the *Water Act* of 1998, forms the backbone of South Africa's water policy. After April 1994 the political decision-makers — supported by DWAF — cited the country's limited water resources, the perceived negative economic and social effects of the riparian principle on the majority of the population, and the 1996 *Constitution* as some of the main reasons for adopting a new water policy. Prior to the promulgation of the *Water Act*, DWAF played a significant role in the development of the current water policy. Although it appears that the majority of water users were consulted, the consultation process was mainly confined to technocrats, the engineering and scientific community, academics, representatives from the industrial and agricultural sectors, as well as Western governments and international water research institutions within these countries — from where the IWRM approach originated. It is

doubtful that the policy has been significantly influenced through the consultation process with society at large. It was a 'top-down' rather than a 'bottoms-up' process.

The use of scientific criteria to delineate the nineteen WMAs created administrative units that ignored the boundaries of the nine provinces and the 47 district municipalities. Some of the CMAs to be established for a WMA will not only include more than one province and different district municipalities, but they will also share the management of water resources with another CMA. This reality highlights the complexity of the co-operation process among all the major role players involved in the management of water resources.

Another aspect of the WMAs is the interconnectedness between them and neighbouring countries. The fact that the human activities within neighbouring countries and the decisions of the CMAs within South Africa will affect water resources and economic development, raises several questions. Will the neighbouring countries be directly or indirectly involved in the activities of CMAs? Will these countries as well as the different levels of government contribute to the financing of the CMAs? The transfer of water is another important aspect because it has implications for the environment and leads to conflict between interest groups, water users and neighbouring countries.

The CMAs cannot be regarded as mere administrative institutions responsible for the implementation of the NWRS. Since water resources are classified as a common-pool resource, the CMAs are also political institutions. The decisions and day-to-day activities of the CMAs will have social, economic and political implications for all the water users. The interests of all the water users within a WMA can only be maximised if they have access to a CMA. However, the fact that the Governing Board of a CMA will only be accountable to the political head of DWAF, minimises the expected influence of water users. The interests of technocrats, scientists and interest groups will most probably overshadow the interests of other water users. The situation will be exacerbated if officials at the level of local governments and others from the historically disadvantaged groups, lack capacity to make and implement policy decisions.

CHAPTER 5

MULTICULTURAL REALITIES, PUBLIC PARTICIPATION AND THE BUREAUCRACY IN SOUTH AFRICAN WATER POLITICS

5.1 INTRODUCTION

This chapter has three sections. The first section focuses on selected economic and cultural realities such as the distorted levels of income, on the prominent role and influence of traditional leaders in rural areas, and on gender and the allocation of water resources. It is contended that these realities may have an influence on the implementation of the IWRM approach. The second section examines the holistic element of the IWRM approach namely the stakeholders, representation, and their role in the decision-making mechanisms. The third section deals with the establishment and expansion of large bureaucratic structures as well as the expected financial implications associated with the day-to-day activities of water management institutions.

5.2 MULTICULTURAL REALITIES

South Africa is a developing country with a multicultural society that reflects two major cultural systems, viz. a Western and an African culture. Even though there is a growing synthesis between African and Western cultures, the different value systems virtually dominate all aspects of life. One of the major challenges facing the historically disadvantaged segment of society is the integration of their "time-honoured values, customs and practices and those associated with a technologically based and market-oriented modern economy" (Leistner 1994, 223).

In a study of the cultural difficulties that governments in South Africa and Namibia face with the implementation of their respective education policies, Fuller (1999, xiv) argues that both are facing the same dilemma:

> "the state's legitimacy depends upon its ability to break through cultural boundaries (be they set by ethnicity, class, or gender) and bring democratic opportunity to groups at the grassroots. Yet

> this requires reordering social rules in largely private or insular domains—a challenging task that no Western state has met with agility" (Fuller 1999, xiv).

The same situation exists in respect of water policies. In 2001 South Africa had an estimated population of about 44.33 million. The estimated levels of urbanisation in 2000 stood at 56 percent – an average increase of 1.6 percent a year since 1995 (Schönteich 2001, 100). Based on these estimates about 44 percent of the population are residing in rural areas. Poverty, exacerbated by the rapid rise of unemployment and the socio-economic impact of the HIV/AIDS pandemic, is most widespread in rural areas (Schlemmer and Smith (2001, 37).

> "A deepening of poverty between 1995 and 1998 caused income inequality to increase between all races, and between men and women. Inequality was greatest among Africans and was increasing almost rapidly as it was among whites. The Gini coefficient for Africans rose from 0.57 to 0.65, and for whites from 0.56 to 0.67" (Schlemmer and Smith 2001, 37).

In a newspaper report entitled "Cabinet approves strategy to tackle inequality," Barry Streak states that between 1975 and 1991 the income of 60 percent of the population, the poorest segment of society, dropped by about 35 percent. This income inequality has increased significantly since 1991. In 1996 one fifth of the poorest segment received 1,5 percent of the total income. Ten percent of the richest segment of society received 65 percent. It is also estimated that only 67 percent of the population above the age of 15 years can be regarded as functionally literate. About three million people are illiterate and hence their inability to "participate fully in the political, economic and social spheres of life" (*Mail & Guardian,* 1-7 June 2001). Apart from the high levels of poverty throughout the country, the influence and observance of cultural traditions among the predominantly black segment of society in rural areas could have a significant impact on the implementation of the water policy.

5.2.1 Traditional authorities and natural resource management

The majority of people, especially those living in the rural areas, have an allegiance to traditional leaders. Traditional leaders or rulers are:

> "individuals occupying communal political leadership positions sanctified by cultural mores and values, and enjoying the legitimacy of particular communities to direct their affairs … The area of influence and instruments of administration … are confined to one "tribal" group" (DPLG 2000, 58).

Although Chapter 12 of the 1996 *Constitution* recognises the institution, status and role of traditional leadership, it fails to provide a specific role for it to administer communal land, especially in respect of the implementation of the water policy (Laurence 2001, 82; DPLG 2000, 11). Farmers on communal land in the former homeland areas have no private property rights. Traditional leaders control the land. In a newspaper report entitled "Land bill no closer to resolution," Nasreem Seria made the following comments:

> "The Communal Land Rights Bill … is not any closer to reaching a resolution on key issues regarding the administration and control of communal land despite being five years in the making. At the heart of the debate is a highly political issue revolving around the role of traditional leaders and authorities in controlling "tribal" land, mainly in the former homeland areas. The Constitution commits the government to providing legal secure tenure to the 15-million people living on land that was reserved for black people. Tenure rights on communal land are largely derived from customary law or indigenous law. These rights are held collectively by members in the community and were not given any legal recognition and status by previous governments" (*Business Day,* 29 August 2003).

In a study by Eckert, De Beer and Vorster (2001) of the Laka community at Mapela in the Limpopo Province, that serves as a exemplar for this analysis, it was found that traditional leaders do indeed have a significant role to play, in particular regarding the management of natural resources. The cultural values of the Laka community are representative of traditional black communities in the rural areas of the country.

The study focused on the importance of cultural concepts related to the management of natural resources and the shared decision-making principles among the Laka community. An analysis was made of the practical implications of the community's values regarding the use of land, especially their group oriented approach to life and their "holistic or inclusive worldview" (Eckert, De Beer and Vorster 2001, 88-90). The management of

natural resources is based on traditional values that are unlikely to change in the short and medium term:

> "For development projects which focus on the long-term availability of natural resources, the need to reach compatibility between Western concepts and the view of grassroots people is indispensable" (Eckert, De Beer and Vorster 2001, 92).

The control over natural resources, including the allocation and control of land, is of vital importance to traditional leaders. It not only enables them to provide "basic subsistence" to the community but also gives them prestige, political power and the ability to lay claims to financial support from the national government. The study found that other natural resources, including water, are "automatically included" in the land debate – i.e. 'part and parcel' of the land (Eckert, De Beer and Vorster 2001, 93). The traditional leaders therefore believe that the tribal area can only be managed in its totality and none of the single natural resources – including water management – can be isolated. Therefore:

> "Management situations are … not assessed in terms of linear and scientific analysis but rather by a multiplication of causal relationships … resource management is thus an inclusive concept which encompasses a complexity of perceptions and beliefs" (Eckert, De Beer and Vorster 2001, 94).

The holistic approach of the community is also evident in their perception of development. For them development only refers to projects that are financially sponsored by others to improve the infrastructure. It has nothing or little to do with the natural environment. The belief exists that human beings are sharing the "cosmos with other invisible forces" and ancestor spirits that have an influence on natural resources. Based on the belief that the "land is not made by" human beings, it is argued that the land, including water resources, should be freely accessible to the members of the Laka community. This open access policy regulating access to and the use of the land was subject to the decisions of traditional leaders (Eckert, De Beer and Vorster 2001, 92-94).

Self-interest and individualism are not superior to that of the community at Mapela. An individual needs the group just as the group needs the individual to exist. However:

> "Membership to the group is … not only confined to the living members only because the deceased, the ancestor spirits (*badimo)*, are regarded as having tremendous influential powers on any decision that is taken. This fundamental believe is based on the assumption that the *badimo* attain superhuman powers once they are dead so that they are able to influence the life of families" (Eckert, De Beer and Vorster 2001, 93).

The Laka community's concept of humanity (*botho*) also forms the basic underlying principle of local resource management. The needs of human beings are placed above the conservation of natural resources and hence the assumption that traditional management is predominantly humane and social rather than materialistic and individualistic:

> "Unlike customary practices and personal expertise, market-oriented and individualistic values do not as yet influence the behaviour of the majority considerably. The need to reach consensus and the reluctance of the people to act without the support of others result in a long time span which usually passes before a plan is put into operation" (Eckert, De Beer and Vorster 2001, 95).

Given the fact that South Africa has a multicultural society, cognisance needs to be taken of the relationship between elected or nominated representatives and traditional leaders in rural areas. This relationship can be problematic since traditional leaders control communal land. As an example that is representative of most communities that reside in rural areas, the study on the Laka community in the Limpopo Province found that there were some forms of "conflict and incompatibility between" the "practices and views" of the traditional leadership and that of the representatives of the transitional local government when it comes to the management of natural resources (Eckert, De Beer and Vorster 2001, 89). The traditional leadership questioned the legitimacy of the elected representatives because:

> "their representatives were mainly young people, politically empowered by 'outsiders' who 'don't know the local situation. Moreover, elderly and traditional people believe that TLCs disrespect the past, lack a sense of belonging and ignore customary values" (Eckert, De Beer and Vorster 2001, 89).

Similarly, during November 2003, in a written submission to Parliament regarding the proposed *Communal Land Rights Bill*[•], the Transvaal Rural Action Committee (TRAC) in Mpumalanga identified numerous issues concerning the provision of security of tenure of residents of state land under tribal jurisdiction. There are instances recorded where the tribal authorities have failed to provide adequate protection of natural resources (including water) or to prevent the exploitation of it by internal as well as external parties. Once the tribal authorities have received financial benefits for themselves, external parties are allowed to exploit the natural resources to the detriment of the community. According to TRAC "there have been no cases recorded where the National or Provincial government have intervened in corrupt practices of chiefs or tribal authorities" (TRAC 2003).

There also appears to be a lack of co-operation between some (unidentified) tribal authorities in Mpumulanga and the different levels of government. For example:

> "A water project in Nzikazi has been stalled for two years because the tribal authority refuses to allow a community resolution to take place - insisting rather that it represents the community. It appears that the state is unwilling to bypass tribal authorities and continue with their development activities"(TRAC 2003).

In another example cited by TRAC, the tribal authority in Matsulu has encouraged the vandalisation of water installations and the "encroachment onto servitudes by people paying fees to the tribal authority causing interruptions to water supplies and other services to the entire township" (TRAC 2003). Tribal authorities have a significant role to play in the management of water resources.

5.2.2 Gender

On 2 May 1990 the National Executive Committee of the ANC issued a statement on the emancipation of women in South Africa. The following excerpt underlines the influence of cultural traditions on women:

• *Communal Land Rights Act, 2004* (Act No. 11 of 2004)

> "Gender oppression is everywhere rooted in a material base and is expressed in socio-cultural traditions and attitudes all of which are supported and perpetuated by an ideology which subordinates women. In South Africa it is institutionalised in the laws as well as the customs and practices of all our people … all women have a lower status than men of the same group in both law and practice" (ANC 1990).

According to the third *Dublin Principle* water policies ought to address the specific needs of woman and empower them to play an active role in the decision-making processes. In article 2 of the *Water Act* it is stated that water institutions must have appropriate gender representation. In 1997 DWAF formulated its own gender policy. Initially the policy required a quota of at least 30 percent (at present 50 percent) of women in departmental decision-making committees and women involved in technical community projects in rural areas (Berold 2004, 20). However, in a study of the Peddie water supply scheme to the villages of Ncala, Cisira, Nqwenerana and Mgwangqa between Grahamstown and King Williams Town, Priscilla Monyai concludes that the current stratification between men and women in traditional Xhosa societies would not be changed by only using the gender quota system (Priscilla Monyai in Berold 2004, 21). The cultural norms not only restrict women from "asserting themselves in the presence of men" but also disallow them to interact with third parties involved with planning of water projects. Married women in the Peddie area can only attend meetings if they have the permission of their husbands or from a male relative. Therefore the viewpoint:

> "Married women are not allowed to make decisions by themselves. They would have to ask permission from their husbands or from male relatives to attend meetings … Married women are not allowed to say their name in public gatherings, that is, a married woman is not able to introduce herself and announce her surname lest she dishonours her husband" (Monyai as quoted by Berold 2004, 21).

One of the residents of Cisira, Cecilia Kaulela, acknowledged that the Peddie water supply scheme has indeed improved their lives because they now have clean running water. However, the women were not really involved in the decision-making process. The men were responsible for the decisions and the subsequent water scheme did not reflect the wishes of the women (Cecilia Kaulela in Berhold 2004, 22).

The significance of the current situation is highlighted by the fact that women who have contracted marriages under the African customary law before 1998, cannot rely on Article 8 of the 1996 *Constitution* that accords equal status to everyone, regardless of race, sex or culture. According to Bentley (2003, 2-15) the current situation is contrary to the *Constitution* that recognises people's cultural norms, traditions and marriages contracted under a system of customary law. As a result women are marginalized and denied constitutional protection, with the result that their access to water resources on communal land is subject to the approval of the traditional leaders.

5.2.3 Water allocation

The *Water Act* defines water as a common-pool resource with an economic as well as a social value attached to it. It also, in terms of articles 7 and 9, mandates the Minister of Water Affairs and Forestry (in effect DWAF) or a CMA after it has been established, to allocate and regulate water resources in an equitable manner. In order to accommodate farmers and other landowners who had lost their water rights as a result of the abolishment of the riparian principle, water licences were allocated to them. The water licences are not attached to property rights and an appropriate authority, i.e. either the Minister or a CMA, could revoke it under certain circumstances. Therefore, the allocation of water resources is in the hands of the national government.

In June 2001, guided by article 27 of the *Constitution* that states that all persons have a right of access to sufficient water, the Government introduced a free basic monthly water supply of 6 000 litres per household. The free supply was calculated at 25 litres per person in a household of eight persons (Schlemmer and Smith 2001, 48). Logic has it that for the project to succeed it is essential that certain conditions are met. Firstly, the monthly water consumption of households in urban and rural areas has to be monitored. Secondly, the required infrastructure needs to be maintained by the local authorities responsible for the provision of the water to households. Thirdly, payments for using more water than the allocated volume of water have to be collected. If these conditions are not met, the project to provide free water to households runs the risk of failure. The

first obvious obstacle for local governments and also indirectly for the proposed CMAs, is the non-payment for water services. There are, however, numerous reasons for the non-payment.

As indicated previously, many traditional communities in rural areas regard water as a free resource that ought to be made available to everyone. It is not regarded as a single resource with only an economic value attached to it. Based on the belief that water is a common-pool resource, why should water users pay for it? In a study of the rural water users residing in the Steelpoort River basin, it was found that the provision of free water services to rural communities from the former homeland governments that existed prior to April 1994, added to the reluctance of the communities to accept responsibility for the operational costs (Stimie *et al.* 2001, 78).

Another reason for the non-payment is the high levels of poverty in rural as well as urban areas. In the aforementioned study on the Peddie water supply scheme in the Eastern Cape province, it was found that many women still walk more than one kilometre to dams and streams to fetch water because they cannot afford the prepaid tokens (Berold 2004, 22). Schlemmer and Smith (2001, 48) state that 40 percent of the country's poor is getting poorer. Many women in rural areas prefer to use their income on food rather than to pay for water. Trade-offs are therefore made in order to survive. An almost similar situation is prevalent in urban areas. Accordingly:

> "The major dynamic for non-payment is a precedent established by the 50 percent of households in typical low-cost or informal housing which are genuinely too poor to pay. This precedent is then exploited by less-poor households as a private rationalisation for not paying their accounts. The non-payers in this category tend to use more water than the very poor. These opportunists in turn set a new precedent, and other people who might otherwise pay begin to feel that they would be naïve to do so. In this way a culture of non-payment is perpetuated" (Schlemmer and Smith 2001, 55).

The efficient and regular monitoring of water consumption is essential in order to determine the volume of water that water institutions have to take into consideration when deciding on water allocations. Without reliable data water could either be over - or

under - allocated to water users. A closely related aspect is the regular payment for water resources to cover the costs involved with water allocation as well as the development and maintenance of infrastructure. It should be noted that whereas the cost-recovery rate in Durban for providing free basic water services is reportedly 92 percent, it is only two percent in many other rural areas (Schlemmer and Smith 2001, 49). This is borne out by the fact that:

> "carefully laid plans for cost recovery have been destroyed by non-payment — not only on the part of the genuinely poor who have to be accommodated, but also by their less-than-poor neighbours who have exploited the disarray in credit control. More basically, the circumstances of the poorest 40 percent are such as to annihilate the most generous budgets that can be scraped out of the careful fiscal planning system" (Schlemmer and Smith 2001, 58).

Visscher *et al.* (1999, 43-45) similarly note that the non-payment for water services in developing countries can be ascribed to the perception that water is a free resource, that poor water service levels prevail, and that the community does not accept ownership of the water supply. With reference to the aforementioned Peddie water supply scheme it was concluded:

> "If the community has no feeling for ownership, it is because they are treated as passive recipients. This is what happens when government gives projects to private contractors, who are driven by the profit motive. Usually they are engineers who want to get the job done as soon as possible" (Monyai as quoted by Berold 2004, 23).

From the aforementioned it is indeed questionable whether it would be appropriate to selectively privatise water services. If people cannot pay for water services, they most probably cannot make any financial contribution to the day-to-day activities of water institutions. In terms of the public choice theory, the free-rider problem is also expected to remain with South Africa for many years to come.

5.3. PUBLIC PARTICIPATION

One of the main characteristics of the IWRM approach is the participation of water users in water institutions at the level of catchment management areas. This holistic element is

incorporated in the *Water Act*. Article 77 of the *Water Act* makes provision for the establishment of a CMA for a specific management area "after consultation, on the initiative of the community and the stakeholders concerned." This raises numerous questions about the identity of the stakeholders, the consultation process, the role of technocrats, representation and the decision-making powers of the representatives.

5.3.1 Stakeholders

Although it can be argued that everyone that uses water and benefits from it can be regarded as a stakeholder, there is a need to identify and categorize all the stakeholders. Prior to the promulgation of the *Water Act* and the subsequent delineation of the boundaries of the WMAs, DWAF — i.e., mainly technocrats — started to identify the stakeholders. This was done through a process of exploratory meetings as part of the procedure to develop proposals for the establishment of CMAs. During the preliminary stages to develop a proposal for a CMA for the Inkomati River basin, the regional office of DWAF in Mpumalanga and a private consultant took the following course of action to identify the stakeholders:[*]

- DWAF requested the participants of the various meetings within the Mpumalanga Province to propose the names of individuals, groups and categories of people who could be regarded as stakeholders.
- Organisations that are actively involved in the water sector were also asked to make some suggestions regarding the stakeholders. These organisations included provincial government departments, local government bodies, civic associations, traditional authorities, irrigation boards, farmers' associations, sectoral groupings (e.g. Forest Owners' Association), environmental groups and non-governmental organisations (DWAF 2001, 4-5).

In March 1998 the regional office of DWAF in Mpumalanga also initiated a process to establish a CMA for the Olifants River WMA. In 1999 and 2000, private consultants

[*] Funded by the United Kingdom's Department for International Development (DWAF 2001, 5).

were appointed to identify and brief, amongst others, emerging farmers and "potential water users through water related" and "unrelated community structures" (Ligthelm 2001, 23). Consultants played a significant role in assisting DWAF throughout the process. Once the stakeholders had been identified there was a realisation that they had to be categorised. What criteria should be used? This question was addressed at an International Workshop, held from 16-21 October 2000 at Loskop Dam under the auspices of the International Water Management Institute (IWMI) and the German Foundation for International Development (DSE). There were 81 participants (Abernethy 2001, 405-416).

The composition of the participants is indicative of the prominent role that technocrats, scientists, engineers, consultants and academics played in the process to identify and categorise the stakeholders. There appears to have been no representative from traditional authorities (i.e. traditional leaders), local communities (urban and rural), small scale emerging farmers and civic organisations.

The Loskop Dam workshop rejected the concept of using the natural boundary of a river basin as a criterion. It was argued that the complexity of the issues involved and its impact of this on neighbouring states negate the notion of using river basin boundaries (Abernethy 2001, 369). As an alternative it was proposed that the stakeholders should be categorized according to their aims and issues of concern. The Workshop subsequently identified the following broad categories:

"1. Poverty alleviation: Stakeholders include rural/urban communities, subsistence farmers, deprived groups and other interest groups whose aim is to alleviate poverty, such as churches and non-governmental organisations. This could include government ministries and public bodies.
2. Wealth creation: This would cover those whose primary objective is to make profit, for example, commercial entities and industries, including plants.
3. Recreation: All those interested in using river-basin management for recreational purposes, fishing and boating.

4. Regulation: This would include groups of people whose aim is to regulate the river basin such as government agencies, community structures, municipalities, traditional leaders and chiefs" (Abernethy 2001, 369).

In general the stakeholders can be grouped into the agriculture and forestry sector; the mining sector; industry and local government that include domestic users; environmental groups; technocrats and the scientific community. The agriculture sector can be divided into large commercial irrigation farmers and small-scale farmers. The latter includes emerging farmers who mainly represent the 'previously disadvantaged' communities. The irrigated area inside South Africa is about 87 003 hectares. Since large commercial irrigation farmers were usually well organised into irrigation boards that existed prior to the promulgation of the *Water Act*, they have the knowledge, capacity and networks to 'promote' their diverse interests in water management institutions. The same cannot be said of small-scale farmers. Those residing in the Inkomati basin, for example, were assisted by technocrats and consultants to promote their interests (DWAF 2001, 17).

5.3.2 Representation

Article 81 of the *Water Act* stipulates that the governing board of a CMA must be structured in such a way to ensure that the interests of all the stakeholders are "represented or reflected in a balanced manner" and that members of the board have the "necessary expertise" to ensure that it functions effectively (DWAF 1999a). This raises the question about the interest of stakeholders, the role of technocrats and the kind of representation that in fact materialises.

As previously indicated in chapter 4, the Governing Board of a CMA should have 9 to 15 members, and should reflect the relevant stakeholders, demographic and gender profiles. In addition, DWAF, the provincial and local governments, as well as the historically disadvantaged communities should be represented in the CMA. In accordance with article 81 of the *Water Act,* the board members can be either elected or nominated by the different water user groups or stakeholders for appointment by the Minister. However, according to an official brochure of DWAF (1999a): "board members do not serve to

represent their particular sector or organisation, but rather to take decisions on integrated water resource management."

The complexity of representation, for example, is evident in the Inkomati Reference Group's proposal for the establishment of the Inkomati CMA. The Inkomati basin has an estimated population of 1,85 million. The basin stretches over the provinces of Limpopo and Mpumalanga as well as Swaziland — covering a total area of 31 230km². It has three major and two minor catchments. The major catchments are the Komati, the Crocodile and the Sabi-Sand catchments. The minor catchments are the Nwaswitsontso and Nwanedzi. The rivers from these catchments flow into the Komati River that traverses Mozambique into the Indian Ocean (DWAF 2001, 14-15 and 17). All the water users, irrespective of whether they reside at the upper, middle or lower end of the rivers, will certainly be affected by the management activities and decisions of the CMA. Apart from those who reside within the Inkomati WMA in South Africa, other water users in Swaziland and Mozambique — from a theoretical point of view — ought to be represented on the Inkomati CMA. Without going into detail, it suffices to note that the 2000 *Revised Protocol on Shared Watercourse Systems in the Southern African Development Community* adequately addresses the interests of the stakeholders within those countries.

In principle, the interest of all stakeholders must be represented in a CMA. However, according to the Inkomati Reference Group (DWAF 2001, 26), representation at catchment level ought to be structured in terms of both sectoral and geographic representation.

> "In this way, the synergies between different needs and interests which are achieved at sub-catchment level can be carried to the catchment level, where synergies can be strengthened further by establishing higher order synergies across sub-catchments in a manner that is consistent with broad sectoral interests and requirements. This will allow for the management of inter- and intra-sectoral competition for water resources, whether in terms of competition between new and established developments or in terms of equity and other adjustments" (DWAF 2001, 26).

Admittedly, the mere geographical area of a WMA, the different stakeholders and interest groups, as well as the size of the populations make direct representation virtually impossible. The solution is indirect representation that also implies that decisions are taken on behalf of others. Representation now becomes an issue of political choice. Wester and Warner (2002, 6) posit that there is a notable difference between stakeholders regarding the issue of inequality. This inequality is partly the consequence of the different levels of education, language barriers, access to and influence in politics, and different belief systems about the relationship between nature and society. They argue that:

> "the relationship of the people participating in any multistakeholder process to the constituents is also problematic, especially when third parties are involved. It is a nostrum of development work that third-party facilitators … are needed to help to identify, mobilise, organise and inform stakeholder groups" (Wester and Warner 2002, 70-71)

When third parties such as consultants are involved, the assumption can be made that their given mandate will reflect the agenda of their political or bureaucratic principals as well as their own financial interests — i.e. establishing new markets.

Given the fact that none of the envisaged CMAs has been established yet, it is difficult to critically assess public participation. However, it is important to take note of the observations Dreyer (1999) has made. In a study about disappointments regarding public participation, she identified numerous "unreliable assumptions" on which the expectations of community participation are based. One such assumption is the notion that the community is a single and reliable cohesive entity that will ensure good co-operation to the advantage of the community, and that collective decisions will be sustainable and be observed by everyone. There is also the assumption that there is a difference between rural and urban dwellers. Whereas rural communities are involved in the provision of water services, urban dwellers are not — they only have to pay for it. People not only make meaningful contributions in group or public settings, they also know what they want and voice the concerns of the community or individuals. Facilitators without the presence of planners can conduct participation processes. By making the participation processes 'fun' and ensuring that participants enjoy themselves,

the outcomes of the processes can be regarded as valid. Other 'unreliable' assumptions include the following:

> "People are willing to give up leisure for voluntary activities for the community good. Properly advertising a meeting means that the appropriate people will attend. People want to participate. People can be trained for a long-term role in the development. Because a participative process met expectations in one context it will work in another" (Dreyer 1999).

It is significant to note that the consultation process conducted by the Inkomati Reference Group found a similar lack of knowledge and understanding among the stakeholders regarding the IWRM approach, especially when it came to community participation (DWAF 2001, 10).

5.3.3 Decision-making

Although article 79 (4) (b) of the *Water Act* states that "in performing its functions" a CMA must "strive towards achieving co-operation and consensus in managing" the water resources under its control, no reference is made to any method of decision-making, be it on policy issues or administrative issues. It only refers to the concept of consultation. The concept of consultation is based on the premise that a CMA would be able to obtain and evaluate all the socio-economic needs and opportunities within its area of jurisdiction before a decision is taken in the 'interests of the public.' In theory there is nothing wrong with this concept. However, since the number of officials of a Governing Board is restricted (9-15 members) and they "do not serve to represent their particular sector or organisation' (DWAF 1999a), it raises the question as to why those members can be nominated by the stakeholders if they are not accountable to them. Their membership is eventually subject to the approval of DWAF who makes recommendations to the Minister. In this regard DWAF will be guided by one of the objectives of the *Water Act,* namely as stated in article 2, the creation of "suitable institutions and to ensure that they have appropriate community, racial and gender" representation.

Although the rationale for a consultation process is indeed laudable, the perception it creates among those who are consulted is not necessarily positive. Visscher *et al.* (1999, vi) found that the consultation process often leads to disillusionment and the withdrawal of co-operation in rural communities. Rural communities and other stakeholders also tend to question the credibility of a CMA Governing Board if the decisions do not meet the expectations of water users. Since no mechanism exists for the election or replacement of a member or members of the Governing Board, some stakeholders could become disinterested.

In the absence of any prescribed form of decision-making and the fact that water is a common-pool resource, the assumption is that the principle of consensus be observed in all the decision-making processes. However, a consultation process will not necessarily ensure that the principle of consensus will prevail in the conclusions reached at the end of such a process.

Given the recognition of democratic principles in the 1996 *Constitution*, an institutional framework for a CMA preferably ought to be designed to encourage consensus decision-making. However, the Inkomati Reference Group found this difficult to achieve:

> "All parties have to be open to the search for compromise positions and have to use as their guide the goals contained in the proposed mission statement of the Inkomati CMA. "Spoilers", i.e. parties who refuse to change their positions under any circumstances, can undermine any process of consensus building. Procedures for the resolution of deadlock situations need to be established, and all parties need to be aware of the consequences of activating such procedures. In general, consensus should be aimed at the convergence of ideas and the description of any chosen option in terms of its strengths and weaknesses with regards to other options" (DWAF 2001, 27).

An important element in the decision-making process is the decision-making powers of the representatives in a CMA and how the water users, especially those in rural communities, perceive their powers. If the decision-making powers and the consequences of the decisions fail to satisfy the expectations of water users, the trust between the community and government institutions could be undermined.

In this respect Visscher *et al.* (1999, 3) found that the reluctance of communities to become involved in IWRM in developing countries is due to the absence of ownership or control over decisions; the lack of real decision-making powers regarding water allocation and use; high transaction costs of involvement; and "poorly developed frameworks by which the views of large communities can be represented at stakeholder level."

5.4 THE BUREAUCRACY

5.4.1 Proposals

Prior to 1994 and the subsequent promulgation of the 1997 *Water Services Act* and the 1998 *Water Act*, the now defunct riparian principle allowed land owners to manage their water resources without necessarily taking into consideration the needs of other water users. The water resources in the nominally independent homelands were also in the hands of the traditional leaders as well as the administrations of the homeland governments. The jurisdiction of DWAF was therefore limited to the "administration of government water control areas, the supply of bulk untreated water to water boards (bulk treated water supply utilities), water quality management" and the administration of legislation related to water resources (Abrams 1996).

With the promulgation of the *Water Act*, DWAF virtually became the government's implementation agent. This is clearly illustrated by the initial steps that DWAF took to identify specific WMAs for the establishment of CMAs. The regional branches of DWAF and independent third parties play an active role in the identification and mobilisation of stakeholders to be involved in the proposed water management institutions. To implement the *Water Act,* DWAF is practically obliged to use a 'top-down' approach to establish CMAs throughout the country. Since DWAF has a vested interest to ensure the efficient and effective functioning of CMAs, it is essential to create appropriate bureaucratic structures. A good example of the complexity of these structures is highlighted in the proposal for the establishment of a CMA for the Crocodile (West) and Marico WMA.

The aforementioned proposal envisages a "small group of managers and support staff" for the following eight teams: institutional co-ordination; strategy development (supported by information management); water use regulation (financial); information management; audit (linked to information management); physical implementation (managed by institutional co-ordination); and corporate services (DWAF 2002b xvii). Therefore:

> "When it becomes a responsible authority (i.e. authorizing water use), the Catchment Management Agency would be required to develop an internal unit for water authorization and enforcement (this cannot be outsourced). Some of the capacity would be achieved through transfer of staff from the Department of Water Affairs and Forestry" (DWAF 2002b, xvii)

The suggested transfer of staff from DWAF to the CMA is a clear indication of the role that bureaucrats are expected to play in the day-to-day activities of water management institutions. In terms of the public choice theory it could be expected that once the CMAs have been established, the bureaucratic structures may expand to accommodate the vested interests of the bureaucrats. This would not necessarily be to the advantage of all the water users or improve the efficiency of a CMA.

5.4.2 Financial implications

In terms of Chapter 5 of the *Water Act* the pricing strategy to finance the development and management of water resources may differentiate between various geographical areas and the categories of water users. The pursuit of social equity serves as the guiding norm to determine the differentiated charges. According to Part 1 of Chapter 5 of the *Water Act*, the 'polluter-user-pay' principle will be applied to discourage or prevent the pollution of water resources. Apart from the free basic monthly water supply of 6 000 litres per household, all the stakeholders are obliged to pay for water services. If not, the non-payment of water user charges will be penalised. This could include the restriction or suspension of water supplies from waterworks to water users.

At the International Workshop held from 16-21 October 2000 at Loskop Dam, one of the four working groups focused on the allocation of costs during the operational phase of river basin management. They identified stakeholders in the following sectors:

> "environment (user is not the payer); smallholder irrigated agriculture; large-scale irrigated agriculture; rain-fed agriculture; manufacturing industry; domestic water supply – urban, rural; hydropower; forestry; tourism; fishery; navigation" (Abernethy 2001, 383).

In the 2001 proposal for the establishment of a CMA for the Inkomati Basin, the Inkomati Reference Group estimated that DWAF had to make provision for a budget of about R30.5 million over the next 5 years – after the establishment of the CMA – to meet the following requirements:

> "Provision to the CMA of up-to-date information on the water resources of the Inkomati Basin, including information on the following: Hydrology; Yield calculations; Registered water use; Reserve estimates; Water quality; Establishment of a geographic information management system (GIS) for easy access and manipulation of data for planning, monitoring and, ultimately, direct management purposes; Development of the CMA Proposal; Support during the first round of planning by the new Inkomati CMA; On-going subsidisation of the Working for Water Programme, as described in the National Pricing Strategy, for the next 5 years" (DWAF 2001,67).

The Inkomati Reference Group presented five possible operational and technical support (O&TS) scenarios with the associated financial implications after the establishment of the CMA. These scenarios represent different visions of the human resources that would be required to manage the CMA as required by the *Water Act* (DWAF 2001, 44). Without going into detail, it suffices for the purpose of this study to refer briefly to the financial implications of the various scenarios.

O&TS Scenario 1

Scenario 1 will apply as an interim arrangement until the CMA becomes functional. The scenario is based on the DWAF Mpumalanga Regional Office's water resource management activities in the Inkomati Basin.

Water Management	R 2 264 363
Quality Control	R 1 254 124
Strategy	R 1 190 142
Corporate Services	R 263 175
TOTAL	R 4 971 804

If the method used by DWAF at a national level to calculate the contribution of each WMA in South Africa to the total national water resource management cost is used, the total expected revenue (to cover cost) will be R8 032 000. This excludes the government subsidy for the Working for Water Programme.[•] The subsidy for the Working Programme is R1 968 000. The total budget is R10 000 000 (DWAF 2001,44-46).

O&TS Scenario 2

There will be a Chief Executive Officer (CEO) as well as a Water Resources Manager and a Financial Manager. Two Pollution Control Officers, a Quantity Control Officer, and a CAD Operator will support the Water Resources Manager. Two Assistants will be available to these staff. A Communications Officer and an Administrative Clerk, both of whom will be able to draw on the services of an Assistant, will assist the Financial Manager. The total cost of scenario 2 (including Working for Water) would amount to R6 938 327.

O&TS Scenario 3

Scenario 3 is very similar to O&TS scenario 2. The only difference between scenario 2 and 3 is the addition of a Quality Manager and a Water Pollution Control Officer to the staff contingent. The cost of O&TS scenario 3 (including Working for Water) would amount to R7 343 443 per year.

O&TS Scenario 4

In scenario 4 a Quantity Manager, an Information Systems and Technical Services Manager, an Engineer in Training and 2 Quantity Control Officers have been added to

[•] The Programme has two aims: Job creation and increasing the runoff from catchments (DWAF 2001, 21).

the staff. The cost of O&TS scenario 4 (including Working for Water) would amount to R8 000 024 per year.

O&TS Scenario 5

Scenario 5 is based on the employment of staff to perform the full range of water resources management functions that can be delegated or assigned to the Inkomati CMA. The cost of scenario 5 (including Working for Water) would amount to R9 330 000 per year.

Based on the aforementioned scenarios the Inkomati CMA would only be able to function effectively if adequate financial resources and the appropriate know-how are provided.

5.5 CONCLUSION

Chapter 12 of the 1996 *Constitution* confirms the multicultural characteristics of the South African society. It recognises the institution, status and role of traditional leadership. Traditional leaders control communal land where an estimated fifteen million people reside. The control of communal land implies that the traditional leaders also control the area's water resources. Once a CMA has been established, it raises numerous questions. Will traditional leaders have to forfeit their control over water resources? Will they be able to participate in the activities of the CMA? Another aspect is gender representation. It is doubtful that all the traditional leaders in the rural areas under their control would support the concept of gender equality. Traditional leaders also tend to question the legitimacy of elected officials and bureaucrats working in their jurisdictional areas.

The free-rider problem in South Africa is indeed a matter of great concern. It is aggravated by the high levels of poverty, the provision of a free basic monthly water supply of 6 000 litres per household, problems to monitor the use of water, and the perception that water is a free commodity. The usage of economic incentives to

discourage overexploitation or prevent the depletion of water resources will most probably affect only a small segment of society. It is indeed a challenge to develop strategies to address the free-rider problem.

Although the *Water Act* explicitly encourages public participation in the activities of the CMAs, the Governing Board of a CMA can only have nine to fifteen members. The members can be either elected or nominated by different water user groups or stakeholders for appointment by the Minister. According to DWAF the members will not necessarily serve to represent their particular sector or organisation. They will only take decisions regarding integrated water resource management. This, as well as the fact that the Governing Board will only be accountable to the political head of DWAF, raises questions about the need for and basis of representation. Poor representation, if indeed the case, may not only dampen interest in the activities of the CMAs, but also alienate public participation. The needs and concerns affecting the lives of water users will not necessarily be articulated in the CMAs. It can be expected that the agendas of the well-organised interest groups in the industrial, agriculture and water sectors may receive preferential treatment. Public participation is also likely to be discouraged if the decision-making powers of the CMAs and the consequences of the decisions fail to satisfy the expectations of water users. This may further undermine the trust between the community and government institutions.

In conclusion it can be stated that DWAF, research institutions and private consultants have a vested interest in the establishment and functioning of CMAs. Although no CMAs have been established between 1998 and 2001, the proposals for the establishment of CMAs do indicate that the complexity of co-operation activities would necessitate the establishment of large bureaucratic institutions. The bureaucratic structures may continue to expand without improving their efficiency and effectiveness. There are also indications that the CMAs would require extensive financial resources to carry out their day-to-day activities, and the cost to maintain them may become prohibitively expensive.

CHAPTER 6

EVALUATION

As indicated at the outset, the aim of this study is to assess the political appropriateness of the IWRM approach in South Africa's water policy. It emanates from the research question: *Is the incorporation of the IWRM approach in South Africa's water policy, from a political point of view, appropriate?* The significance of the research question stems from the fact that the concept of integrated water resource management, as presently imported and applied to developing countries, originated in developed countries with predominant, homogeneous societies. In these countries there is a general commitment to democratic principles, the free market system and individualism. Since developing countries in general — and South Africa in particular — do not necessarily share the same characteristics associated with developed countries, it raises the question as to whether the IWRM approach should and in fact could form the basis of South Africa's water policy.

South Africa is classified as a developing country with a multicultural society reflecting two dominant cultures namely, a modernised Western and a traditional African culture. Given the multicultural nature of the South African society that reflects a skewed income disparity — exacerbated by colonialism and the pre-1994 policy of apartheid — two subsidiary research questions follow: *Can the commitment and impartiality of all the stakeholders that partake in the decision-making processes of water institutions at all levels be ensured? Is it possible to establish small, efficient and financially viable bureaucratic structures (water institutions) at the level of WMAs?*

In order to analyse the research problem and the two sub-problems, the study is based on the public choice theory. The rationale for this is fivefold: Firstly, public choice originates from economists, political scientists and others whose norms and values are primarily influenced by Western culture in developed countries. The theory assumes that political actors — governments, legislators, bureaucrats, interest groups and voters — are always trying to maximise their interests in politics and in the marketplace. In the process

of pursuing their self-interests, the political actors and other individuals within society mutually benefit through the collective decision-making processes.

Secondly, public choice postulates that the state has a specific role to play in addressing market failures that result in collective problems for the public as a whole. A market failure relating to water as a common-pool resource is either caused by an externality such as water pollution or by the free-rider problem. The free-rider problem is the result, amongst others, of either the overexploitation or the depletion of water resources though human activities. Thirdly, governments use market-based approaches to manage externalities and to avoid or discourage the free-rider problem.

The fourth reason for using public choice is the evaluation of government policies concerning the environment, including the particular government's water policy. The policy is evaluated in terms of the net benefits to society at large. Therefore, the costs of a policy should not exceed the benefits to society. If it does, such a policy may not be appropriate. The fifth reason relates to the notion that the bureaucratic structures of public institutions — including water management institutions — tend to expand into large bureaucratic structures. The large bureaucratic structures are not necessarily beneficial to societies and could become, from a financial perspective, non-viable institutions.

Since the public choice theory categorises water as a common-pool resource, the development and management of water resources have social, economic and political implications for society at large. The encouragement of public participation in the decision-making processes of water institutions, transforms them into institutions of political choice. Public choice and the IWRM approach are therefore closely linked.

The IWRM approach is based on four guiding principles — also referred to as the *Dublin Principles*. The first principle focuses on the integrated management of water and land resources within a scientifically defined WMA. The second and third principles focus on the participation of all the water users, especially women, in the decision-making processes of water institutions at the lowest appropriate level. In terms of the fourth

principle water is recognized as an economic good to promote the efficient and equitable use of water resources. The linkage between public choice and the IWRM approach is confirmed by the functioning of the IWRM approach in France and Australia.

The six water institutions in France use a market based economic incentive—known as the 'polluter-user-pays' principle — to manage externalities caused by human activities. The study concludes that the water institutions in France are generating enough financial support through water taxes and the 'polluter-user-pays' principle to finance their day-to-day activities. Although the principle of public participation is observed in the so-called Water Parliaments of France, the following is noted: The water institutions are dominated by the agendas of interest groups; there are low levels of interest and consensus among water users regarding water management; basin committees have no operational or police powers; and the Water Parliaments only serves as a locus of collective learning processes.

In Australia the Commonwealth government also uses a financial incentive to promote federal co-operation with the implementation of IWRM policies within the different federal states and territories. The institutional structures of the Murray-Darling River basin in Australia are also hailed by proponents of the IWRM approach as a textbook case of institutional reform. However, this study takes cognisance of the criticism levelled against the implementation of decisions based on scientific information. These criticisms are based on the fact that the institutional structures of the Murray-Darling River basin are hampered by a lack of financial support by government to community-based catchment management committees; a lack of knowledge regarding decision-making mechanisms and available institutional arrangements; the dominance of local interests; the absence of social impact assessment studies; an ignorance about what drives regional economies; and an increasing reluctance among volunteers to remain involved in catchment management activities.

The reason for referring to these selected aspects of the public choice theory and the implementation of the IWRM approach in France and Australia, was to highlight the fact that the IWRM approach is still in the process of development. This raises the question

about the appropriateness of incorporating the IWRM approach in the water policies of developing countries, such as South Africa. Developing countries do not necessarily share the same cultural, economic and political characteristics inherent to the developed countries from where the IWRM approach and the public choice theory originated.

The research problem and the three sub-problems therefore rest on three hypotheses. The first hypothesis is that the level of cultural homogeneity within a society influences the degree of commitment and the impartiality of the stakeholders that are involved in the decision-making processes of water institutions. The second hypothesis is that the level of economic development and the status of technological and scientific knowledge within developing countries determine the bureaucratic structure, efficiency and financial viability of water institutions. If both hypotheses are valid, it is the third hypothesis that the incorporation of the IWRM approach in South Africa's water policy has to be properly contextualised to reflect the country's economic, political and multicultural characteristics in order to be politically appropriate and therefore feasible.

Concerning the first hypothesis the study identified specific differences between the predominant traditional cultures of Western and African societies. This provided a better understanding of the applicability of institutions of developed countries in developing countries, especially in Africa. Some of the most prominent differences relate to individualism, communalism and the relationship between human beings and natural resources. Individualism in traditional African communities is less emphasised relative to the interest of the community. An individual's interests and welfare depend on that of the community and not the other way around. Although communalism is predominantly associated with the African culture and individualism with the Western culture, both '-isms' can be found among different groups in different countries, but to different degrees.

With regard to the relationship between human beings and natural resources it was found that — contrary to the most common Western way of thought — the Africanist viewpoint contends that human beings should live in harmony with nature. Accordingly, water

resources are not regarded as a single commodity but form an integral part of the natural environment — i.e. natural resources. Since the needs of human beings are placed above the conservation of natural resources, it is thus the assumption that traditional management is predominantly humane and social rather than materialistic and individualistic. This implies that the concept of water as an economic good in terms of the fourth *Dublin Principle* is alien to traditional African cultures.

Concerning the second hypothesis the description of the IWRM approach in Indochina exposed some of the alleged negative consequences of it on the environment and the economic well-being of individuals in the agricultural sector. Apart from the fact that a 'top-down' approach was followed to initiate the IWRM approach, the MRC is unable to function without the financial support of the international donor community. The high turnover of officials contributes significantly to the lack of institutional knowledge within the MRC. The implementation of IWRM projects in Sub-Saharan Africa highlighted some of the cultural characteristics that may influence and impact on the successful implementation of the IWRM approach.

In South Africa the IWRM approach is an integral part of the water policy. A 'top-down' approach was followed to incorporate it in the *Water Act* of 1998. Although it appears as if the political actors were the driving force behind the adoption of the IWRM approach, this study points to the opposite. With the assistance and active support of scientists, hydrologists, international research institutions such as the Water World Council, and different interest groups, DWAF not only initiated the policy change but also continued to determine and manage the progressive implementation of the IWRM approach in South Africa. The aforementioned actors, namely the technocratic and bureaucratic elites, have vested interests in the establishment and functioning of water institutions.

The use of scientific criteria to delineate South Africa into nineteen WMAs, took little cognisance of the existing political and administrative boundaries of provincial governments and district municipalities. The management areas of some CMAs to be established will include more than one provincial area and different district

municipalities. It will definitely contribute to the complexity of co-operation among the major role players involved in the management processes.

The WMAs also ignore the artificial boundaries of communal land in areas under the management and control of traditional leaders. With regard to the latter the study found that an ignorance or disregard of cultural traditions and practices could have a negative impact on the management of water resources, gender representation (women) and the perceived legitimacy of CMA officials. In terms of Chapter 12 of the *Constitution* that recognises the cultural norms and traditions of society as well as the *Communal Land Rights Act, 2004* (Act No. 11 of 2004), traditional leaders will continue to manage and control communal land — i.e. water resources, as well. This, as well as the fact that an estimated fifteen million people are living on communal land, will have a significant impact on the implementation of the IWRM approach, especially in rural areas.

The social value that traditional African communities attach to water is in essence similar to that of other communities in Sub-Saharan Africa. The study found that market-oriented and individualistic values, akin to the Western culture, have not significantly influenced the behaviour of the historically disadvantaged majority of society as yet. Given South Africa's limited water resources the free-rider problem, in terms of the public choice theory, will be aggravated by the Government's provision of a free basic monthly water supply of 6 000 litres per household, irrespective of its location. It is also debatable whether it will be financially feasible, especially in the absence of adequate data to monitor the volume of water used and the number of households serviced. Additional factors that are expected to contribute to the free-rider problem, are the high levels of poverty throughout the country as well as the influence and observance of cultural traditions among the predominantly black segment of society in rural areas. At the end of the day every water user ought to make a valuable contribution to the development and management of water resources. Presently this is not the case.

The holistic element of public participation is one of the cornerstones of integrated water management. However, the study found that although provision is made for public

participation in the activities of water institutions, the participation, representation and influence of water users in CMAs could be hampered by factors such as the institutional powers of CMAs, multicultural realities, the influence of interest groups, and the scientific and technocratic nature of the IWRM approach.

Once a CMA has been established it cannot be merely regarded as an administrative institution and its activities as water management. Water is defined as a common-pool resource and every decision or water management activity will have social, economic and political implications for communities within a WMA. A CMA therefore also becomes a political and a societal institution. However, the *Water Act* stipulates that the Governing Board of a CMA will only be accountable to the political head of DWAF. The role of representatives will also be of a consultative nature. This is based on the assumption that a CMA would be able to obtain and evaluate all the socio-economic needs and opportunities within its area of jurisdiction before a decision is taken in the interest of the public. The study, however, found no explicit references to the decision-mechanisms of CMAs. The fact that the total number of officials of a Governing Board is restricted to fifteen and not required to represent a particular sector or organisation, brings representation into question. Representation is about accountability. If there is no accountability, representation has no significance at all. If the water users, through their representatives, have no ownership or control over the decisions of CMAs, interest in the activities of CMAs would be dampened.

In addition the study found that traditional leaders in control of communal land with its water resources in the rural areas tend to question the legitimacy of elected officials who are involved in the allocation of water resources. Cultural norms and practices also limit the role of women in decision-making processes. Ignorance of the culture diversity in South Africa could lead to the development of false expectations in terms of public participation.

The scientific and technical nature of the IWRM approach requires a high level of knowledge and expertise among those officials involved in the day-to-day activities of

CMAs. To succeed with the decentralisation process, DWAF realises that there is indeed a major lack of capacity at the level of local government and the historically disadvantaged communities in rural areas. To overcome this problem, DWAF and other water research institutions have initiated capacity building projects. However, whether these projects could produce the desired results will only become evident once CMAs have been established.

The study indicates that the establishment of CMAs is a complex and cumbersome process. It requires a high level of expertise and financial resources. In this regard the bureaucrats and technocrats, assisted by private consultants, have a significant role to play in the development of proposals for the establishment and functioning of CMAs. The efficiency and effectiveness of these institutions will largely depend on the level of the technical and scientific knowledge of the officials involved. As a result of this the assumption is that the bureaucrats, hydrologists and members of the scientific community have a vested interest in water institutions. Since technocrats are concerned about the protection of their immediate interests, it is highly unlikely that they would prefer small bureaucratic management structures. In terms of the public choice theory it can be expected that bureaucrats would use their institutional knowledge to further their individual or bureaucratic interests. Although no CMAs have been established between 1998 and 2001, the proposals for the establishment of CMAs indicate — though not conclusively — that water institutions could become large bureaucratic organisations.

As indicated previously, South Africa is a developing country with a society reflecting grave income disparities. The majority of the poor find themselves in either the rural areas or the informal settlements situated at the fringes of major cities and towns. In the proposal for the establishment of a CMA for the Inkomati River basin, it was estimated that the expected operational and technical support costs for the next five years would amount to about R30.5 million. With the gradual establishment of CMAs for all the nineteen WMAs, indications are that the financial burden on water users will increase substantially. It is not only the CMAs of the nineteen WMAs that need to be financed, but also the numerous sub-basin agencies and other water user associations. The complexity

of the structures will also add to the costs. Another important aspect is the role of consultants. The study concluded that consultants are already playing a significant role in the consultation process for the establishment of CMAs. There are thus sufficient reasons to believe that the implementation of the IWRM approach in South Africa is indeed a costly exercise that will undoubtedly increase in the years to come.

Concerning the third hypothesis the study found that the multicultural nature of society (i.e. the current cultural differences), the unequal levels of economic development and the limited level of technological and scientific knowledge, will make it extremely difficult to implement the IWRM approach without contextualising it. It is doubtful that the aforementioned factors will assure a total commitment and impartiality from the individuals and organisations involved in the decision-making processes and other management activities of water institutions. The financial viability of the water institutions will also be severely affected by the high poverty levels and the free-rider problem associated with water resources. The study thus finds support for the three hypotheses.

In conclusion, the study found the public choice theory to be a useful framework to analyse the research problem, namely, the political appropriateness of the incorporation of the IWRM approach in South Africa's water policy. According to the public choice theory, a public policy has to be evaluated in a specific way. If the net benefits for a society outweigh the costs, it is worthwhile to continue with the investment of resources. If not, the policy needs to be either adjusted or abandoned. It is important for any policy to bring about a Pareto improvement — i.e., the aggregate benefits of a policy change must outweigh its aggregate costs. Since none of the proposed CMAs have been established between 1998 and 2001, it is not possible to come to a verifiable conclusion. However, the study points to the fact that in terms of the public choice theory, the opportunity costs of the IWRM approach are likely to outweigh the benefits for society. This, together with the fact that the findings of the study validate the three hypotheses, lead to the conclusion that there is a need to adjust the current water policy to

accommodate the cultural, economic and political realities of society at large, i.e. it has to be contextualised to be a politically appropriate public policy.

The concept of integrated water resource management is indeed a laudable approach. However, given the aforementioned hypotheses, the holistic element of the IWRM approach and the demarcated WMAs necessitate a re-evaluation of South Africa's water policy, in spite of the fact that it has not been fully implemented as yet. What are the options? There are three: The first option is to revert back to the riparian principle as it was prior to the 1998 *Water Act*. Since the water policy has to reflect the principles of the *Constitution*, a return to the riparian principle is not feasible. It will also not address the injustices of the past caused by the policy of apartheid.

The second option is to either revisit the concept of public participation in the management of water resources, or to re-delimitate the WMAs. The re-delimitation must take cognisance of the existing political boundaries and the number of WMAs must be significantly reduced. A reduction in the number of WMAs will subsequently lessen the financial obligations of public institutions and society at large. Both elements could be combined to develop a new policy approach.

Given the scientific and technical nature of water resource management, the third and favourable option is to abandon the concept of public participation. This option will not only negate the need for CMAs (and indirectly WMAs), but also greatly simplify the management of water resources. Water is a finite common-pool resource that needs to be managed to the advantage of society at large. It is therefore essential to evaluate South Africa's water policy continuously to ensure that it is adequately contextualised to meet the basic needs of society.

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SUMMARY

A POLITICAL POLICY ANALYSIS OF THE INTEGRATED WATER RESOURCE MANAGEMENT APPROACH IN SOUTH AFRICA'S WATER POLICY (1998 – 2001)

by

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The aim of the study emanates from the research question: *Is the incorporation of the integrated water resource management (IWRM) approach in South Africa's water policy, from a political point of view, appropriate?* The IWRM approach, as applied to developing countries, originated in developed countries with predominantly homogeneous societies where there is a broad commitment to democratic principles, the free market system and individualism. Societies in developing countries do not necessarily share the same characteristics associated with those in developed countries.

South Africa, classified as a developing country, has a multicultural society that reflects an income disparity and two major cultures, namely a modernised Western and a traditional African culture. As a result two subsidiary research questions follow: *Can the commitment and impartiality of all the stakeholders that partake in the decision-making processes of water institutions at all levels be ensured? Is it possible to establish small, efficient and financially viable bureaucratic structures (water institutions) at the level of water management areas (WMA)?*

The study uses the public choice theory to assess the IWRM approach in selected developed and developing countries. The applicability of public choice concepts with reference to the differences between Western and African cultures are briefly alluded to. It also defines the IWRM approach and certain IWRM elements that have political implications for society at large.

The study describes specific elements of the IWRM approach in France and Australia and the relative successes thereof in terms of the public choice theory. The implementation of the IWRM approach in Indochina and selective developing countries in Sub-Saharan Africa are described to highlight certain institutional problems, inadequate financial resources, the lack of capacity and various cultural aspects that inhibit the efficiency and effectiveness of the IWRM approach.

In the analysis of South Africa's water policy, the study found that the multicultural nature of society, the unequal levels of economic development and the limited level of technological and scientific knowledge, will make it extremely difficult to implement the IWRM approach without contextualising it. According to the public choice theory, the net benefits of a policy for a society must outweigh the costs. If not, the policy needs to be either adjusted or abandoned. Since none of the proposed catchment management agencies (CMA) were established between 1998 and 2001, it is not possible to come to a verifiable conclusion. However, the study indicates that the opportunity costs of the IWRM approach are likely to outweigh the benefits for society.

Other aspects that necessitate a re-evaluation of South Africa's water policy are the holistic element of the IWRM approach and the demarcation of WMAs. The study identifies three options: The first option is to revert back to the riparian principle. The second option is to either revisit the concept of public participation, or to re-delineate the WMAs. The third and most favourable option is to abandon the concept of public participation. It would not only negate the need for CMAs (and indirectly WMAs), but would also greatly simplify the management of water resources.

KEY TERMS: bureaucracy; catchment management agency; decision-making; Dublin principles; integrated water resource management; public choice; South African water politics; water management area; water policy; water resources.

SAMEVATTING

'N POLITIEKE BELEIDSANALISE VAN DIE BENADERING VAN GEÏNTEGREERDE WATERBESTUUR IN SUID-AFRIKA SE WATERBELEID (1998 – 2001)

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Die doel van die studie spruit vanuit die navorsingsvraag: *Is die inkorporasie van die benadering van geïntegreerde waterbestuur in Suid Afrika se waterbeleid — vanuit 'n politieke perspektief — geskik?* Die benadering van geïntegreerde waterbestuur, soos toegepas in ontwikkelende state, het in ontwikkelde state ontstaan. Hierdie state het hoofsaaklik homogene gemeenskappe waar die vryemark stelsel, individualisme en algemene demokratiese beginsels nagejaag word. Gemeenskappe in ontwikkelende state deel nie noodwendig dieselfde eienskappe nie.

Suid-Afrika, wat as 'n onwikkelende land geklassifiseer word het nie net 'n samelewing met 'n oneweredige verspreiding van inkomste nie, maar ook een met 'n multikulturele karakter, naamlik 'n moderne Westerse en 'n tradisionele Afrika-kultuur. Dit gee aanleiding tot twee onderliggende vrae: *Kan die toegewydheid en onpartydigheid van belanghebbendes wat aan die besluitnemingsprosesse van wateragentskappe op alle vlakke deelneem, verseker word? Is dit moontlik om klein, effektiewe en finansieel lewensvatbare burokratiese instellings (waterinstellings) op die vlak van waterbestuursgebiede te skep?*

Die studie gebruik die openbare keuse teorie om geïntegreerde waterbestuur in geselekteerde onwikkelde en ontwikkelende state te analiseer. Daar is ook kortliks verwys na die verskille tussen Westerse en Afrika kulture met betrekking tot die onderliggende konsepte van die openbare keuse teorie. Geïntegreerde waterbestuur is ook gedefinieer en die moontlike politieke gevolge wat sekere elemente vir die gemeenskap

in sy geheel kan inhou, is bespreek. Die studie beskryf spesifieke elemente van geïntegreerde waterbestuur in Frankryk en Australië, asook die relatiewe suksesse daarvan in terme van die openbare keuse teorie. Die implementering van geïntegreerde waterbestuur in Indo-Sjina en geselekteerde state in Sub-Sahara Afrika is beskryf ten einde die institusionele probleme, onvoldoende finansiële bronne, 'n gebrek aan kapasiteit en kulturele aspekte uit te wys wat die effektiwiteit van geïntegreerde waterbestuur in ontwikkelende state strem.

In die analise van Suid Afrika se waterbeleid het die studie bevind dat weens die multikulturele aard van die gemeenskap, die oneweredige ekonomiese vlakke van ontwikkeling en die beperkte vlak van tegnologiese en wetenskaplike kennis, dit uiters moeilik sal wees om geïntegreerde waterbestuur te implementeer sonder om dit te kontekstualiseer. Volgens die openbare keuse teorie, moet die netto voordele van 'n beleid vir die gemeenskap meer wees as die kostes daaraan verbonde. Indien nie, moet die beleid verander of geskrap word. Aangesien geen waterbestuursagentskap tussen 1998 en 2001 geskep is nie, is dit onmoontlik om 'n verifieerbare gevolgtrekking te maak. Die studie het egter wel bevind dat die verwagte koste van geïntegreerde waterbestuur waarskynlik hoër gaan wees as die verwagte voordele vir die gemeenskap.

Ander aspekte wat dit noodsaaklik maak om Suid-Afrika se waterbeleid te herevalueer, is die holistiese element van geïntegreerde waterbestuur en die afbakening van waterbestuursgebiede. Daar is drie opsies: Die eerste opsie is om na die beginsel van oewerregte terug te keer. Die tweede opsie is om te besin oor die konsep van openbare deelname, of oor die herafbakening van waterbestuursgebiede. Die derde en verkieslike opsie is die skrapping van openbare deelname. Dit sal nie net die behoefte vir die skepping van waterbestuursagentskappe (en indirek waterbestuursgebiede) uitskakel nie, maar ook die bestuur van waterbronne vereenvoudig.

SLEUTELTERME: besluitneming; burokrasie; Dublin beginsels; geïntegreerde waterbestuur; openbare keuse; Suid-Afrikaanse waterpolitiek; waterbeleid; waterbestuursagentskap; waterbestuursgebiede; waterbronne.