Chapter 1 Introduction

'Leave the world better than you found it, take no more than you need, try not to harm life or the environment, make amends if you do' (Hawken 1993).

'Water should be seen as essential to everything that has to do with life and livelihood and not as a sector' (William Cosgrove 2004).

1.1 The Journey

In this chapter, the research context for the study is introduced. It outlines the research statement, aims, contribution of the study, and methodology. The chapter sets out the research design processes in a systematic manner, and sets the tone for more focussed investigations to be pursued in subsequent chapters.

1.2 Setting the Scene

In recent years, water resource issues have been of major international concern. In a number of countries, low water quality and quantity have become critical factors limiting socio-economic development (GWP 2000; Biswas 2004; Essaw 2004). Many institutions are rooted in a centralised culture with fragmented and supply-driven water management. There are often inadequate economic, social and environmental criteria to support the approval of policies, plans and projects related to water (Jonch-Clausen 2004).

Countries of the world, especially the developing countries, face numerous socio-economic problems with the continued capacity of water resources to service community, environmental and economic needs representing a major priority. These countries recognise these water resources issues as a priority focus for achieving those socio-economic outcomes and sustained poverty

reduction that the strategy promulgates (Water Resources Commission 2000; Rees 2002; Ahmad 2003). Specific priorities for water resource management include:

- avoiding further soil and water resource base deterioration;
- improving the capacity of prevailing resources to sustain community development; and
- supporting the provision of environmental services of sufficient order to maintain sensitive ecosystems.

These challenges emerge from a history of water use that has had little regard for the finite nature of that resource to support continuing socio-economic development. The reality is that demand for water resources continues to grow, while the quality and reliability of supply continue to deteriorate.

One of the key constraints to the implementation of sustainable water resources management is an inadequate institutional water demand management framework. Of possible greater significance is the lack of what will be described as a collective private or public sector knowledge relating to water use that is generally consistent with any general agreed notion of 'sustainability'. Articulating the theoretical foundations of an appropriate sustainability culture through which to underpin water resources management within a global context is an explicit aim of this thesis. Those values, attitudes and beliefs that underpin progress towards sustainable water resources management are inconsistent and frequently at odds with the realisation of government priorities in relation to this resource. With no consistent "sustainability culture" in place, it is no surprise that the world lacks an articulate institutional framework for integrated water resources management (Chapter 3).

The challenge, however, is to deal with the variability of water in time and space to enable humankind to have access to water for various uses and protect vital ecosystems (Pigram 2006). The need to find appropriate ways to co-ordinate policy-making, planning and implementation in an integrated manner across sectoral, institutional and professional boundaries and to take

into account the even more complex coordination issues arising over the management of international water courses is apparent (GWP 2000). Hence, this whole idea of integrated water resources management (IWRM) concept became prominent in the 1990s.

1.3 Research Statement

The increasing competition for water from diverse users points to the urgent need to secure water for the livelihood of the world's increasing population and the protection and conservation of the resource to sustain its functions and characteristics.

This is why an IWRM approach was adopted by the United Nations in 1992 during the International Conference on Water and the Environment held in Dublin (GWP 2000; Biswas 2004). Further to this was a call for all countries to "develop IWRM and water efficiency plans by 2005" at the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002 (GWP 2000; Salaman 2003). The IWRM approach aims at promoting the co-ordinated 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). Since the adoption of IWRM by the United Nations, the Global Water Partnership (GWP) through its IWRM processes has advocated an integrative perspective for water management that is responsive to economic, environmental and community outcomes.

However, very little is offered in terms of processes to operationalise the IWRM ideals on the ground. It has been established that water management is a complex process involving many actors, with different knowledge by the GWP and at different levels. The success of management initiatives in such a context is dependent on the capability of change agents to facilitate the integration between different sources of knowledge at different levels. Participatory approaches to planning have been advanced to be the appropriate framework to engage all who have a stake in the management of

the water resources (Mikkelsen 1995; Chambers 1997). However, the validity of this claim has not lived up to expectations in its application by change agents (Cooke and Kothari 2001). Therefore, there is a clear need for methodologies that can catalyse, facilitate and support a systematic stakeholder involvement in learning processes in relation to the proactive management of these complex water resource challenges.

Given that change is a fundamental part of the IWRM planning approach, the processes should be capable of adapting to new economic, social and environmental conditions and to changing human values**.** A planning process that favours the alternative towards an integrative setting for water resource management wherein the connections that water represents between economy, environment and community needs to be explored**.** How those improvements should be defined and instituted are aspects of an IWRM implementation that need to be carefully considered before the apparent potential of that perspective could even begin to be realised. The degree to which this intent is likely to translate into effective water resources governance, management and use is a key concern for this study.

1.4 Aims

In order to approach the research in a systematic manner three aim statements are proposed:

- To develop a methodology for integrated water resource management planning processes customised to the particular ecological, economics and community settings that can serve as a framework consistent with the rhetoric embedded in the existing IWRM GWP agenda;
- To combine insights from appreciative inquiry perspectives to underpin a praxis synthesis consistent with the rhetoric of IWRM; and
- To explore improved ways to help stakeholders and communities own the process of change for improved water resources management.

The more specific aim is to integrate open-participatory processes to addressing water resource issues. The underlying principles are that water issues manifest through complex inter-connecting systems and the need to understand each sub-component and their interrelationships is critical. Open participative processes have the potential to maximise a 'collective intelligence' of systems understandings as the key asset through which to devise, implement and manage holistic responses to complex systems problems such as water resource management.

1.5 Expected Outcome

The anticipated outcome of this study is the designing and testing of IWRM praxis that is robust through its application across two very different environmental-community-economic settings in Australia and Ghana. The outcome of the study will enable demonstration of how the IWRM ideals could be applied in practice in the development of an integrated water resources management framework.

1.6 Proposed Methodological Framework

In view of the complex nature of water resources and its management issues, a probable perspective will be the adoption of a transdisciplinary approach. Transdisciplinarity is a meta perspective or philosophy associated with ecological economics which, according to Costanza (1991) 'goes beyond our normal conceptions of scientific disciplines and tries to integrate and synthesise many different disciplinary perspectives'. A transdisciplinary approach, as argued by Gray (2006), and van de Lee (2002) is vital to attempt to compare and contrast complementary aspects of paradigms and provide a useful theoretical foundation to help address myriads of water resource issues espoused by the GWP.

Ecological economics (EE) 'is a new transdisciplinary field of study that addresses the relationships between ecosystems and economic systems in the broadest sense. These relationships are central to many of humanity's

current problems including water issues and to building a sustainable future but are not well covered by existing scientific disciplines' (Costanza 1991).

EE is rooted in both ecology and economics and recognises ecological impacts and dependencies and the need to make ecology more sensitive to economic forces (Costanza 1989). Costanza (1991) opined that the contemporary economic paradigm (economists) holds onto the assumption of continuing and unlimited economic growth in the real state of the world. Accordingly, he reasoned that, resource limits to growth could be eliminated by clever development and deployment of new technology. Call this line of thinking 'technological optimism'. As opposed to this, the 'technological pessimism' (usually, ecologist, environmentalist, life scientist and biologist viewpoints?) assume that technology will not be able to address the resource constraints and eventually economic growth will stop (Costanza 1991; Soderbaum 2000).

Granted that technology can be developed to salvage environmental problems that humankind is facing, why, to date, has technology not been able to reverse limited water quantity problems in a so-called technologically advanced country like Australia? Whatever turns out to be the answer, Costanza (1989) stressed that 'a more transdisciplinary approach to ecology and economics will be beneficial in order to maintain our life support systems and the aesthetic qualities of the environment including water resources'. In support of this view, Funtowicz and Ravetz (1994) argued that contemporary water resources issues are different from traditional scientific problems in the sense that they are global in scale, and long-term in their impact (Costanza 1991; Soderbaum 2000) and when specifying the categories of environmental functions to be protected, a standard single disciplinary approach cannot be used due to inherent uncertainties related to the unpredictability of complex water systems.

Gill (2004) argued that EE could claim to represent a 'transdisciplinary' perspective on the sustainability issue and that most practitioners attempt to maintain an openness or responsiveness to ideas that may come from outside

their own field. In support of this Costanza (1989) noted that since EE supports conceptual pluralism, we should expect to find a wide range of approaches and ideas in addressing myriads of water resources issues rather than a coherent and consistent single point of view. Taylor, Bryan et al. (1995) argued that what is more important is to appreciate the guiding and informing role of theory that informs the approaches, to know what to ask and how to interpret it (Neuman 2000).

This study therefore integrates ideas from complexity theory, systems thinking, communicative action and appreciative inquiry perspective to inform the design of Appreciative Systems Planning methodology used in this study.

1.6.1 Appreciative Systems Planning Approach

The methodology to be developed in this thesis is labelled appreciative systems planning (ASP) process to reinforce its focus on its appreciative inquiry mode and the utilisation of the graphical mapping process.

Appreciative Inquiry (AI) is a methodology for change premised on the fact or assumption that in every organisation or community something works and change can be managed on the basis of this premise, and the analysis of how to do more of what works. As a holistic form of inquiry, it asks a series of questions not found in either a logical-positivist conception of science or a strictly pragmatic, problem-solving mode of action-research (Cooperrider and Whitney 2000; Watkins and Mohr 2001; Nicholas and Dyer 2003; Whitney and Trosten-Bloom 2003). As will be noted in Chapter 6, AI does not look for problems to fix, rather it suggests we look for what works in an organisation or community. The tangible results of the inquiry process are a series of statements that describe where the organisation/ community wants to be, based on experience, history and the high moments of where they have been.

The development of AI is strongly influenced by the theory of social constructionism which reflects a belief that there is no one reality or truth; rather, truth is grounded in the synthesis of the multiple realities of individuals

(Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003). Proponents of AI believe that meaning is not discovered but constructed. People construct meaning in different ways even in relation to the same phenomenon. Subject and object emerge as partners in the generation of meaning (Crotty 1998).

The conceptual heritage of Appreciative Systems Planning (ASP), as used in this thesis is shared by the institutional economics, learning organisation, system dynamics and social ecology (cognitive mapping) fields. The approach is termed 'mudmapping' by Gill. The ASP approach explores and builds on the big systems picture of how everything fits together and allows identification of key leverage points in any system undergoing change (Gill 2005). The approach utilises graphical mapping process in a form of cognitive mapping that, in effect imposes a single non-technical language as the medium through which all related discussions take place. The ASP methodology is consistent with the transdisciplinary setting which embraces a multi-disciplinary perspective.

1.6.2 Case Study Approach

In order to address the aim statements a dual case-study approach to inform and test the associated methodological development was undertaken. The methodological development involved consideration of theoretical underpinnings, and identification of applicable tools consistent with the principles and theory of IWRM.

Yin (1994) described a case study as empirical enquiry that 'investigates a contemporary phenomenon within its real life context: when the boundaries between the phenomenon and the context are not clearly evident; and in which multiple sources of evidence are used'. Yin believes that to uncover some pertinent issues (in this case water resources management) in a study, deliberate attempts to understand the issues in their own real contexts form part of the process. He maintained 'the case study as a research strategy comprises an all encompassing method - with the logic of design incorporating specific approaches to data collection and to data analysis'.

Considering the appropriateness of the case study as a research strategy, Diesing (1972) noted that the process allows an intensive examination of a phenomenon and the interaction of individuals within and outside enables a more interpretive analysis of the issues at stake. It also provides concrete observation, potentially unhampered by theories or pre-determined conclusions. This case study approach is consistent with the transdisciplinary approach that forms the basis for this research.

Macintyre Brook Catchments, in Australia, and Savelugu Nantom Catchments, in Ghana provided the testing grounds for the application of the ASP approach. As members of the Global Water Partnership (GWP), Australia and Ghana have indicated a formal intent to explore Integrated Water Resource Management (IWRM) as a sustainability construct through which to expedite the resolution of current water resources issues. Testing the proposed methodology across these very different case studies will allow for the articulation of a more robust specification for IWRM than could be achieved through a single application.

The compare and contrast approach should thus reveal both generalisable and location-specific elements of the IWRM methodological framework articulated in this thesis.

1.7 Structure of This Study

Chapter 1 has set the scene for the more focussed investigations to be pursued in subsequent chapters. Chapter 2 begins with establishing the relationship between water and livelihood issues and the need for an efficient water resource management strategy. The rationale is to provide the basis for exploring this whole idea of integrated water resources management.

A literature review in relation to the history, background and status of the generic GWP/IWRM will be discussed in Chapter 3. The main theme to be explored will be the articulation and assessment of the assumptions involved and the particular truth claims that they embed. Of particular interest for the

review will be the degree to which IWRM implies the need for some kind of consistent “paradigm shift” or evolution of understandings in relation to sustainable water resources management and governance.

In order to have a practical appreciation of the IWRM concept, the study will review the current state of IWRM implementation globally in Chapter 4. The rationale is to assess the observed and conceptual model to determine the leverage point through which to design planning processes to advance the IWRM agenda.

Based on the practical revelation to be discussed in Chapter 4, there will be the need to re-assess the participatory planning approaches in Chapter 5. The review of literature from Chapters 2, 3, 4 and 5 will provide the basis for the methodological framework to be discussed in Chapter 6. This will provide a space to discuss the wider “theoretical” implications of appreciative inquiry perspective with particular focus on how IWRM fits in this perspective. The discussion will look at how the AI might contribute to deriving greater insight into these water issues and their resolution.

In Chapter 7, cases from Macintyre Brook catchment (Australia) and Savelugu catchment (Ghana) will provide a testing ground for the proposed methodology. These cases will be focussed around an attempt to critically assess IWRM implementations and to systematically explore the prospects for ASP to do ‘better’.

Chapter 8 assesses how the case studies will demonstrate the various methodological claims about how the enhanced AI methodology will be consistent with the improved definition of sustainability and with the aims and ambitions of the IWRM/GWP agenda.

In the final chapter, an attempt is made to articulate the relevance of the ASP approach in the IWRM planning process. This will be followed by a summary of the thesis, a review of thesis aims and implications for theory and practice in terms of conceptual and applied contributions of this study.

Chapter 2 Water and Livelihood Issues

2.1 Introduction

Water is critical to the interaction between people and their livelihood. The importance of water to livelihoods, as well as survival, health and quality of life is implicit in life expectancy rates, hunger and malnutrition levels, poverty rates, employment migration, urbanisation rates, flood displacement, and even school retention rates (Ahmad 2003; GWP 2003; Gonzalez 2005).

Water should be seen as essential to everything that has to do with life and livelihood and not as a sector. In the words of William Cosgrove (President, World Water Council, 2004), 'We have been talking about water as if it is something that competes with other sectors and we should stop that'. All strategies to improve livelihood must include water. For example:

- *we cannot reduce the number of children under age 5 who die, without providing water and sanitation;*
- *we cannot improve the number of children attending schools without providing safe water;*
- *we cannot talk about feeding more people without water; and*
- *we cannot talk about reducing poverty by economic development without water infrastructures (Gonzalez 2005).*

Water is essential for life, for the functioning of a modern developed society and for ensuring the integrity and sustainability of the earth's ecosystem (UN Water Development Report 2003). It should be recognised as a tool for community development and peace building.

The provision of safe and adequate water supplies for domestic use has often been used as a yardstick for determining the level of socio-economic development and health status of human communities. In towns, a good water supply is a basic requirement for the growth of commerce, tourism and light

industries. In the rural community, it can also become the starting point for new commercial ventures. These ventures are usually aimed at alleviating poverty and improving the quality of life. Improvement in water supply can result in better health, community development and socio-economic benefits (Essaw 2001).

2.2 Water and Livelihood Issues

Poor management of water resources causes health, environment and economic losses on a scale that impedes development and frustrates poverty reduction efforts, especially in the developing countries (Salaman 2003; Jonch-Clausen 2004). Current global statistics indicate that about 1.4 billion people live without clean water; 2.3 billion lack adequate sanitation and 7 million die annually of diseases linked to water. Over 3.5 million children die each year from water-related diseases (Jonch-Clausen 2004). Resolution II of the United Nations Water Conference held in Mar del Plata specifically stated that 'all peoples, whatever their stage of development and their social and economic conditions, have the right to have access to drinking water in quantities and of a quality equal to their basic needs (Salaman 2003).

Substantial information about water issues around the world is available. Inadequate access to water sources leads to decline in agricultural production, and loss of life, as well as ecological problems. Some examples are listed below:

Drought in Zimbabwe in the early 1990s entailed a 45 per cent decline in agricultural production and an associated 11 per cent decline in gross domestic product (GDP). El Nino floods (1997-98) caused an estimated economic loss exceeding 1.7 billion US dollars in Kenya (Jonch-Clausen 2004).

Water consumption has almost doubled in the last fifty years. A child born in the developed world consumes thirty to fifty times the water resources of one

in the developing world (UNEP 1999). A child born in Australia[1], for example, consumes more than fifteen times the water resources of one in Ghana[2]. Consider water consumption per capita in the following countries: Australia 350-400 litres/person/day (water that had been treated to drinking standard – half of this was used for gardening and flushing toilets); Ethiopia (Africa) 30 litres; Ghana (Africa) 20 litres; Uganda (Africa) 10 litres (Water Resources Institute 2001; Salaman 2003; Australian Bureau of Statistics 2006). The number of people dying from diarrhoeal diseases is equivalent to twenty fully-loaded jumbo jets crashing every day with no survivors (UN Water Development Report 2003).

Nearly 450 million people in 29 countries face water shortage problems and the figure is expected to jump to 4 billion by the year 2050 with conditions particularly severe in Africa, the Middle East and South Asia (Salaman 2003).

Pearce (2006) writes,

> *The ground water boom is turning to bust and, for some, the green revolution is over. Fifty years ago in northern Gujarat in India, bullocks driving leather bucket augers lifted water from open wells dug to about 10 metres. Now tube wells are sunk 400 metres, and they still run dry. Half the traditional hand dug wells and millions of tube wells have dried up across western India. In the southern state of Tamil Nadu, two-thirds of the hand-dug wells have failed already, and only half as much land is irrigated as a decade ago. Whole districts in Tamil Nadu and Gujarat are emptying of people. Suicide among farmers is rife. Many more are joining the millions migrating to urban slums (Pearce 2006:59).*

The water anarchy experience in some parts of Indian is already repeated elsewhere. From China to Iran and Indonesia to Pakistan, rivers are running dry under the impact of increased abstractions. China and Pakistan together

[1] Australia by world standard is the driest inhabited continent, yet in terms of water consumption it is one of the highest.
[2] Ghana is a tropical country endowed with both surface and ground water resources yet in terms of water consumption it is one of the lowest.

pump out around 400 cubic kilolitres of underground water a year, around twice as much as is recharged by the rain. These three countries account for more than half the world's total use of underground water for agriculture (Pearce 2006).

The Weekend Australia (18-19 March 2006) reported, 'In the past 50 years the population of Mexico City has quadrupled to nearly 22 million people. The city is dropping at an alarming rate - by as much as 38 cm a year in some areas - and by almost 9 m over the past 100 years. The rate of collapse has accelerated as the city pumps 10,000 litres of water per second out of the ground, hollowing out the subterranean lake. Despite its pumping efforts, the city wastes about 40 per cent of water through leaking' (The Times 2006).

According to The Times (2006) water, if not properly managed, will start to become as contentious an issue as oil.

> *many of us, particularly in countries where farming does not rely on artificial irrigation, have little idea how much it takes to grow our food. Some of the statistics are staggering. It takes between 2000 and 5000 litres of water to grow I kilogram of rice, 1000 litres to grow a kilo of wheat, 11,000 litres to grow the feed for enough cow to make a quarter-pound hamburger and between 2000 and 4000 litres for that cow to fill its udders with a litre of milk. For a kilogram bag of sugar, it takes 3000 litres to produce. Every teaspoonful of sugar in your coffee requires 50 cups of water to grow it (Pearce 2006:21).*

Irrigation, industrial and municipal uses account for 70 per cent, 20 per cent, and 10 per cent, respectively of global withdrawals. Half the world's rivers and lakes are seriously polluted, 50 per cent of the world's wetlands have disappeared in the last century and many rivers no longer flow to the sea (Salaman 2003).

These statistics illustrate the gravity of the challenges facing the world with respect to its water resources and the startling disparities that exist in its

utilisation. Indeed the water crisis affects livelihoods of billions of people in different ways and in different places. These effects call for urgent action to secure water for the livelihood of the world's increasing population and the protection and conservation of the resource to sustain its functions and characteristics. Gill (2004) stressed that 'the continued prevalence of unresolved water sharing conflicts, environmental problems and the plain fact that the world is increasingly "short of water" should recommend a mature analyst's preparedness for new ideas'.

Despite floods and torrential rains hitting many parts of the world, it is important to remember that the world as a whole faces an increasing shortage of usable water (Pigram 2006). Recent pictures of vast areas of flooded land in Bangladesh, tsunamis in Indonesia, Sri Lanka, India, Somalia and elsewhere, with warnings of worse to come if current patterns of global warming are not reversed, are a vivid reminder of what happens when communities are faced with too much water. At the other extreme, droughts in Australia, the Sahel and other parts of Sub-Saharan Africa send an equally stark message about what happens when there is not enough water to meet basic human needs. Consequently, increasing the effectiveness with which water is used must become a top priority (Dickson 2004).

2. 3 Poverty and Livelihood

Inadequate access to water forms a central part of peoples' poverty, affecting their basic needs, health, food security and basic livelihoods. Poverty is no longer seen as simple lack of income or, at the national level, low per capita Gross National Product (Ahmad 2003; GWP 2003).

Poverty is about deprivation in wellbeing and should be recognised as multi-dimensional with complex interactive and causal relationships between the dimensions (Nkum 1998; Ahmad 2003). It is incorrect to assume that poor people are solely concerned about inadequate financial/ economic assets and opportunities (e.g. income, savings, credit, remittances, insurance instruments etc.). They are also concerned about deprivation and challenges in other

essential livelihood assets which may include a combination of some or all of the following (Rakodi 1999; NDPC 2004): **financial/ economic barriers (**inadequate access to investment capital, constrained job market, low access to productivity-enhancing technology); **natural/ environmental barriers (**unfavourable/ inequitable land tenure arrangements, inadequate access to productive water sources, pollution of water sources, erratic rainfall, windstorms, wild fires, pest plagues, crop diseases, livestock diseases, deforestation, infertile/ degraded soils, flooding, unregulated surface mining, geographical remoteness); **human asset barriers** (malnutrition, high fertility/ dependency rates, poor sanitation, low immunity to disease); **physical asset barriers** (homelessness/ unsafe accommodations, poor standard construction; and **social barriers** (gender, cultural, governance/ participation).

The International Institute for Sustainable Development defined livelihoods as the activities, assets and entitlements that poor people use to survive (Elliott 1999). Livelihoods encompass the material, human and social conditions and how these either allow people to live well or prevent them from doing so (Chambers 1997).

The livelihoods perspective provides a framework for examining impacts on poor people's livelihoods. It comprises the capabilities (especially education, health), assets (including natural, human, social, human and physical capital) and activities required for a means of living (Chambers 1997; Rakodi 1999).

Sustainable livelihoods thus comprise: ability to recover from shocks; ability to maintain levels of financial and institutional resources when external support is withdrawn; ability not to deplete natural resources including water resources; and all these are sensitive to the livelihood options of others. The rural livelihoods framework examines the various assets available to rural people, and the social context within which they develop livelihood strategies.

Experience shows that in any competition over access to resources, whether these be natural resources or man made services and livelihood opportunities, those in poverty do less well than others, unless there are

agents acting on their behalf to manage to secure their relative interest *vis a vis* those with more economic, social and political clout (GWP 2003).

The Second World Water Forum and Ministerial Conference (The Hague) acknowledged that the right to land and access to water is the key to breaking out of the poverty trap (Rahaman and Varis 2005). The International Conference on Freshwater held in Bonn in 2001 produced a Recommendation for Actions proclamation which included issues such as poverty and key steps towards sustainable development through meeting water security needs of the poor. The conference also recommended that the World Summit on Sustainable Development (WSSD) in 2002 should harmonise water issues with overall sustainable development objectives and integrate water into national poverty reduction strategies. As noted earlier, inadequate access to water forms a central part of peoples' poverty. This is a confirmation of the statement; the status of being 'water poor' transcends all sectors and affects the livelihood security of the majority of the population in the world, especially those from the developing countries.

2.3.1 Water Poor

The GWP (2003) stated that the water poor condition would apply to:

- those whose natural livelihood base is persistently threatened by severe drought or flood;
- those whose livelihood depends on cultivation of food or gathering of natural products, and whose water source is not dependable or sufficient;
- those whose natural livelihood base is subject to erosion, degradation or state confiscation (e.g. for construction of major infrastructure) without due compensation;
- those living at a long (defined) distance from a year-round supply of drinking water;
- those obliged to expend a high (i.e. >5 per cent) percentage of household income on water; slum dwellers obliged to pay for water at well above markets rates;

- those whose water supply is contaminated bacteriologically or chemically, and who cannot afford to use, or have no access to, an alternative source;
- women and girls who spend hours a day collecting water, and whose security, education, productivity, and nutritional status is thereby put at risk; and
- those living in areas with high levels of water-associated disease (bilharzia, guinea-worm, malaria, trachoma, cholera, typhoid etc.) without means of protection.

All the above conditions of water poor are prevalent in most developing countries. Therefore, any poverty studies which exclude access to water for purposes other than drinking is highly flawed (GWP 2003). Issues relating to the degradation of soils, forests, biodiversity, and water quantity and quality have been analysed in relation to environmental costs and protection measures, but the interactions between these phenomena and livelihood systems based primarily on the natural environment have been insufficiently noted. Another aspect of environmental sustainability is its “unfair” effect on the poor. It is the poor people who often have to live in “undesirable” marginal areas, more at risk from flood, water-associated diseases etc. The poor often live in closer relationship with the environment, and do not have alternatives open to them, as do the wealthy (GWP 2003; UN Water Development Report 2003). No water development project can be sustainable if the issues of equity and poverty are completely ignored (Biswas 2004).

2.4 A Case for Effective Water Management

The articulation of the vision of 192 countries that signed the Millennium Declaration (2000) on the Millennium Development Goals (MDGs) is, in many respects, a major landmark in the history of global development partnership. Against the background of a world facing developmental problems including water, the MDGs have evolved as a major instrument for bolstering the global water development agenda through a strategic partnership, based on the triple criteria of responsibility, accountability and mutuality. An analysis of the

MDGs to support a case for effective water management is presented in Table 2.1.

Table 2.1: The UN Water, Poverty (livelihood) and the Millennium Development Goals

Millennium Goals		How water management contributes to achieving goals	
Issue	Goal	Directly contributes	Indirectly contributes
Poverty	To halve by 2015 the proportion of the world's people whose income is less than $1/day	∞ Water as a factor of production in agriculture industry and other types of economic activity ∞ Investments in water infrastructure and services act as a catalyst for local and regional development	∞ Reduced vulnerability to water-related hazards reduces risks in investments and production ∞ Reduced ecosystems degradation boosts local-level sustainable development ∞ Improved health from better quality water increases productive capacities
Hunger	To halve by 2015 the proportion of the world's people who suffer from hunger	∞ Water as a direct input into irrigation, including supplementary irrigation, for expanded grain production ∞ Reliable water for subsistence agriculture, home gardens, livestock, tree crops ∞ Sustainable production of fish, tree crops and other foods gathered in common property resources	∞ Ensure ecosystems integrity to maintain water flows to food production ∞ Reduced urban hunger by cheaper food grains from more reliable water supplies
Universal primary education	To ensure that, by 2015, children everywhere will be able to complete a full course of primary schooling		∞ Improved school attendance from improved health and reduced water-carrying burdens, especially for girls
Gender equality	Progress towards gender equality and the empowerment of women should be demonstrated by ensuring that girls and boys have equal access to primary and secondary education		∞ Community-based organisations for water management improve social capital of women ∞ Reduced time and health burdens from improved water services lead to more balanced gender roles

Table 2.1 Cont'd:

Millennium Goals		How water management contributes to achieving goals	
Issue	Goal	Directly contributes	Indirectly contributes
Child mortality	To reduce by two thirds, between1990 and 2015, the death rate for children under the age of five years	Improved quantities and quality of domestic water and sanitation reduce main morbidity and mortality factor for young children	∞ Improved nutrition and food security reduces susceptibility to diseases
Maternal mortality	To reduce by three quarters, between 1990 and 2015, the rate of maternal mortality	Improved health and reduced labour burdens from water portage reduce mortality risks	∞ Improved health and nutrition reduce susceptibility to anaemia and other conditions that affect maternal mortality
Major diseases	To halve, halt and begin to reverse by 2015, the spread of HIV/AIDS the scourge of malaria, the scourge of other major diseases that affect humanity	∞ Better water management reduces mosquito habitats and malaria incidence ∞ Reduced incidence of range of diseases where poor water management is a vector	∞ Improved health and nutrition reduce susceptibility to HIV/AIDS and other major diseases
Environmental sustainability	To stop the unsustainable exploitation of natural resources and to halve, by 2015, the proportion of people who are unable to reach or to afford safe drinking water	∞ Improved water management, including pollution control and sustainable levels of abstraction, are key factors in maintaining ecosystems integrity. Actions to ensure access to adequate and safe water for poor and poorly serviced communities	∞ Development of integrated management within river basins creates conditions where sustainable ecosystems management is possible and upstream-downstream impacts are mitigated

Source: (Soussan 2002)

Table 2.1 shows that improving water management can make a significant contribution to achieving all of the Millennium Development Goals (MDGs) established by the UN General Assembly Millennium meeting in 2000. The next section discusses various concepts aimed at improving water management in an integrated way.

2.5 Integrated Catchment Management, Integrated River Basin Management and Integrated Water Resource Management

A catchment is the area supplying surface and groundwater to a common watercourse. Each catchment is separated by hills or ridges, which direct the flow of water (Green and Tunstall 1998; Hooper 1999). Its boundaries do not usually match government, administrative or social boundaries and there are often decisions, activities or natural phenomenon that are not restricted by these boundaries. Catchments have been the focus of natural resources management which is believed to have originated in Australia since water shortages were experienced in Sydney in the 1790s. Catchments emerged as a significant focus of land and water management in the 1930s to protect urban water supplies (Green and Tunstall 1998). Catchment management (CM) is a process of strategic decision-making about the allocation of land and water resources within a water catchment area, with the focus being regional, river basin scales of planning, rather than small scale sub-watershed approaches (Green and Tunstall 1998; Hooper 1999). According to Pigram (2006), CM is a subset of river basin management (RBM). One can have about 20 or more catchments making up a river basin eg. the Murray Darling Basin in Australia is divided into 26 major catchments. While there are differing approaches to water management, there is acceptance of a common philosophy: the use of an integrated approach to land and water management on a watershed basis (Hooper 1999). Terms such as integrated catchment management (ICM), integrated river basin management (IRBM) and integrated water resources management (IWRM) have been used interchangeably.

For Pigram, ICM includes water, soil, and vegetation. We can have ICM within catchment (small scale) and between or across two or more catchments (Pigram 2006).

Hooper (1999) sees ICM as:

> *the coordinated management of land and water resources within a region, with the objectives of controlling and/or conserving the water resource, ensuring biodiversity, minimising land degradation, and achieving specified and agreed land and water management, and social objectives (Hooper 1999).*

The World Bank (2006) defined IRBM as:

> *to coordinate, facilitate and implement planning, development, management and conservation of water related resources of a river basin in a participative and integrated way, consistent with relevant international conventions and national laws, objectives and goals (World Bank 2006)*.

The GWP (2000) defined IWRM as:

> *a process which promotes the co-ordinated 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 2000:22)*

All the three concepts seem to be 'philosophically' similar in perspective and are all promoting an holistic approach in which the relationships among the economic, social and environmental systems are addressed. What is not clear is whether they are in competition as policy or management constructs. Diversity in usage of terms may have occurred because of the involvement of different disciplines and the problems posed in particular parts of the world (Downs and Brookes 1991).

2.5.1 Integration of Management Processes

The multiobjective nature of water management processes is necessary because water-based systems involve feedback processes (Chapters 3, 5 and 6), therefore management actions in one part of the system will have consequences for the operation of another part of the same system (Downs and Brookes 1991). If coordinated management of water resources is to be achieved, Mitchell (1987) has suggested that the scope of the holistic approach must be thought through. Hatcher (1982) in Downs and Brookes (1991) argued that, 'an integrated outlook in the planning stage can lead to a more efficient management service, which is not detrimental to other parts of the system and can possibly extend the range of activities that become cost effective'. Moreover, Pigram (2006) opined that integrating many functions of water (recreation, hydropower, domestic etc) with other resources (soil, forest, land etc) by different agencies has had some resistance. It is usually a 'turf war'. In other words, each of them has sphere of influence. For him, integration means 'having to surrender, or give away one's own decision making processes for a common good'. This is difficult to achieve because of the fear of the unknown, people lose opportunities, want to be lords in their own shells (Pigram 2006).

There are many definitions and ideas as to what constitutes 'good integrated water management' and the above covers only some of the interpretations that have been articulated. What can be seen from the above definitions of ICM, IRBM and IWRM is that integrating the various functions of water by different agencies is a complex issue. This is because water resources issues are complex systems (Capra 1997; Anderson 1999) made up of a large number of parts that have many interactions; social, economic and environmental (Chapters 3, 5 and 6). According to the World Bank (2006) report, words such as 'coordinate', 'facilitate', 'implement', 'water-related', 'participative', 'integrated' and 'consistent with' are all open to individual interpretation and it is not uncommon for there to be more debate on 'words and meanings' rather than 'actions and progress' when it comes to creating a new framework for water management (World Bank 2006).

The World Bank report further stressed that it would be 'helpful to move away from debatable or 'wordy' definitions and look more at what is happening in the 'real world' where river basin organisations and water resources management agencies are implementing new approaches to solve problems of resource use and degradation, and institutional and regulatory efficiency and effectiveness (World Bank 2006). Jonch-Clausen (2004) asks:

> *is the management, development and use of water in an integrated way truly a pre-requisite for achieving MDGs in developing countries? If so, what are the key steps needed to ensure that this target directly contributes to achieving the MDGs by 2015, especially those related to poverty, hunger, health and environmental sustainability? (Jonch-Clausen 2004: 6)*

The increasing competition for water from diverse users points to the urgent need to secure water for the livelihood of the world's increasing population as well as to maintain the ecosystem. For the purpose of this study IWRM perspectives will be explored. The IWRM concept was adopted by the United Nations in 1992 during the International Conference on Water and the Environment held in Dublin. Further to this was a call for all countries to 'develop IWRM and water efficiency plans by 2005' at the World Summit on Sustainable Development (WSSD) held in Johannesburg in 2002. Recognising the crucial role effective management of water resources plays in socio-economic development of nations, the next chapter examines the history, background and status of the generic Global Water Partnership and its IWRM concept.

Chapter 3 History of International Developments in Water Resources Management

3.1 Introduction

The relationship between water and livelihood issues and associated challenges has been established from Chapter 2. This chapter discusses the history, background and status of the generic Global Water Partnership (GWP)/Integrated Water Resources Management (IWRM) 'movement'. This will enable some consistent deconstruction of the key motivations for IWRM as a policy priority area and the articulation of clear policy settings for addressing water resources issues. Of particular interest is the degree to which IWRM implies the need for some kind of consistent "paradigm shift" or evolution of understandings in relation to sustainable water resources management and governance.

3.2 Historical Excursion into Integrated Water Resource Management

Recently, water resources issues have been a major concern both to the developed and developing worlds. In a number of countries, low water quality and quantity have become critical factors limiting socio-economic development (Essaw 2004; Biswas, Varis et al. 2005). Other world-wide common critical issues identified by Jonch-Clausen (2004) and GWP (2000) include:

- the world's fresh water resources are under increasing pressure. Growth in population, increased economic activity and improved standards of living lead to increased competition for and conflicts over limited freshwater resources. Local governments lack capacity to manage pressure on water resources;
- deteriorating water quality caused by pollution threatens human health and the functioning of aquatic ecosystems;

- institutions are rooted in a centralised culture with supply-driven management and fragmented and sub-sectoral approaches to water management;
- awareness – and priority – at a political level of water issues is limited;
- inappropriate pricing structures and hence limited cost recovery result in inefficient operation and maintenance of water systems, as well as in misallocation and loss of water;
- investments in the water sector are low, and do not get sufficient attention in the national budgeting procedures;
- information and data to support sound management of water are generally lacking; and
- the often-inadequate economic, social and environmental criteria for the approval of policies, plans and projects.

In Sub-Saharan Africa, water and sanitation faces enormous challenges:

- poor inter-agency coordination, particularly between state agencies and non-governmental organizations (NGOs) leads to duplication of efforts, contradiction and inconsistency;
- inappropriate institutional arrangements and unclear organisational mandates hinder service provision;
- inadequate human resource capacity in both utilities and local authorities limits knowledge of issues involved in service delivery; and
- officials commonly consider the poor to be ignorant and apathetic. This prevents their badly needed involvement in the planning and management of services (WUP Africa 2005).

The challenge, however, is to deal with the variability of water in time and space to enable humankind to have access to water for various uses and protect ecosystems (Pigram 2006). The need to find appropriate ways to co-ordinate policy-making, planning and implementation in an integrated manner across sectoral, institutional and professional boundaries and to take into account the even more complex coordination issues arising over the management of international water courses is apparent (GWP 2000).

Water management has been institutionalised in an advanced and integrated way over centuries. In Valencia, Spain, for example, multi-stakeholder participatory water tribunals have operated at least since the 10th century (Rahaman and Varis 2005). Embid (2003) writes that Spain was probably the first country to organise water management on the basis of river basins, as it adopted the system of *confederaciones hidrograficas* in 1926. Over the last several decades, there have been serious attempts to implement IWRM in different global regions. In the 1940s, an early version of IWRM occurred when the Tennesse Valley Authority (Tortajada 2005) began to develop the water resources for that region (Barkin and King 1986) cited in Rahaman and Varis (2005). A later example occurred in 1960 in Hessen, Germany, where Integrated Water Resource Management Planning was prepared on the basis of a multi-disciplinary integrated approach (Berg 1960; Kaitera 1963) cited in Rahaman and Varis (2005). During the 1970s, many European countries implemented a considerable number of comprehensive watershed management plans. One example is Finland, which produced basin-wide plans for the Lower Kymi River, institutionalised the process by establishing the National Board of Waters, and implemented those plans. One of many implementations was the countrywide construction of municipal plants, which at the time were already more advanced than current plants in many countries of today (Rahaman and Varis 2005). Prominence of the IWRM concept caught the international eye after the United Nations Water Conference in 1990s. Since then, IWRM has become a universal framework believed to be able to help resolve the global water resource issues.

3.3 IWRM in the International Agenda from Mar del Plata 1977 to Kyoto 2003

This section discusses the Global Water Partnership (GWP)/Integrated Water Resources Management (IWRM) “movement” from 1977 to 2003. A key aim is to search for evidence of any consistent epistemological, theoretical perspective, methodological and method responses to the rhetoric espoused by the GWP.

3.3.1 United Nations Conference on Water (Mar del Plata 1977)

The United Nations Water Conference held in Mar del Plata (14-25 March 1977) was the first internationally coordinated approach to IWRM (Salaman 2003; Biswas 2004; Rahaman and Varis 2005). The conference chalked up a number of successes including recommendations that covered all the essential components of water management (assessment, use and efficiency; environment, health and pollution control; policy, planning and management; natural hazards; public information, education, training and research; and regional and international cooperation), and 12 resolutions on a wide range of specific areas (Biswas 2004). It was claimed to be a major milestone in the area of water development and management during the second half of the 20th century (Biswas 2004). There was active participation from the developing world as well as the provision of a platform for discussions on various aspects of water management. This conference also recommended the period 1980 to 1990 as the International Water Supply and Sanitation Decade and also considered water management on an holistic and comprehensive basis (Rahaman and Varis 2005).

However, the greatest issue of concern was that financial arrangements and an implementation scheme for the Action Plan, which were not developed during the discussion and transboundary water resources management, were not discussed comprehensively (Biswas 2004).

3.3.2 International Conference on Water and Environment (Dublin 1992)

The current thinking regarding the crucial issues of IWRM is heavily influenced by the Four Dublin Principles (*Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment; water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels; women play a central part in the provision, management and safeguarding of water; and water has an economic value in all its competing uses and should be*

recognised as an economic good) agreed during this conference (Rahaman and Varis 2005).

The Conference focussed on the necessity of integrated water management and on the active participation of all stakeholders from the highest level of government to the smallest communities, and highlighted the special role of women (Rahaman and Varis 2005). This major conference faced a number of criticisms:

- the conference was considered a meeting of experts rather than an intergovernmental meeting. There was inadequate representation from the developing world (Rahaman and Varis 2005). Very few water professionals from developing countries participated in the Conference or its preparatory process (Biswas 2004);
- failure to indicate how the principles could be implemented in the context of complex water management scenarios in the developing countries (Rahaman and Varis 2005);
- most of the Dublin Principles are generalities, and at best could be considered to be good rhetoric. They are of limited value to developing countries which are searching for strategies as to how best to formulate and implement efficient water management policies and programmes. Again, no thought was given in Dublin as to how the principles could be operationalised by decision-makers and water professionals in the developing countries (Biswas 2004); and
- as Biwas put it, in private conversation with a UN official, 'all our delegates are honourable, all our background documents are excellent, and all our meetings are outstandingly successful'. Everything considered, it is high-time that we stop being politically correct, and objectively review our past performances in order to develop a cost-effective and impact-oriented road map for the future (Biswas 2004).

3.3.3 Eighth World Congress (Cairo 1994)

The International Water Resources Association (IWRA), an organisation set up in 1972 with a view to advancing water resource planning, management,

education and technology, held its VIII World Congress in Cairo, Egypt, in 1994. The congress mandated the Founding Committee of the World Water Council to deliberate and agree on the mission statement, objectives, and structure of the World Water Council (WWC).

The World Water Council was established in 1996 in Marseilles, France. The overall objective of the Council is to act as a think tank on water resources matters. The Global Water Partnership (GWP) was also established in 1996 as a working partnership among all entities - government agencies, public institutions, private companies, professional organisations, and multilateral development agencies - involved in water resources management. The mission of the GWP is to support the promulgation of Integrated Water Resources Management for sustainable use of water resources in all countries.

3.3.4 First World Water Forum (Marrakech 1997)

The conference recognised and noted the urgent need for a better understanding of all the complex issues that must go into shaping an international water policy for the next millennium. It called upon the world community to work together to put into practice the Mar del Plata Action Plan and the Dublin Principles as well as Chapter 18 of the Earth Summit on freshwater resources. It also mandated the WWC to prepare a global vision for water, life and the environment.

This Forum paved the way for an international conference to be held every three years where water professionals from the different regions of the globe, as well as organisations, agencies and institutions would meet to discuss and try to agree on ways of dealing with the pressing problems facing the world community in the water resource sector.

3.3.5 International Conference on Water and Sustainable Development (Paris 1998).

The conference recognised integration of all aspects of development, management and protection of water resources, progressive recovery of service cost, as well as the creation of an enabling framework through legislative economic, social and environmental measures. It also recognised the role of the private sector in the provision of water services. The methodology to achieve this integration was not discussed, or indeed, purposeful in terms of being based on an explicitly articulated integrative process based on methodologically derived principles. At best, it would seem that the integrative mechanics involved were more of an 'intuitive' kind; and certainly not articulated in any conference-related supporting documentation (Pigram 2006).

3.3.6 Second World Water Forum & Ministerial Conference (The Hague 2000)

Unlike Dublin, The Hague conference considered the outcomes of previous water initiatives and acknowledged water's social, environmental and cultural values. The four IWRM principles as mentioned earlier were put on the political agenda and the conference endorsed active participation of the developing world's water stakeholders (Rahaman and Varis 2005). One key element that featured prominently was that many water professionals opposed privatisation, arguing that the water sector is interrelated with many functions that demand government presence (food control, drought alleviation, water supply and ecosystem conservation) (Shen and Varis 2000).

The Forum resulted in a sharp polarisation of the views of the different groups of the water professional organisations on the issues of dams and the role for the private sector participation, and a widening of the gap on those issues. The declaration was clearly a political statement devoid of any commitment or specific actions or plans that could be monitored or measured (Salaman 2003). The Ministers and Heads of delegation claim they lacked the authority

to make any commitment on behalf of their governments, including authority to endorse the vision and plan of action of the World Commission for Water, the WWC and the GWP (Salaman 2003).

3.3.7 International Conference on Freshwater (Bonn 2001)

The Bonn recommendations for actions included issues such as poverty and articulation of the key steps towards sustainable development through meeting the water security needs of the poor. The conference also recommended a World Summit on Sustainable Development (WSSD) in 2002 to harmonise water issues with overall sustainable development objectives and integrate water into national poverty reduction strategies. The Bonn conference suggested IWRM as the most capable tool (Rahaman and Varis 2005). There was also adoption of the Bonn recommendations in the WSSD Plan of Implementation (Rahaman and Varis 2005). The conference however, reviewed all previous water resource development principles and recognised that there was often a gap between policy development and practice.

3.3.8 World Summit on Sustainable Development (Johannesburg 2002)

The World Summit provided specific targets and guidelines for implementing IWRM worldwide including mandating member countries to develop IWRM and water efficiency plans by 2005. It also put IWRM at the top of the international agenda and since that time it became an internationally accepted water policy tool (Rahaman and Varis 2005). The World Summit declaration committed participants to the 'Johannesburg Implementation' as opposed to the title 'Action Plan' used in the Mar del Plata, and 'Programme of Action' used in Rio. Emphasis was more on implementation than planning. However, the issue of concern was that the Johannesburg declaration was a lengthy and imprecise document (Salaman 2004).

3.3.9 Third World Water Forum (Kyoto 2003)

The Third World Water Forum recommended IWRM as the way to achieve sustainability regarding water resources. In that respect, it vowed technical and financial support to enable developing countries to achieve the UN Millennium Development Goals and developing IWRM and water efficiency plans in all river basins worldwide by 2005 (Rahaman and Varis 2005).

3.4 Synthesis: IWRM from Mar del Plata to Kyoto

This historical review of IWRM's background and status seem to suggest that the Mar del Plata Conference of 1977 gave birth to the first internationally coordinated approach to IWRM and also provided a platform for discussions on various aspects of water management.

The current thinking of IWRM was heavily influenced by the Dublin Conference in 1992, and has been an accepted water policy concept since the World Summit in 2002 in Johannesburg. The water sector is slow in combining its integrated plans, compared to other tightly related sectors, such as energy, agriculture and forestry even though IWRM concept has been internationally accepted (Rahaman and Varis 2005).

Different conferences that have been held to address global water resources issues have not lived up to those challenges. In a few instances, where actions are specific, the political will for implementing them, and for building consensus in the area of water resources management is clearly lacking (Biswas 2004; Salaman 2004). As noted in Section 3.3.6, the Hague declaration for instance, was clearly a political statement devoid of any commitment or specific actions or plans that could be monitored or measured. The question one would ask is why then do they attend those conferences?

In the words of Salaman (2004), 'If the recurring resolutions and declarations, which are now the outcome of every global water gathering, are characterised by generalisations and include no specific monitorable actions, and if the

debate on the main water issues is leading nowhere, then should the world community continue those elaborate and expensive water fora and conferences'. Biswas (2004) argued that, 'the time for rhetoric are over, we must develop urgently new and cogent solutions and paradigms which could be operationalised in the fields'. Further, Biswas et al.*(2005)* stressed that '… conceptual attraction by itself is not enough, unless the concept of IWRM can actually be applied in the real world in a timely and cost effective manner to demonstrably improve the existing water management practices, its current popularity and extensive endorsements by international institutions become irrelevant'.

Indeed, water professionals from all fields have, however, reviewed previous water resource development principles and recognised that there was often a gap between policy development and practice. The failure to indicate how the IWRM principles could be operationalised by decision-makers and implemented in the context of complex water management scenarios remains a major challenge to all. The discussion that follows reviews the generic Global Water Partnership (GWP)/Integrated Water Resources Management (IWRM) 'policy nexus'.

3. 5 Global Water Partnership/Integrated Water Resources Management

The Global Water Partnership (GWP), established in 1996, is an international network open to all organisations involved in water resources management: developed and developing countries, government institutions, agencies of the United Nations, bilateral and multilateral development banks, professional associations, research institutions, non-governmental organisations, and the private sector. Its mission is to support countries in the sustainable management of their water resources. Through its network, the GWP facilitates integrated water resources management (GWP 2003).

3.5.1 IWRM is Defined

As defined in Chapter 2, Section 2.5, the IWRM concept is embedded within the four universal principles formulated in 1992 during the International Conference on Water and the Environment held in Dublin.

I Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment – since water sustains life, effective management of water resources demands a holistic approach, linking social and economic development with protection of the natural ecosystems;

Ii water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels – the participatory approach involves raising awareness of the importance of water among policy-makers and the general public. It means that decisions are taken at the lowest appropriate level, with full public consultation and involvement of users in the planning and implementation of water projects;

Iii women play a central part in the provision, management and safeguarding of water – this pivotal role of women as providers and users of water has seldom been reflected in institutional arrangements for the development and management of water resources. Acceptance and implementation of this principle requires positive policies to address women's specific needs and to equip and empower women to participate at all levels in water resource programmes, including decision-making and implementation, in ways defined by them; and

Iv water has an economic value in all its competing uses and should be recognised as an economic good – within this principle, it is vital to recognise first the basic right of all human beings to have access to clean water and sanitation at an affordable price. Past failure to recognise the economic value of water has led to wasteful and environmentally damaging uses of the resource. Managing water as an economic good is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources (ICWE 1992; GWP 2000).

Implied in the four principles is the need for humankind to use the water resources in a sustainable manner (Section 3.7) to cater for the needs of future generations. This means a holistic approach that focusses on the connection between social, economic and environmental dimensions in decision-making that the water resources issues represent, needs to be explored. It is also declared that participatory approaches would seem to be an appropriate framework to involve all who have a stake in the management of the water resources. The validity of this claim is discussed extensively in Chapter 5.

3.6 Review of the Technical Committee Papers Published by GWP/IWRM

Since its establishment in 1996, the Technical Committee (TEC) of the GWP has prepared a series of publications and range of supplementary documents. These are aimed at helping stakeholders implement reform processes in water resources management and to guide development towards more integrated approaches. Of greater significance to the discussion in this thesis, the TEC papers have attempted both implicitly and explicitly to articulate a coherent 'methodological' foundation for IWRM. The discussion that follows presents a review of the ten technical papers published by the GWP. The aim is to search for an apparent and observed conceptual and applied 'model' of GWP/IWRM recommended by the GWP. The remainder of this thesis will focus on assessing the prospects for this model, and of others to be articulated as the work progresses, to achieve the desired outcomes of IWRM.

The review of the ten TEC papers reveals that the general ideas presented therein seem to suggest IWRM processes as complex. In this context, complexity is taken to mean that water resources issues are complex systems made up of a large number of parts that have many interactions and the properties of the parts are not intrinsic properties, but can be understood only from the organisation of the whole or within the context of the larger whole

(Capra 1997; Anderson 1999). To resolve the water resources issues confronting the world, therefore requires a framework that will address the complex water resource issues (Chapter 6) as shown in Figure 3.1.

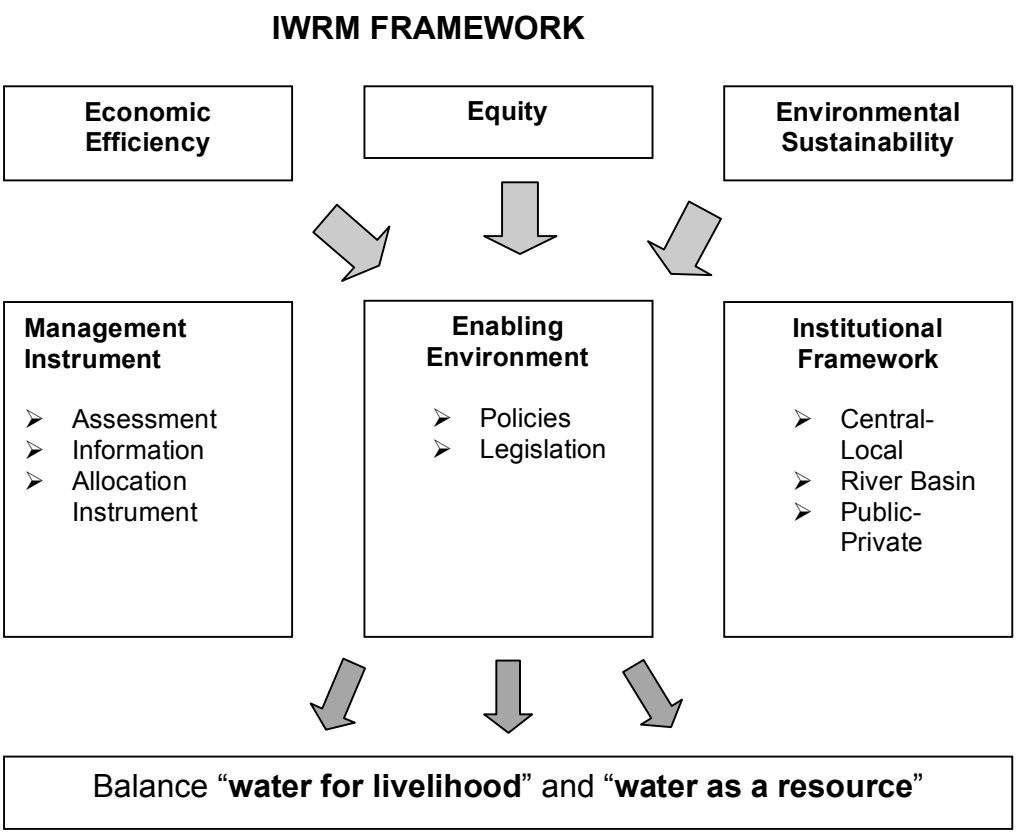

Figure 3.1: The 'three pillars' of Integrated Water Resources Management (Jonch-Clausen 2004)

From Figure 3.1, implementing an IWRM process is getting the "three tier pillars" right (Jonch-Clausen 2004): moving toward an **enabling environment** of appropriate policies, strategies and legislation for sustainable water resource development and management; putting in place the **institutional framework** through which the policies, strategies and legislation can be implemented; and setting up the **management instruments** required by these institutions to do their job. These processes are aimed at ensuring integrated economic (economic efficiency), social/community (equity) and environmental outcomes. Jonch-Clausen (2004) discusses the IWRM framework as in Box 3.1.

Box 3.1

Detailed Guidelines on IWRM Framework

A The Enabling Environment

Policies - setting goals for water use, protection and conservation.

This part of the framework deals with water policies and their development. Policy development gives an opportunity for setting national objectives for managing water resources and water service delivery within a framework of overall development goals.

Legislative framework - the rules to follow to achieve policies and goals.

The required water laws cover ownership of water, permits to use (or pollute) it, the transferability of those permits, and customary entitlements. It underpins regulatory norms, e.g. conservation, protection, and priorities.

Financing and incentive structures – allocating financial resources to meet water needs.

The financing needs of the water sector are huge, water projects tend to be indivisible and capital-intensive, and many countries have major backlogs in developing water infrastructure. Financing approaches and incentives are required to achieve the development goals.

B Institutional Roles

Creating an organisational framework - forms and functions.

Starting from the concept of reform of institutions for better water governance, the practitioner needs to create the required organisations and institutions – from transboundary to basin level, and from regulatory bodies, to local authorities, civil society organisations and partnerships.

Institutional capacity building - developing human resources.

Upgrading the skills and understanding of decision-makers, water managers and professionals will take place in all sectors, and capacity building for regulatory bodies and for empowerment of civil society groups will need to be undertaken.

C Management Instruments

Water Resources assessment - understanding resources and needs.

A set of tools is assembled to assist water resources assessment, starting with the collection of hydrological, physiographic, demographic and socio-economic data, through to setting up systems for routine data assembly and reporting.

Plans for IWRM - combining development options, resource use and human interaction.

River, aquifer and lake basin planning entail a comprehensive assembly and modelling of data from all relevant domains. The planning process must recognise social, economic and environmental needs using a range of assessment tools.

Demand management - using water more efficiently.

Demand management involves the balancing of supply and demand focussing on the better use of existing water withdrawals or reducing excessive use rather than developing new supplies.

Social change instruments - encouraging a water-oriented civil society.

Information is a powerful tool for changing behaviour in the water world, through school curricula, university courses on water and professional and mid-career training. Transparency, product labelling and access to information are other key instruments.

Conflict resolution - managing disputes, ensuring sharing of water.

Conflict management has a separate focus as conflict is endemic in the management of water in many places and resolution models must be at hand.

Regulatory instrument - allocation and water use limits.

Regulation in this context covers water quality, service provision, land use and water resource protection. Regulations are the key to implementing plans and policies and can fruitfully be combined with economic instruments.

Economic instruments - using value and prices for efficiency and equity.

Economic tools involve the use of prices and other market-based measures to provide incentives to all water users to use water carefully, efficiently and avoid pollution.

Information management and exchange - improving knowledge for better water management.

Data sharing methods and technologies increase stakeholder access to information stored in public domain data banks and effectively complement more traditional methods of public information.

The Framework is implemented through a rolling planning process. It is a rolling planning process in the sense that it gives room for new development to be added and where necessary repeat certain steps of the process.

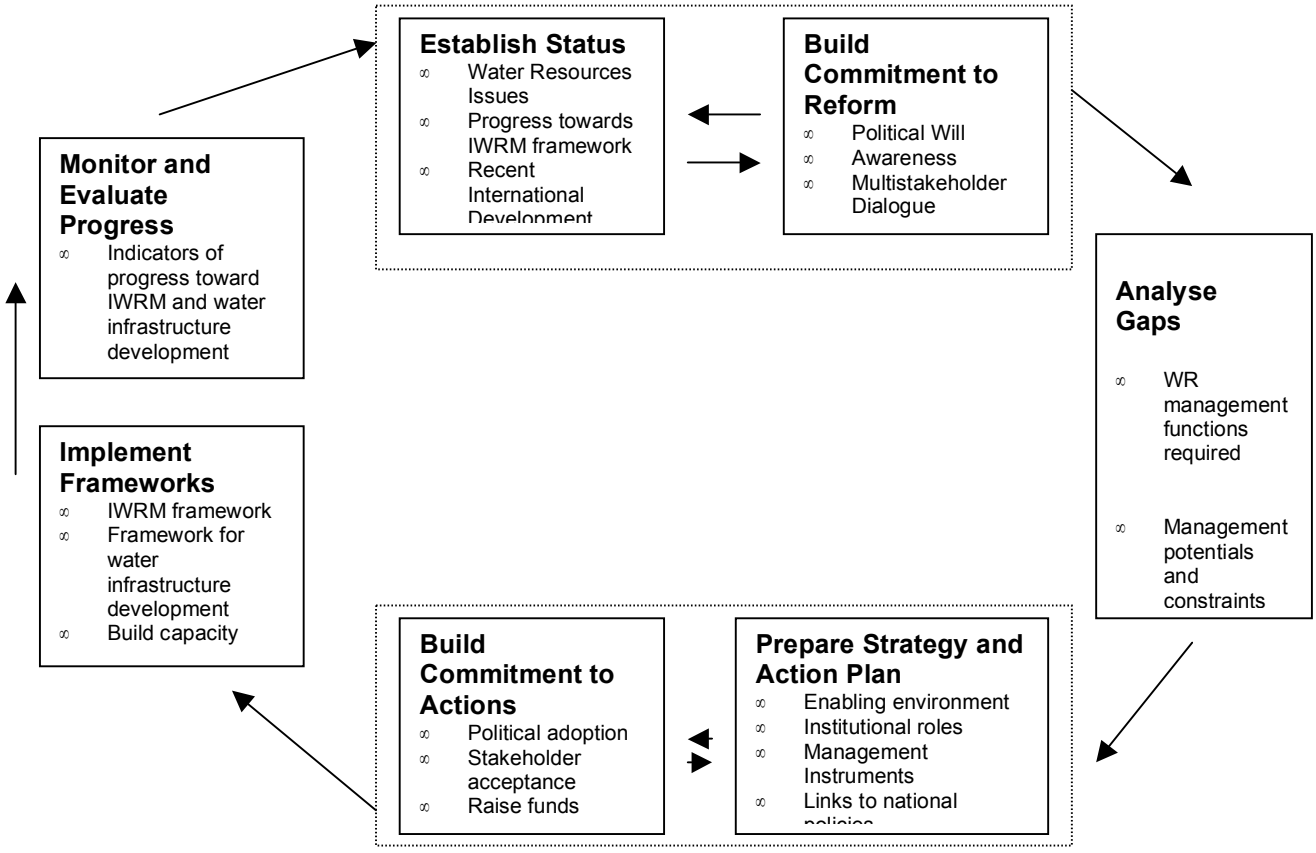

Figure 3.2: The Integrated Water Resources Management Cycle

As depicted in Fig 3.2 the cycle starts with the planning processes and continues into implementation of the frameworks and action plans and monitoring of progress. Jonch-Clausen (2004) has identified that implementation of the IWRM planning processes are facilitated by a number of factors including:

- strong political will, often motivated by a need to address burning and high profile issues;
- a clear distribution of roles and responsibilities among the stakeholders;
- highly motivated drivers maintaining commitment throughout the process;
- exchange of knowledge and experience between countries at various stages of the process;
- setting clear milestones for the achievement; and
- monitoring and evaluation of progress, performance and impact.

Jonch-Clausen concluded that IWRM 'plans', as foreseen in the WSSD target for 2005, are just one step in the process of ensuring sustainable use of the water resources.

3.7 IWRM and Sustainability Agenda

As noted from the preceding discussion, the definition of sustainability appears to be the driving force that underpins this whole idea of integrated water resources management. However, the concept, since its inception in 1987, has generated arguments about its definition. Many interpretations have been given over the past decade and to date no single definition has been accepted as ideal. For instance, the World Commission on Environment and Development in 1987 interpreted the concept of sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987). This widely used definition has proved elusive (Marshall and Toffel 2005) in the contemporary literature on sustainability because it has been criticised by some researchers as being difficult or impossible to operationalise and implement (Parris and Kates 2003; Marshall and Toffel 2005). They reasoned that the 'ability of future

generations to meet their own needs' requires predicting both those needs and abilities.

Argyris (1993) argued that there will always be a gap between current understandings of sustainable development and that it would be difficult to solve evolving environmental management including water issues comprehensively. Davidson-Hunt and Berkes (2003) noted that there are other cultural, political, and development changes influencing the sustainability agenda. In a similar vein, Devine and Rigby (2004) noted the operationalisation of the concept of sustainability in terms of policy prescriptions is more problematic than reaching a consensus on its definition, since there exist different approaches to environmental management, each with different assumptions regarding human nature, nature itself, society at large and their interactions.

For Pigram and Wahab (1997), sustainability is an integrative concept with environmental and socio-economic dimensions. These authors argue that compatible human use of environments and resource management practices that minimise human disturbance of ecosystems and avoid actions with irreversible consequences are often overlooked. When human and nature are put together in the same framework, a more holistic view for sustainability is achieved. For instance, Folke, Carpenter et al. (2002) also argue that human society is part of the biosphere and societies are embedded in ecological systems. Their opinion is that 'sustainable development' is about creating and maintaining our options for prosperous social and economic development.

Meppem and Gill (1998) advocate that individual attempts to address sustainability depend on the subjectivist priorities of the interpreter. They argue that the different disciplines (ecology, economics, environmental activists and industrial leaders) are all likely to diverge in their interpretation on and recommendations to address specific sustainability issues. Divergent positions according Meppem and Gill are consistent with the discursive nature of worldviews. With this in mind, consensus can be no more than the coercion of diverging views into a single view. If consensus is simply the product of

majority ruling, then the artificial consensus view masks the divergence of viewpoints that are just as important as the 'common view'. On the other hand, consensus which is reached through a process of social learning and which is not forced upon participants is a worthy outcome.

Given the differing reactions to and interpretations of sustainability, one would wonder what the implied interpretation of sustainability within this whole idea of integrated water resources management is (Hooper 2006). The concept itself is subjected to criticisms as to its interpretation and operationalisation. For instance, Biswas, Varis et al. (2005) question the interpretation of some elements within the definition of IWRM concept:

> *'promotes': Who promotes this concept, why should it be promoted, and through what processes?*
>
> *'maximise': what specific parameters are to be maximised? What process should be used to select these parameters? who select these parameters: only water experts, as was the case for the formulation of the definition, or should other stakeholders be involved? What methodology is available at present to maximise the selected parameters reliably?*
>
> *'sustainability': what is meant by sustainability? How should sustainability be defined and measured in operational terms?*

In an attempt to explain the sustainability concept, Paul Hawken expressed this in terms of an 'economic golden rule' for the sustainability of our economy: "Leave the world better than you found it, take no more than you need, try not to harm life or the environment, make amends if you do" (Hawken 1993).

In line with Hawken's thinking, Russell (1995) sees sustainability as a measure of how the growth, maintenance, or degradation of a resource or set of resources affects a population's ability to sustain itself. Sustainability according to Harris (2000) and Russel (1995) should be seen in terms of its environmental, economic and social systems. Thus, e*nvironmentally sustainable systems* must maintain a stable resource base, avoiding over-

exploitation of renewable resources and depletion of non-renewable resource. This implied that the environmental dimension is seen only as 'resources' available for human use. What about resources to maintain the ecosystem?
In addition, an e*conomically sustainable system* must be able to generate revenue to maintain itself in a market economy and produce a surplus to invest for example in security, research and development. Furthermore, a *socially sustainable system* must achieve distributional equity, adequate provision of social services including health and education, gender equity and political accountability and participation (Russell 1995; Harris 2000; Spangenberg 2004).

From the review of the GWP technical papers, it appears that the interpretation of the sustainability concept is implicit in the 'three tier pillars' as depicted in Figure 3.1. (Jonch-Clausen 2004): It is envisaged that achieving sustainable water resource development and management can be achieved through an enabling environment of appropriate policies, strategies and legislation; putting in place the institutional framework through which the policies, strategies and legislation can be implemented; and setting up the management instruments required by these institutions. However, what is meant by sustainability, how sustainability is defined and measured in operational terms, what constitute appropriate policies and strategies, are not articulated.

In view of the complexities of water use within society, developing, allocating and managing it equitably and efficiently requires the combined commitment of government, various groups in civil society including processes at all levels. A framework within which to assess the implied interpretation of IWRM becomes apparent.

Given the differing reactions to and interpretations of sustainability, including the IWRM implied definition (Figure 3.1), the search for a single synthesised definition is inappropriate. Adopting a single definition of sustainability will mean compromising of diverse viewpoints down to a single artificial position that reflects no individual positions in reality. There is diversity of positions out

there and that diversity is what counts. It will be more important to sustain the perpetual catalysation of conversations about sustainability as the foundation for managing processes of cultural adaptation and evolution towards more integrative community-economy-environment outcomes; and that this journey will never end (Meppem and Gill 1998). It is a perpetual learning process. It is against this background that, for purposes of this study, an adoption of the interpretation given by Meppem and Gill (1998) would seem appropriate. Meppem and Gill (1998) defined sustainability as a "learning concept" and provided a framework within which to interpret sustainability. They proposed a reworking of the sustainability concept to include the following elements:

- *sustainability describes a state that is in transition continually;*
- *the objective of sustainability is not to win or lose and the intention is not to arrive at a particular point;*
- *planning for sustainability requires explicit accounting of perspective (world view or mindset) and must be involving of broadly representative stakeholder participation through dialogue;*
- *success is determined retrospectively, so the emphasis in planning should be on process and collectively considered, context-related progress rather than on achieving remote targets. A key measure of progress is the maintenance of a creative learning framework for planning;*
- *institutional arrangements should be free to evolve in line with community learning; and*
- *the new role for policy makers is to facilitate learning and seek leverage points with which to direct progress towards integrated economic, ecological and socio-cultural approaches for all human activity.*

Meppem and Gill (1998) advocate that sustainability as a learning concept provides context for a conversation wherein the great diversity of viewpoints and understandings of sustainability can be shared in a constructive way. In that way, people learn about the viewpoints of others through such an epistemologically reflexive deliberative process; it is a discursive community conversation setting for the understanding of sustainability and there is no

single definition anticipated as an outcome of such a conversation. What matters is the exchange; the learning that takes place.

From the interpretation of sustainability provided by Meppem and Gill learning is the key. This is because they contend that as learning proceeds and an appreciation for the underlying complexity of any sustainability–oriented planning situation develops, the focus for policy making will shift towards the development of 'suitably flexible, inductive rather than deductive policy or management processes' (Meppem and Gill 1998). This appears consistent with the adaptive learning model which posits that memory (perception, cognitive knowledge, technology and worldview) is drawn upon by humans in the practice of daily life (Davidson-Hunt and Berkes 2003). It provides a basis to explore how individual creativity and memories are interconnected (Walker, Carpenter et al. 2002). Ownership of ensuing solutions and a level of empathy necessary to support its implementation and delivery, however, are likely to be higher. A drive towards this direction requires an appreciation of the assumptions underlying the IWRM concept. This knowledge, according to McIntosh (2000) is remembered through 'social memory,' which is the long-term communal understanding of the dynamics of environmental change including water issues, and the transmission of the pertinent experience.

As argued from the preceding discussions, what is needed by IWRM advocates is the adoption of learning processes that empower communities towards a shared understanding of the sustainability issues at hand regarding the use of water resources in an ever-changing world. This kind of practice would integrate the intimate systems of understandings of the local community with the scientific knowledge of researchers and the political/policy realities of prevailing government administration. As will be noted in Section 3.8 this learning is suggestive from the IWRM processes.

Communities across various parts of the world have different values, beliefs, needs, prejudices, relationships, histories and these influence their choices/preferences in decisions or processes that promote or affect their livelihoods in a sustainable manner (Merriam 1993). It is therefore important

that in adopting any process aimed at ensuring sustainable use of water resource, a variety of learning strategies (O'Connor and Seymour 1990) should be used in order to ensure that all people involved in the learning process are provided, not only with access to information, but with information in a form that is easily interpreted by them for informed decision-making (Butteriss 2003).

Water issues (social, economic and ecological) cannot be understood in isolation. They are a web of interlinked concerns that require, ideally, an holistic or integrative perspective through which to design appropriate management settings (Chapter 6). Therefore, there is a clear need for methodologies that can catalyse, facilitate and support a systematic stakeholder involvement in learning processes in relation to the proactive management of these complex water resource challenges (Chapter 5).

3.8 Assumptions Underlining IWRM Concept

Assumptions have important consequences for the way in which one attempts to investigate and obtain 'knowledge' about the social world. Different assumptions are likely to incline researchers towards different methodologies (Burrel and Morgan 1979; Crotty 1998). Reviews of the TEC papers of GWP provide basis for the deconstruction/explicit articulation and assessment of the assumptions involved and the particular truth claims that they embed (Burrel and Morgan 1979). For example, do they imply water issues and communicate the nature of knowledge as being definable, separable and capable of being transmitted in tangible form, or whether "knowledge" is of a complex, more subjective and spiritual kind (Crotty 1998)?

To support a systematic process of deconstructing the 'theoretical perspective/methodological' underpinnings of the various recommendations and views of the TEC group in relation to IWRM praxis, some general 'models of meaning' will be discussed. This discussion is provided in Section 3.8.1 below. That discussion will underpin a subsequent attempt at the systematic

deconstruction of conceptual/methodological 'models' that have, apparently, underpinned the TEC discussions.

3.8.1 Methods, Methodologies, and Theoretical Perspectives Underlying the IWRM Concept

It is important to deconstruct and articulate the foundation assumptions underling the IWRM concept to enable understanding of the methodology and methods proposed for Integrated Water Resources Management. Methods need to be coherent with the theoretical perspectives within which they are located. The theoretical perspective and framework of meaning that it embeds will reveal much about the underlying intentions of any praxis area (such as IWRM). The ensuing effort to deconstruct these knowledge relationships from the advice provided by the TEC group will go some way to providing a more informed and informative foundation of any critique of the IWRM policy and practice area. Such a discussion will facilitate any attempt to understand prevailing issues in relation to IWRM and its implementation (and capacities as a framework for change).

A vast body of literature exists that seeks fundamental insight into these kinds of contemporary policy issues and controversies. In the case of this chapter, the specific perspective chosen is critical theory. However, this discussion will be constrained to at best a partial and highly peripheral, though hopefully pragmatically sufficient, overview of an area with an infinity of nuances each of which would require the dedicated attention of a large cohort of PhD investigations.

From the review of the GWP TEC papers, it appears the claim that IWRM processes are technically complex is supported by the observations that water is a flow resource, occurring within hydrologically interconnected systems and that change in one part of the system tends to set up chain reactions affecting the availability, quality and cost of supplies elsewhere within the water region (Rees 1998; Rogers, Bhatia et al. 1998).

Secondly, privatisation being proposed by some of the contributors as providing a catalyst for needed sector reforms cannot easily predict outcomes due to the complexity inherent in water issues. Identification of the full cost of water to enable effective pricing policy and to provide economic efficiency and environmental sustainability of water use has featured prominently in their thinking (Rees 1998; Rogers, Bhatia et al. 1998). However, as noted in Section 3.7, operationalising the concept of sustainability on the ground was not explicitly discussed by the proponents of the IWRM concept.

Drawing from the complexity inherent in the water systems and between water and other environmental, and water and community, and water and economy, proponents of IWRM framework (Figure 3.1) recognise that the framework should not be seen as a universal blueprint or prescriptive model. It is not a 'magic wand' and does not avoid the problem of difficult trade-offs; it merely makes these possible to identify and moderate, and to establish a framework in which all different users and stakeholders can have their say (participatory planning). This is suggestive of the need for a learning framework discussed in Section 3.7 (Cheret 2000; GWP 2000; Rees 2002; Falkenmark 2003; GWP 2003; Rogers and Hall 2003; Jonch-Clausen 2004). In order to ensure collaboration, professionals, bureaucrats, politicians and other stakeholders need to re-orient their mindset and rules of practice of water management issues (collaborative framework). The IWRM process according to Jonch-Clausen (2004) and GWP (2003) is evolutionary and always changing (Section 4.3.2). A case for the dynamic nature of the IWRM processes will be made through the remainder of this thesis. The IWRM framework cannot be a panacea for poverty reduction but can facilitate management of water resources and water services in ways that will help to reduce poverty (Cheret 2000; GWP 2000; Rees 2002; Falkenmark 2003; GWP 2003; Rogers and Hall 2003; Jonch-Clausen 2004).

From a cursory review of the TEC, it would seem that the contributors appear to be suggesting water resource issues are complex and the need to seek for other ways of knowing. There are a number of water professionals who might think otherwise. There is therefore the need for reflexivity in policy

development: that is, seeking to understand the mental models that underpin policies and the thinking of researchers/policy professionals. As noted in Section 3.7, reflexivity in a deliberative process provides a platform for appreciation and learning from viewpoints for informed decision-making aimed at resolving water issues.

So, a framework that seeks to add in this reflexivity (of epistemological and theoretical perspective underpinnings) is a likely approach for resolving water resource issues (Chapter 6). The theoretical perspectives that underpin such a methodology and the epistemology that informs the theoretical basis are important to know. Crotty, (1998) identified the following set-up as informing methodologies researchers use in investigating a phenomenon.

Methods: The techniques or procedures used to gather and analyse data related to some research questions or hypothesis.

Methodology: The strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of methods to the desired outcomes.

Theoretical perspectives: The philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria.

Epistemology: The theory of knowledge embedded in the theoretical perspective and thereby in the methodology (Crotty 1998).

Others arrange things differently. For example, ontology is missing in Crotty's typology and is explicit in other systems (Burrel and Morgan 1979). The way people understand the world is informed by the epistemological positions they hold. Those epistemological underpinnings, in turn, describe the theoretical perspective that is a 'natural fit' to their particular 'way of knowing'. People are drawn to one perspective or another through their fundamental epistemological frames. A theoretical perspective, in turn, shapes specific

methodological responses to any efforts to analyse and through which to promulgate recommendations for change. The tools (or methods) used to undertake these research tasks are in turn shaped by the methodological principles that shape them. In Table 3.1 an indicative schematic of epistemology, theoretical perspective and methodological associations in relation to water resource management is shared.

Table 3.1: An Indicative Schematic of Epistemology, Theoretical Perspective and Methodological Associations in Relation to Water Resource Management

Epistemology	**Knowledge about social world**	**Implications for water resource management**
Objectivism/ positivism	Meaningful reality exists. Example 'tree in the forest is a tree, regardless of whether anyone is aware of its existence or not'. When human beings recognise it as a tree, they are simply discovering a meaning that has been lying there in wait for them all along. Object carries intrinsic meaning (Crotty 1998).	See water issues/problems as definable, separable and are solved by experts who produce clear, workable solutions using analytical approaches of their disciplines (Rittel and Webber 1973).
Constructionism	Meaning is not discovered but constructed. People construct meaning in different ways even in relation to the same phenomenon. Subject and object emerge as partners in the generation of meaning (Crotty 1998).	Acknowledge the complexities inherent in water issues and are more likely to examine the multiple factors and forces that comprise the problem and seek out stakeholders willing to engage in the problem-solving process (Kreuter, De Rosa et al. 2004).
Subjectivism	Meaning does not come out of interplay between subject and object but is imposed on the object by the subject. Meaning is imported from somewhere else (dreams, religious beliefs) (Crotty 1998).	Acknowledge the complexities inherent in water issues and are more likely to examine the multiple factors and forces that comprise the problem and seek out solutions from other sources (religious beliefs, supernatural powers etc) (Kreuter, De Rosa et al. 2004).

From Table 3.1 the following questions could be posed in relation to water resources management issues.

1. What is the apparent fundamental 'knowledge construct' or epistemology underlying different policy settings and responses to the concerns of IWRM?
2. How do the different apparent epistemological positions shape meaning ascribed to water resources issues?
3. How do those meanings change when framed by different ways of knowing?
4. How do those different ways of knowing shape policy setting, institutional responses and processes employed?
5. How do those responses change when framed by different epistemological settings?
6. Do these different ways of knowing explain persistent controversies and lack of resolution?
7. Do understandings of these different 'perspectives' equip us to progress resolution of issues and the articulation of water resources governance arrangements that are more robust across the diversity of human cognitive settings that define the character of human interactions with all resource management issues?
8. Are there consistent knowledge settings that underpin the TEC group's recommendations for IWRM praxis?
9. If so, what are they?
10. If there is an exclusive knowledge set, has this privileged one group of stakeholders over others? If so, is this privileging of position (whether intentional or not) an explanator of lack of progress in dealing with the issues that IWRM seeks to resolve?

Inherent in these questions is a range of epistemological stances, each of which implies a different methodology for resolving water resource issues. From the preceding discussion, it is possible to propose the epistemological-theoretical-methodology-methods settings of IWRM as implied in the ten TEC papers published by the GWP. Observations of this nature are at best cursory given that contact with the actual authors and the groups participating in the preparation of these documents was not a part of this review process. However, in the 'Literary Theory' tradition of deconstructing written works to

seek epistemological meaning, the ensuing observations will hopefully be instructive and will inform the more intentionally reflexive process that will be advanced in this thesis.

To develop a robust and flexible framework to facilitate effective feedback and adaptive management responses to water reform processes aimed at integrated economic, environmental and community outcomes, an approach needs to be explored to help bring consensus on various mindsets on how water issues should be managed. This will enable an appreciation of a common set of triple bottom line (TBL) issues – social, economic, social/community- indicators to be used for assessing the impacts of the management model on the water resources issues.

From Figure 3.3, for example, the TBL reporting under a constructivist approach focusses on description of systems behaviour rather than measurement. Under the positivist approach, TBL reporting sees all economic, environmental and community outcomes as reduced and represented by statistics. These mindsets have implications for water management processes as has been discussed in Table 3.1.

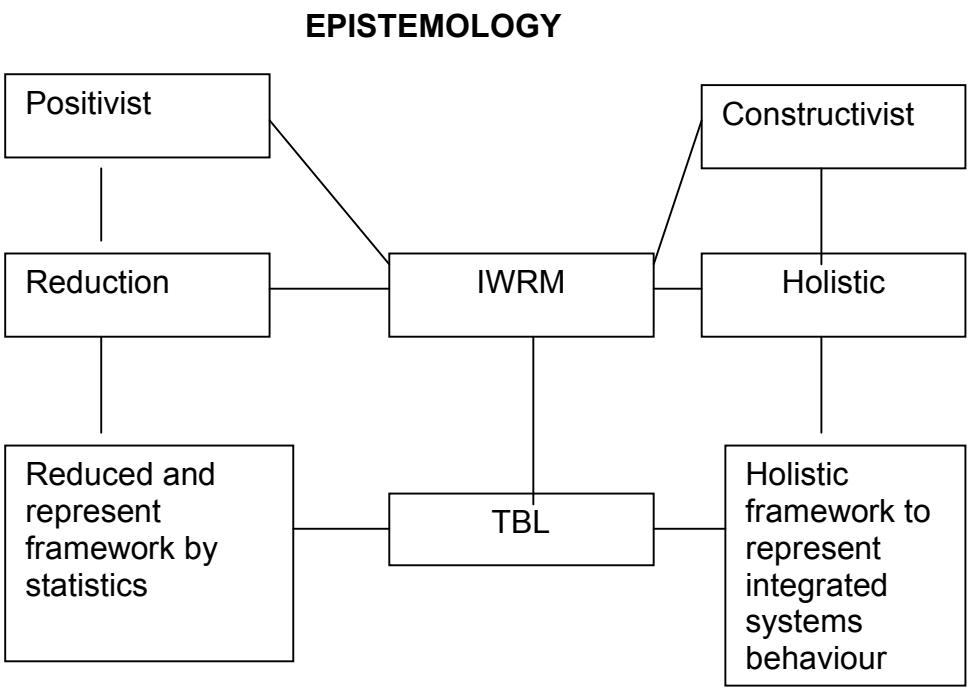

Figure 3.3: IWRM Epistemology

As noted in Table 3.1 the positivists contend that meaningful realities exist and therefore see water issues as 'hard'; that is definable, separable and able to be solved by experts. The constructivists argue that meaning is constructed see water issues as 'soft' because of the complexities inherent in water issues and cannot be defined and separable but the multiple factors and forces that comprise the issue should be examined.

From the preceding discussions, the interpretations favoured in one historical setting may be replaced in the next. There may be multiple ways of knowing regarding water resource issues, each of them valid in its own realm when judged according to its own set of essential assumptions and purposes. In this sense there are many different ways of studying the same phenomenon, and the insights generated by one approach are, at best, partial and incomplete (Cooperrider and Sekerka 2003). According to Habermas (1984) different perspectives can be evaluated only in terms of their specified 'human interests'.

Many environmental problems including water resources issues are complex and contested, and they are called ‘wicked’ for good reasons (Rittel and Webber 1973; van Bueren, Klijn et al. 2003). Causal relations are numerous, interrelated and difficult to identify. Such problems have to be dealt with in a context of great uncertainty (Chapter 6) with regard to the nature and extent of the risks involved for individuals and society as a whole (van Bueren, Klijn et al. 2003).

Rittel and Webber used the term ‘wicked’ to describe a problem that is difficult to pin down (Kreuter, De Rosa et al. 2004) and usually influenced by a myriad of complex social and political factors, some of which change during the process of solving the problem. They rely upon elusive political judgement for resolution. Social problems are never solved. At best, they are only re-solved - over and over again (Rittel and Webber 1973). By comparison, problems in mathematics, engineering and chemistry, while certainly complicated and technically demanding are “tame” (Rittel and Webber 1973; Kreuter, De Rosa et al. 2004) to the extent that problems themselves are definable, separable and could be solved by experts who produce clear, workable solutions using analytical approaches of their disciplines. Some of the factors that help distinguish tame from wicked problems and are especially relevant to water resource issues are summarised in Table 3.2.

Table 3.2: Summary of Differences between Wicked and Tame Problems

Characteristics	Tame Problem	Wicked Problems
1. The problem.	The clear definition of the problem also unveils the solution. The solution is determined according to criteria revealing the degree of effect - goal is achieved fully or partially, outcome is true or false.	No agreement exists about what the problem is. Each attempt to create a solution changes the problem. The solution is not true or false- the end is assessed as "better" or "worse" or good enough or improving.
2. The role of stakeholders.	The causes of a problem are determined primarily by experts using scientific data.	Many stakeholders are likely to have differing ideas about what the "real" problem is and what its causes are.
3. The "stopping rule".	The task is complete when the problem is solved.	The end is determined either by stakeholders, political forces, and resource availability or a combination thereof.
4. Nature of the problem.	The problem is like other problems for which there are scientifically based protocols that guide the choice of solution(s).	Solution(s) to problem is (are) based on "judgements" of multiple stakeholders; have distinguishing properties that tend to rule out the use of "standard" approaches or solutions.
5. The planner has no right to be wrong.	The scientific community does not blame its members for postulating hypotheses that are later refuted. "The more a hypothesis withstands numerous attempts at refutation, the better its "corroboration" is considered to be.	In the world of planning and wicked problems no such immunity is tolerated. Here the aim is not to find the truth, but to improve some characteristics of the world where people live. A planner is expected to get things right.

Source: Adapted and modified (Kreuter, De Rosa et al. 2004).

'When we acknowledge the complexities inherent in wicked problems like water resources issues, we are more likely to examine the multiple factors (Table 3.1) and forces that comprise the problem and seek out stakeholders willing to engage in the problem-solving process. In effect, this process allows wicked problems to be broken into more manageable components, many of which are likely to be amenable to tame problem-solving strategies' (Kreuter, De Rosa et al. 2004).

The most fundamental rule for handling wicked problems is that they must not be treated like ‘tame’ problems. Rittel and Webber (1973) point out that the classical systems approach is based on the assumption that a project can be organised into distinct phases: ‘understand the problems’, ‘gather information’, ‘synthesise information’, ‘work out solutions’ and the like. For wicked problems like water resources issues, however, this type of scheme is not likely to work (Chapter 5).

3.9 Conclusion

Various management processes have been institutionalised and implemented over centuries and yet water resources problems worsen. The current thinking on IWRM implies the need for some kind of consistent “paradigm shift” or evolution of understandings in relation to sustainable water resources management and governance. Drawing from the review of IWRM from Mar del Plata 1977 to Kyoto 2003, through to the establishment of GWP and subsequent publication of its TEC papers, the observed conceptual model of IWRM seems to suggest the need to embrace all stakeholders irrespective of their worldviews in the resolution of complex water resources issues. In order to have a good practical appreciation of the concept, it will be important to review the global status of IWRM implementations to date in Chapter 4. The aim is to identify the apparent and observed conceptual and applied ‘model’ of GWP/IWRM as recommended by the GWP.

Chapter 4 Status of IWRM Implementation in the Global Context

4.1 Introduction

In the previous chapters a case for the adoption of an integrated approach to water management has been presented. In order to have a good practical appreciation of the IWRM concept, it will be important to review the global status of IWRM implementation to date. The discussion in this chapter begins with IWRM governance structure and the processes for implementation as reflected in the IWRM framework (Chapter 3). This is followed by a review of implementation of IWRM in the global context. The chapter concludes with the way forward for advancing the GWP agenda.

4.2 The IWRM Governance Structure and Processes

Water governance structure refers to the range of political, social, economic and administrative systems that are in place to develop and manage water resources and the delivery of water services, at different levels of society (Rees 2002). One of the key elements of governance is to create a framework within which all groups of people with different interests can constructively discuss and agree to cooperate and coordinate their actions towards the realisation of integrated economic, social and environmental outcomes (Rogers and Hall 2003). IWRM is about strengthening water governance structures to foster good decision-making process in response to changing needs and situation. Adopting an IWRM approach requires:

- positive change in the enabling environment, in institutional roles, and in management instruments (See IWRM framework Chapter 3). The institutions at all levels will have to consider all uses and users within the traditional water sector and also their interconnections with and

impacts upon all other potential users and sectors (Rogers and Hall 2003);

- stakeholders are given a voice in water planning and management processes, with particular attention to securing the participation of women, and the disadvantaged across all levels. Stakeholder involvement should be an on-going process, not one that simply stops when the initial strategy is complete. Dialogue and acceptance by stakeholders for IWRM planning process are crucial (Jonch-Clausen 2004);
- employing an implementation process that is flexible enough to adapt to changing conditions and take advantage of new opportunities. Need for greater clarity and responsibility from all those involved in developing and implementing;
- institutional reforms that utilise a participatory and consultative approach, involving the formal and informal sectors, to develop understanding and ownership of the change process. Improved participation is likely to create more confidence in the participating stakeholders. Governance institutions and systems need to communicate among the actors and stakeholders in a very simple and understandable way (Rogers and Hall 2003); and
- good governance requires that all decisions are transparent so that both insiders and outsiders can easily follow the steps taken in the policy formulation (Rogers and Hall 2003).

In summary, the public IWRM rhetoric suggests a process that should encourage the use of water resources, to promote balanced development in poverty reduction, social equity, economic growth and environmental sustainability. This, according to Varis, Kummu et al. (2006) should happen in a basin-wide context, with stakeholder participation and under 'good governance'. An attempt to describe what 'good' might imply with regard to the governance of water resources within the context of IWRM is the aim of the forthcoming discussion.

4.3 Putting IWRM into Practice

Since the adoption of IWRM by the United Nations in 1992, various studies have been conducted to assess progress on IWRM implementation.

In 2003 the GWP conducted an “informal stakeholder baseline survey” to assess the status of water sector reform processes towards more sustainable water management practices as part of IWRM broad implementation plan in 108 countries – 45 in Africa, 42 in Asia and the Pacific, and 21 in Latin America. The assessment was based on policies, plans/strategies and other planning documents prepared in the 108 countries. The result indicated about 10 per cent of all countries surveyed had made progress towards a more integrated approach and a further 50 per cent had taken some steps in the direction but needed to increase their efforts. The remaining 40 per cent were at the initial stages of the process (GWP 2004). However, little is known in terms of the governance structure put in place and the processes adopted for the integrated approach. Nevertheless, the survey however, acknowledged that the assessments made reflect the best judgement of senior professionals drawing on the accumulated information available within the GWP networks at the regional and country levels.

Another survey was carried out in November/December 2005, aimed at providing a basis for reporting to the Fourth World Water Forum in Mexico in March 2006. The survey focussed on policies, laws, plans/strategies and other planning documents prepared to date in 95 countries, in order to assess whether they had initiated new measures to strengthen water resource management. The survey also assessed whether those nations had included IWRM elements in their policy document (GWP 2006).

The results indicated that approximately 21 per cent of the countries surveyed have plans or strategies in place and a further 53 per cent have initiated a process for the formulation of an IWRM plan. The remaining 26 per cent have made only limited progress and in many cases have expressed the wish to move forward but need support in this process (GWP 2006). Progress in this

context is based on the assessment criteria used, that is, whether the assessed countries have initiated policies, laws, plans/strategies and not the actual implementation of IWRM principles on ground.

Based on the criteria used in assessing progress from the two survey results, it would seem that the IWRM concept appears to be well accepted as the way forward for better water resources management and use. However, it would have been interesting to know from the assessed countries: what their interpretation of the concept was? What governance structure was put in place to ensure effective implementation of the processes? At what level was the planning done? Responding to these questions will enable applications of best practices and those issues countries need to look at to improve the process.

In their book *Integrated Water Resources Management in South and South East Asia*, Biswas, Varis et al. (2005) assessed the status of the implementation of the IWRM concept in eight countries (Bangladesh, China, Indonesia, India, Malaysia, Nepal, Thailand and Vietnam) from South and South East Asia to answer questions such as:

- how has each country, river basin, or a smaller geographical unit, on which the case study is based, defined IWRM?
- what has been the overall results (positive, negative, or neutral) on water management due to the implementation or non-implementation of the concept?
- if the concept has worked, what were the conditions that made it work, and why? What can be done to further improve the operationalisation and efficiency of the concept?
- based on these experiences, what lessons can be learnt? If the concept works, how can its operationalisation be made more efficient and widespread? If it does not, should a new paradigm or pluralism of paradigms, be considered, depending upon social, economic, institutional, and other relevant conditions for each specific case, and/or region?

Others, including Jonch-Clausen (2004), Ortiz-Zayas and Scatena (2004), Water Resources Commission (Water Resources Commission 2001; Water Resources Commission 2003a), DEH (2004), Varis, Kummu et al. (2006) and GWP (GWP 2006), have shared experiences from implementing the IWRM concept in Poland, Uganda, Burkina Faso, Central America, Eastern Puerto Rico, Cambodia, Australia and Ghana.

It will therefore be important to review, for example, the governance systems and the processes adopted in the assessed countries. The discussion that follows aims at reviewing the status of IWRM implementation with the view to identifying the apparent and observed conceptual and applied 'model' of GWP/IWRM recommended by the GWP.

4.3.1 Governance

Compared with the necessary elements of what is widely accepted to be a well-designed IWRM process, as discussed under Section 4.2, the governance structure in the assessed countries and regions, in reality, would seem to be very far from the idealistic picture drawn by IWRM rhetoric (Biswas, Varis et al. 2005).

Issues such as fragmented governance structures where individual institutions take unilateral decisions concerning water management issues, and a poorly developed structure in the non-governmental and private sector is accounting for the low implementation of IWRM principles on the ground. This weakness has been identified in almost all the cases from India, Thailand, Uganda, Nepal, Poland, Burkina Faso and others (Jonch-Clausen 2004). States within countries like India and Australia have sovereignty but have a large degree of autonomy in the management of water resources in each province.

In Australia for example, the administration of water resources development and management remains firmly in the public sector, with primary responsibility resting with the individual states. The Federal Government's direct responsibility for water relates primarily to the territories and the marine

zone, as well as to research and meteorological activities (Pigram 2006). The Federal primacy over the development and management of the nation's water and other resources continues to be an issue to the Australian government (GWP 2006; Pigram 2006). IWRM is still a new concept in Australia and for that matter in most of the States. Instead, Integrated Catchment Management appears to be a catchphrase describing similar principles as IWRM (Section 2. 5).

Similarly, many states in India have a subculture based on languages and other considerations and this makes water management decisions difficult to implement. The implementation of IWRM principles has been characterised by public sector dominance. Decisions on water resources issues have been taken principally on a sectoral basis and the involvement of other key stakeholders such as water users has also been minimal (Mohile 2005).

To address the issue of good governance taking into account all stakeholder concerns, it will be necessary to address the present public sector dominance in the water and environment sectors to allow for inclusion of professional associations, non-governmental organisations, interest and water user groups and other important development partners (Hansen and Phan Hong 2005). Contemporary complex water resources issues require that policies aimed at resolution should at least be arrived at through a discussion in the wider context leading to some kind of appreciation from the various viewpoints (Section 3.7). The process, according to Habermas (1984), requires that policy makers or analysts should effectively sort out a communicative interaction (Section 6.4.3) process that allows emergence of issues in a deliberative manner for informed policy direction. This is because people learn about the viewpoints of others through such a deliberative process and the outcome from such process is owned by all.

Generally, much of the management and action in the countries surveyed has been sectoral in nature with limited cooperation from the general public. Huda Shamsul (2005) has observed that until recently, flood management in Bangladesh has been approached as an independent entity and not as a

component within the overall water resources management framework. In Bangladesh, bringing the various water agencies together, for instance, is beset by the legacy of treating it in a fragmented manner by different agencies (Huda Shamsul 2005).

The situation is no different in the Mekong Region. That region according to Sokhem and Sunada (2006) lacks a truly regional body equipped with real power to address, for example, the concerns of local community groups in relation to water issues. The region lacks the impetus to ensure interaction between social, economic and environmental imperatives and interests with a broad-based involvement of relevant stakeholders, especially the affected people (Sokhem and Sunada 2006). According to Huda Shamsul (2005) many of the management approaches required in an IWRM concept run counter to existing administrative and management practices and require revisions of existing laws or regulations.

In Ghana, the Water Resources Commission has the key responsibility for the regulation and management of water resources and for the coordination of policies in relation to them. The national institutional framework developed for coordinating water resources activities appears to have been developed based on the usual 'top down' command-and-control approach (Water Resources Commission 2003b).

For example, in the implementation of the Densu Basin Pilot project, the Commission engaged local consultants to help with the development of a constitution to guide the management of the basin. Upon the consultants' recommendation, the Commission set up a Densu Basin office in order to establish the national coordinating institute's representation in the basin and to test the coordination process (Water Resources Commission 2003b). Stakeholder involvement in the development of the institutional framework was minimal, especially at the local level. These processes appear inconsistent with IWRM frameworks for water governance which aim to foster good decision-making through participatory process.

A participatory approach to water planning is seen to lead to good decision-making, because the data on which those decisions are based are assumed to have been generated collectively between government institutions and other stakeholders in relation to the management of water resources (Cooke and Kothari 2001). From the preceding discussions, implementation to date seems to suggest minimal involvement of wider stakeholders in the planning and management of water resources issues. Where lies the implied learning as suggested in the IWRM framework and the ensuing discussions on the TEC papers from Section 3.8.1? It is therefore imperative that institutional frameworks need to be supportive of the kind of learning process that is intended in the IWRM framework. For instance, if the process is intended to invoke stakeholder/resource manager culture change (changing the culture of water use towards more 'sustainable outcomes') then the need is for governance structure that inculcates that kind of behaviour shifting, where all stakeholders will be given the opportunity in the decision-making process. It is through this approach that stakeholders can begin to own the process of change for improved water resources management.

From the preceding discussion, the implementation of the many functions of water from the assessed countries has not been integrated within one framework and implementation institutions remain unconnected. According to Pigram (2006) integrating many functions of water (recreation, hydropower, domestic and others) by different agencies has had some resistance because of territorial differences and fear by some agency leaders to lose authority and power. For Pigram (2006), integration means having to surrender, or give away one's own decision making-processes'. As a result, Pigram has observed, there has not been a single successful process within the water sector through which to integrate the many functions of water. At best, agencies' representatives meet to share their activities and not to integrate their functions. This view appears to be consistent with the recent World Bank (2006) report:

> *There is no magic solution or single correct way to go about achieving the right degree or level of integration, nor is there one specific institutional model that is applicable to all cases. What is required is a change in how individuals and agencies think about their water-related activities. Often, strong political will and leadership are needed to get all players on board and move the process forward (World Bank 2006:5).*

The World Bank (2006) offered the following five attributes that could contribute to effective integration:

1. The establishment of a basin-wide institutional framework that allows all the main government administrations operating within the basin to participate;
2. Good knowledge of the conditions and behaviour of the natural resources of the basin to include all aspects of catchment data;
3. The development of all policies, strategies, decisions and projects in an integrated manner in recognition of the holistic and interactive way that the natural resources represent;
4. Incorporation of community and stakeholder participation into the planning and management processes; and
5. Establishment of a system to assess whether or not the river basin is being managed sustainably.

There are dissenting views as to the applicability of the basin-wide approach. Experience from Uganda indicates that although decentralisation of certain water resources management responsibilities has the potential of increased 'ownership' at local levels and also reduced logistic pressures, it is not always necessary or feasible to establish river basin agencies in situations of scarce human and financial resources (Jonch-Clausen 2004).

According to Biswas, Varis et al. (2005) the river basin approach may not be the most relevant planning and management unit due to issues such as "international boundaries, distribution of economic activities, groundwater aquifers which do not often go along surface water basins and so forth".

4.3.2 Process

The success or otherwise of IWRM rhetoric is dependent on the ability of countries concerned to catalyse change in the management of their water resources. Change management entails a thoughtful planning process and implementation, and above all, consultation with, and involvement of, the people affected by the changes (Chapman 2005-06). A thoughtful planning process is the one that involves a 'collective decision making through authentic democratic discussion, open to all interests, under which political power, money and strategising do not determine outcomes' (Dryzek 1995). The process is analogous to Gill's (2006) open-participative framework for planning wherein all participants are required to articulate their thoughts through a single and uniformly unfamiliar cognitive map-like language of 'mudmapping' (Section 5.3 and 6.7.1). Where everyone goes out of their way to paint a picture of their thoughts that unpacks meaning to the degree that others can understand.

Fundamental issues that countries may consider in change processes include: what do countries want to achieve with this change, and why? who is or will be affected by this change, and how will they react to it? Change in whatever form needs to be understood by people in order for them to have a chance to decide how the change will be managed, and to be involved in the planning and implementation for change. The IWRM principle II (Chapter 3) indicates that stakeholders be given a voice in water planning and management processes, with particular attention to securing the participation of women, and the disadvantaged across all levels (Jonch-Clausen 2004).

Lessons learnt from implementation of IWRM to date suggest that the planning processes adopted in the analysed countries seem to be contrary to the IWRM principle II. Cases from Central America, Thailand, Poland, Burkina Faso, Ghana, Uganda, Australia, India, and Bangladesh indicate that the structure created to promote the preparation and implementation of the Action Plans did not work because the participating agencies tended to prioritise their

own agendas and processes, which were much wider and more diffuse than just achieving IWRM. Their agendas were not consistent with what was decided in the plan (Jonch-Clausen 2004; Mohile 2005; Pigram 2006).

In India, Mohile (2005) noted that 'Integration of a well-managed basin, with an integrated plan of development by various governments, other stakeholders, water use interest and so on, to the overall satisfaction of everyone, appears to be almost Utopian'. This is because the planning implementations have not been connected as well as they might have in terms of integrative and communicative process.

Another case in point is the Mekong River Basin, where for example, the Basin Development Planning (BDP) works with ten sub-areas within the basin. This is to identify assets and development options requiring inputs from local, provincial, and national-level groups and agencies based on what the group want. However, many of the people of the lower Mekong countries (Vietnam, Lao PDR, Cambodia and others) are extremely poor, and their livelihood is dependent on the river, fish and aquatic plants; in terms of planning their involvement is almost negligible. It is essential that planning procedures be developed which are far more inclusive so that the full range of sectoral and community interests are considered (Campbell 2005). As noted in Section 4.2, IWRM processes require that stakeholders are given a voice in water planning and management processes, with particular attention to securing the participation of women, and the disadvantaged across all levels. The issue of concern is the kind of participative process that would be regarded as effective through which to manage all those groups that are involved. This kind of participation is discussed in Sections 6.7 and 6.7.1

While the integrated action plan provides a broad macro-level framework of action, a major part of the plan is believed to be executed at the regional and sub-regional levels (Huda Shamsul 2005) where stakes are high. Given the long tradition of sectoral implementation of water projects, it remains an open question as to how much accommodation for an integrated approach will persist at the ground level. Strong sectoral interests characterised by

command-and-control principles have influenced the planning processes in the analysed countries. This has often resulted in insufficient attention being paid to the possible impacts on other interests or groups especially women and the poor at the regional and local levels.

For example, in Bangladesh, Ghana, Burkina Faso, Uganda and many other developing countries, rarely do women have the opportunity to express their opinion on water management issues that vitally affect their lives. Contrary to the situation in many developing countries, Puerto Rico has a history of women being involved in the decision-making process (Ortiz-Zayas and Scatena 2004). It would be worth exploring the processes adopted by Puerto Rico to involve women.

It is increasingly evident from the discussions that operationalising IWRM is quite difficult, be it at the sectoral planning level or at community and village levels (Onta 2005). Present needs and future water requirements demand more flexible institutions and decision-making processes with emphasis on local and participatory structures. Decision-making would certainly be more dynamic and rational if it is approached and implemented on the basis of consultative (as long as this consultative process is culturally attuned), participatory, and transparent process, and not in terms of control (Tortajada 2005).

Mohile (2005) and Jonch-Clausen (2004) have noted that putting IWRM into practice takes time and should be viewed as a dynamic process. It is important that IWRM is looked at as a process and not as a one-off goal to be achieved. Mohile (2005) states:

> *Even while the set of four principles would normally have a universal acceptance, the environments under which the principles are to be put in practice may have severe constraints; and although the management policies could to some extent be tuned, through a process aimed at removing such constraints, this may be very difficult (Mohile 2005:40).*

From the preceding discussion, to realise the full potential of IWRM concept is for a change in 'culture' (the cultural background of a location informs perceptions and individual sense of place and identity) within the relevant communities (rural, urban and government) from one that considers water as an input to one that recognises water as an element in a complex system that connects community, environmental and economic activities. This perspective is recommended as the way to go within the context of the complexity and systems thinking theoretical areas (Sections 6.4.1 and 6.4.2).

4.3.3 The Way Forward

IWRM is seen in many countries as an approach to help address a myriad of water resources issues. For instance, in India, the concept is seen to be appropriate to guide water management (Mohile 2005). In Nepal, it is seen as a viable means of resolving the conflicting issues while ensuring increased economic productivity, equity, and sustainability of available water resources (Onta 2005). In Malaysia, the concept is rapidly gaining prominence as a result of emerging issues relating to water resources, particularly that of water shortages, flooding, and deterioration in the quality of river water (Abdullah 2005).

Though IWRM is recognised and does appear in governments' official documents and regulations concerning water management in a number of countries (China, Nepal, Thailand, Ghana, Poland, Uganda and so forth), Biswas (2005) has argued that to date, there is no single large project that could be found where IWRM has been applied with full success based on its four principles. He contends that the concept is still not commonly understood and does appear to exist by many in theory only.

However, Huda Shamsul (2005) has observed that it is impractical to think that all theoretically derived conditions of IWRM principles should be fulfilled prior to initiating IWRM. He contends, therefore, that the best approach is learning by doing. He believes that in the process of implementation, what did

not go so well could provide a basis for replanning based on learning. As has been noted in Section 3.7, Meppem and Gill (1998) contend that as learning proceeds and an appreciation for the underlying complexity of any sustainability-oriented planning situation develops, the focus for policy making will shift towards the development of 'suitably flexible, inductive rather than deductive policy or management processes'. This seem consistent with the Rogers and Hall (2003) recommendation in Section 4.2, that governance institutions and systems in the IWRM processes need to communicate among the actors and stakeholders in a very simple and understandable way. Implicit in this recommendation is that people will learn from the process, thereby owning the process of change for improved water resources management.

As the IWRM implementation progresses, many unanticipated constraints to achieving the objectives set may appear and processes will be designed to determine how to deal with those. After all, this is a new kind of management approach that seeks to build on experience surrounding the complexities of integrated water management (Huda Shamsul 2005). As noted in Chapter 3 and to be discussed in Chapter 5, what will be needed is a planning process that incorporates open participatory styles of decision-making that have the potential to promote shared meaning of the issues at stake. The promotion of reflexive communication (Chapter 6) orientated towards shared meaning defines a learning process for the development and management of water resources issues (Habermas 1984).

Advocates of communicative approaches for planning argue that the 'policy analysis tradition is seeking both to escape from its predominant emphasis on instrumental reason and scientific knowledge to incorporate greater understanding of how people come to have the ways of thinking and ways of valuing that they do, and how policy development and policy implementation processes can be made more interactive' (Healey 1997). Communicative approaches recognise that knowledge and value do not have some kind of external existence but are actively constituted through social relations, and thus demand a more self-reflexive orientation for policy (Habermas 1984; Shotter 1993). A change process in the IWRM engagement process would

therefore require an explicit attention to the role of language and social relations, as communication is based on social relations rather than "things". In that way, the culturally derived, context-dependent meaning of water resource issues becomes the focus for collective attention. An appropriate participative process in this kind of situation is explored in Chapter 5.

Chapter 5 Participatory Planning Approaches: A Reassessment

5.1 Introduction

As noted in Chapters 3 and 4, the GWP through its IWRM processes has advocated an integrative perspective for water management that is responsive to economic, environment and community outcomes. Participatory approaches to planning, as reflected in principles II and III of the four IWRM principles are believed to address the above concern. Lessons learnt from implementation of IWRM to date suggest otherwise. Based on the practical insights from the review of status of IWRM implementation in Chapter 4, this chapter discusses the planning decision support approaches being used for water resources development and management, participatory planning methodologies, current thinking and a proposal for an appreciative inquiry approach to planning.

5.2 Planning Decision Support Approaches

In the development and management of water resources a number of planning decision approaches have been used. These decision approaches can be expressed in mathematics, symbols or words, and may be prescriptive or illustrative, but essentially they are a description of entities, processes or attributes and the relationship between them (Vennix 1996; Pahl-Wostl, Downing et al. 2005). Different types of decision support approaches are used for planning water resource development and management scenarios. These include a quantitative, predictively-orientated economic decision approach, and a decision support approach which is based on a systems perspective (Jaffe and Al-Jayyoust 2002).

The quantitative, predictively-orientated economic decision-making approach employed in water resource planning essentially determines the economically efficient solution (implicitly considered to be in the best interest of society). Such models allow the economic consequences of different water resource development and management scenarios to be both evaluated and compared against their projected benefits (Jaffe and Al-Jayyoust 2002). Through this approach, the most cost-effective resource development and infrastructure investment policies are selected to provide a given level of desired social benefit.

Opponents of policy decision making that is strongly contingent on the application of the quantitative economic decision approach argue that uncertainties are involved in water resource issues (Section 6.4.1). Therefore, it may be difficult to generate a coherent planning analysis using methods such as cost-minimising or benefit-maximising economic assessment (Jaffe and Al-Jayyoust 2002). For instance, Dryzek (1995) has noted that the kind of social experimentation favoured by these approaches requires manipulation of social conditions on the part of some elite social engineers. The subject of experiments (for example, residents in a community water project) can only be the objects of policy, and cannot be allowed to reconstitute their identities, reshape the experiment as it proceeds, or otherwise distort with experimental manipulations and controls.

The economic decision support approaches, therefore, attempt to simplify and clarify complex and interrelated water resource development policies by disaggregating them into constituent sub-components. This process enable each sub-component to be analysed based on cost-benefit scenarios to compare with respect to the policy objectives they seek to satisfy (Jaffe and Al-Jayyoust 2002). The approach according to Mintzberg (1994) might inhibit creativity and ‘does not easily handle truly creative ideas’ from the majority of the stakeholders and most of the time fails to achieve the desired objectives.

The decision support approach, which is based on a systems perspective, on the other hand, encourages stakeholders’ participation in water resource

planning, helping government to move away from the *status quo* and towards more desirable water resource priorities and objectives (Vennix 1999; Checkland 2000; Jaffe and Al-Jayyoust 2002). These approaches are used to help people better understand the relationships and interactions between decisional components. Systems techniques should have more to do with the analysis side of the process than with the decision side (Grigg 1997).

Both economic decision support approaches and decision support based on systems perspectives are based on 'decomposition' and 'synthesis' of problem formulation and design solutions to address the problems. In fashioning more sustainable water management strategies, most water resource relationships cannot be reduced to simple causes and effects, but are merely part of a very complex system of linkages (Jaffe and Al-Jayyoust 2002). In view of this, Gill (2006) argued that a planning process that accommodates a diversity of economic, environmental and community considerations is desirable.

It is for this reason that planning methodologies that can facilitate the systematic exploration of these complex relationships are important. If what Meppem and Gill suggest (Section 3.7) is considered to be an appropriate response to IWRM, then methodologies that can facilitate this systematic exploration of relationships will need to be applied. While a number of different methodological responses to this recommendation are possible, the following discussion will consider those procedures that work through the explicit engagement of stakeholder interaction and learning, to be consistent with the previously outlined communicative theories of Habermas, Dryzek and others.

5.3 Participatory Planning Methodologies

Planning for water-development projects has, in most countries been a top-down approach in a hierarchical line-management system and organised within prevailing governance structures (Wall and Wall 1995; Cleaver 1999; Falkenmark 2004). Rittel and Webber (1973) have argued that plans fail

because of the ineffective attempt by professional planners to gain the support of others in the planning process. As a result, Hax and Majluf (1996) suggest that planners should not plan, but serve as facilitators, and encourage the participation of all who have a stake in water resources development and management processes. Various studies and projects have interpreted 'participation' in different ways. Participation according to Club du (1988), Mikkelsem (1995) and Chambers (1997, 2002) is the 'voluntary contributions' by people in a project, and/or dialogue between the local people and project preparation, implementation, monitoring and evaluation. For Francis (1993) and Simpson and Gill (2007) participation implies a stakeholder-inclusive process of planning.

Participatory approaches to planning are seen to be inclusive of the interests of disadvantaged and vulnerable groups. It is also believed to empower poor people, build social capital, and strengthen governance. These processes are seen to lead to better planning, because outcomes are assumed to have been generated collectively between interventionist and participants (Francis 1993; Mikkelsen 1995; Chambers 1997). For example, in the planning of development projects including water, various forms of participatory planning methodologies aimed at enhancing the level of involvement in the consultation processes have been applied. These include visioning, community profiling, village appraisals, community mapping, and community animation (Chambers 1997; Tippett 2004). Very little is known in terms of incorporating the sustainability element (Section 3.7), which is the driving force behind the whole idea of IWRM in their methodologies. Other known participatory methodologies that appear to have incorporated sustainability and system thinking elements in the planning processes include: Design Ways, and Systems Mapping (Tippett 2004; Gill 2005).

Design Ways is a toolkit for enabling stakeholder participation in planning. The author, Tippett, developed it over eleven years in southern Africa, and Great Britain to embed 'new paradigm' living systems metaphor into a participatory protocol for ecologically informed design (Capra 1997). The engagement process in this approach is designed to help participants build

skills and capacity to apply ecological insights to their own work and projects.

Design Ways includes education about sustainability as an integral part of its process, and implicitly encourages discussion about how ideas, which participants are developing, relate to the principles of sustainability (Tippett 2004; Tippett 2005). Design Ways processes aim to help a wide range of people find common ground and develop a shared vision about a particular issue in the environment (in this case water resource management). Its approach centres on principles of design, without much attention to the process of design, or the process of engaging the participation of multiple stakeholders in design. This approach was tested in the context of regeneration in the Mersey River Basin in England.

Systems mapping has an academic heritage in the systems theory area and incorporates the linkages between economic, environmental and community aspects of any phenomenon under consideration. The conceptual heritage of Appreciative Systems Planning (ASP), as used in this thesis is shared by the institutional economics, learning organisation, system dynamics and social ecology (cognitive mapping) fields. The methodology is analogous to Chambers' (Chambers 1997) flow diagramming aspects of Participative Rural Appraisal and 'mind mapping' in Checkland's (Checkland, 1999) soft systems analysis. The processes and its applications are discussed in Section 6.7.1.

5.4 Dilemma in the Engagement Processes

One of the biggest dilemmas facing development practitioners, planners or change agents pertains to the processes through which communities can be involved in decision-making processes (Cole-Edelstein 2004).

5.4.1 The Problem Solving Approach

In the past, most methodologies adopted to engage communities in decision-making processes in relation to water management have been to interpret situations, opportunities and policy formulation from within a problem focussed setting (Chambers 1997). Techniques such as problem listing, problem sequencing, cyclical problem analysis, and problem tree analyses are among the methods employed (Mikkelsen 1995; Chambers 1997; Essaw 2001). Problem tree analysis (PTA) happens to be central to many forms of water resource planning and is well developed among development agencies. The PTA (also called situational analysis or just problem analysis) helps to find solutions by mapping out the anatomy of cause and effect of an issue.

The PTA is best carried out in a small focus group of about six to eight people using flip charts or an overhead transparency. The range of size between six and eight is considered appropriate because as the number increases in a group, the group dynamics change. Some members of the group will ‘drop out’ in terms of their participation and this may affect the outcomes.

The first step of the PTA is for the group to discuss and agree on the problem situation (in this case water issues) to be analysed in a participatory manner (see next section on critique of participatory approaches) (Essaw 2001). The ‘focal problem’ or ‘core problem’ is written in the centre of the flip chart or pin board and becomes the 'trunk' of the tree. Next, the group identifies the causes of the focal problem - these become the roots - and then identify the effects, which become the branches (Figure 5.1). These causes and effects can be created using notes or cards, so that they can be arranged in a cause-and-effect logic on the flip chart or pin board. The heart of the exercise is the discussion; debate and dialogue that is generated as factors are arranged and re-arranged, often forming sub-dividing roots and branches (Mikkelsen 1995; Taylor, Thin et al. 2003).

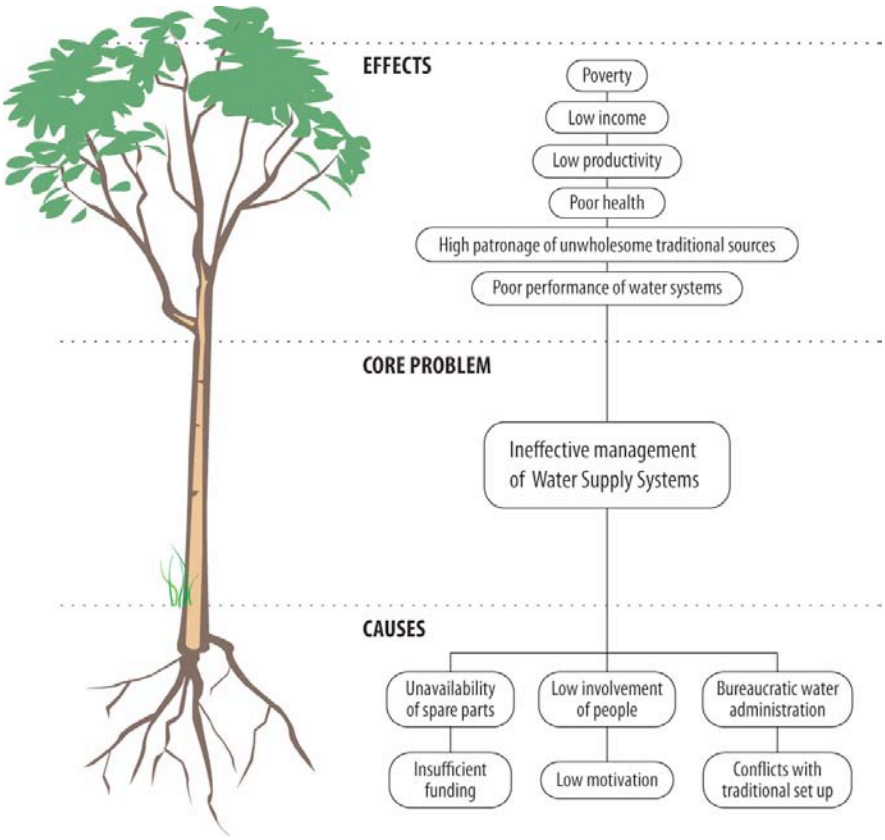

Figure 5.1: Problem Tree Analysis (Adapted and modified from Essaw 2001)

The next stage is to convert the outcomes from the problem tree into an objective tree (another tool used by most development agencies) by rephrasing each of the problem statements into positive desirable outcomes - as if the problem had already been solved. In this way, the core problem becomes the broad objective, while the root causes and effects are turned into means-end relationships (Essaw 2001).

These processes provide a basis for Logical Framework Analysis (LFA) which has been widely adopted and required by donor agencies (World Bank, African Development Bank etc.), for development related projects including water. The Department For International Development (DFID) describes the LFA as ‘a tool to help project designers think logically about what the project is trying to achieve (the purpose), what things the project needs to do to bring

that about (the outputs) and what needs to be done to produce these outputs (the activities). The purpose of the project from the DFID viewpoint is to serve our higher-level objectives (the goal)' (Taylor, Thin et al. 2003). It also provides basis for monitoring and evaluation of project implementation.

Cooperrider and Srivastva (1987) see analysing issues and formulating policies from within a problem-focussed setting differently. They contend that, the problem-focussed setting approach, first compels planners during engagement processes to identify a single core problem under the assumption that something is broken and that it needs to be fixed (Cooperrider and Srivastva 1987; Chambers 1997). By definition, a problem focus implies that one already has knowledge of what 'should be'; thus one's research is guided by an instrumental purpose tied to what is already known. To them, the engagement process in such a context, opens the way for agreement on a relatively few simplistic priorities and plans. In this sense, Staw (1984) argued that problem-focussed setting tends to be inherently conservative. He reasoned that once one agrees with the ground rules of a pragmatic problem-solving science, the inquiry process is largely predetermined, defined, and delimited in scope. This is because this process does not allow analysis of issues in a holistic manner (Chapters 2, 3 and 6).

As both a strength and a weakness, the problem-solving mode narrows our gaze in much the same manner that a blindfold over one eye narrows the field of vision and distorts one's perception of depth (Cooperrider and Srivastva 1987).

Cooperrider and Srivastva (1987) also argued that, planners or facilitators view the world as something external to their consciousness of it, something 'out there'. As such they tend to identify problems not here but 'over there': Problems are not ours, but yours; not a condition common to all, but a condition belonging to this person, that group, or that nation. Thus, the researcher is content to facilitate *their problem solving* because he or she is not part of that world. To this extent, Cooperrider and Srivastva (1987) argued that the 'problem-solving view dissects reality and parcels it out into

fragmented groups, families, ethnic groups, or countries. In both form and substance it denies the wholeness of a dynamic and interconnected social universe (Section 6.4.2) (Cooperrider and Srivastva 1987; Cooperrider and Whitney 2000).

5.4.2 Critique on Participatory Approaches

Cooke and Kothari (2001) argued that proponents of participatory approaches believe that the acts and processes involved in participatory approaches should:

- promote sharing of knowledge and negotiation of power relations - macro/micro; central/local; rich/poor - across all levels of state or other global institutions or at the hands of local elites;
- reduce dominance and empower the poor and marginalised in society;
- incorporate local people's knowledge into programme planning;
- improve our understanding of the institutions of participation and the individual involved; and
- be effective in producing what is considered as 'truth' or at least closer to 'truth' than other less participative, top-down methods of enquiry and knowledge accumulation.

For Mosse (2001), many implementations of participatory processes have involved only a minimum of actual two-way engagement, with the constraints on that engagement ensuing from the desire to maintain a 'top-down' reductionist planning response through which to match prevailing hierarchical governance arrangements for, in terms of this discussion, water resources issues. In support of this view, Craig and Porter (1997) argue that participation in the hands of development professionals can become an instrument of control because they own the research tools, choose the topic, record the information, and abstract and summarise according to project criteria of predetermined relevance. This control as confirmed by Mosse (2001); Allport (1968); Schein (1987); Harvey (1979); and Janis (1991) is argued below.

For Mosse, most development programme decisions including water take place with little reference to locally derived knowledge. He argued that in some cases, the selected participatory processes only symbolised involvement by local people in decision-making without influencing the implementation of outcomes.

He further stressed that implementation of development programmes are sometimes constrained by organisational systems and procedures (e.g. budgeting time-frame, procedures for approval). As a result, most field workers or facilitators develop their own operational interpretation of both villager needs and project goals to be consistent with the managerial and institutional procedures. In practice, the orientation of staff/field workers, backed by unofficial systems of rewards and punishment, ensued strong vertical control of programme activities and implementation schedules (Cooke 2001).

Cooke (2001), Chambers (1997), Gill (2006), and Cleaver (2001) have also observed that resource constraints sometimes prevent communities from saying no to development agencies who they believe have the resources. In addition, community members sometimes agree so that they will not antagonise elders, family members or neighbours.

In a related development, Allport (1968) opined that decisions made through participatory processes should not be seen as a true reflection of what people think. Decisions could be influenced by the actual, imagined and implied presence of others (Cleaver 2001). According to Allport (1968), the presence of others through participation can cause decisions to be made that are more risky, with which no one really agrees, and can be used consciously or otherwise to manipulate members' ideological beliefs (Schein 1987). This is consistent with the '*Abilene paradox'* which suggests that unconscious psychological processes shape how the group thinks, feel and act (Cooke 2001). Harvey (1979), in Cooke (2001), noted that in the participatory process, group members or participants sometimes fail to communicate accurately their actual desires for fear of 'loss of face, prestige, being made

scapegoats, and branded as disloyal'. On the basis of this misperception, actions are taken by the group that are actually contrary to what everyone wants to do. Janis (1991) states:

> *the more amiability and esprit de corps there is among a policy making ingroup, the greater the danger that independent critical thinking will be replaced by groupthink, which is likely to result in irrational and dehumanising actions against outgroups (Janis 1991:262)*

The potential presence of 'groupthink' undermines claims for participation as a means and as an end. Groupthink is a term for a set of group dynamics that leads to wrong decisions being taken (Cooke 2001). Schein (1987) also argued that claims made for participation as a value-free process, suggesting that participatory processes never take place in an ideological vacuum, is questionable. What is seen as a positive outcome from a participatory process will depend on an ideological position and the outcome is shaped by the interventionist (Cleaver 2001; Cooke 2001).

The preceding argument suggests the need for some kind of 'reflexivity' (Section 3.7) in all participatory processes, one that acknowledges a level of open-mindedness that accepts that participatory development may inevitably be tyrannical and a preparedness to abandon it (Cooke and Kothari 2001).

5.5 Current Thinking

The implication from the preceding argument is that we need a shift in the planning framework whereby the engagement processes and the focus of inquiry are no longer constituted on their facility for predictive capacity, but instead are judged in terms of their generative capacity - their ability to foster dialogue and to generate fresh alternatives for social action (Ross and McGee 2006). Cooperrider and Srivastva (1987) and Habermas (1987) contend that 'patterns of social action are not fixed by nature in any direct biological or physical way'.

What can be seen emerging is a heightened sensitivity and interdisciplinary recognition of the fact based on 'the structure of knowledge' (Kolb 1983; Campbell 2000; Neuman 2000); there may be multiple ways of knowing, each of them valid in its own realm when judged according to its own set of essential assumptions and purposes (Cooperrider and Srivastva 1987; Taylor, Bryan et al. 1995; Robson 2002). In this sense there are many different ways of studying the same phenomenon, and the insights generated by one approach are, at best, partial and incomplete. Thus, in adopting one mode over another the researcher directly influences what he or she will finally discover and accomplish (Cooperrider and Srivastva 1987; Cooperrider and Whitney 2000; Ross and McGee 2006).

5.6 Appreciative Inquiry as an Appropriate Framework.

Lessons learnt from IWRM implementations to date suggest the need to highlight the planning process more than the plan itself. Biswas, Varis et al. (2005), Jonch-Clausen (2004), and Ortiz-Zayas and Scatena (2004) have noted that:

- most of the planning done to date was at the national/policy level and participation at communities/local levels has been minimal (Chapter 4). At best, those at the community levels are either asked to endorse plans or are only informed about the implementation process; and
- water management plans apart from being prepared by water experts, the reality in their conceptualisation does not reflect the reality of the communities/local people who are in constant touch with the resource for their livelihood. The question is who owns the process of change? Is it at the national level, or at the community/local level?

They emphasised the need to involve all stakeholders especially in basins/catchments or areas where economic, social and environmental stakes are high. Varis, Kummu et al. (2006), in their study on integrated water resources management on the Tonle Sap Lake, Cambodia, concluded that without recognition of the policy makers to incorporate local realities, and

without adopting engagement processes that will enable ownership of IWRM concepts by all stakeholders, IWRM remains a theory.

Chambers (1997) has argued that in an attempt to engage local people in a decision-making process, many professionals in their various fields create and sustain their reality on the community/local people which is in contrast a diversity of people and their livelihoods. He noted that professionals reconstruct their reality by formulating their own problems, which does not reflect the realities of the local people. As a result, they design processes to make solutions to their own problems but not problems of the communities (Chambers 1997). The obvious question one would raise is who then possess the process of change? Professionals? Experts or communities/local people?

Chambers further stressed: 'a person whose livelihood does not depend directly, for example, on water resources, who pronounces on what matters to those in close contact with the resource, is in a trap'. According to him, experts or professionals can struggle to reconstruct their realities to reflect what local or poor people indicate to be theirs, but there will always be distortions. He noted that the nature of interactions between the socially dominant, academics, professionals etc. and the 'non-titled' affects what is shared and learnt and also affects the process of change (Section 5.4.2). Chambers concluded:

> …*after all the ignorance and inabilities of local people is not just an illusion but are an artefact of outsiders' behaviour and attitudes, of an arrogant and ignorant manner of interacting. In return the local people also deceive socially dominant, researchers, academics etc. by feigning incapacity and incapacitate themselves by internalising social dominant beliefs in their inabilities (Chambers 1997:129).*

As noted in the preceding discussion, resolution to bridge the gap between the experts' reality and local realities can be found in a new paradigm of change. The personal, professional and institutional challenge to change is learning how to learn, learning how to change, and learning how to organise

and act. The analytical challenge is to frame a practical paradigm for knowing and acting, and changing how we know and act, in a flux of uncertainty and change (Meppem and Gill 1998; Campbell 2000; Pahl-Wostl and Hare 2004).

Many of the change agents, in their bid to help communities out of their water problems, have followed from trying to apply blue print approaches (such as scientific methods for predicting or prescribing for the complex open systems), which according to Chambers (1997), work with controllable and predictable things, to processes with uncontrollable and unpredictable people. Water resource issues involve uncertainties (climatic changes, unpredictable human behaviour) when so much is unknowable and so unpredictable. It seems sensible therefore to seek resolutions through methodological pluralism (that is integrating perspectives from different disciplines aimed at providing a useful theoretical foundation to help address myriads of water resource issues rather than a single approach), through flexible and continuous learning and adaptation where both the scientific knowledge and indigenous knowledge gain acceptance (Costanza 1991; Chambers 1997; Soderbaum 2000; Ropke 2004).

The knowledge of local people, variously described as indigenous knowledge, has a comparable strength to the scientific knowledge. After all, the scientific knowledge take data from the local people (Uphoff's 1992 in Chambers (1997).

The participatory rural appraisal (PRA), rapid rural appraisal (RRA), Ziel-Orientierte Projekt Planung (ZOPP) (Chambers 1997) approaches, for example, have the potential to ensure ownership of change at all levels. However, change agent approaches have been widely framed by a problem-focus mode and the critique provided in section 5.4.2 makes an appreciative inquiry approach appropriate in this kind of situation.

Appreciative Inquiry (AI) refers to both a search for knowledge and a theory of intentional collective action which are designed to help evolve the normative vision and will of a group, organisation, or society as a whole (Cooperrider

and Whitney 2000). It is a framework that focusses on illuminating and affirming personal success factors or discovering and valuing the best of what is in organisations, communities or groups in order to create a better future. As a holistic form of inquiry, it asks a series of questions not found in either a logical-positivist conception of science or a strictly pragmatic, problem-solving mode of action-research (Cooperrider and Whitney 2000; Watkins and Mohr 2001; Nicholas and Dyer 2003; Whitney and Trosten-Bloom 2003).

As will be discussed at length in Chapter 6 of this thesis, the Appreciative Inquiry (AI) approach has the potential for reshaping the practice of community learning, designing, planning and management for a sustainable water resource management (Cooperrider and Whitney 2000; Watkins and Mohr 2001). Through the AI approach, stakeholders are facilitated away from the need to defend individual perspectives and view-points towards an increased willingness to listen to and participate in the evolution of more generally shared insights.

The AI process would seem to have the potential to address the proposed reworked interpretation of sustainability elements by Meppem and Gill (1998). As was noted in Chapter 3, learning, a key element in Meppem and Gill's interpretation of sustainability, is also the main driving force of the principles underlying the AI approach (Chapter 6). Through AI learning processes, where communities are engaged in conversations, all interested stakeholders are able to develop shared understandings of their system and these understandings will help them identify and articulate current issues and opportunities, directions for change and sometimes innovative ideas about pathways along which to realise long term ecological-economic-cultural sustainability of the water resources can be realised (Whitney and Trosten-Bloom 2003).

Chapter 6 Appreciative Inquiry Perspective

6.1 Introduction

As noted in Chapter 4, water management processes from the implementation of the IWRM concept in the assessed countries have been sectorally based. Water issues were dealt with in isolation and potentially undesirable long-term consequences have not been taken into consideration. For instance, the human dimension was taken into account as an 'external' boundary condition (Pahl-Wostl, Downing et al. 2005). In a related development, Pigram and Wahab (1997), noted that compatible human use of water resources and resource management practices that minimise human disturbance of ecosystems and which avoid actions with irreversible consequences, are often overlooked. Similarly, Meppem and Gill (1998) advocate that individual attempts to address water resources issues depend on the subjectivist priorities of the interpreter. They argue that the different disciplines (ecology, economics etc) are all likely to diverge in their interpretation on and recommendations to address specific water resource issues. The persistence of divergent views and interpretations is likely to prolong outstanding problems through lack of consensus on policy direction and mechanisms for improved water resource management.

Over the last two decades, water management has changed from a focus on separate governance structure to a more integrated perspective (Pahl-Wostl, Downing et al. 2005). The increasing awareness of the complexity of environmental problems, including water has encouraged the search for a new management methodology that has the potential to change management practices based on new insights (Pahl-Wostl 2002; Pahl-Wostl, Downing et al. 2005). The Appreciative Inquiry (AI) approach appears to have an orientation to change that can fundamentally reshape the practice of organisational learning, design and development in the management of water resources and for other areas of management as well (Watkins and Mohr 2001). This

chapter provides a discussion on the wider 'theoretical' implications of the appreciative inquiry framework with a particular focus on how integrated water resources management fits in this perspective. The discussion looks at how the AI perspective might contribute to deriving greater insight into these water issues and into their resolution.

6.2 Evolution and Theoretical Basis of Appreciative Inquiry

'Nothing is permanent but change' – Heraclitus, c.500 BC

Appreciative Inquiry evolved from the work of David Cooperrider, who, in 1980 as a doctoral student at Case Western Reserve University in Cleveland, Ohio, intended to study physician leadership in one of the most highly regarded medical centres in the United States. The results of the study evolved an action research approach to change management that enables organisations to learn and transform their processes and systems for improved performance (Watkins and Mohr 2001; Cooperrider and Sekerka 2003; Nicholas and Dyer 2003).

The development of AI is strongly influenced by the theory of social constructionism. Social constructionism reflects a belief that there is no one reality or truth; rather, truth is grounded in the multiple and contextually determined realities of individuals' perceptions, dialogues, and shared understandings (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003). The way people understand the world is informed by the belief they hold which, in turn, describes the theoretical perspective that is a 'natural fit' to their particular 'way of knowing'. As has been noted in Chapter 3, people are drawn to one perspective or another through their fundamental epistemological frames. A theoretical perspective, in turn, shapes specific methodological responses to any efforts to analyse and through which to promulgate recommendations for change. Proponents of AI believe that meaning is not discovered but constructed. People construct meaning in different ways even in relation to the same phenomenon. Subject and object emerge as partners in the generation of meaning (Crotty 1998).

Chambers (1997) in his book *Whose Reality Counts?* therefore noted that holding objective reality is not possible and that society embeds multiple realities. He reasoned that "perception about the world is always selective (Section 6.6.2), through the nature of our senses, through what we have contact with, through what we choose to perceive or expose ourselves to perceiving in this complex world, through our methods and acts of observing, through our habits of thinking and through our mental frames into which we filter information. Our personal mental frames are made up from our past learning experience, and our constructs, beliefs, values and preferences". In a similar vein, Crotty (1998) maintained that "all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their complex social world (Section 5.6.2), and developed and transmitted within an essentially social context".

The social constructionists acknowledge the complexities inherent in water resource management issues, and are more likely to examine the multiple factors and forces that comprise the issues and seek out stakeholders willing to engage in resolving those issues (Kreuter, De Rosa et al. 2004).

6.3 What is Appreciative Inquiry?

AI is an approach or framework that focuses on illuminating and affirming the best experiences from people, their organisation, community, and the world around them (Watkins and Mohr 2001; Cooperrider and Whitney 2005). It is a process that inquires into, identifies, and further develops the "best of what is" in organisations in order to create a better future (Cooperrider, Whitney et al. 2003; Nicholas and Dyer 2003).

AI looks at organisational issues, challenges, and concerns in a different way: it reframes problem statements into a focus on strengths and successes (Watkins and Mohr 2001; Whitney and Trosten-Bloom 2003). Instead of focusing on problems, the approach first seeks to discover what is working

particularly well in the institutions or communities with respect to the management of water resources. Then, instead of analysing possible causes and solutions, the approach will envision what it might be like if 'the best of what is' occurred more frequently. Here participants engage in a dialogue concerning what is needed, in terms of both tasks and resources, to bring about the desired future (Coghlan, Preskill et al. 2003).

AI as an approach aligns an organisation or institution within its environment to establish a context for accomplishing goals, and providing a framework and direction to achieve the organisation's desired future (Hax and Majluf 1996; Rowley, Lujan et al. 1997). It is an ongoing, continuous learning process, an organisational dialogue, which extends beyond attaining a set of predetermined goals. It aims to change the way an organisation thinks and operates, and create a learning organisation (Rowley, Lujan et al. 1997; Senge, Kleiner et al. 1997).

Ashford and Patkar (2001); Nicholas and Dyer (2003) argue that organisations, institutions, communities or groups improve more effectively by focusing on their own positive experiences through 'discovery and valuing, envisioning, dialogue and co-constructing the future' (Ashford and Partkar 2001). In that way, organisations, communities or groups 'walk away with a sense of commitment, confidence and affirmation that they have been successful. They also know clearly how to make more moments of success' (Hammond and Royal 1998). In the AI approach, stakeholders are encouraged to participate actively, engage in the ongoing dialogue in the planning process thereby generating a feeling of ownership of the process and the outcomes (Hax and Majluf 1996).

A common criticism of AI however, is that it ignores or even denies problems. Coghlan, Preskill et al., (2003) argue that while at first blush this view may seem understandable, it is nevertheless untrue. They reasoned that AI does address issues and problems, but from a different and often more constructive perspective: it reframes problem statements into a focus on strengths and successes (Cooperrider and Whitney 2000; Watkins and Mohr 2001; Whitney

and Trosten-Bloom 2003). “More broadly, Appreciative Inquiry does not turn a blind eye on ‘negative’ situations or ‘deficit-oriented’ realities in organisations; it does not substitute a ‘rosy’ and ‘romantic’ picture for an ‘objective’ and ‘realistic’ one. It accepts these realities for what they are. But AI intentionally shifts the focus of the inquiry and intervention to those realities that are sources of vitality” (Hammond and Royal 1998). Chambers (1997) noted, “Thoughtful leaders increasingly recognise that we are not only failing to solve the persistent problems we face, but are in fact causing them”.

Nicholas and Dyer (2003) shared the view that ‘human systems are adapted to be creative and innovative, and so organisations (Senge, Kleiner et al. 1997), in the view of AI proponents, are full of solutions rather than problems. It is the organisation’s diversity, multiplicity and forward movement that need to be highlighted and built upon’. Whitney and Trosten-Bloom (2003) add, ‘We do not dismiss accounts of conflict, problems, or stress. We simply do not use them as the basis of analysis or action’.

Cooperrider and Whitney (2000) have argued that AI can get you much better results than seeking out and solving problems. They argued ‘if you combine a negative culture with all the challenges we face today, it could be easy to convince ourselves that we have too many problems to overcome—We can’t ignore problems—we just need to approach them from the other side’.

6.4 AI and its Relationship with Complexity Theory, Systems Thinking and Communicative Action Theory

Complexity theory, systems thinking and communicative action theory would seem to have some close association with the appreciative inquiry approach.

6.4.1 AI and its Relationship with Complexity Theory

By definition, complex systems are represented by highly non-linear, dynamic relationships and are subject to ever changing patterns of unpredictability in science or government or in daily life (Gill 1993; Nowotny 2005). In a similar

dimension, Stacey and Griffin (2005) and Browaeys and Baets (2003) argue that complexity refers to ‘a particular dynamic or movement in time that is self contradictory; stable and unstable, predictable and unpredictable, known and unknown, certain and uncertain, all at the same time’.

Complexity in its broadest sense is difficult to define (Kauffman 1993; Byrne 1998; Burnes 2005; Nowotny 2005; Stacey and Griffin 2005; Urry 2005) because it points to ‘something which is just beyond human ability to understand and control’ (Browaeys and Baets 2003). In his description of complexity, Gill (1993) contends, ‘complexity exists when one has a positive and negative polarity feedback loop of a structure operating at the same time within a defined system’. This feedback relationship according to Vennix (1996), is a process in which action and information affect each other. For instance, a negative feedback relationship can cause a system to become stagnant and unable to adapt to suddenly changing situations. An example of negative feedback is a thermostat regulating the temperature of a house: any temperature above a fixed point leads to cooling, and any temperature below it leads to heating (Gleick 2003). Positive feedback on the other hand, describes a chain of events that is increasingly self-reinforcing. It introduces uncertainty into systems behaviour, potentially reinforcing small events until they generate system-wide phenomena. Chaos is a potentially extreme outcome of complex system behaviour (Gill 1993).

As noted in Section 6.2, the development of AI is strongly influenced by the theory of social constructionism which states that, truth is grounded in the multiple and contextually determined realities of individuals’ perceptions, dialogues, and shared understandings (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003). AI’s perspective would seem to be consistent with complex systems.

For the purpose of this methodological survey, AI and complex systems would seem to imply that we cannot have perfect knowledge of complex systems and therefore cannot ‘calculate’ the performance of, for example, complex social systems in their complexity (Cilliers 2005). This means that we cannot

have complete knowledge of complex water systems; our knowledge of complex systems is always provisional or limited and we have to be modest about the claims we make about such knowledge. Thus, we cannot make purely objective and final claims considering the uncertainties involved in the complex water systems (Cilliers 2005).

Strategic and institutional uncertainties for example, are involved in water resource issues (van Bueren, Klijn et al. 2003). *Strategic uncertainty* exists because many actors are involved. Their strategies to address the issue are based on their perceptions of the issue and its solutions, which may differ from views of others. Diverging and conflicting strategies are the result, and these may cause stagnation and deadlocks in policy debates on one hand, and may also lead to surprising and unexpected outcomes on the other (van Bueren, Klijn et al. 2003). *Institutional uncertainty* results from the fact that decisions on water issues are made in different places, in different policy arenas (international, regional or local level) in which actors from various policy networks participate. The institutional setting in which complex water resource issues are dealt is thus highly fragmented (van Bueren, Klijn et al. 2003).

From the preceding discussions all social action including water issues is open to multiple interpretations. The interpretations favoured in one historical setting may be replaced in the next. The proponents of AI argue that there may be multiple ways of knowing regarding issues such as those pertaining to water resources, each of them valid in its own realm when judged according to its own set of essential assumptions and purposes. In this sense there are many different ways of studying the same phenomenon, and the insights generated by one approach are, at best, partial and incomplete (Cooperrider and Sekerka 2003). According to Habermas (1984) different perspectives can be evaluated only in terms of their specified "human interests”.

6.4.2 AI and Systems Thinking

Systemic thinking in its broadest sense, means thinking in terms of relationships, patterns, processes within the context of a larger whole (Capra 2005). Cartesian science believed that in any complex system like water resources issues, the behaviour of the whole could be analysed in terms of the properties of its various uses and functions (Checkland 1981; Forrester 1994; Checkland 1999). In systems thinking, the properties of the parts are not intrinsic, but can be understood only from the organisation of the whole or within the context of the larger whole because the whole is more than the sum of its parts. Thus, systems' thinking is 'contextual' as opposed to analytical thinking (Capra 1997; Checkland 1999).

AI and systems thinking would seem to have some similarity in that they both emphasise managing change as a whole, and promoting the use of different change approaches together within a given context (Wolstenholme 2000; Cao, Clarke et al. 2003). As has been discussed in the previous Chapters, many water resource issues have been approached as separate, fragmented and not as a unified whole. Interventions provided have been guided by an instrumental purpose approach tied to what is already known rather than exploring broader human and/or social purposes. This is not to say that systems thinking perspective does not recognise reductionism, rather it embraces the values of reductionist science by understanding the parts. As noted from the preceding discussion, in systems thinking, the properties of the parts are not intrinsic, but can be understood within the context of the larger whole. This appears to be consistent with the IWRM ideals (Chapter 3) which advocate the promotion and integration of the various functions of the water resources.

Due to uncertainties involved in dealing with water resources issues, decisions can adequately be handled by enhancing the interactions between stakeholders. Social constructionism posits 'that human communication is the central process that creates, maintains, and transforms realities' (Cooperrider and Whitney 2000; Whitney and Trosten-Bloom 2003). Complexity and

uncertainty would seem to be more characteristic of many water resource issues, and so creative processes for anticipating change such as AI may be useful. AI is presented as a mechanism with which to gain an appreciation of the underlying dynamics of the complex water systems. As has been noted in the preceding discussion, meaning is not discovered but constructed through interaction. People construct meaning in different ways, in different places and at different levels. The AI approach therefore, seeks to find out:

1 how those meanings change when framed by different ways of knowing; and
2 how those different ways of knowing shape policy setting, institutional responses and processes employed for improved water resources management.

6.4.3 AI and Communicative Action Theory

Interaction among stakeholders promotes mutual learning as well as a better representation of reality than the traditional "truth dissemination model" where it is believed knowledge is only owned by experts (Soderbaum 2000). For Dryzek (1995), interaction is between the individual and his or her relationship with the society as a whole. Through this interaction, meaning is constructed, rather than by the subject in isolation (Habermas 1984).

Dryzek (1995) for instance, contrasts women's needs as defined by policy makers or planners with the needs that women themselves might construct if they were given the chance. A survey conducted by Essaw (2001) to identify the involvement of women in the design and planning of a water supply system concluded:

> *The women were not involved in the design, neither were they allowed to choose the design they most desired because the project came with their design; the Vergnet foot pump. A further investigation into their preferences showed that about 75 per cent of the respondents favoured the use of hand pump to the Vergnet foot pump provided by the project. The reasons for their preferred option were that they were*

familiar with the use of hand pumps, were easy to operate and according to them yielded more water than the foot pump (Essaw 2001:99).

The issue is not the policy makers or planners ignoring real need but rather of their construction of women's needs as opposed to what the women favoured. This is contrary to Habermas's communicative action theory which advocates dialogue in which participants are fully informed and empowered, with that empowerment ensuing from effective communication.

Habermas (1984), Moon (1995), and Simpson and Gill (2007) have argued that an essential element of the interpretive accomplishment required for communicative action is based on the selection of a communicative style that supports the interchange of ideas towards new learning and inspiration in relation to ensuing plans and actions. It is only through this process that harmonisation of individual plans could become a collective plan.

Proponents for IWRM seem to be advocating for this kind of interchange of ideas between various stakeholders towards developing an integrative learning for managing water resources (Section 3.8.1). The reason is that planning processes are essentially an attempt by change agents to help in resolving social problems including water. Contemporary complex water resources issues require that policies aimed at resolution should at least be arrived at through discussions in the wider context leading to some kind of consensus or compromise. Communicative action theory (CAT) requires that policy makers or analysts should effectively devise a communicative interaction process that allows for the emergence of issues in a deliberative manner for informed policy direction (Simpson and Gill 2007). This means that it is important that policy makers or change agents adopt participatory processes that encompass all water users deciding on where they are now, where they would want to go and developing implementation plans to reach their goals based on self-reliance. Through this process they are likely to own the process of change to enable them to contribute effectively towards managing water resources at individual local or regional levels. Thus, effective

use of participatory processes to water resources management becomes imperative and requires that the change agents are able to empower the stakeholders to plan, implement, manage, monitor and evaluate their own actions.

The insights shared in Chapter 4 on the status of IWRM implementation seem contrary to the preceding discussion and this calls for an institutional design that has the potential to ensure communicative rationality proposed by Habermas. This is because people have 'different ways of knowing' and interpret the world from within different 'frames of meaning' and one group should not be seen as superior to the other group (Gadamer 1975). Rather the communicative process should provide a platform to accept each view through what Benhabid called 'interactive universalism'. This model conceives that 'each individual is a moral person endowed with the same rights as ourselves' and is capable of respecting the rights of others'. Interactive universalism accepts this ideal, but also insists upon the 'standpoint of the concrete other' which enjoins us to view every moral person as a unique individual, with a certain life history, disposition and endowment, as well as needs and limitations (Moon 1995).

For interactive universalism, the moral point of view involves the individual ability to appreciate the perspective of the other and to develop a collective perspective towards a common goal (Moon 1995).

AI seems to recognise the interactive universalism principles, and Habermas's communicative action. This is because the AI process allows people to share their best experiences of what has worked through communication and interaction, and respect each perspective. As a holistic form of inquiry, the AI approach seeks to ask series of questions not found in either a logical-positivist conception of science or a strictly pragmatic, problem-solving mode of action-research (Cooperrider and Whitney 2000; Watkins and Mohr 2001; Nicholas and Dyer 2003; Whitney and Trosten-Bloom 2003). AI also recognises that "the necessity for coordinated action generates in society a certain need for interaction through communication, which must be met if it is

to be possible to coordinate actions effectively for the purposes of satisfying needs" (Habermas 1984).

This communicative interaction, as it is sometimes formulated, is between two distinct types of action: one which is grounded in intersubjectivity and is dependent upon convention and institutional structures (interaction–communicative action) and the one which is not (purposive rational action). According to Held, Habermas's communicative and purposive rational actions are difficult to sustain. To Held, although technical rules are critical elements of instrumental action, they are always articulated within the framework of communication (Held 1980). Held argued that it remains unclear as to whether instrumental action is to be understood as an element of all human activity – governed by socially interpreted relations - or as a distinct type of human action isolated from social contexts (Held 1980).

6.5 AI and IWRM

To deal with the water resource challenges elaborated in Chapters 2 and 3, IWRM processes must be able to respond to changes in the natural and social environment and to anticipate the uncertainties associated with these changes. The current IWRM concept does not elaborate on water management under uncertainty, nor does it include approaches and methods towards adaptive water management strategies. Water management involves many actors, with different knowledge and at different levels. The success of any management initiative in such a context will depend on the ability of change agents to facilitate the cooperation between the various actors and the integration of their different sources of knowledge. This means an approach where stakeholders are facilitated away from the need to defend individual perspectives and viewpoints towards a more healthy willingness to listen to and participate in the evolution of a more generally shared insights. This has the potential for reshaping the practice of community learning, designing, planning and management for a sustainable water resource management (Meppem and Gill 1998).

The AI approach has the capacity for encouraging water users and other stakeholders to use their understanding of “the best of what is” to construct a vision of what their institution or community might be if they identify their strengths. These strengths can help create propositions in future that can challenge them to move ahead by understanding and building on their current achievement. In that way, stakeholders are likely to own the process of change thereby freeing themselves from mental and physical dependence on experts’ knowledge and energising them to contribute effectively towards water management processes.

6.6 AI as a Process

Cooperrider and others applied the theories of social constructionism to organisational change and developed the following eight core principles for the practice of Appreciative Inquiry (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003). The discussion of the principles is related to water resources management.

6.6.1 Principles Underlying Appreciative Inquiry

Constructionist Principle: This principle places human communication and language at the centre of change. Related to the notion that multiple realities exist based on perceptions and shared understandings of stakeholders, this principle suggests that meaning is constructed in conversation, reality is created in communication, and knowledge is generated through social interaction with all key stakeholders in the water management processes. The questions that we ask set the stage for discovering stories from which a new future for integrated water resource management can be conceived and constructed (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

Principle of Simultaneity: Since reality is perceived to be an evolving social construction, it is possible for inquiry to create change. Inquiry and change are simultaneous and ‘inquiry is intervention’. In any inquiry aimed at improving

water resources management, the questions we ask should be such that it provides opportunities for stakeholders to discover what is working well in their organisations or communities. This may stimulate ideas, thought, innovation and invention and can provide the basis for water institutions, professionals, and other users to discover and learn from the good processes and through that co-construct their future (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

Poetic Principle: Because reality is a human construction, we are free to choose which part of the story to study or inquire about. We can study virtually any topic on human experience in any institution or community. Questions of hope, joy and enthusiasm bring stories, images and experiences of joy and hope. Appreciative inquiry chooses to focus on the positive aspects of individual, organisations, communities or groups. In its application to water resources, change agents can choose to inquire about the best experiences in the management of water resources from the communities or institutions instead of focussing on the problems (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

Anticipatory Principle: Image inspires action. This principle postulates images people have about the future form their reality description and expectations in life and this guides their current behaviour (Figure 6.2). If the policy makers or governments see IWRM as an approach believed to help address a myriad of water resources issues, they will anticipate the kind of positive change process that will underpin, for example, the emergence of attitudes, governance arrangements, and related institutional settings that could help resolve the issues. Thus, positive images of the future will anticipate, or lead to, positive actions (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

Positive Principle: This principle posits that positive questions lead to positive change. This principle is embedded in the model of positive organisational change. The process begins with an assumption that organisations are networks of human relatedness and that these networks are

‘alive’. The object of AI is to touch the ‘positive core’ of the organisational life.

Table 6.1 shows the diverse sets of assets, strengths, and resources that when discussed broadly constitute an organisation or a community’s positive core. Conversations about the positive core, give it meaning and enable an organisation’s members and stakeholders to share best practices.

Table 6.1: Positive Core of Organisation Life

Achievement	Vital traditions
Strategic opportunities	Lived values
Product strengths	Positive macrotrends
Technical assets	Social capital
Breakthrough innovations	Collective spirit
Elevated thought	Embedded knowledge
Best business practices	Financial assets
Positive emotions	Visions of positive futures
Organisation wisdom	Alliances and partnerships
Core competencies	Value chain strengths
Vision of possibility	Strategic advantages
Leadership capabilities	Relational resources
Product pipeline	Customer loyalty

Source: Cooperrider and Whitney (2005)

The model of positive organisational change involves three stages, moving from elevation of inquiry, to fusion of strengths, to activation of energy. Each stage is triggered by increases of inquiry into the appreciable world and the expansion of relatedness (Figure 6.1). As individuals work together to look deeper into what they value most, an expansion of relatedness occurs. The contention according to Cooperrider and Whitney (2005) is that this experience generates positive emotions which help broaden and build resources needed to motivate, create, overcome adversity and transform.

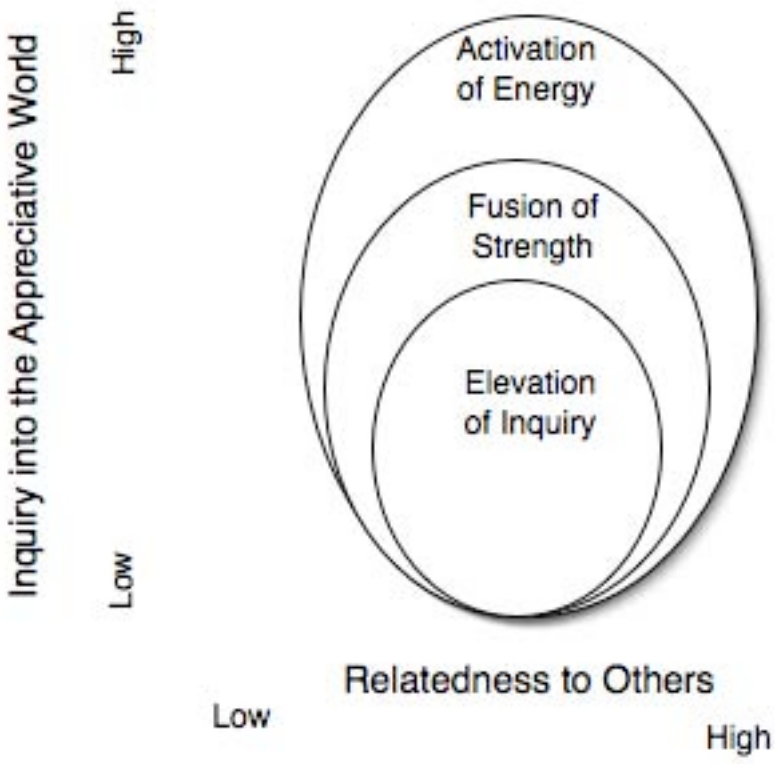

Figure 6.1: A Model of Positive Organisational Change (Adapted from Cooperrider and Sekerka (2003)

In many important respects, people and communities move in the direction of their questions. This holds true because human beings want to turn toward positive images that give them energy and nourish happiness. In its application to water resource planning processes, inquiry into what is working well may have the potential to bring out the best in people, inspire positive action, and create possibilities for a positive future (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

The Wholeness Principle: This principle posits that looking at issues from context may be useful. This principle is consistent with systems thinking which posits that the properties of the parts are not intrinsic, but can be understood only from the organisation of the whole or within the context of the larger whole because the whole is more than the sum of its parts. Its application is also embedded in the IWRM framework (Chapter 3) (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

The Enactment Principle: Positive changes in a person's life come as a result of the images and visions one desires to achieve in the future that are enacted in the present. The idea of enactment – of living one's dream today - is a simple yet paradoxical practice. Any change in a person, group, community or organisation requires that processes used for change be a living example. The enactment of the IWRM concept is an image the proponent believed would help address a myriad of water resources issues. It is therefore important to project and build on the positive aspect of the concept to enable some kind of governance arrangements, and related institutional settings that could help resolve the issues (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

The Free Choice Principle: The principle of free choice teaches us to consistently create opportunities for choice, to give people options, and to encourage them to choose their actions based on their intuitions, interests, and strengths (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003). The issue of choice raises concern as to the representativeness of the stakeholders to be engaged in a planning process. Falkenmark (2004), posited that the issue of stakeholder representation in water management issues, for example, is critical. He argued many stakeholders are the actual users of water, while others have interests that might be affected positively or negatively, if water is "used" or "not used'. For example, how should the decision-making bodies be constituted? Who is legitimately placed to be a member of the decision-making body at the local level? He concluded that often the interest of these groups of people is not well represented during plan preparation and policy formulation. In a related study on *Managing the maintenance of rural water supply systems in Ghana*, Essaw (2001) noted, for example, women as domestic managers and users of water were excluded from the planning processes on critical decisions affecting the development and management of water resources. He found that in many communities, religious and cultural attitudes make it virtually impossible for views of women to be ascertained (Essaw 2001). As has been noted from the preceding discussion, in applying

AI, emphasis should be on the need to create opportunities for all, and to encourage all people irrespective of their gender, race or ethnicity to choose freely to participate, for example, in the planning processes and designing of governance arrangements.

The eight principles discussed above would seem to have some application in all human endeavours including the management of water resource issues. Humans may be happy and willing to cooperate and contribute in whatever form if their positive experiences in life are brought to bear. In selecting the best jobs, personnel for positions, contracts and others, the criteria used have always been focused on 'what is best of' the individual, organisation or institution and anticipate the same to happen in future.

Applying these principles to water resources management, inquiry processes could begin by identifying what is working well in communities, groups and build on those 'appreciative' processes that led to the success. What is not known, perhaps is in the event of a catastrophe (tsunami, flood etc) how, for example, the positive principle could be applied to resolve the issue?

In summary, the eight principles of AI suggest that it is a conversation approach which manifests or is at least consistent with Habermas's theory of communicative action. According to Habermas (1984), through conversation, and shared vision, values and strategies emerge which make real and tangible the highest potentials of individuals, groups, communities and organisations. This could be applied in the IWRM planning processes for improved water resource management. Based on the eight principles, Hammond (1996) mentioned that there are certain assumptions that underpin the AI processes and methods.

6.6.2 Assumptions Underlying AI Change Process

Assumptions have important consequences for the way in which one attempts to investigate and obtain 'knowledge' about the social world. Different assumptions are likely to incline researchers towards different methodologies

(Burrel and Morgan 1979; Crotty 1998). According to Hammond (1996), assumptions are the set of beliefs shared by an organisation, institution, community or group, that causes the group to think and act in certain ways and could be looked at in the following ways:

- assumptions are statements or rules that explain what a group generally believes;
- assumptions explain the context of group's choices and behaviour;
- assumptions are usually not visible to or verbalised by participants/members; rather they develop and exist; and
- assumptions must be made visible and discussed before anyone can be sure of the group beliefs.

Assumptions according to Vennix (1999) contribute to the reality formation in individuals, institutions, communities or groups. He opines if people define situations as real they will behave accordingly. This behaviour in turn creates a reality that is perceived by others and affects their thinking and behaviour as shown in Figure 6.2.

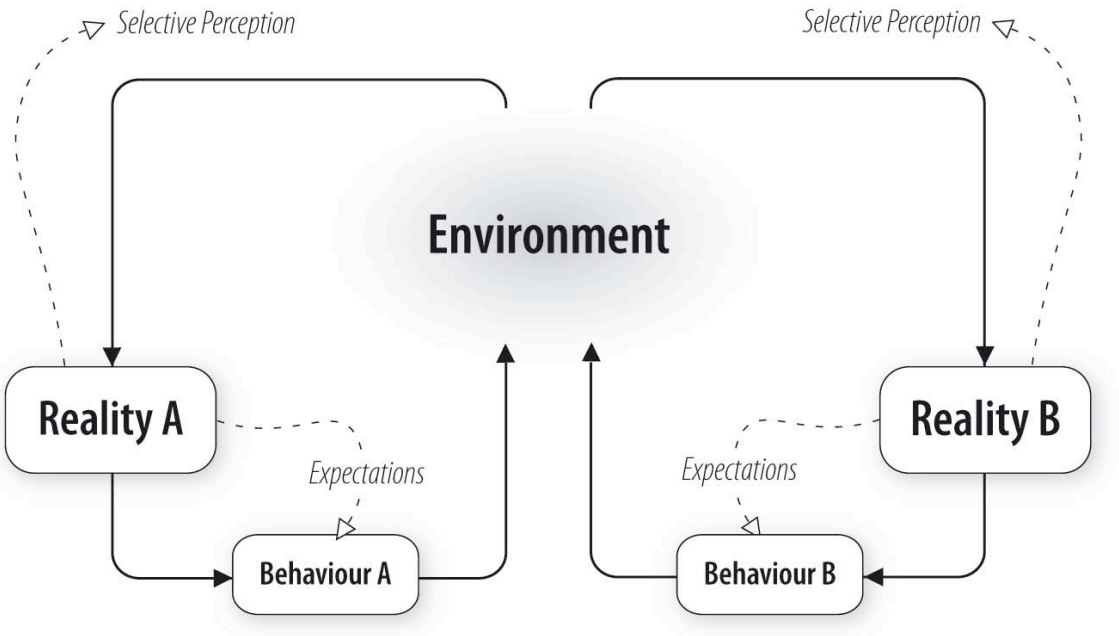

Figure 6.2: Reality Formation

From Figure 6.2 person A acquires information from the environment (selective perception). Based on his own reality description and expectations

from this information, A constructs a 'model of reality', which not only affects subsequent perceptions, but also forms basis for his behaviour. A's behaviour forms part of B's environment and the same holds. B selects and interprets data in the environment, constructs his model and behaves accordingly. See for example, the dangerous river scenario in Box 6.1

Box 6.1 The Dangerous River

A man almost drowned in a river and nearly died. He assumes that the river is dangerous and tries to stay away from it. He made that assumption based on the time he almost drowned and nearly died in the river. He told all the members of his family. As a result, they began to stay away from that river. Over time it became an unquestionable belief in the family that, that river was dangerous. As the new members of the family (children) appear, the family members teach them to stay away from the river. The longer the belief is in effect, the harder it is for the family to see any new information that contradicts the belief.

The shared set of assumptions of a group is a powerful force. One needs to understand what the assumptions are, in order to predict how the group will act. To understand AI and its application to the IWRM planning process, one must understand the assumptions underlying AI processes. These assumptions according to Hammond (1996) include:

- in every society, organisation, or group, something works;
- what we focus on becomes our reality;
- reality is created in the moment, and there are multiple realities;
- the act of asking questions of an organisation or group influences the group in some way;
- people have more confidence and comfort to journey to the future (the unknown) when they carry forward parts of the past (the known);
- if we carry parts of the past forward, they should be what are best about the past;
- it is important to value differences; and
- the language we use creates our reality.

These assumptions and principles from the preceding section underlie both the philosophy of Appreciative Inquiry and the ways in which it is conducted. Doing more of what works is the driver for AI as opposed to doing less of something we do not do well in the problem-solving model as shown in Fig.6.3. The conclusion Cooperider and AI practitioners draw is that one cannot use AI as a questioning technique within the problem-solving model and achieve a result. For AI to work its magic, the practitioner has to believe and internalise the assumptions (Hammond 1996; Watkins and Mohr 2001; Cooperrider, Whitney et al. 2003).

PROBLEM SOLVING	APPRECIATIVE INQUIRY
"Felt Need" Identification of Problem ↓ Analysis of Causes ↓ Analysis of Possible Solutions ↓ Action Planning *ASSUMPTION 1: AN ORGANISATION IS A PROBLEM TO BE SOLVED*	Appreciating and Valuing the Best of "What Is" ↓ Envisioning "What Might Be" ↓ Dialoguing "What Should Be" ↓ Innovating "What Will Be" *ASSUMPTION 2: AN ORGANISATION IS A MYSTERY TO BE EMBRACED*

Figure 6.3: Two Different Processes for Organisation Change: Adapted from Watkins and Mohr (2001).

From Figure 6.3, if we accept assumption 2, then what we focus on becomes our reality. If we focus on what is wrong, we tend to see everything through that filter or frame (Hammond 1996; Watkins and Mohr 2001). In order to see the IWRM concept from a different perspective, we have to break outside of our filter or frame. Chris Agyris calls this the frame, Edgar Schein and Peter Senge call it a mental model (Hammond 1996). The implication for the IWRM planning process is that if we begin the inquiry process from what is working or from the best practices instead of the problem focus, our reality and behaviour may move toward that kind of perspective. This, according to Schein, will go through a three-stage change process described in Table 6.2

Table 6.2: Schein's three-stage model of change process

Stage 1: Unfreezing	Stage 2: Changing	Stage 3: Refreezing
Creating motivation and readiness to change through: ∞ Disconfirmation or lack of confirmation ∞ Creation of guilt or anxiety ∞ Provision of psychological safety	Through cognitive restructuring: helping the client to see things, judge things, feel things, and react to things based on a new point of view obtained through: ∞ Identifying with a new role model, mentor etc. ∞ Scanning the environment for new relevant information	Helping the client to integrate the new point of view into: ∞ The total personality and the self concept ∞ Significant relationships

Source: Schein (1987)

Cooke (1998) calls these three stages 'one of social disintegration (unfreezing), social reconstruction (change) and social reintegration (refreezing) of individuals' cognitive frameworks'. Refreezing, according to Schein, perhaps only begins within the first engagement with stakeholders. Within that initial engagement, there may start to be a realignment of how people see themselves - for example from bureaucrat to reformer, from academic to consultant - all which begin to change the self-concept (Schein 1987).

6.6.3 The Five Core Generic Processes for AI

Watkins and Mohr (2001) identified five “generic processes” that guide the application of AI as a framework for change. These processes are:

1. Choose the positive as the focus of inquiry.
2. Inquire into stories of life-giving forces (that which gives hope, inspires).
3. Locate themes that appear in the stories and select topics for further inquiry.
4. Create shared images for preferred future.
5. Find innovative ways to create that future.

Watkins and Mohr (2001) used the term generic processes to emphasise the flexibility of the processes. However, they intimated that the sequence as is outlined above does not begin and end neatly in practice. The outcome of the process may be indeterminate.

6.6.4 Models Applied

To apply the five generic processes, different models have been developed. The original Cooperrider/Srivastva model, the GEM Initiative Four-D Model, and the Mohr/Jacobsgaard Four–I Models are discussed subsequently.

The Original Cooperrider/Srivastva Model.

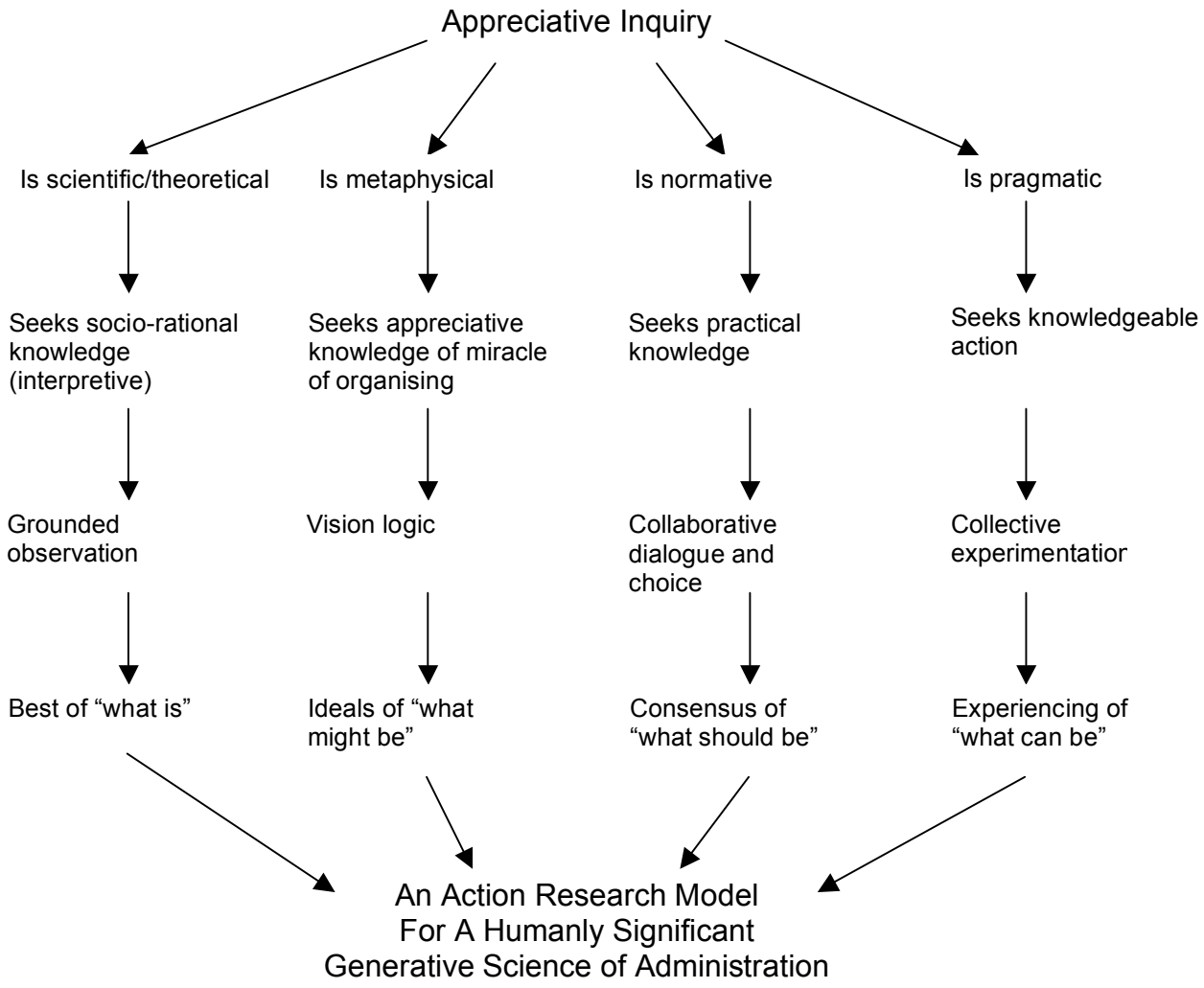

Figure 6.4: Dimensions of Appreciative Inquiry: Adapted from Watkins and Mohr (2001).

In its original thinking, Cooperrider and Srivastva suggested four dimensions of AI as depicted in Fig 6.4. According to Watkins and Mohr (2001) the model shows that AI is simultaneosly scientific/theoretical (leading to an awareness of the 'best of what is'), metaphysical (establishing ideals of 'what might be'), normative (creating consensus on "what should be"), and pragmatic (leading to an experience of 'what can be').

The GEM Intitiative Four-D Model

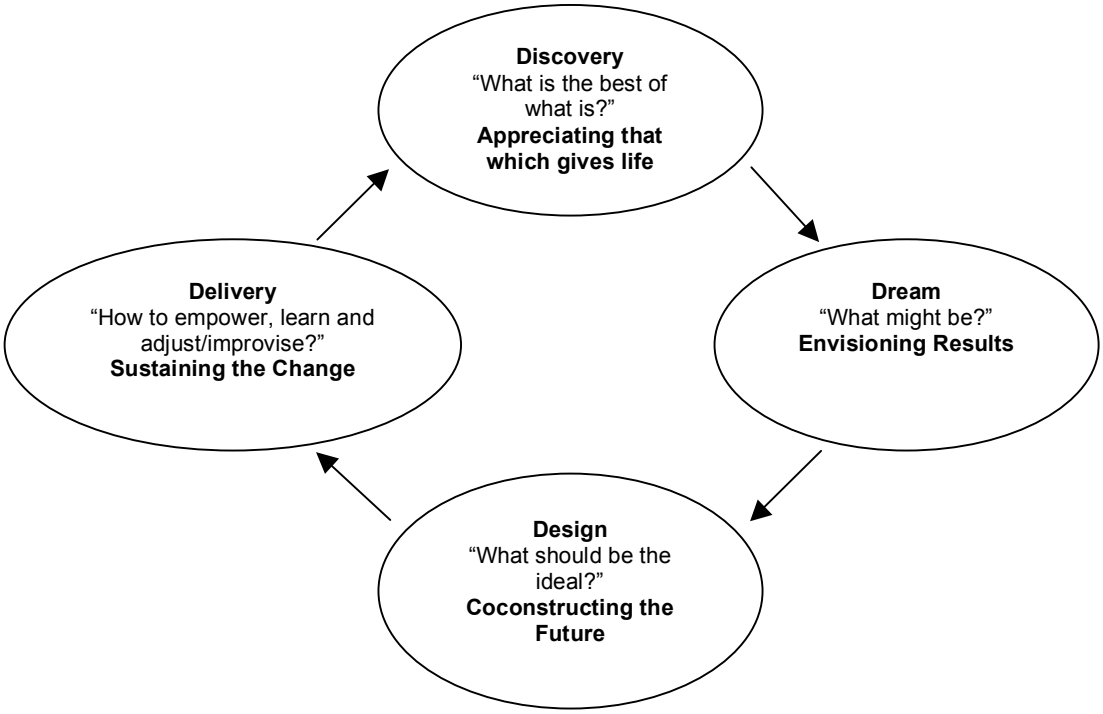

Figure 6.5: The Four-D Model: Adapted from Watkins and Mohr (2001)

The Four-D model as depicted in Figure 6.5 is widely used by most Appreciative Inquiry Practitioners (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

The main aim of the ***discovery*** phase is to appreciate the best of 'what is' by focusing on a peak moment of organisation or community excellence – when people experienced the organisation or community in its most alive and effective state. Participants engage in 'talk and tell' activities to discover the best practices, success stories in an organisation or groups. The discovery phase is focussed on building knowledge, learning and relationships through conversation. In this phase, people share stories of exceptional accomplishments, discuss the best experiences of their community and deliberate upon the aspects of their history that they most value and want to enhance in the future (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003). The management of the engagement process is discussed in Section 6.7.

The ***dream*** phase lifts up the best of what has been, and people challenge the status quo by imagining or envisioning what might be. This phase is both practical, in that it is grounded in the organisation or community's history, and generative, and seeks to expand the organisation or community's potential. Participants think great thoughts and create great possibilities for their community in the future. The process amplifies the positive core and stimulates innovations, creativity through a variety of ways - painting, drawing, performing, modelling, and writing - and through an experiential approach to dreaming based on what has been learned (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

The ***design*** phase involves groups identifying what should be the achievement of their dreams. It involves the group co-constructing the future by sorting, sifting and making choices between alternatives. In the design phase participants create a strategy to carry out their innovative propositions. They do so by building a social planning for their organisation or community that might, for example, re-define approaches to leadership, governance, participation or capacity building. As they compose strategies to achieve their provocative propositions, local people incorporate the qualities of community life that they want to protect, and the relationships that they want to achieve (Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

The final phase creates ways to deliver on the selected new image of the future and is sustained by nurturing a collective sense of destiny. In order to sustain the change process, the ***delivery*** phase is ongoing. It is a time of continuous learning, adjustment and improvisation in the service of shared community ideals. The momentum and potential for innovation is high by this stage of the process. Because they share positive images of the future, everyone in a community re-aligns their work and co-creates the future. Appreciative inquiry is a continual cycle. The delivery phase leads naturally to new discoveries of community strengths, beginning the process anew. It is full of continuing dialogue, revisiting and updating discussions as new ideas come

(Cooperrider and Whitney 2000; Coghlan, Preskill et al. 2003; Whitney and Trosten-Bloom 2003).

The step-by-step processes at each stage of the 4-D model is summarised in Table 6.3.

Table 6.3 Step-By-Step to Appreciative Inquiry

4 Ds	Discovery	Dream	Design	Delivery
Step-by-Step	∞ Craft Appreciative Interview Questions ∞ Develop an Interview Guide ∞ Create an Interview Plan ∞ Communicate the Inquiry Strategy ∞ Conduct Appreciative Interviews in Pairs ∞ Disseminate Stories and Best Practices ∞ Make Meaning and Map the Positive Core in plenary	∞ Reflect on a Focal Question ∞ Engage in a Dream Dialogue ∞ Clarify the Collective dream ∞ Creatively Enact the dream ∞ Determine Common Themes ∞ Create an Organisational Dream Map ∞ Document the Dream	∞ Identify a Meaningful Social Architecture ∞ Select Relevant and Strategic Decision Elements ∞ Identify Organisational Design Preferences ∞ Craft Provocative Propositions	∞ Review, Communicate, and Celebrate Accomplishment ∞ Generate a list of Potential Actions ∞ Self-Organise for Inspired Action Projects ∞ Support Success of Self-Organised Projects ∞ Systemic Application of Appreciative Inquiry

The application of the 4-D model in the field led to the development of the 4-I Model (initiate, inquire, imagine, innovate) which according to Mohr and Jacobsgaard reflect people's experience of "initiating something and also the need to have a model that covered all key processes of an AI-based change effort (Watkins and Mohr 2001). Figure 6.6 gives a detail description of the 4-I Model.

The Mohr/Jacobsgaard Four–I Models.

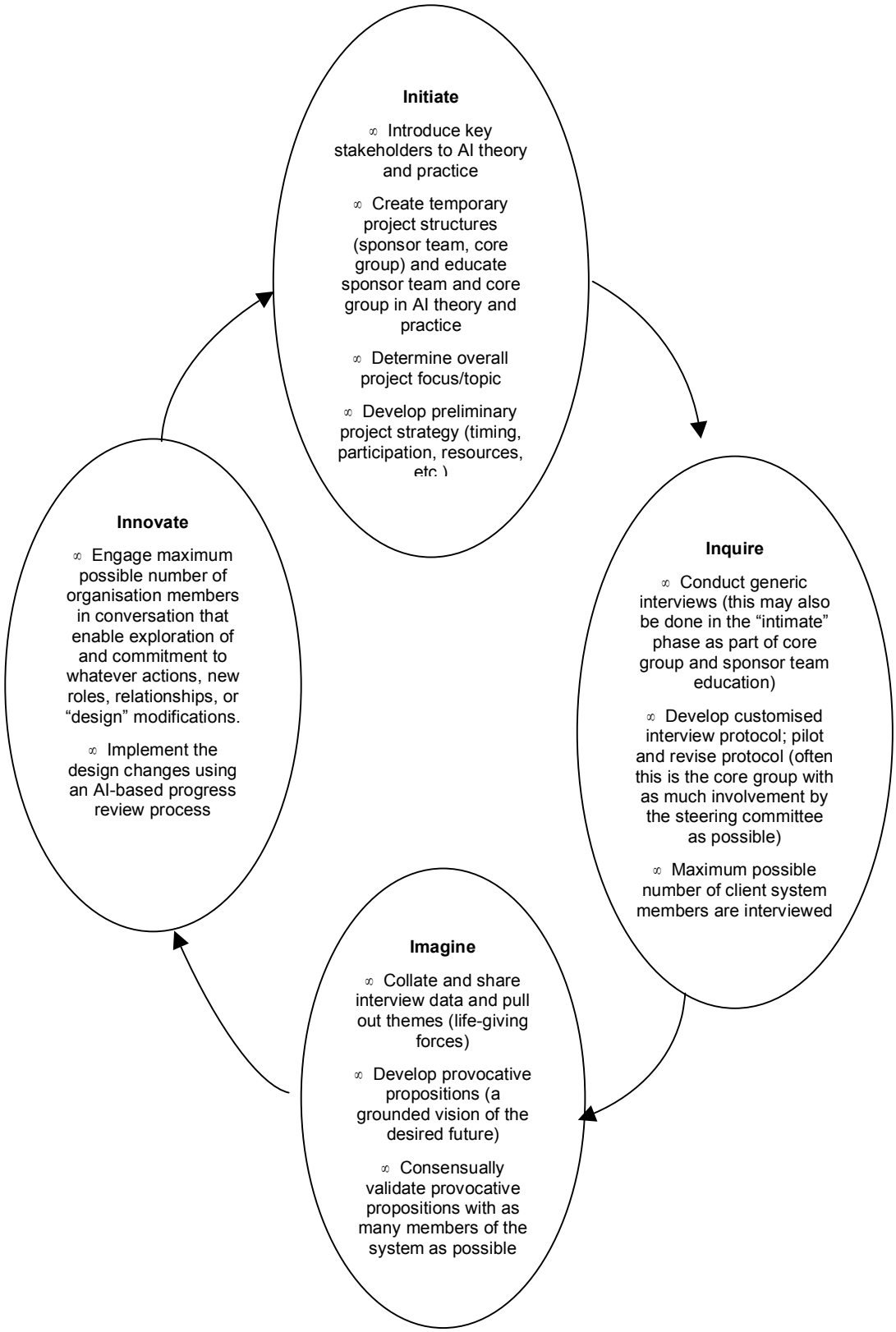

Figure 6.6. The Four-I Model: Adapted from Watkins and Mohr (2001)

Connecting the Models

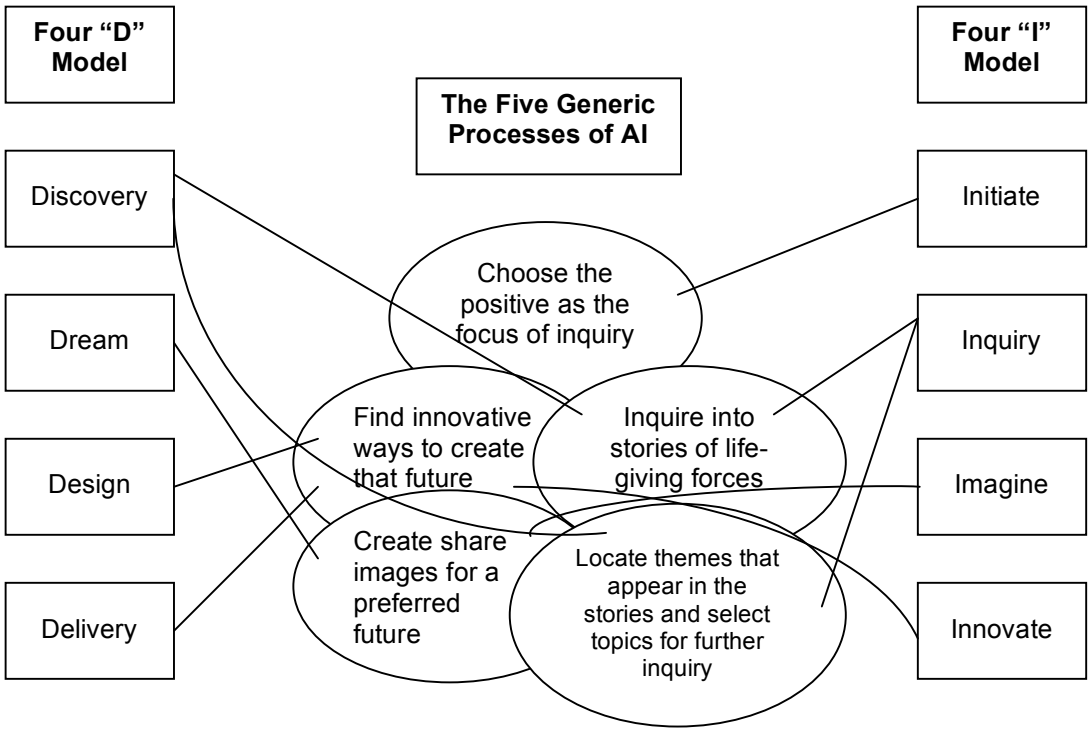

Figure 6. 7: Connecting the Four–D and Four-I Models: Adapted from Watkins and Mohr (2001).

The relationship between the Four Ds, Four Is and the generic processes is depicted in Figure 6.7. However, the adoption of each model is dependent on the user's interest and the need at the time.

6.6.5 Application of AI in the Field

According to Whitney and Trosten-Bloom (2003), AI's perspective has been applied in a number of international community development programmes including the work of Case Western Reserve University's GEM (Global Excellence in Management) and SIGMA (Social Innovations Global Management). The Star Island Corporation applied AI principles to do its strategic planning with the Board and the Star community. In the process, the board has improved its relationship with the broad Star Community, especially with the staff and conferees, by demonstrating its interest in collaboration, its ability to involve others and listen, and its distinctly appreciative stance. The

outcome of the process is reflected in the organisation's governance, and, through the planning process the board has already gone a long way to establish new norms of collaboration and participation (Watkins and Mohr 2001). AI has been used by organisations such as Save the Children, Lutheran World Relief, UNICEF and others.

In its international applications, AI has been applied to several global organisations including The Mountain Forum, an organisation dedicated to the care and preservation of mountain cultures and environments worldwide. British Airways North America selected AI perspective to guide participation process for enhancing 'Excellence in Customer Care'. For more of AI events and applications see (Watkins and Mohr 2001). In Table 6.4, Whitney has suggested change agenda areas that may suit AI.

Table 6.4: Change Agendas Suited to AI

Change Agenda	Examples
Organisational change	∞ Strategic planning ∞ Culture transformation ∞ Customer satisfaction ∞ Morale and retention ∞ Organisation design ∞ Leadership development ∞ Business improvement
Community development	∞ Participatory planning ∞ Asset mapping ∞ Economic development ∞ Educational reform ∞ Peace building
Global transformation	∞ Global organising ∞ Multi-local planning ∞ Consciousness raising
Small group development	∞ Team development ∞ Business development ∞ Meeting management ∞ Instructional design
Inter-group change	∞ Conflict resolution ∞ Process improvement
Personal/Relational transformation	∞ Leadership development ∞ Performance appraisal ∞ Employee orientation ∞ Career planning ∞ Relationship enrichment ∞ Spiritual development

Source: Adapted from Whitney and Trosten-Bloom (2003)

6.6.6 Facilitation is Key in AI Processes

Humans perceive situations and construct their models of reality in different ways (Figure 6.2). We ought to be aware that people can easily be led to believe things and that the opinions they hold may be strongly affected by what others think and the context in which the issue is framed. Although this is not necessarily bad, as this kind of influence can be described as learning, it may prevent others from participating. There is therefore the need for a group facilitator, a role that is of paramount importance to moderate group processes. Habermas communication action theory would relate to this particular understanding of human cognition and social interaction (Section 6.4.3).

A facilitator is a person who acts as a process manager. The facilitator is concerned with how things are done in a meeting. Distinction between the attitudes and skills of a Facilitator is important. The Facilitator is a practitioner who does what he does based on his/her knowledge of the relevant theories that underpin the methodology and of how that methodology is applied. This study is designed to offer insight and advice to support a more informed foundation for those theories and praxis through which to extend AI more purposefully into, in this case, the IWRM area.

Facilitation attitudes

The Facilitator:

- needs to be neutral with regard to the discussion of issues;
- is responsible for the management of procedure and process;
- asks questions rather than provides answers; and
- is not supposed to teach, but foster reflection and learning in a team by discouraging defensive communication.

Facilitation Skills

- one prerequisite for a Facilitator is a thorough knowledge of the underlying theories and praxis of AI in order to be able to ask the right

questions during meetings and to be able to translate what participants say;

- the Facilitator needs conflict handling skills. Whenever two or more people meet there are bound to be differences in aims, motives, opinions and points of view. These differences sometimes create conflict situations and it is important for Facilitators to manage such conflict situations; and
- the Facilitator needs communication skills. Communication is the exchange of ideas, thoughts, feelings (or even objects) between two or more people. Vennix (1999) contends that the verbal communication can easily be identified and dealt with during group processes; however, he cautions that the non-verbal mode of communication is the most troublesome because it can easily send wrong signals to participants because of the frames through which each filters information. It is therefore important that Facilitators avoid developing teacher-centred characteristics such as this is wrong, in individuals, communities, and groups, but instead try to foster a reflective attitude and encourage team learning by supportive communication (Vennix 1999).

6.7 Management of AI Engagement Processes

The methodology underpinning the management of AI embraces participative processes where ideas are constructed from the bottom-up. Bottom-up in this context is defined in terms of the smallest 'comprehensible group' scale argued by Gill (2006). In his explanation of comprehensible group, Gill states:

> *Groups persist as long as that commonality of purpose which defines them persists. A comprehensible group may be an international advocacy organisation that promotes, say, the return to traditional agricultural practices; or it may be a single catchment community that has such a long shared history of experiences that a common position on future directions or the nature of current challenges is easy for them to articulate (Gill 2006:6).*

This implies the need to identify the groups, work out how the 'stakeholder' identification and consultative process should be organised and managed. The issue of concern is the kind of participative process that would be regarded as effective through which to manage all those groups that are involved. Kothari and Cooke (2001), and Gill (2006) have noted choices in relation to participative process are fundamentally informed by many factors, ranging from the epistemological leanings of those empowered to coordinate to the funding available. This is because of the inherent weakness which undermines claims for participation as a means and as an end.

For instance, Harvey, (1979) in Cooke (2001), noted that in the participatory process, group members or participants sometimes fail to communicate accurately their actual desires for fear of 'loss of face, prestige, being made scapegoats, branded as disloyal or ostracised as non team player etc' and indeed they do exactly the opposite, leading 'one another into misperceiving the collective reality'. On the basis of this misperception, actions are taken by the group that are contrary to what everyone wants to do (Cooke 2001). Silence by some individuals is sometimes assumed as concurrence with the majority view. This process is what Janis (1991) in Cooke (2001) calls 'groupthink' in Section 5.4.2, which undermines claims for participation as a means and as an end. A recommended model is to propose an open-participative planning framework that might be called 'appreciative systems planning'.

6.7.1 Systems Mapping Approach

'Systems maps' are representations organised to describe community-perceived environment-community-economy relationships (Gill 2006). These maps are analogous to what Gill terms 'mudmapping'. The maps are a picture of 'collective knowledge or understanding'. The 'systems mapping approach explores and builds on the big systems picture of how everything fits together and allows identification of key leverage points in any system undergoing change (Checkland 1999; Gill 2005).

The conceptual heritage of the systems mapping approach has a close association with the work of Eric Wolstenholme on Qualitative System Dynamics (Wolstenholme 2000). Systems mapping is a manifestation of (or is a method of) qualitative system dynamics (as a methodological field). This in turn is a procedure through which to engage a community discourse on the systematic exploration of the dynamics of the system under review. Qualitative System Dynamics is a tool through which to manage a conversation and a learning process through which people develop shared understandings in relation to 'how specific systems work'. It is a learning tool; it is a tool of community discourse.

Further, System Dynamics is also known as 'feedback modelling'. It is argued that once a community constructed a Qualitative System Dynamics model of the system under review, it is then possible to further detail that construct into a formal computer model that then offers the potential to even further explore the system's underlying dynamics. But Eric Wolstenholme always suggested that this 'computerisation stage' is seldom necessary when the aim of the exercise is simply to facilitate learning. It is often the case that the learning generated in purely qualitative space is enough to underpin informed decision making; especially when the inherent complexity of most environmental-economic-community systems is such that prediction is basically meaningless and often misleading (particularly for those desiring neat ‘answers’ to each problem)

An array of related methodologies (Section 5.3) are also used as tools of community engagement (These tools enable the deconstruction of how people understand the settings within which they operate. This understanding then underpins the reconstruction of a shared understanding of those settings – an understanding enhanced through the systematically structured learning process). The systems mapping approach differs design ways, from for example, community visioning (Section 5.3) in that the SMA is all about the systematic exploration of feedback relationships that collectively describe the dynamics of a system.

The systems mapping approach is seen to be the better way forward because it embraces complexity and also provides improved rigour and understanding by providing a simple yet comprehensive systems language to help build pictures of the whole, both static and dynamic, from different perspectives. It also emphasises managing change as a whole, and promoting the use of different change approaches together within a given context (Wolstenholme 2000; Cao, Clark et al. 2003)

The approach utilises a graphical mapping process in a form of cognitive mapping that, in effect, imposes a single non-technical language as the medium through which all related discussions take place. Mind mapping is a process of creating a mental map, a tool used by Systems Thinkers to understand the relationships between the issues under investigation. The ‘systems mapping’ is simple and accessible to any planning group; one could draw up one of these maps with a stick, in the mud, or in the sand.

Figure 6.8 outlines the systems mapping planning process

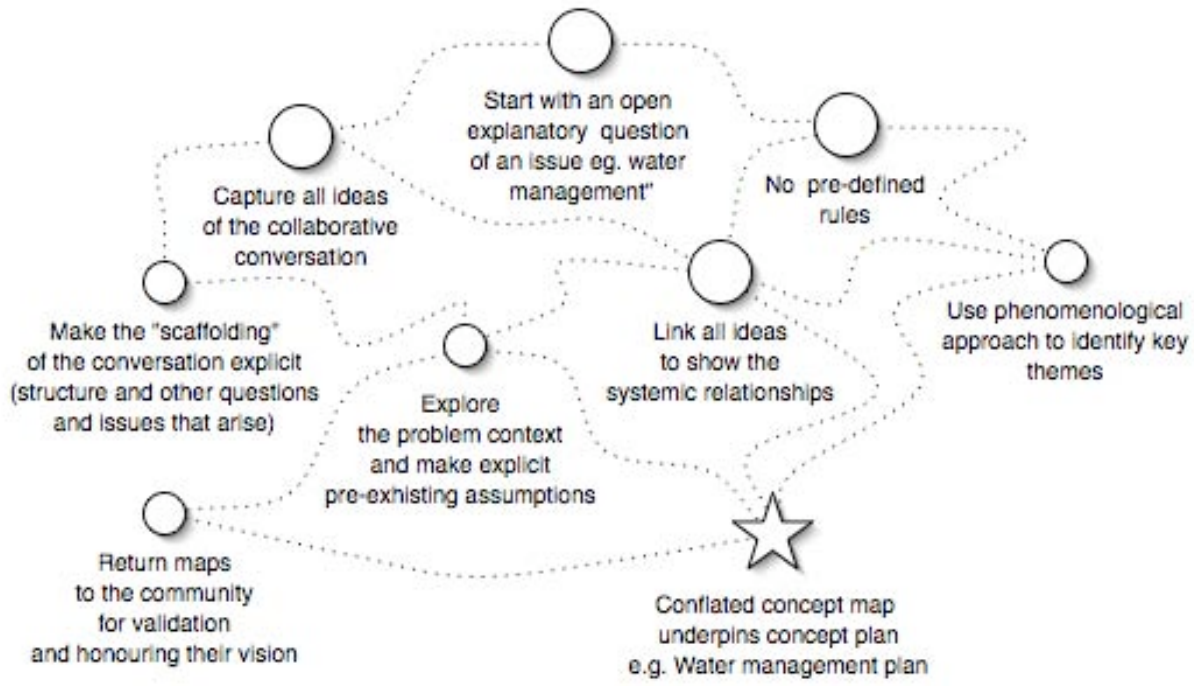

Figure 6.8: Systems Mapping Planning Process (Adapted and modified from O'Loughlin, Taboada et al. (2006)

In its application, Gill used the systems mapping approach to facilitate and document a community conversation on envisioning the future of Armidale City. In the Re-visioning of Armidale City for example, what emerged out of this stakeholder envisioning process (Figure 6.9) was the potential pathway for Armidale to become an Arts and Culture Centre.

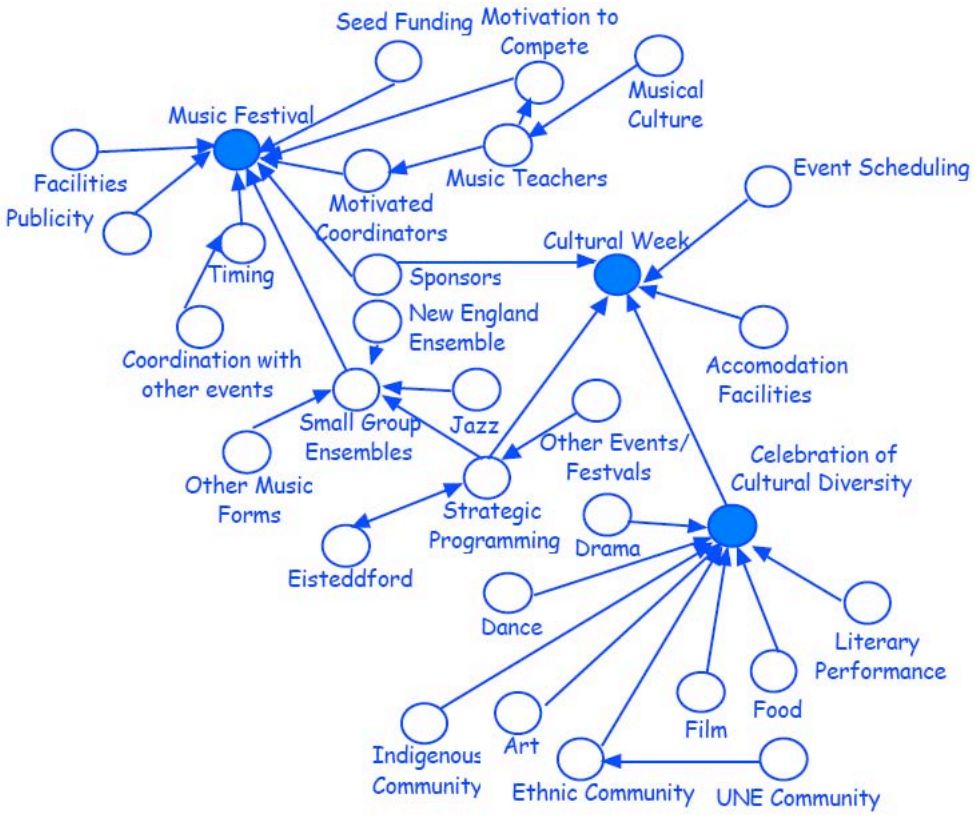

Figure 6.9: Building the Future - Armidale (Gill 1998)

Another example of the systems mapping approach was to engage the Rural Strategic Planning Steering Committee in the Coffs Harbour area to develop a Strategic Plan for Rural Lands in the region. An example of output from that engagement process is represented in Figure 6.10.

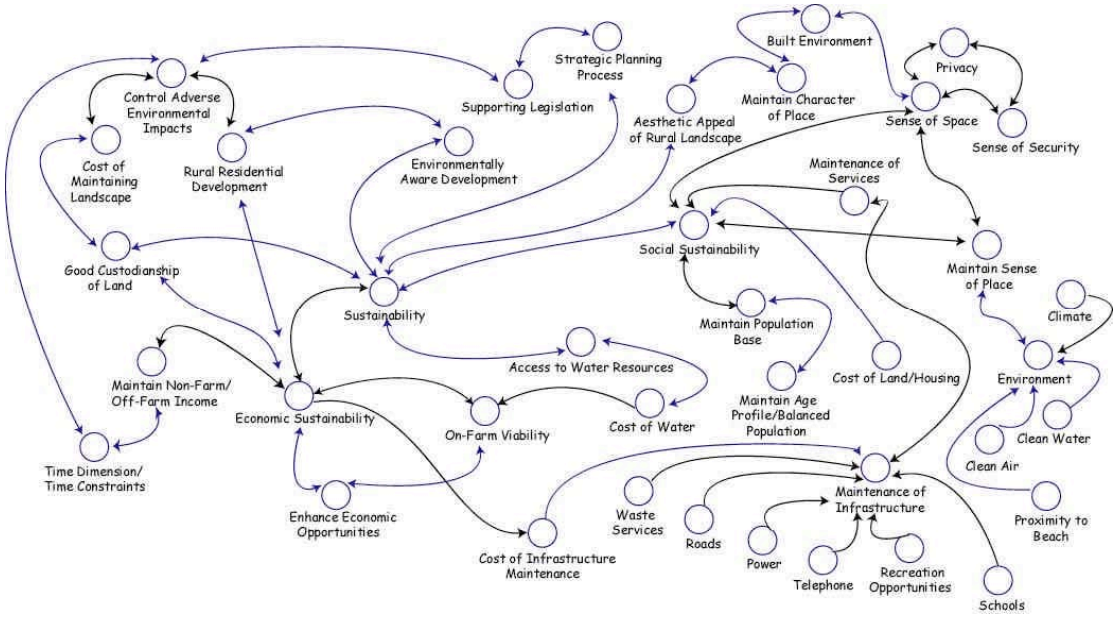

Figure 6.10: Rural Strategic Planning Steering Committee "Systems mapping" in Coffs Harbour (Gill 2001)

The Steering Committee provided an interactively derived holistic definition of sustainability. This definition represents the desired landscape that the ensuing strategic plan is designed to realise. The Steering Committee 'painted a picture' of where this whole strategic planning process is intended to go. Sustainability was defined as a three-dimensioned concept, covering social sustainability, economic sustainability, and the environmental sustainability. This is consistent with the so-called 'triple bottom line' definition of sustainability now in current use around the world.

Looking at the diagram from Figure 6.10, economic sustainability incorporates the need for good custodianship of land, the need for on-farm viability, explicit attention to the maintenance of economic infrastructure and the cost of infrastructure maintenance and the need to maintain non-farm/off-farm income as a necessary element in the maintenance of elected lifestyle goals. It was noted that good custodianship of land is a critical element in long-term sustainability. Rural residential development needs to be managed in such a way as to control adverse environmental impacts, in recognition of the fact that any decline in the resource base will impact, via feedback, on economic

sustainability through time. As shown from the diagram on Figure 6.10, social sustainability involves a diverse array of interlinked elements, ranging from the need to maintain population base, and relatedly, maintain age profile/balanced population (to preclude an ageing population), the need for the maintenance of services, and, importantly, the need to maintain sense of place. Maintaining a sense of place is directly related to the maintenance of a sense of space, which captures things like privacy, and sense of security.

The underlining philosophy was that it was not sensible for example, to consider economic development and devise a plan that ignores environmental and community impacts. One thing feeds back to influence another. The process systematically facilitates integrative conversations of this kind.

This technique is a social learning tool to help catalyse the emergence of community learning. The approach involves a series of specific locality/stakeholder group workshops facilitated through a particular 'interactive learning-oriented mapping process'. Through this methodology, participants go out of their way to articulate their thoughts in a manner that unpacks meaning to the degree that others can understand. This symbolic language does not permit the posting of jargon and the hiding of assumed knowledge. Nor does it allow the justification of propositions through power relationships or privileged positions. Given that all water resource development and management involves a complex interaction of environmental, community and economic factors, the systems mapping process seeks to establish the relationships as articulated by an array of diverse interest of 'informed system observers' (Gill 2005).

6.7.2 The Appreciative Systems Planning

The appreciative systems planning (ASP), is a hybrid between the AI and the systems mapping methodologies. It is labeled appreciative systems planning to reinforce its focus on it appreciative inquiry mode through its 4-D practices and the systems mapping processes. The theoretical foundations for the ASP

are derived from the insights from complexity theory, systems thinking, and communicative action theory as discussed in Section 6.4.

From the discussion on AI thus far, proponents of AI acknowledge that human communication is central to create, maintain, and transform realities (Whitney and Trosten-Bloom 2003). As a result, the AI acknowledges multiple ways of knowing through the 4-D processes. However, little is known in terms of the theoretical basis to support the human communication which is central to AI processes. The ASP is a consistent framework for communicative action (Section 6.4.3) because it systematically helps people to explore the relative hermeneutics.

As noted from the preceding discussions AI acknowledges the wholeness principle suggestive of complexities in the social world and the need to address social phenomena from context, thus, acknowledging different ways of knowing. Implicitly, this line of thinking by AI proponents seems consistent with ideas from complexity theory and systems thinking discussed in Sections 6.4.1 and 6.4.2. The AI methodology has been applied principally in the organisational management setting (Section 6.6.5) and most people in the business environment are familiar with its principles. However, its application to environmental issues such as water is ‘untried’. The ASP methodology is consistent with systems thinking based on the arguments presented in this thesis and would appear more suited for IWRM planning processes given the complexities involved in water issues.

The positive principle from the AI is central to the ASP methodology. As noted in Section 6.6.1, as individuals work together to look deeper into what they value most, through what has worked, or their best experiences, an expansion of relatedness occurs. The contention according to Cooperrider and Whitney (2005) is that this experience generates positive emotions which help broaden and build resources needed to motivate, create, overcome adversity and transform. The ASP shares the assumptions underlying AI perspective that in every organisation, community or group something works.

The acknowledgement of complexity and systems theories in the ASP approach will provide the background to understand that community issues including water are as important as ecological and economic issues. Having said that, the communicative action and appreciative inquiry perspectives will provide the means for utilising systems thinking and complexity theories.

In summary, the difference between the AI and the ASP is the more explicit theoretical foundations provided for ASP over what was ever proposed for AI. A main aim of this thesis is to actually provide AI with vastly more sound theoretical foundations that it currently has. The result of providing AI with these sounder theoretical foundations is called ASP.

The AI part of the ASP might be regarded as a methodology to frame the community dialoguing process along a setting of positive engagement. This is not to say problems are not addressed, rather, the problems are addressed in a kind of roundabout lateral way through this process. For instance, the dialogues are opened on a positive/what is good setting and once that tone of discussion is set, the discussion then gets around to addressing problems in a kind of 'positive way'. It is important to note at this point that AI does not ignore problems but rather reframes the problem statement into a positive frame.

The systems mapping side of ASP is used to purposefully deconstruct issues in a setting of positive engagement and thus avoid an immediate adversarial and destructive conversational setting that would mitigate the prospects for the real intended outcome of this dialogue which is learning, and maximising the prospects for engendering collective enthusiasm as the foundation for subsequent change management. As noted in Section 6.7.1, the 'Systems mapping' approach explores and builds on the big systems picture of how everything fits together and allows identification of key leverage points in any system undergoing change. The systems mapping approach under the ASP is informed by communicative action. In that regards the ASP is likely to be a better articulation of Habermas communicative action theory than the AI.

The ASP approach begins with no real firm ideas by the facilitators about the outcomes but proactively coordinates the emergence and documentation of stakeholder perceptions in relation to an issue (in this case water resources management). In order to ensure 'interactive universalism' the ASP approach process removes that cushion of disciplinary support and exposes all participants equally to the task of telling the stories of what is working well in relation to the issue at stake. The disciplinary experts may share his/her best experiences on what is working well from his/her perspective.

As discussed in Section 5.4.2 the potential presence of 'groupthink' undermines claims for participation as a means and as an end. In order to expose all participants equally to communicate their individual critical self-thinking, and minimise the domination by those experts who Chambers (1997) described as 'experts who privilege their own positions through language-asserted projection of mystique and an uncontestable 'aura-of-the-expert', the ASP proposes a three-stage process in managing this kind of situation.

Individual Reflection at the Plenary

Participants for the engagement process will first meet as a group in a plenary session. The rationale is to provide a platform for participants to establish a learning community. According to Senge, Kleiner (1997), in a learning community:

- people feel they are doing something that matters-to them personally and to the larger community;
- every individual in the community/organisation is somehow stretching, growing, or enhancing his capacity to create; and
- people treat each other as colleagues. There is a mutual respect and trust in the way they talk to each other, and work together, no matter what their positions may be.

This initial grouping is also intended to help participants become more aware and remain focussed on the issues to be discussed and the processes to be adopted during the dialogue. It will also afford each participant the opportunity to understand and prepare for the pair discussion in the next stage. In order to expose all participants equally to communicate their individual critical self-

thinking, participants/stakeholders will be asked to select a dialoguing partner (of their own choice) for the next stage. Participants could select partners at random, or by any other means preferred by participants. However, it is important to emphasise that the selection of pair partners should not be imposed by facilitators.

Pair Dialogue

At this stage participants/stakeholders meet in pairs first to tell their stories on water resource management issues on a rotational basis and if they can document their stories to be shared during the next stage described as 'Plenary Total Community' (Whitney and Trosten-Bloom 2003). The underlying principle is to encourage individual critical thinking and begin to learn from each other from the very onset. As noted in Section 5.4.2, Allport (1968) argued the presence of others through participation can cause decisions to be made that are more risky and should not be seen as a true reflection of what people think in a group. This is supported by the '*Abilene paradox'* which suggests that unconscious psychological processes shape how the group think, feel and act (Cooke 2001) and Janis's (1991) concern that independent critical thinking will be replaced by groupthink. The above suggest the need for some kind of reflexivity in the participatory processes. One pathway through which to facilitate reflexivity of this kind might be via the step of pair dialogue, which is recommended here to precede open plenary discussions. The pair dialogue approach is consistent with Gurevitch 'dialogic connection' (Gurevitch 1990). Gurevitch believes that the principle underlying the framework of dialogue is the connection between two individual selves based on the idea of recognition. Gurevitch contends that the ethics of dialogue has a set of three obligations: the obligation to speak, the obligation to listen and the obligation to respond. According to Gurevitch, the first obligation to speak presupposes the second to listen and to be attentive to what is being said by the other partner and thirdly to respond in turn.

This dialogue process facilitates people to think through an issue together in pairs without the peer pressure in responding in front of a whole group. This subgrouping dialogue pair process is another distinguishing feature of the ASP.

Plenary Total Community

Each subgroup or pair reconvenes, and then shares their best experiences from the stories of the other in 'plenary total community'. Facilitators then capture best experiences from each pair while allowing for discussions from the whole group using the systems mapping approach. The rationale at this stage is a way of trying to capture collective learning, which is the main intent of ASP.

The underlying principle for this three-staged process within the ASP methodology is to address the concerns raised from the preceding discussions and to encourage dialogue among participants/stakeholders during the engagement processes. Difference between dialogue and ordinary discussion is that, for the latter, people usually hold relatively fixed positions and argue in favour of their views as they try to convince others to change (Bohm and Peat 1987).

Dialogue occurs where both parties are looking for solutions that will benefit both sides, where parties attempt to develop an emphatic understanding of divergent viewpoints or of divergent goals and where this understanding involves goodwill, the willingness to listen and discretion (Papadakis 1996). In dialogue, people are encouraged to make their thinking or position clear (i.e. advocacy); but at the same time to become curious about the other person's stand and to genuinely help the other make his/her thinking processes visible/transparent (i.e. inquiry). All this is facilitated by strategically designed, purposeful process. The ASP methodology is intended to generate this kind of integrative thinking. It aims at establishing a basis for reasoning among communicating partners. Dialogue is for bringing up alternative positions, and admiring the beauty of each perspective. To dialogue is to honour each

other's experience and reality, without focusing on differences (Papadakis 1996).

The facilitation process in the ASP approach is designed to engender a strong degree of ownership and empathy with participants. Community understanding through this approach is much more aligned with a dynamic, holistic perspective rather than the fragmented alternative that so critically underpins much of conventional water resources management decision-making noted in Chapter 4.

6.7.3 Dealing with Communities with Culturally Embedded Perspective of Problem Focussed Deliberation

It is acknowledged that in communities where expectations for engagement processes work through the more conventional/culturally embedded perspective of problem-focussed deliberation, it will be important to devise a strategy to go around it. Through the application of ASP, there should be carefully devised components of the overall process that will 'introduce the people' to the ASP while forestalling the kind of negativity that would otherwise destroy any attempt to apply it. The individual reflection section of the process discussed earlier on is aimed at addressing this concern.

6.7.4 In the Events of a Catastrophe

As noted from the preceding discussion, experience tells us that some of the catastrophes are flagged, for example, droughts are preceded by long periods without rain. In such situations it would be important for governments, institutions, and communities concerned to begin to analyse the 'signals' and identify what worked in the past from within, or outside the locality, or country in addressing such an issue.

When experts or consultants are invited to submit proposals through which to address any kind of catastrophe, what they present normally is based on their

best experiences. Water restrictions[3] practised in various parts of Australia are examples of this kind of situation.

In the area of energy crisis in some parts of the world, power sharing is an example of a measure that has worked. In Ghana for example, the country relies on hydroelectric power for its energy. As is the case in Ghana now, the level of the Akosombo Dam which generates the electricity has gone down from minimum operating level of 240 feet to 235.78 feet on June 10 2007 (Daily Graphic, 10 June 2007). Power sharing (where some sections within the country get lights on a rotational basis) is the immediate response because the previous governments used it before and it worked. The current government, while looking for alternatives (solar, gas etc), is building on what worked to address the energy crisis in Ghana.

Best experiences in this sense come in various forms; it could be skills people have to facilitate the emergence of issues aimed at resolving a catastrophe. In other areas it could be application of a practical experience based on what worked elsewhere. A possible argument may occur when we are in the middle of a catastrophe (e.g. drought); how then do we use this positive principle? A probable response will be that, sometimes, institutions charged to oversee the issue ignore signals either because they do not have the requisite knowledge, or where they have, may not have the political will to implement strategies.

As has been discussed in relation to the complex nature of water issues and their management, it will be difficult for one person or group of persons to have comprehensive knowledge to address those concerns in one go. AI is therefore one way to facilitate innovative or at least more integrative thinking.

[3] Water restrictions are currently in place in all major cities of Australia in response to the severe drought. These include restrictions on watering lawns, using sprinkler systems, washing vehicles and others. There are different stages, starting at Stage 1, for the least restrictive, going up to as far as Stage 8

6.8 Conclusion

From the synthesis thus far, ASP may be useful or appropriate to the needs of water resources management and IWRM issues. Chapter 7 examines the application of an ASP approach on two case study regions from Australia and Ghana.

Chapter 7 Engagement Process for Integrated Water Resources Management: Australia/Ghana Case Studies

7.1 Introduction

The purpose of this chapter is to present the outcomes from the application of the Appreciative Systems Planning (ASP) approach to a case study located within the Macintyre Brook catchment in Australia and the Savelugu Nantom catchment in Ghana. The discussion begins with an overview of the ASP processes. This is followed by a discussion of outcomes from the case study engagement processes. The chapter concludes with a reflection on group processes and outcomes.

7.2 The Appreciative Systems Planning Process

In the application of ASP the following engagement processes were pursued:

7.2.1 Initial Preparation

This included all the preparatory activities from contact to contracting, making community and institutional contacts, arranging meetings, dates and times, venue and identifying key contact persons. This initial step led to the preliminary identification of key stakeholders, such as public and private institutions, NGOs, farmer-based organisations and community members. All community entry and institutional protocols, such as meeting the leaders of institutions, chiefs, opinion leaders[4] and communities, were observed. The purpose of the workshop was included in the invitation to participants (Appendix 1).

[4] Opinion leaders are individuals besides the chiefs who command some authority, such as the queen mothers, youth leaders, unit committee chair persons etc. within the local communities in Ghana

7.2.2 Dialoguing Process during Institutional and Community Engagement

The first two steps of the 4-D model: the *Discovery and Dreaming* (Section 6.6.4), guided the dialogue process. In the discovery phase, the 'here and now' provides the basis to discover what is working well. Because what is working well in an organisation or a community is based on real experiences and history, people know how to repeat and improve their successes. Through dialogue (Section 6.7.2.), people stir up memories of success creating a new energy that is positive and synergistic. The discovery phase thus focusses on building knowledge, learning and relationships through conversation. According to Schein (Chapter 6), this creates motivation and enhances cognitive restructuring: that is it helps people to see, judge and feel things and to integrate the new point of view into their thinking. The process enables people to challenge the status quo by dreaming or envisioning what the preferred change might be.

The discovery and dreaming phases seem consistent with Schien's 'refreezing' and Cooke's social reintegration change processes (Section 6.6.2). Schien and Cooke argue that cognitive restructuring begins within the first engagement with stakeholders. Within that initial engagement a realignment of how people see themselves may start to occur, all which begins to change their self-conception (Schein 1987). In line with Schien (1987) and Cooke (2001), the study thus focussed on the two phases of the 4 'D' model. The design and the doing phases of the 4-D model are all based on the outcomes from the first two phases, hence the need to concentrate on this aspect. In this study, the open-participative framework of the 'Appreciative Systems Planning' approach, discussed in Section 6.7.2, was applied.

Establishing a Learning Community

In establishing a learning community (Section 6.7.2), participants were informally asked by Facilitators to introduce themselves to the whole group with their name and where they were from. Participants also told the group one thing they valued about themselves that contributed to making the decision to participate in the workshop. The focus was on the fact that a positive choice to attend had been made and that decision already indicated something worth valuing about each person. By focussing right at the beginning on the positive choice each had made to be part of the process, we were already constructing common ground and highlighting evidence of capacity that could then be utilised constructively for engaging in dialogue.

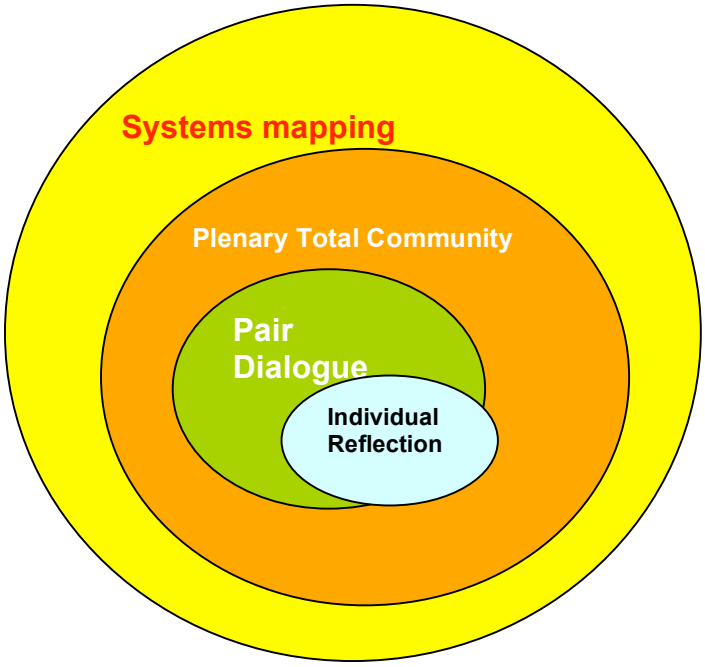

Figure: 7.1 The Appreciative Systems Planning Dialoguing Process

As depicted in Figure 7.1 the dialoguing process went through four stages during the workshops.

Individual Reflection

Individuals present at the workshop were given time to reflect on water resources management in the catchment and communities, the different types of water systems, the economic uses, the importance to livelihoods and the environment. To build a common ground, the responses were shared in plenary. This initial open question was intended to help participants become more aware and remain focussed on the issues to be discussed. It also afforded each participant the opportunity to prepare for the pair discussion. Participants were informed that they would interview and be interviewed by a partner. They were therefore encouraged to select their own partners from among the group to engage in a pair dialogue about their personal best experiences in relation to the management of water resources in their catchments.

Pair Dialogue

During the pair dialogue the processes that would be used were shared with all participants. Pair discussion provided the opportunity for every person/institution present at the meeting to actively participate in the discussion and to share their insights and ideas in relation to the use and management of the water resource. As noted in Section 6.7.2 the pair dialogue provided the opportunity for participants to speak, listen and to respond to the issues at stake. Further to these, participants were more willing to participate at the pair dialogue stage given the absence of peer pressures that might be involved when responding in front of a whole group. This process of sharing was to promote learning and to enrich knowledge.

Plenary Total Community

After the pair dialogue, participants were reconvened at the 'plenary total community' where the pairs were given opportunities to share their outcomes to the whole group. Insights from each pair were captured using the systems mapping approach until the whole plenary had shared their findings. As discussed in Section 6.7.1, the systems mapping approach explores and builds a big systems picture of how everything fits together. The results shared from each pair during the plenary discussions enriched knowledge and

facilitated learning amongst participating individuals, communities and institutions. The systems mapping together with the insights from each dialogue pair builds a shared systems picture of what is involved in local water resource management. This systems mapping helps show the key relationships, stakeholder issues and helps outline possible initiatives that could be taken. In this way stakeholders and participating institutions and communities learn how to define the scope and inter connected systems nature of the local water management issues and potential solutions.

Based on the ASP methodology discussed in Section 6.7.2, participants from two levels, institutional and community, engaged in a pair dialogue and plenary discussions. In order to have a common ground for comparison from the two different case study regions, the initial open question was to ask each group from the two case study areas to:

1. Describe what a perfect system in relation to water resources management would look like in their catchments.

The rationale, apart from revealing the spectrum of visions held by each group, was to provide a basis to unearth the embedded values of people in each case study region in order to underpin discussion pertaining to the next question on ‘what is working well’. This is because one person's 'working well' might be another person's 'working passably' or another person's ‘not working at all’. From the interpretation of a perfect system in relation to water resources management, a summary of the insights from the institutional engagements from the two case study regions revealed that ‘what is working well’ could be described as catchments where:

- there are laws and regulations regarding the allocation, use and management of water resources; and that these laws and regulations are understood;
- there is an equitable distribution or allocation of the resource;
- there is a mechanism in place for monitoring the use of the resource;
- there are institutions at all levels (national, regional and community) to manage the resources including policy directions;

- there are mechanisms to assess the availability of water resources and supply mechanisms;
- there are databases for storing water resource information, which are accessible to all;
- communities have a say in the policy formulation regarding the use and management of the resource; and
- water is recognised as a finite and vulnerable resource.

Based on the above interpretation, the following questions were then posed for dialogue to discover what was working well in relation to the perfect system discussed in their catchments.

2 What is 'working well' in the management of water resources in the catchment? / How is the community managing/taking care of water resources?

3. What are the community/institutions doing to ensure that their children and great grandchildren also benefit from the resource?

4 What else should be done in the future to ensure the continuous use of the resource?

7.3 Institutional Engagement

As noted in Section 4.2, institutional reform that embraces the development of understandings of and ownership in the IWRM planning process is likely to create more confidence in the participating stakeholders. Governance institutions and systems need to communicate among the actors and stakeholders in a very simple language and in an integrated manner (Rogers and Hall 2003). In Section 4.3.1, the implementation of the IWRM processes in the assessed countries has not been integrated within one framework and implementation institutions remain unconnected**.** It is therefore important to explore the extent to which the ASP approach could provide insights into IWRM planning processes. In the discussions that follow, an application of the

ASP approach across two different case study areas in the Macintyre Brook Catchment, Australia and the Savelugu Nantom Catchment, Ghana, is examined.

As mentioned in Chapter 1, Ghana and Australia are both signatories to the GWP and will provide a completely different context for IWRM, with a different culture, institutions, technology and climate among other things. Testing the proposed methodology across these very different case studies will allow for the articulation of a more robust specification for IWRM than could be achieved through a single application.

7.3.1 Macintyre Brook Catchment, Australia.

The Macintyre Brook catchment is located three and a half hours drive south west of Brisbane, the state capital of Queensland in Australia. It is characterised by extremely diverse soil types and topography, making it suitable for a wide variety of rural production (CRCIF 2006).

Elevation at the main community centre, Inglewood, (Figure 7.2) is 284 metres. Daily temperatures range from 18 to 32 °C in summer, and 4 to 18 °C in winter, when frosts are common. Average annual rainfall is 650 mm. Most of it falls between October and March, but around 100 mm falls in winter. The mainstay rural industries are beef cattle, wool, cereal grains, prime lambs, hardwood and cypress pine milling, summer crops, pigs, lucerne, deer, peanuts, fruit and vegetables (CRCIF 2006).

Irrigation in the region was traditionally for tobacco production, but the demise of that industry in the 1960s led many irrigators to fall back on opportunistic irrigation of pastures and crops. More recently, there has been a significant development in olive and peanut production. The region is also well suited to stone fruits, citrus, pecan nuts, herbs, a wide variety of vegetable crops, grapes and aquaculture (CRCIF 2006).

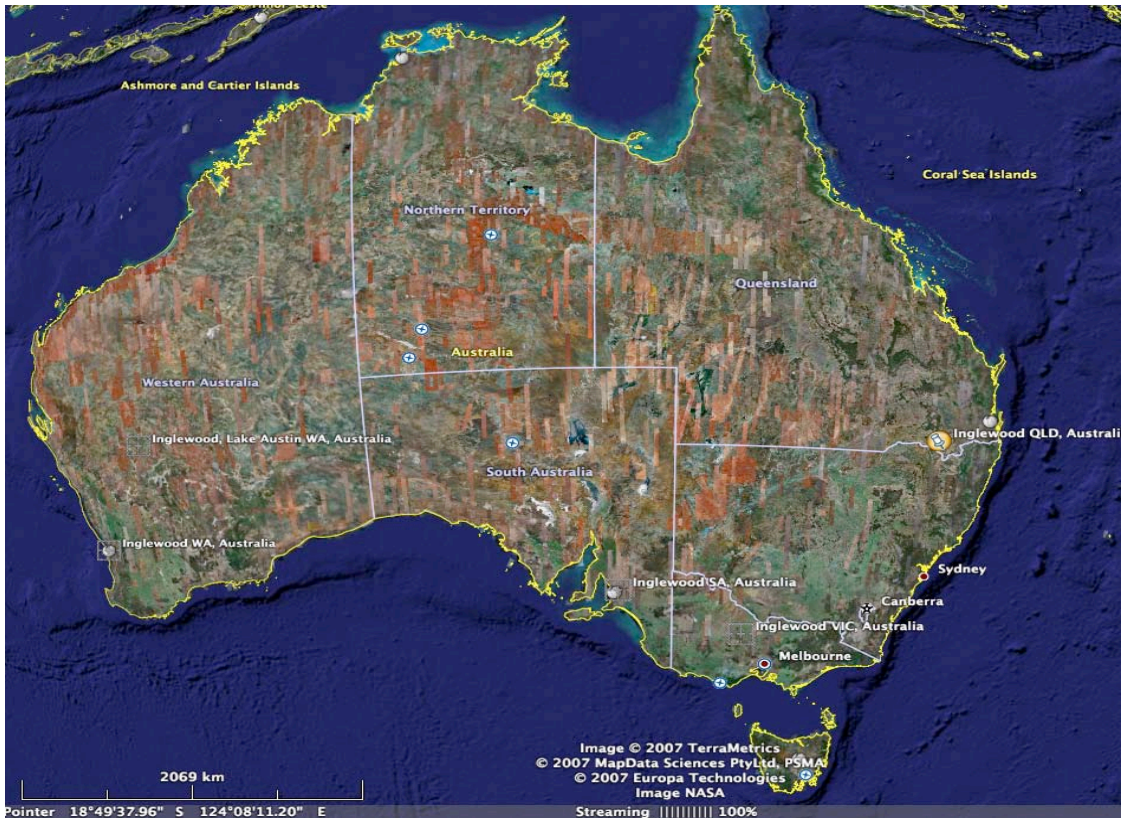

Figure 7.2: Inglewood, Macintyre Brook Catchment (yellow pinned) in the National Context

The Macintyre Brook Water Supply Scheme encompasses the diversion, storage and management of water in Macintyre Brook from the Coolmunda Dam downstream from the junction with the Dumaresq River. It also includes the Greenup Weir, Whetstone Weir and Ben Dor Weir. SunWater is licensed to operate the scheme. The interim water allocation to be managed under the Licence consists of 488 ML of high priority and 24,512 ML of medium priority interim water allocation, giving 25,000 ML in total. The entitlements managed under SunWater's licence do not include water-harvesting (high flow access) entitlements, which may be held as separate entitlements by SunWater or individual customers (CRCIF 2006).

As part of a research agreement with the Macintyre Brook catchment, the Cooperative Research Centre for Irrigation Futures (CRCIF) established Regional Irrigation Business Partnerships (RIBP). The RIBP is a working

group with the responsibility to facilitate the design and implementation of regional water use plans. The process was to adopt collective planning and ownership processes where both scientific and local knowledge interplay would enhance water use efficiency in the catchment. The RIBP comprised mainly the Macintyre Brook Irrigators Association, the Queensland Murray Darling Committee, the Inglewood Shire Council, SunWater, the Department of Natural Resources, Mines and Water, CRCIF, the Indigenous community and Border Rivers Food and Fibre. The ASP approach was applied to the Macintyre Brook Regional Irrigation Business Partnership (RIBP) Working Group to their engagement processes in order to develop a sense of shared vision to guide those participating in the RIBP for improved water resources management and enhanced business opportunities in the catchment.

7.3.2 Application of ASP Approach in the Macintyre Brook Catchment, Australia

Based on the *appreciative systems planning* methodology discussed in the preceding sections, representatives from the groups that comprised the RIBP were invited to engage in dialogue on the following questions:

1. Describe what a perfect system in relation to water resources management would look like in their catchments.
2. What is working well in the catchment?
3. What can be improved in future?

As noted in Section 7.2.2, the “What is working well?” question serves to focus attention on the positive, thus steering away from the more usual problem-focus that is often adopted by people when considering strategic issues. The “What can be improved in the future?” question invites participants to build on this positive frame as they identify some key aspects of a vision statement. Elements of the ensuing discussion were recorded on a white board. Key points from what was working well in the catchment are represented in Figure 7.3. It must be noted that the arrows used to connect the systems diagrams in this thesis came from the participants and are not necessary agreed by the author.

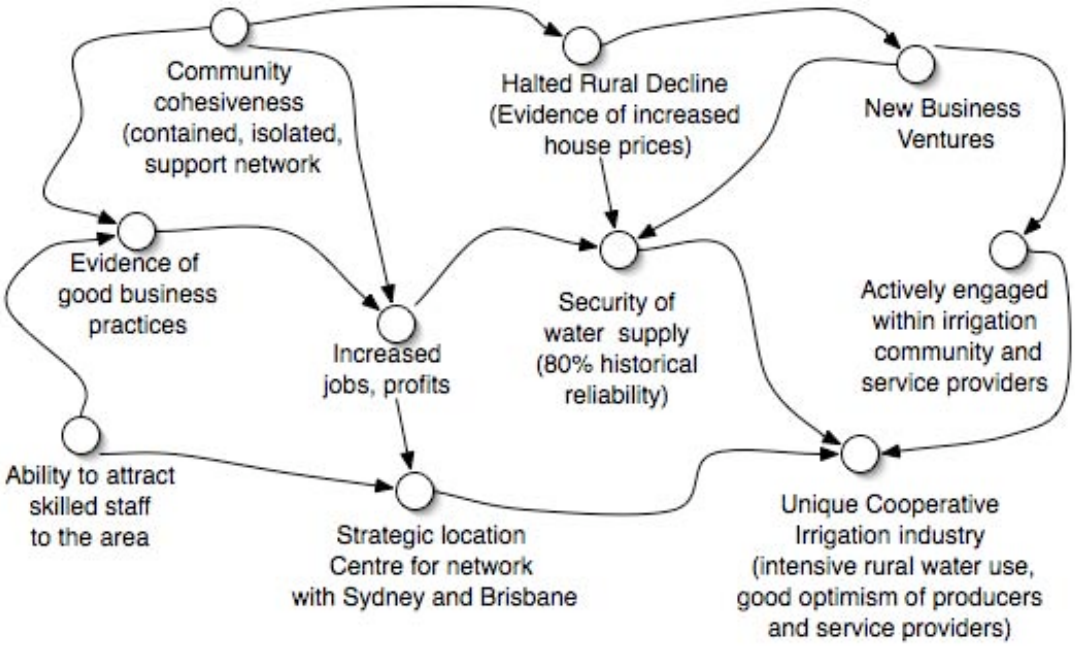

Figure 7.3: Macintyre Brook catchment - What is working well?

As can be seen from Figure 7.3, a number of **new business ventures** has been initiated and a significant enabling characteristic for this seems to have been the **security of water supply** (80 per cent historical reliability).

It was noted from the discussions that new business ventures opened up employment opportunities within the catchment. This has attracted demand for housing properties in the area. A simple relationship that can be drawn from the diagram is that the reliability of the water supply is encouraging more businesses, thereby increasing the demand for housing properties. Any attempt, therefore, to look at the issues from the single point of view may break the relationships that the three issues represent.

New businesses lead to employment, increasing house prices[5] and the ongoing growth of these new businesses suggests a local halting of a general

[5] This and other observations about the area are reported here following their discussion at the workshop, and have not been independently verified.

condition of rural decline within the larger region. The perception is that there is a general optimism among producers and service businesses. The area has been moderately successful in attracting skilled staff to the area.

Rural businesses are noted as being proactive (rather than reactive), and actively pursue new business opportunities. There is significant cooperation among different industry members, while a strong sense of community cohesiveness is recognised. From Figure 7.3, it could be seen that every issue raised is connected to the others indicating a systemic relationship. One issue feeds back to influence another. For instance, the **good business practices** that enabled **increased jobs and profits** are dependent on the **reliability of the water supply** in the catchment. The implication is that a decline in the water supply would likely influence economic plans and may affect the uniqueness of the irrigation industry in the catchment. It would be important that water resources in the area are managed in such a way as to ensure economic sustainability in the area.

In looking to the future, the possibility of significantly different economic activities was explored (Figure 7.4).

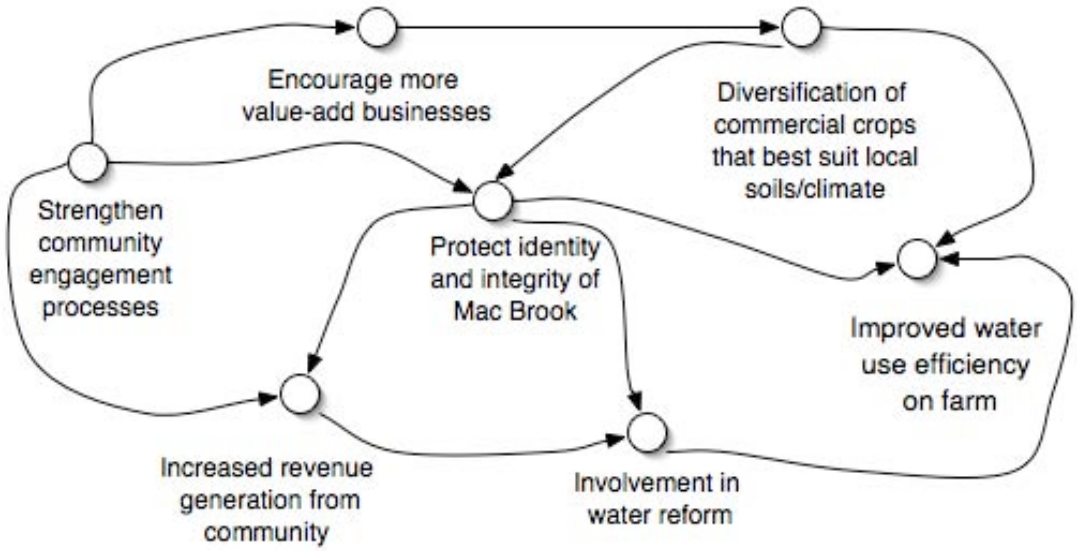

Figure 7.4: Macintyre Brook Catchment- What can be improved in future?

Stakeholders identified that more value-add businesses would result in a better overall total economic value per megalitre of water used and that this would be a desirable outcome for the catchment as a whole. In Figure 7.4, participants noted that the **diversification of commercial crops better suited to local soils and climate** would help improve overall agricultural outcomes thereby **improving water use efficiency on farm**.

As noted earlier, the ability to attract and retain skilled staff is a critical issue to continued business growth in the area. Participants were well aware of the systems-wide perspective on this – if the whole catchment is thriving, people are more likely to want to move there. Thus, individual businesses appear willing to financially support community-benefit type activities in order to help strengthen overall attractiveness. There was a clear understanding, among the local participants at the workshop at least, of the need for a whole system approach for a truly sustainable pathway into the future. This could be achieved through helping the local stakeholders to better understand the various elements of their system, as reflected in Figures 7.3 and 7.4, and how best to manage it for improved overall resilience and long-term livelihood security for its present and future residents.

Unlike a more conventional listing of issues process that characterise most engagement exercises of this kind, an inspection of the map from Figures 7.3 and 7.4 reveals linkages between economic, environmental and community aspects of the issues under consideration. A simple listing of issues approach does not explicitly reveal these linkages and there is much insight to be derived through such collective introspection. To illustrate this point under listing approach, it will be difficult to draw linkages between diversification of commercial crops better suited to local soils and improving water use efficiency on farm. As can be seen from Figure 7.4, this relationship is clearly depicted in the diagram. These systemic relationships help any future planning interventions to understand how the system works and to design appropriate actions that would address issues in an holistic manner.

The key element from the outcomes of engagement process was the application of the ASP approach. The methodology facilitated understanding among participating stakeholders and this provided a basis for suggesting future actions such as **encouraging more businesses**, **diversification of commercial crops better suited to local soils and climate** for improving water use efficiency, and to ensure the unique cooperative nature of the irrigation industry in the catchment.

7.4 Savelugu Nantom Catchment, Ghana.

Savelugu-Nantom catchment shares boundaries with West Mamprusi in the North, Karaga to the East, Tolon/Kumbungu in the West and Tamale Metropolitan Assembly to the South (Figure 7.5). It is generally flat with a gentle undulating low relief. The area receives an annual rainfall averaging 600 mm. The rainfall pattern is erratic at the start of the rainy season, starting in April, but it intensifies as the season advances raising the average from 600 mm to 1000 mm. Temperatures are usually high, averaging 34 ^{o}C. The maximum temperature is as high as 42 ^{o}C, whilst the minimum is as low as 16 ^{o}C. The generally high temperatures, as well as the low humidity brought about by the dry harmattan winds, favour high rates of evaporation and transpiration, leading to water deficiencies (World Vision International 2001)

The main drainage system in the catchment is made up of the White Volta and its tributaries. One of the tributaries of the White Volta, Kuldalnali, stretches to constitute a natural boundary between the catchment and the Tolon/Kumbungu catchment. Farming along river courses has also caused vast silting of the few drainage systems, which therefore dry up quickly in the dry season and flood easily in the wet season (World Vision International 2001).

Figure 7.5: Savelugu, Savelugu Nantom Catchment (yellow pinned) in the National Context

The catchment is located in the interior (Guinea) savanna woodland, which sustains large scale livestock farming, as well as the cultivation of staples like rice, groundnuts, yams, cassava, maize, cowpea and sorghum. Agricultural practices are dependent on rainfall, which is erratic. The area receives rain during a three to four month period from May to September, allowing for only one rain-fed harvest per year. The actions that have been adopted are small-scale irrigation projects in Bunglung, Kukobila and Libga to boost agriculture during the dry season. These factors, along with a traditional lack of farming activities in the dry season, necessitated the need for World Vision International (WVI), in close collaboration with WINROCK, an international NGO operating in Northern Ghana, to teach and help farmers to produce vegetables during the dry season on small tracts of land using locally available water resources and fencing materials (World Vision International, 2001). WINROCK's task is to introduce farmers to the benefits of dry season

farming and to enable them to improve their livelihoods through income generation and improved nutrition (World Vision International 2001).

WINROCK International's presence in Ghana is currently limited to the smallholder irrigation schemes, which are funded by the Conrad Hilton Foundation, which is part of the West Africa Water Initiative (WAWI). WAWI was launched in 2001 with the overall aim of improving the health and socio-economic well-being of the people in the beneficiary countries through the provision of potable water, sanitation facilities, health/hygiene promotion and income-generating activities (World Vision International 2001). WAWI constitutes a network of 14 NGOs based in Mali, Ghana and Niger that includes the Conrad Hilton Foundation, UNICEF, USAID, The Desert Research Institute (DRI), WaterAid and World Vision. Apart from the presence of WAWI in the catchment, there are other water-related government institutions and NGOs operating in the catchments, notably the District Assembly, the Community Water and Sanitation Agency, the Ghana Water Company and the Water Resources Commission.

7.4.1 Application of ASP Approach in the Savelugu Nantom Catchment, Ghana

Representatives from WAWI, and other key stakeholders mentioned in the preceding section, were engaged in the ASP process at the WAWI Training and Development Centre at Savelugu, the district capital of Savelugu Nantom district in the Northern region of Ghana. Similar to the Macintyre Brook engagement process, the initial perception of participants from the Savelugu Nantom catchment was that the approach was going to use the usual problem-solving process, where participants are first asked to share the problems before any further analysis.

7.4.2 Discovering What is Working Well

At the start of the dialogue, participants were taken through the four key questions indicated in Section 7.2.2. Elements of the ensuing discussion were

recorded on (a white) paper. Key points from this are represented in Figures 7.6 and 7.7. Participants grouped the key points into seven thematic areas: capacity building, water systems, governance, institutional linkages, database and information sharing, conservation practices and monitoring, and evaluation, as shown in Figure 7.6.

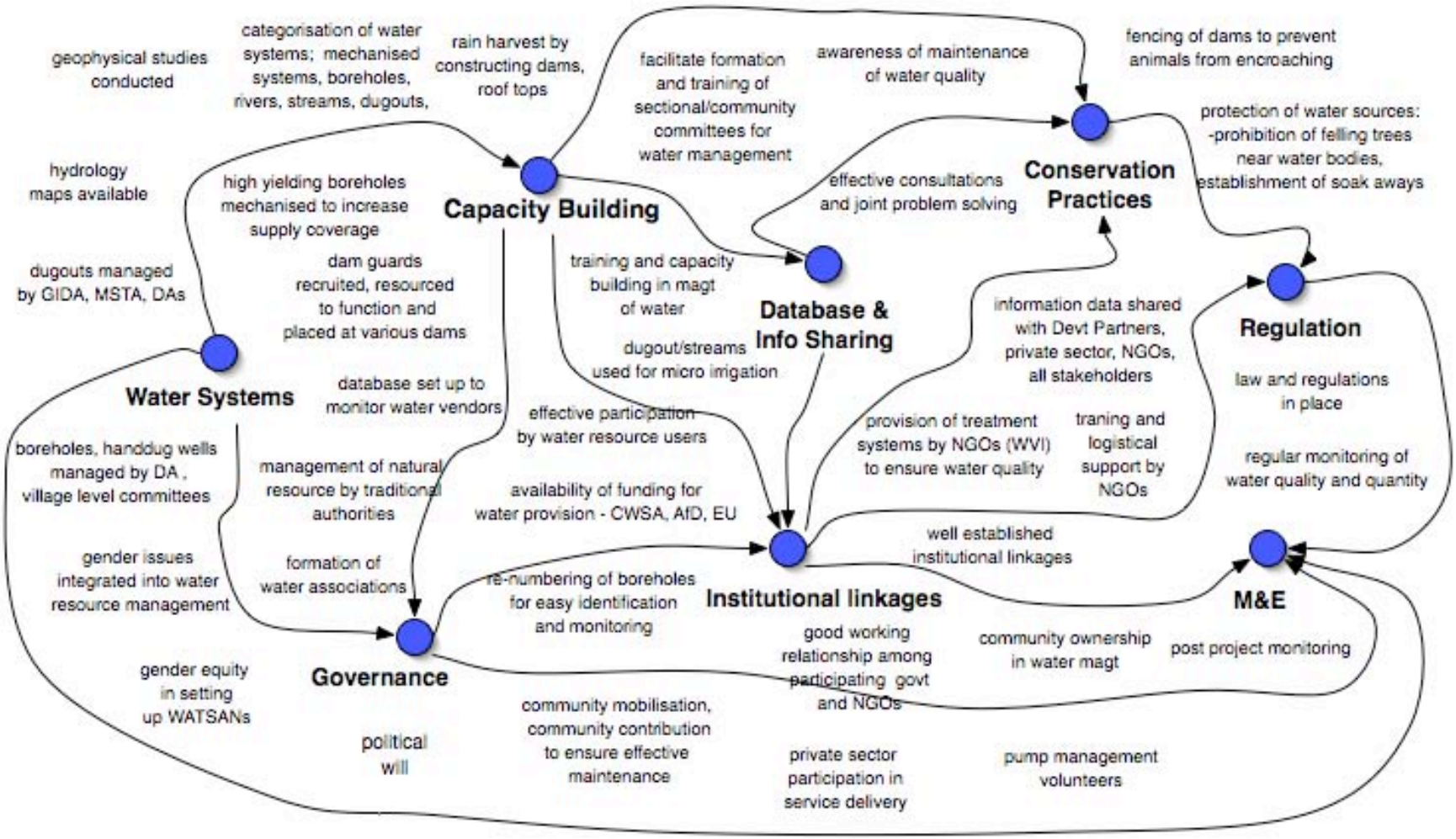

Figure 7.6: Management of Water Resources in Savelugu Nantom Catchment
Institutional Engagement - What is Working Well

Conservation Practices

As shown in the diagram on Figure 7.6, issues such as the fencing of dams to prevent animals from encroaching, the protection of water sources, the prohibition of falling trees near water bodies and the establishment of soak-aways to prevent people from walking directly into the river, were among the conservation practices initiated by the communities themselves in the Savelugu Nantom catchment. These initiatives, according to the participants, were helping to prevent streams and rivers from drying up. The implication for the IWRM planning process is that the processes that led to the identification of these issues need to be identified and built upon for sustainable water resources management. According to the participating institutions, experience of drought conditions and the ensuing hardship of the people during the dry season, gave birth to the initiative to protect the water bodies. As a result of this initiative, the surrounding villages have teamed up to present a proposal to the District Assembly (the highest political authority within the catchment) to persuade upstream settlers to do same.

Capacity Building

'Capacity' encompasses social and human capital. It is concerned not only with the resources available, but also with the ability to act. 'Capacity Building' relates broadly to some form of external or internal intervention aimed at enhancing the ability of individuals and communities to act (Anon 2002). In the case of Savelugu Nantom, the capacity building theme, as shown in Figure 7.6, goes beyond the ability to act to include networks and interrelationships. Issues that affect water management, such as the strengthening of governmental monitoring systems on water resources in the area, and the recognition of each partner's strengths for effective coordination and collaboration. The social, economic and community issues within which the water resources are managed in the catchment are always changing and participants therefore pressed participating institutions to strengthen the current network in capacity building for improved water resources management.

Governance

As noted in Chapter 4.2 one of the key elements of water governance is to create a framework within which all groups of people with different interests can peacefully discuss and agree to cooperate and coordinate their actions aimed at integrated economic, social and environmental outcomes (Rogers and Hall 2003). The ASP Approach provided a platform for various institutions in the Savelugu Natom catchment to share their perspectives on good water management practices in the catchment. In Figure 7.6, governance issues, such as the decentralisation of management structures at various levels including the formation of water associations, ensuring gender equity by setting up WATSANS, a database to monitor the activities of water vendors and community contributions towards effective maintenance of water systems, were among the issues shared during the engagement process. It was noted that the interrelationships between governance elements and other different dimensions of water management, such as institutional linkages, capacity building, M&E etc. are all linked in a web (see Figure 7.6). This interrelationship confirms the need to look at water resource issues from a systems perspective (Section 6.4.2).

Institutional Linkages

From Figure 7.6, participants indicated that the good working relations among participating governmental and non-governmental institutions is an example of the well-established institutional linkages in the Savelugu Catchment. They mentioned that these linkages serve as a platform for the design of an all-inclusive institutional framework to manage the water resources in the catchment.

Database and Information Sharing

As noted in Section 3.2, information and data to support the sound management of water are generally lacking as a result of inappropriate institutional arrangements and unclear organisational mandates for service provision. As shown in Figure 7.6 participants indicated that, in the Savelugu Nantom catchment, information data is shared among all water-related agencies, development partners, the private sector and NGOs. It also noted that

geophysical studies have been conducted, the results of which are available for easy access, while hydrology maps are also available (Figure 7.6). According to the participants, these were the result of institutions sharing their water visions through set up workshops and the preparation of community action plans including water issues.

Water Systems

Categorisation of water systems, dams, rivers, streams, hand dug water points and mechanised systems enabled systems and structures to be put in place to manage the resources. For instance, in the case of Savelugu Nantom, as shown in Figure 7.6, the Ghana Irrigation Development Authority (GIDA) and the District Assembly are managing dugouts while the natural resources are managed by the traditional authorities (Figure 7.6). However, participants indicated that any new interventions in the area of water resources management could be built in line with what is working well from the processes of categorisation and the structures that are currently functioning.

Regulation, monitoring and evaluation

Monitoring and evaluation (M&E) are of primary importance to any planning process because it provides the basis for institutions to assess their activities and to identify ways of improving performance (Estrella 2000; Kumar 2002). The M&E process does not only support the management of physical landscape, but policy responses and institutional arrangements can also be implemented. As shown in the diagram on Figure 7.6, participants indicated that regular monitoring of water quality and quantity will enable assessment of the kind of management structures to be put in place. They mentioned that in Savelugu, the laws and regulations regarding the use of water resources facilitates monitoring activities. Participants through plenary discussions also noted that it would be important for stakeholders to agree on what to monitor, to set procedures for monitoring and evaluation and to share roles and responsibilities.

The maps in Figures 7.6 and 7.7 could be described as system maps because they define the relationships between the various ecological, economic and community aspects that combine to describe the overall system that is accommodated by catchment planning (and by IWRM). Interventions aimed at

improving water use management in the catchment therefore require an holistic approach that can be implemented to improve the overall resilience in the catchment. The map should also provide a basis to assess how the same management strategies may influence other parts of the system within the catchment. Mapping these relationships enables the complexity of water issues to be appreciated and management strategies designed to maximise positive outcomes.

A number of processes facilitated what is working well in the Savelugu catchment. These included the classification of water systems into manageable units, government policies and the setting up of relevant structures by government to manage water resources. Further more, the involvement and recognition of traditional authorities as custodians of natural resources including land and water, sharing water visions through set up workshops by institutions, participatory planning done at the grass-roots level and the involvement of water users at all levels facilitated what is working well. These processes provided a basis for future planning.

7.4.3 Dreaming into the Future

This phase was also embraced with much enthusiasm just like the discovery phase. Based on what was working well, participants shared what they would want to see more of in the management of water resources in the catchment. A summary of the dreams shared is presented in Figure 7.7.

Looking at the diagram from Figure 7.7, issues such as intensive education on water resources, the 'greening of water bodies to add colour to the blue', mainstreaming water resource issues in the educational curriculum at basic levels, the promotion of the use of indigenous trees along water bodies, livelihood training for riparian communities on effective water management, the enforcement of water bye-laws and regulations at all levels, national, district and community, the recognition of each organisation's strengths for effective coordination and collaboration in the management of water resources, action research on water issues encouraged and best practices, were shared. The

implications are that the realisation of these dreams requires an identification of what is working well (Figure 7.6) and the processes that led to the success. In this way, institutions involved are likely to contribute resources for effective water resource management in the catchment because they are part of processes for change.

On the strategic move into resolving water resource issues, the discussion centred on an holistic approach to water management, where all institutions, and for that matter every user of water, in the catchment has a role to play. Practices such as dumping of waste materials (garbage), and silting of water bodies through agricultural practices, affect the quality and quantity of water resources in the catchment and it is difficult for one institution or individual person to claim to have the knowledge and resources required to manage it all. It therefore calls for a collaborative approach where individuals, groups and institutions are to be custodians of the water resource and to contribute in various ways (ideas, time, resources) to sustain the use of the resource. Participants intimated that the hardship the communities go through, during the dry season for example, affects everybody including government and non-governmental agencies in the catchment in that agricultural production is affected and so is income level. Domestic consumption, as well as quality of water with its attendant health problems, affects not only the individual families but also the District Assembly and the government as a whole. In further discussions participants noted that the quantity of water and quality in the catchment over the past ten years has worsened day-by-day affecting the livelihoods of people in the area. Participants recognised all forms of support including food items, health and educational material, boreholes from NGOs and other development partners such as IFAD, WVI, EU, AFD and the Catholic Relief Services during the dry season. This support notwithstanding, participants realised that they cannot talk about improved education, improved health and increased agricultural outputs without access to water all year round both for agricultural and domestic use. The above connection depicts a systemic relationship of issues as indicated in Figure 7.7.

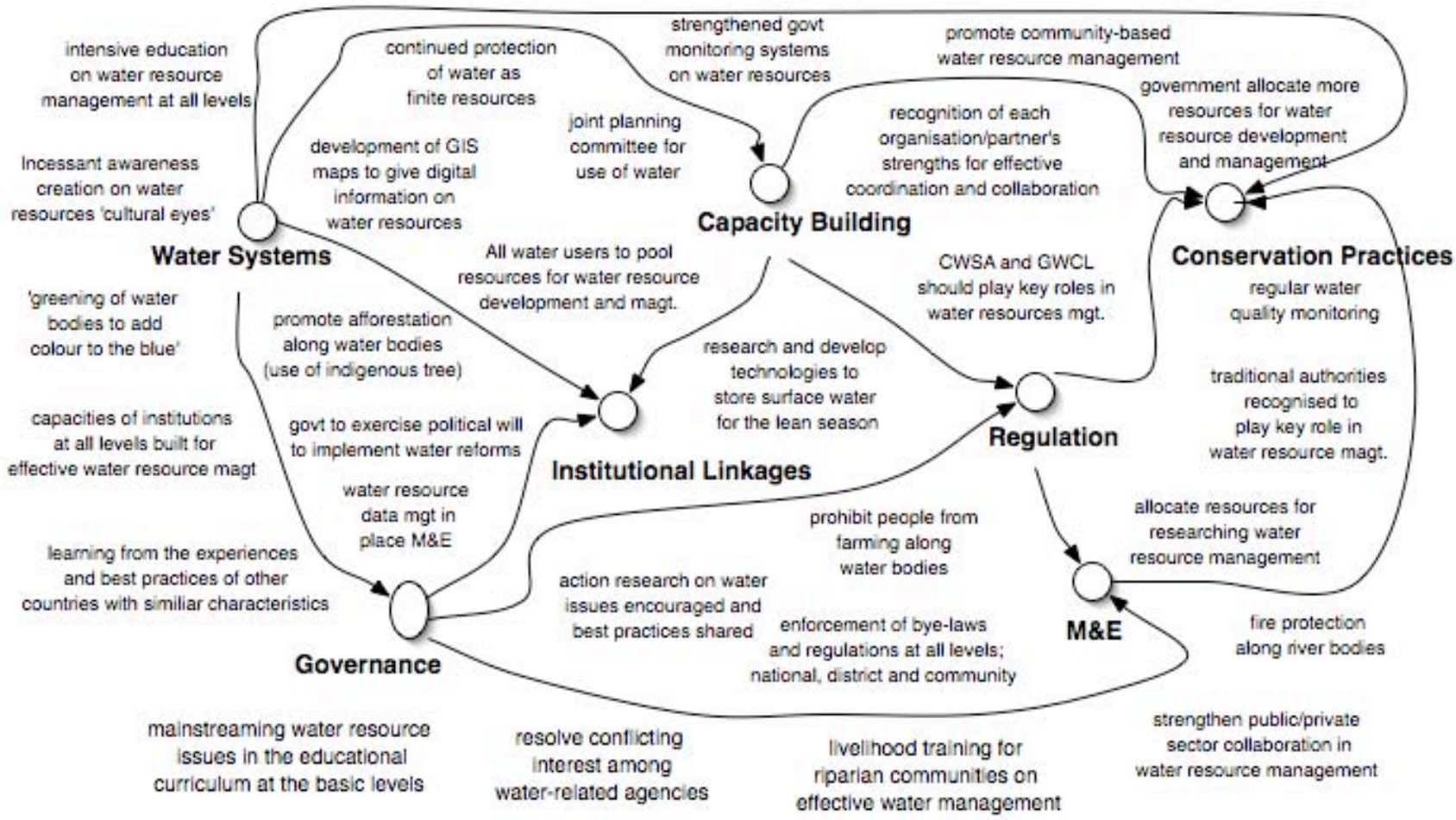

Figure 7.7: Management of Water Resources in Savelugu Nantom Catchment
Institutional Engagement -Future

The outcomes from Figure 7.7 have defined communities'/institutions' strategic planning activities that aim to embrace the holistic integration of environmental, economic and community domain. Actions in one domain need to be set within an understanding of how they might impact across all three dimensions.

For instance, in addressing water scarcity during the dry season, participants indicated that the government, while commissioning action research on learning from the experiences and best practices of other communities or countries with similar characteristics on **water systems**, needed to set up **governance** structures and design an **institutional framework** where all water users in the catchment could pool resources for the development and management of water resources in the catchment. **Capacity building** in various forms including good **conservation practices, monitoring and evaluation** systems need to be devised and implemented. The need to recognise each organisation's strengths and contribution and the need to provide a platform for resolving conflicting interests among participating institutions requires a framework to facilitate the process. There are various elements shown in Figure 7.7 within the system to consider in this regard. These include the organisation of livelihood training for riparian communities on effective water management, regular water quality monitoring, the development of GIS maps to give digital information on water resources and the mainstreaming of water resource issues in the educational curriculum at the basic levels, among other issues.

Addressing these concerns, drawing linkages from what is working well as indicated in Figure 7.6, may be useful. Apart from helping communities to own the process of change (since the issues discussed are their realities), building on what is working well provides a basis for identifying strategies for improved water resources management.

In designing the institutional framework, governments or institutions concerned need to build on the good working relationships among participating NGOs, well-established institutional linkages and information

data sharing mechanisms where development partners, the private sector and NGOs come together. On the issue of governance, the strategy could build on the best practices shown in Figure 7.6, concerning how the water systems have been managed over the years and identify the best practices to inform policy formulation.

In all these processes the guiding principles are that water issues are complex and require a concerted, integrative effort. Apart from providing "visual" language, the maps shown in Figures 7.6 and 7.7 allow examination and inquiry and provide a powerful means for fostering collective understanding of an issue. At the institutional engagement (Savelugu), most participants were amazed not only by the outcome but also the way in which every issue raised during the dialogue was represented on the map and linked together. It also helped them to look at the water issues in the catchment as a whole, the parts and their interconnectedness. The individual perspective, seen at the beginning of the process, ended up as a collective whole, as reflected in Figures 7.6 and 7.7.

7.4.4 Lessons from Institutional Engagement

The pair and plenary discussions were an improved model for maximizing the learning possibilities across the participating institutions and communities. Exchange and learning were mutual. Each perspective was not challenged because issues shared at the individual level became a collective whole for the group. As noted in Section 6.7.1, the systems mapping approach facilitated a systematic process through which participants might explore and build a shared big systems picture that provides context for resolving the local water management issues. The ASP methodology helps overcome the problem of any fragmentation between participating institutions and communities to build a single group of stakeholders. Individual views were acknowledged and appreciated and issues were addressed together. Participants were not intimidated by the other person's background, social status, qualification or experience.

7.5 Community Level Engagement

Community issues (cultural, social, economic and ecological), including water, cannot be understood in isolation. They are characterised by a web of interlinked concerns that ideally require a holistic or integrative perspective through which to design appropriate management settings (Chapter 6). Communities have different values, beliefs, needs, prejudices, relationships, histories and these influence their choices/preferences in decisions or processes that promote or affect their livelihoods (Merriam 1993). Therefore, collecting community knowledge can facilitate the establishment of a "two-way" flow of information, which acts to reduce conflict, encourage participation and provide a co-learning environment for improved water resources management (Giordano and Vurro 2005). The ASP approach was thus tested in the Bunglung and Ligba communities in the Savelugu Nantom catchment. The rationale was to examine the extent to which insights from community perspectives could be incorporated into the institutional insights to inform the design of a robust IWRM planning process.

7.5.1 Bunglung and Ligba Community Engagement

Bunglung is located 5 km east of the Tamale-Bolgatanga road at the Savelugu junction. Ligba is one kilometre away from Savelugu. The traditional occupations in both communities are rainy season farming and small ruminant husbandry. Each community has a dam, which serves as a source of water for cultivating large quantities of tomatoes, hot pepper and okra in the dry season. Water scarcity is clearly a constraint on improving livelihoods in both communities. The issue is not an absolute lack of water, but a drastic reduction in the water level towards the end of the dry season. The ASP approach was applied in Bunglung and Ligba communities with representatives comprising women farmers, opinion leaders, men farmers and smallholder irrigation farmers.

7.5.2 Discovering What is Working Well in Bunglung and Ligba Communities

The same process as indicated in Section 7.2.2 was followed. First the communities discussed what would constitute a perfect system in relation to water resources management in their catchments. What they shared seems consistent with the summary of institutional insights in Section 7.2.2 except for the following:

- where there is a constant flow of water for agricultural and domestic uses; and
- where they are able to manage their boreholes, wells and dams successfully on a day-to-day basis so that the system continues to work and supply water as planned.

The discussion then addressed the questions, 'What is working well in the management of the water resource in the catchment?' and 'What else should be done in the future to ensure the continuous use of the resource?' Participants from the two communities, Ligba and Bunglung, were very enthusiastic with the process used to generate information from them regarding the management of water resources in their communities. According to them, the process was different from their usual problem approach. As one participant from Bunglung remarked:

"We thought we were going to enumerate our problems for you to help us'.

They also had a good understanding and knowledge of the various water resource issues in and around the community and how they are being managed. Consequently, a wealth of information was generated regarding what was working well on the types of water resources available to them and how they are managing them. The outcomes are represented in Figures 7.8 and 7.9.

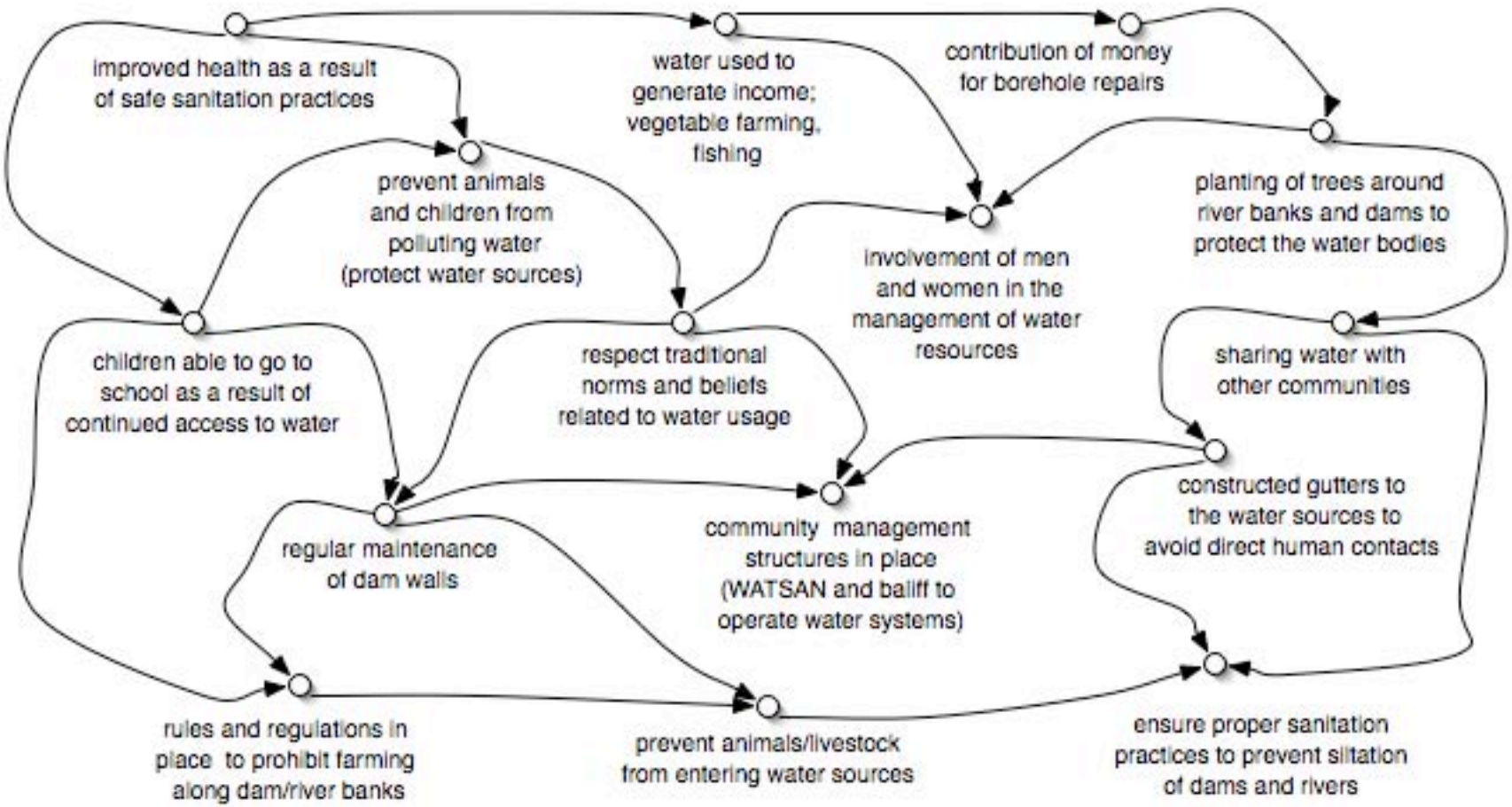

Figure 7.8: Management of Water Resources in Savelugu Nantom Catchment Community Engagement (BUNGLUNG)-What is Working Well

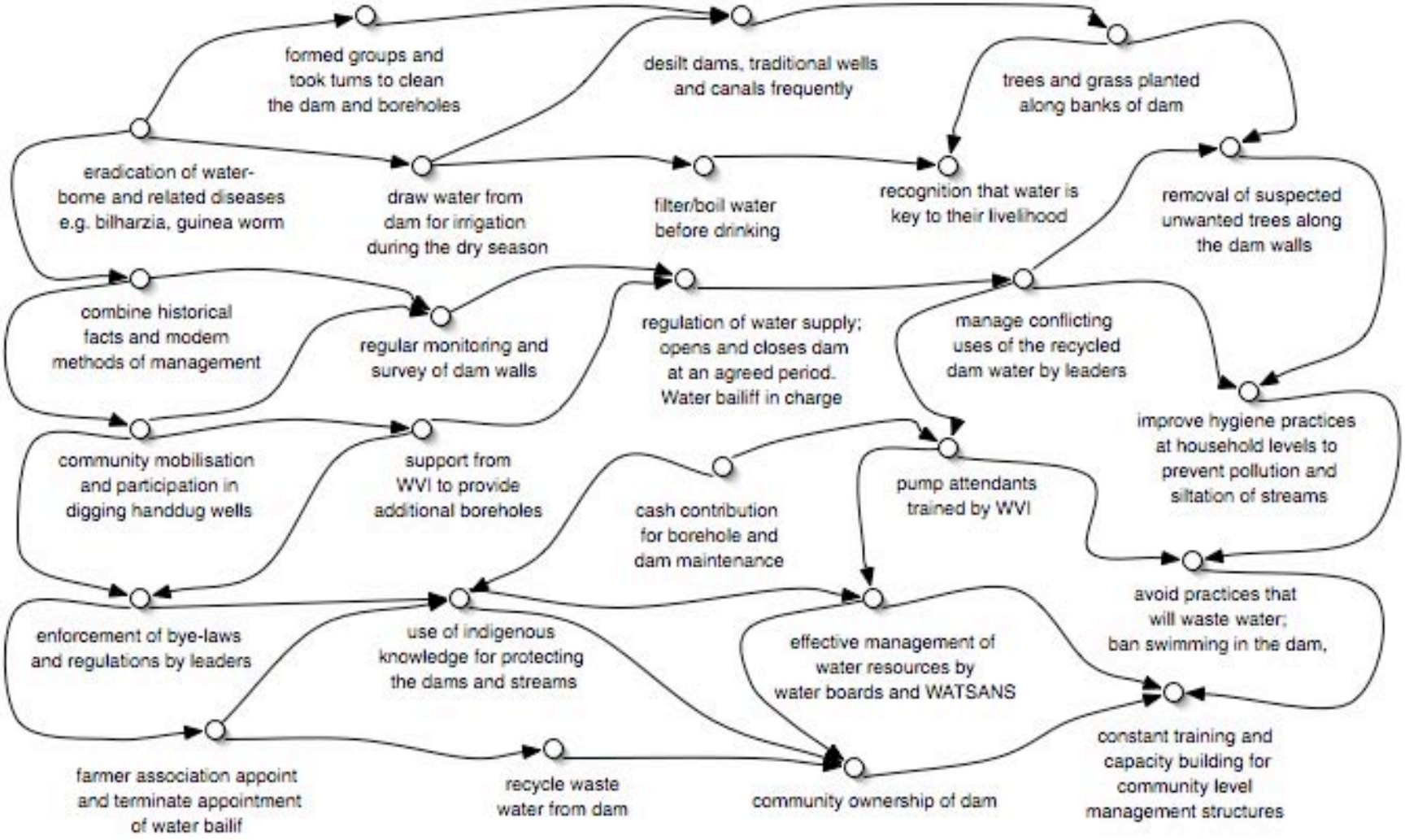

Figure 7.9: Management of Water Resources in Savelugu Nantom Catchment Community Engagement (LIGBA)-What is Working Well

In both the Bunglung and Ligba communities, issues shared during the discovery phase could be grouped around social, economic and environmental. Under social, issues such as improved health, as a result of safe sanitation practices, the respect of traditional norms and beliefs related to water use and the involvement of men and women in the management of water resources became prominent in their deliberations.

On the economic front, water used to generate income through vegetable and fish farming, cash contributions for boreholes and dam maintenance and the recognition that water is the key to their livelihood seem to be working well in the two communities.

Regarding environmental issues, the two communities were more concerned about protecting the various water systems and instituting measures to safeguard the use of the water resources. Issues such as the planting of trees, fencing of dams and the construction of gutters to the water sources to avoid direct human contact were among the initiatives that were working well in the management of water resources by the two communities. Other practices that were working well included banning swimming in dams, improving hygiene practices at the household level to prevent pollution and the siltation of dams.

The connection between social, economic and environmental issues are similar to what has been discussed in the preceding discussions at the institutional engagements. It is clear from the insights that the communities, while using the water resources for economic gains, are also concerned about the sustainability of the resource. To meet future needs they want regulation regarding the use of the water. They open and close boreholes and dams at an agreed period and appointed a water bailiff in charge of operations and management.

7.5.3 Dreaming into the Future – Bunglung and Ligba Communities

Dreaming into the future the two communities emphasised the need to adopt an holistic approach to the management of the resource. Asserting that children should be educated in the management of water resources so that they become change agents for water resources management is remarkable. Community members have a future perspective on water resources management (sustainability of water resources), hence thinking about how children could be change agents in the future. Also the communities understood water resources management to be the collective responsibility of all stakeholders—government, district assembly, community etc. Other issues shared in ensuring the connections between social, economic and environmental concerns are represented in Figures 7.10 and 7.11.

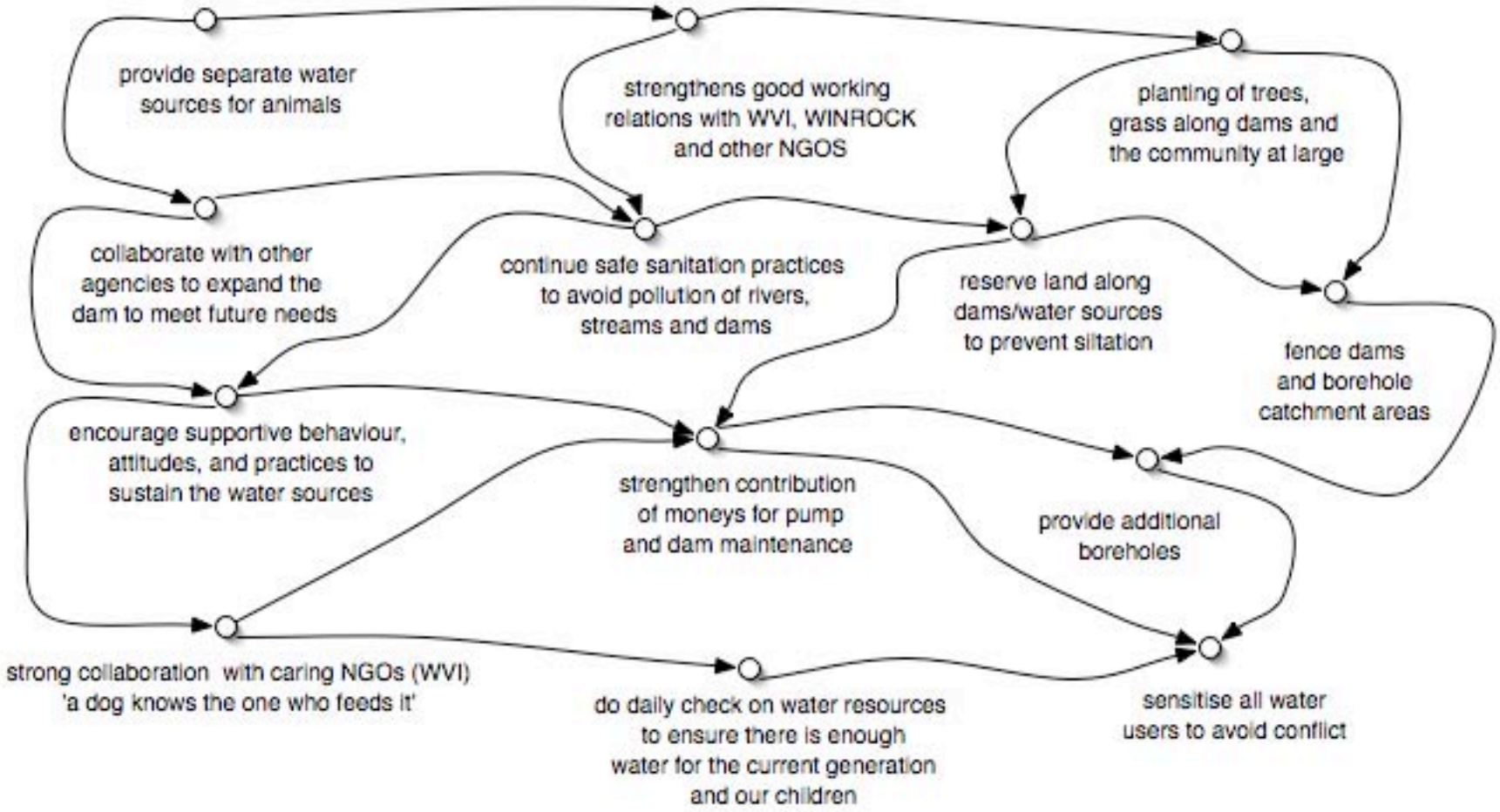

Figure 7.10: Management of Water Resources in Savelugu Nantom Catchment Community Engagement (BUNGLUNG)- Future

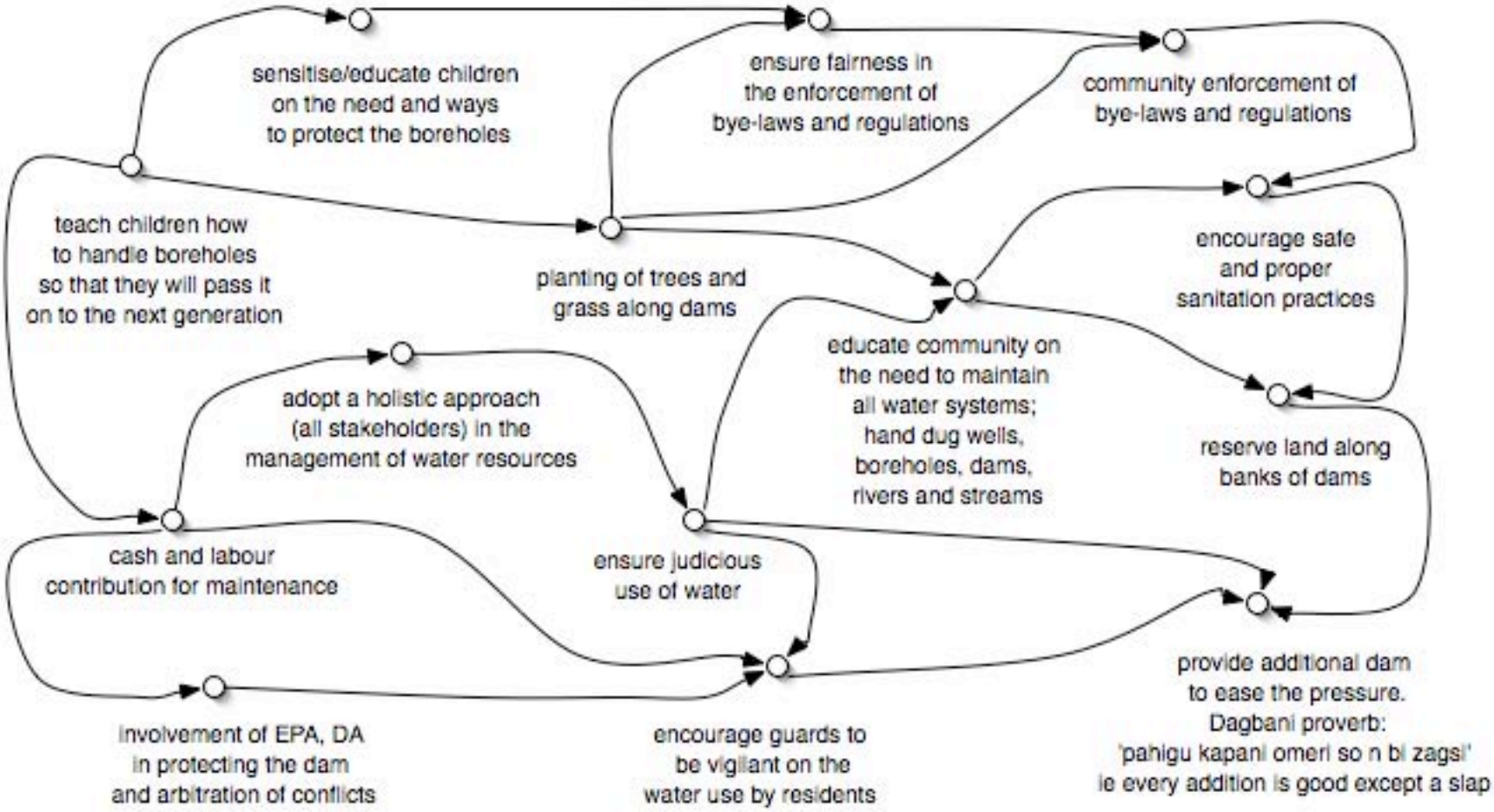

Figure 7.11: Management of Water Resources in Savelugu Nantom Catchment Community Engagement (LIGBA)- Future

7.6 A Reflection on Processes and Outcomes

The application of the ASP approach in the two case-study regions, Savelugu-Nantom and Macintyre Brook, provided opportunities for engagement with a range of people with different cultural and geographical settings concerning water resource management. Discussions that follow offer a reflection on group processes and outcomes.

Facilitation Process

As opposed to a conventional approach where some facilitators are tied to the outcome so much that they tend to influence outcomes (Section 5.4.2), in the application of the ASP, the facilitator's role was more to introduce the task and identify whether participants needed further clarification. Facilitators recorded issues as they arose and they reflected the realities of stakeholders or participants at the workshop. In the case of the LIGBA and BUGLUNG community engagement from the Ghana case, some community leaders assisted facilitators in the recording as well. Documentation was carried out immediately as pairs shared their insights during the plenary sessions. Each pair was given the opportunity to discuss all their issues. This approach created the setting for new insights because it provided the opportunity for everyone to discuss issues on success factors rather than dwelling on problems, which sometimes leads to tension among participants due to the differing perspectives each holds.

Pair Dialogue

Research evidence suggests that small group work is far more effective than large group work (Creighton, 1977). As noted in Section 6.7.2, the pair dialogues obligate partners to speak, listen and to respond (Gurevitch 1990). Creighton (1977) has argued that as the number increases in a group, some participants will 'drop out' and participate minimally. This increases the likelihood that the group will be dominated by the stronger personalities (Chapter 5). The group begins to break into 'leaders' and 'followers' and the chances of polarisation increase (Creighton 1977). As noted in Section 6.4.2,

Cilliers (2005) argued that the complexity of water issues is such that no one person has the repository of knowledge necessary to address the myriad water challenges. To break the 'Leader – Follower' syndrome, people need the opportunity to put their views forward and become involved in water management planning processes in constructive and practical ways.

Pair Dialogue (Bunglung Community) in Savelugu Nantom Catchment, Ghana	Pair Dialogue (Institutional) in Savelugu Nantom Catchment, Ghana
	

Figure 7.12: Pair Dialogue

The pair dialogue approach from the two case studies generated the active participation of all group members. Discussions were conducted in a friendly and calm atmosphere. Issues or points raised among the groups were thoroughly discussed before putting them on paper. The pair discussion allowed each group to think deeply and to discuss the issues independently as they saw them without being intimidated or influenced by what had been observed or said by others (Figure 7.12). The participants were very enthusiastic and ready to provide information regarding water resources management in the catchment to the best of their knowledge from the two case studies.

Plenary Discussion

The plenary section, apart from providing a platform for documenting views to emerge through group process, makes the entire decision-making process which has taken place, transparent. It also provides opportunities for

participants to develop a shared understanding about their local irrigation system and community, along with a strong 'action focus' to work within that system (Figure 7.13).

At this stage of the process there was a calm or quiet atmosphere while in some cases some of the participants could be seen nodding their heads in support of some of the very new and innovative ways mentioned for water resources management. There were no disagreements to the points raised by pairs, since each contribution was found to be unique and therefore required a place on the map. This gave an indication of the ownership of the process and that all issues raised for managing water in the catchments were to some extent valid. The level of energy and participation among the participants as they discussed the issues at the plenary was very high throughout the process.

Plenary Discussion (Institutional, Australia) in Macintyre Brook, Australia	Plenary Discussion (Ligba Community) in Savelugu Nantom Catchment, Ghana
	

Figure 7.13: Plenary Discussions.

Time for Deliberation

Observation of the application of the ASP revealed a shorter time for identification of issues as opposed to the conventional problem approach. As noted in Chapter 5, the problem approach begins with the identification of problems, narrowing all problems into one core, analysing the problem causes and effects, turning problem statements into positive statements and beginning to resolve the issues. Starting straight away with what is working well shortens the time for deliberations, the energy for discussion is enhanced

and divergent views acknowledged. In support of this, one participant from the Savelugu case remarked:

'Why all other practitioners waste our time with problem, problem, and argue and argue and still we don't seem to be moving forward on a simple issue'

Ownership of Process

The involvement of participants in terms of the contribution of ideas, the provision of resource materials (benches), the fact that some participants had the chance to document their findings (Figure 7.14) from pair dialogue on systems maps, drawing linkages of issues at various stages of the process from the beginning to the end, demonstrates that the participating institutions and communities had ownership of the process.

Figure 7.14: Participant (Ligba, Ghana) assisting with documentation on systems maps

Again, the output from the two case study areas represented the realities of the participants/stakeholders at the meeting rather than an expert perspective.

Venue

The workshops were conducted in venues suitable for each stakeholder group from the two case studies. Materials used were location specific. For instance, during the Macintyre Brooke engagement, facilities such as a well-furnished modern conference room, white board, sticky white paper and technologically advanced equipment such as projectors and computers were used.

In the Ligba community, a shed at a farm was used as the meeting place (Figure 7.13), which was convenient for the community members. Materials such as newsprints, pews, improvised pin boards served the purpose. The interesting thing is that both venues were found conducive for effective learning and sharing. The implication for future engagement processes is to make use of available local resources available as it enhances learning and sharing.

7.7 Chapter Conclusion

On the whole, participants involved with the engagement processes from both cases remained positive and enthusiastic about the issues shared and the outcomes. Participants have learnt much from the group during pair dialogue and plenary sessions and have used the knowledge on what is working well to inform future management practices. This has occurred at both the institutional, community and individual levels.

Water resources management is of paramount importance to both the institutions and the communities who are directly benefiting from the water resources. The level of understanding of managing water resources, however, slightly varies between the institutions and the communities. This could be explained by the differences in issues shared. While the institutions were talking more about the use of technology (GIS, hydrological maps etc.), the communities were more concerned with the social and operational issues of the water systems. However, both institutions and communities understood the complexities involved in water issues and hence desired the adoption of holistic approaches to water resources management.

AI advocates different ways of capturing information - drawing, painting etc. However, the literature seems silent when it comes to providing participants with an appreciation of the relationship between issues and how this contributes to the wholeness principle. ASP, through the systems mapping process, is able to present results as a systemic set of relationships, highlighting the complexities involved in water resources management issues

that are exemplified by the two case study areas considered in this thesis. The complexities involved in water resources issues require a planning methodology that can catalyse the emergence of a shared understanding of these issues and local concerns through a systematic dialogue approach.

Chapter 8 Methodological Insights from the Case Studies

8.1 Introduction

This chapter assesses how the case studies have demonstrated the various claims made in earlier sections about the appreciative systems planning (ASP) methodology. It also seeks to examine the extent to which the case study results are consistent with the improved definition of sustainability and the ambitions of the IWRM/GWP agenda.

8.2 Case Study Insights to Inform the Proposed Methodological Synthesis

The design of ASP was influenced by the insights from various theoretical perspectives. In this section, insights from the case studies pertaining to systems thinking, complexity theory and communicative action theory are discussed. More important are the insights from those case studies that have highlighted the value of the ASP methodology.

8.2.1 Insights Pertaining to the Validity of ASP as an Articulation of Systems Thinking

As noted in Section 3.8.1, water resources issues are described as a complex phenomenon (Rees 1998; Rogers, Bhatia et al. 1998). However, as noted in Chapters 4 and 5, decision support approaches to water resource planning have been applied as separate, and fragmented and not as interrelated and interdependent components that form a complex and unified whole. As a result, interventions have been guided by an instrumental approach tied to what is already known (Section 5.2) rather than exploring broader human and/or social purposes.

Case study support

Insights from the application of the ASP in the two case studies are indicative of systems thinking. Examples from the case studies include:

- on the strategic move into resolving water resource issues, participants in the Savelugu case study gained an appreciation of water management as being a complex inter-linked system through their involvement in the construction of systems map as in Figure 7.7. This enabled participants to adopt an holistic perspective through which to consider and articulate pathways to resolve water resource issues in the their catchment area. As shown in Figure 7.7, practices such as the dumping of waste materials (garbage), and the silting of water bodies through agricultural practices, affect the quality and quantity of water resources in the catchment and it is difficult for one institution or individual person to claim to have the knowledge and resources required to manage it all. It therefore called for a collaborative approach where individuals, groups and institutions are custodians of the water resource and to contribute in various forms (ideas, time, resources) available in the area.
- representation of outcomes from the engagement processes through systems maps in Figures 7.3, 7.4, 7.6, 7.7, 7.8, 7.9, 7.10 and 7.11. The shared learning that took place in a collective dialogue process is illustrated and embedded in these systems maps. These systems maps capture the development of insights into the nature, causes and prospective resolutions to IWRM challenges via their depiction of group-articulated systemic relationships. Noting of course that the maps are not claimed to be comprehensive in relation to their coverage of the relationships involved; they will always be only a partial view as no model can ever contain all the details. However, the systems maps show how one issue feeds back to influence another. For instance, as noted in Section 7.3.2, the good business practices that enabled increased jobs and profits in Inglewood in the Macintyre Brook catchment are dependent on the reliability of water supply. Any decline in water supply is likely to influence the economic plans, social status of

the people and may affect the uniqueness of the irrigation industry in the catchment as a whole. More importantly, the mapping process can identify more convoluted links, wherein one part of the system is determined to exercise influence on another via a relationship that would not be readily apparent without a systemic learning process of the kind advocated in this thesis. Examining the systems maps together can help the stakeholder group to identify possible joint initiatives and to think through possible flow on effects and to see local water management as a system.

- the insight through the ASP approach has defined a target landscape for the communities'/institutions' strategic planning activities that aims to embrace the holistic integration of the environmental, economic and community domains. There was a clear understanding, at least among the local participants at the workshop from both the Australia and Ghana cases, of the need for a whole system approach for truly sustainable water resource management into the future. Actions in one domain need to be set within an understanding of how they might impact across all three dimensions.

- the flexibility and transparency with ASP approach encourage stakeholder empowerment and participation in water resource planning, helping them to move away from the *status quo* and towards more desirable water resource priorities, as reflected from the outcomes from both the Ghana and Australia cases.

- it should, however, be noted that the ASP approach via system-based analysis do not necessarily lead to an optimised or 'best' water resource solution, but are used to help people better understand the relationships and interactions between water issues to enable informed decisions.

8.2.2 Insights Pertaining to the Validity of ASP that are Generated via its Cognisance of Complex Systems

As noted in Section 3.8.1, many environmental problems, including water resource issues, are complex and contested and are called wicked for good reasons (Rittel and Webber 1973; van Bueren, Klijn et al. 2003). As a result, Cilliers (2005) argued in section 6.4.1 that as individuals, we cannot have complete knowledge of uncertainties involved in complex water systems and organising water issues into distinct phases and 'work out solutions'. This is unlikely to work (Chapters 4 and 5). ASP was thus designed to embrace processes that will acknowledge different ways of knowing in order to shape policy settings, institutional and community responses and to examine how those responses change when framed by different epistemological settings.

Unlike the listing of issues in a linear way that characterises conventional planning approaches (Section 5.3), the case study results reflected in Figures 7.3, 7.4, 7.6, 7.7, 7.8, 7.9, 7.10 and 7.11, and the ensuing discussions, demonstrate the diversity of issues involved in the catchment, and mapping these relationships enables the complexity of water issues to be appreciated and for management strategies to be designed. The complex maps derived through the ASP engagement process and the ensuing linkages between economic, environmental and social aspects represent the thinking of communities and the institutions consulted. The implication is that if the holistic or 'big picture' perspective is not particularly fundamental to water experts, it certainly is to the communities and institutions engaged, or has been via the application of the ASP process. The ASP has promulaged these kinds of insights at the group level. Again, in addressing the institutional and community concerns, it would be important for change agents, or experts, to re-orient their mental models towards the acceptance of the real complexities underlying the water management issue and design strategies appropriately.

8.2.3 Insights Pertaining to the Validity of ASP as an Articulation of Communicative Action

One of the motivations of the ASP is to facilitate a level of 'holistic' thinking on the part of stakeholder participants involved in water resource management issues. The case study results and the ensuing process revealed that individuals were encouraged to document their own particular space within the overall landscape through a pair dialogue engagement process. This then progressed towards an exploration of familiar spaces that others described during the plenary discussions. The correlations between one individual's interest and another's were explored in a manner that was most meaningful to the individuals concerned. This revelation is consistent with Habermas's (1984) communicative action theory, which requires that policy makers or analysts should effectively sort out communicative interaction (Section 6.4.3) processes that allow the emergence of issues in a deliberative manner for informed policy direction. Through the application of ASP process, individual perspectives and positions held at the start of the engagement process, were transformed from one mental model to what can be described as an 'enhanced shared learning perspective' towards communicative rationality. This process advocates dialogue through which participants are informed and empowered. The emphasis is on communicative style that supports the interchange of ideas towards new learning and inspiration through which to define ensuing plans and actions (Simpson and Gill 2007).

During the Savelugu institutional engagement, most participants were impressed not only by the outcome but they were particularly enthused about how every issue raised during the dialogue was represented on the map and linked together. The ASP process also helped participating institutions to begin to have an appreciation of water issues in the catchment as a whole, the parts and their interconnectedness. The individual perspective seen at the beginning of the process ended up as a collective whole. Outcomes from Sections 7.3.2, 7.4.2, 7.4.3, 7.5.2 and 7.5.3 testify to the fact that this is a demonstration of learning towards improved integrative systems of understanding. This process could be described as a methodology of cultural

transformation towards deliberative democracy consistent with Dryzek's 'collective decision making through authentic democratic discussion, open to all interests, under which political power, money and strategising do not determine outcomes' (Dryzek 1995) and also analogous to Habermas's communicative rationality.

The integration of the theoretical ideas from complexity theory, systems thinking and communicative action into the development of ASP is in no way out of place. The insights from the case study demonstrate the theoretical application of this study.

8.3 ASP Methodology and Conventional Approach

As noted in Chapters 4 and 5, the weakness of most conventional approaches to water planning, as promulgated by most governments and experts, is that water issues are seen to be definable and not seen as a complex whole. The result is that actions have been designed as separate entities and not from a holistic perspective. A problem focus for analysis has been over emphasised (Section 5.4) to the detriment of building on 'what is working well' according to the institutions and communities championing complex water resource resolutions.

Participatory processes used in engaging stakeholders, according to Craig and Porter (1997) and Mosse (2001), have been in the hands of development professionals or change agents and have become an instrument of control, thus undermining the claim for participation as a means and as an end.

The insights from the methodological synthesis from previous chapters suggest the need for some kind of 'reflexivity', in all participatory processes, hence, the design of the ASP approach. The ASP approach differs significantly from a more conventional approach that would recommend the identification of issues from the external domain of 'expert knowledge' or 'conventional wisdom'. Insights from the case study results to support this claim are presented subsequently.

Individual and Collective Learning is Enhanced

- each of the steps described in the ASP provided opportunities for learning about the system and how it can be managed. It provided opportunity for individual input and collective learning; and
- the process also provided a framework for communicating existing knowledge, so that even when knowledge is not 'new', it is certainly more accessible. Participants can learn from each other. It is a form of experiential learning.

Sense of Ownership

- it empowers communities to understand and resolve water resource management issues at the community and institutional levels;
- it offers individuals, institutions and communities a sense of ownership of their local water resources, which may result in an increased likelihood of the management arrangements succeeding; and
- the result from this process is an improved prospect for sustaining stakeholder empathy throughout the engagement process.

Flexible Process

- the process recognises people from all levels as being an integral part of the sustainable water management challenge. It forces every person to express their views and ideas in the same language, thus minimising the use of jargon and technical language that often divides rather than coordinates group discussions common in the conventional approaches;
- it tends to provide less space for individuals to dominate meetings;
- it is a communicative method for facilitating one mental model to another mental model of collaboration; and
- cultural differences are not a hindrance to the process. The approach utilises the positive side rather than the negative in its processes. It is a methodology of cultural transformation towards deliberative democracy.

Acknowledges Complexities

- the outcomes through the ASP process allow people to visualise issues and draw relationships between different types of information;
- it ensures a consistent focus on relationships; on how one thing influences another or on how the system works as a whole. It asserts the necessary holistic perspective; and
- it acknowledges complex interactions between different parts of the system.

These insights were a true reflection from the application of the ASP approach from the two case studies.

8.4 Comparing the Australia and Ghana Case Studies

The application of the ASP approach in the two case-study regions, Savelugu-Nantom and Macintyre Brook, provided opportunities for engagement with a range of people with different cultural and geographical settings about water resource management issues backing their positive experiences. On the whole, various dimensions of capacities in relation to the management of water resources in the catchment have been documented. Ownership of the outcomes is ensured, as well as a high rate of success.

8.4.1 Cultural/social

Both Ghana and Australia cases discussed the issues based on their social setting and their cultural values.

The issues shared from Macintyre Brook were more towards diversification of business activities, which according to them would result in better overall total economic value per megalitre of water used, and that this would be a desirable outcome for the catchment as a whole. They were also keen on identifying crops that would better suit local soils and climate to help improve overall agricultural outcomes while reducing the likelihood of adverse environmental outcomes including water resources. Participants were well aware of the systems-wide perspective to addressing water resource issues.

There is a clear understanding, at least among the local participants at the workshop, of the need for a whole system approach for a truly sustainable pathway into the future.

In the case of Savelugu catchment area, the institutions interviewed raised issues such as design standards and considerations, regulation, capacity building, governance issues, institutional linkages, enforcement and maintenance. At the community level, members raised issues mainly on the economic uses and importance of the resources, livelihoods in the catchment area, touching historical factors, management practices for conservation, future demand and measures to regulate water use and to ensure that water is available to all generations in a sustainable way.

8.4.2 Location

Understanding the dynamics involve in a place is important for the application of the ASP approach. This is because the cultural background of a location informs perceptions and individual sense of place and identity. For instance, while the identification of contact persons and opinion leaders to assist in the mobilisation processes at both the institution and community level engagements in Savelugu Nantom case in Ghana, was critical, in the Macintyre Brook catchment, in Australia, this was not an issue. Rather, telephone reminders served that purpose. An appreciation of community protocols is important to observe during ASP engagement processes across regions and within localities, as is the case with most communities in Ghana, most developing countries and perhaps some communities in Australia.

In relation to the diverse values and perceptions of people within and across countries, the need to explore communication strategies to address location-specific concerns is important. As indicated in Section 7.2.2, the opening question of ‘describing what a perfect system would look like in relation to water resources management’ provided the basis to understand the values each case study region holds in that regard.

There was increasing recognition at all levels from both cases of the need to coordinate the activities of all who have a stake in the development and management of water resources, irrespective of country-specific and unit of inquiry (institutional or community or individual levels).

One of the important observations from the engagement processes was the diversity of the issues shared from the two catchments. For instance, while in the Savelugu Nantom, some of the issues shared centred on the ability of the institutions and communities to get resources to implement the recommendation from the engagement process. In the Macintyre Brook, participants were keen on designing strategies to implement the outcomes from the process. The diversity confirmed my suspicions that there would be no universal approach to IWRM planning processes as noted in Chapter 4. However, the degree to which both the institutional and community engagements have succeeded in coming out with issues aimed at effecting water management challenges is dependent upon their ability, at the individual, institutional and community levels to positively respond to and overcome their own particular water issues rather than on landscape.

8.4.3 Facilitation

The role of a facilitator is of paramount importance to moderate group processes. Apart from professional facilitators who are trained in managing group processes in most situations, there are people within agencies and communities who have the skills and experience to act as facilitators.

Having facilitators or people within lead agencies who are skilled in understanding and relating to people with diverse views and values is important to ensure a wider cross-section of institutions and communities participate in water resource management initiatives, from planning through to implementation and monitoring and evaluation phases. As noted in Sections 6.6.6 and 7.6, the type of facilitation skills and qualities in the application of the ASP approach that are important in this context encompass interpersonal skills (attentive listening, respect, flexibility in approaches, rapport and trust

building), and a grounding in the methodological underpinnings of the ASP approach.

At the community levels, having key people within the localities to support and facilitate water management processes is critical. Often, people who have local knowledge are able to build rapport with community leaders and other community members more quickly than outsiders because they have some sense of identity with the social collective or group due to the sharing of common experience.

8.4.4 Ownership of Processes

In this context, 'ownership' is about the empathy and connection the people get with understandings and collectively devised pathways to dealing with challenges through their having been part of those discussions. If stakeholders in the water sector at all levels (institutional, community, or individual) are supportive of the proposed planning processes and acknowledge and understand the water issues, they are more likely to be willing to invest their time and resources to implementing the works than if they did not have a sense of ownership of issues and resolutions. As demonstrated in Sections 7.5.1 and 7.5.2, the two communities were helped to better understand water resources management as being a collective responsibility of all stakeholders—government, district assembly, community etc.

8.5 ASP Methodology and Definition of Sustainability

An appreciation of a working definition of sustainability is important if nations, institutions, communities or individuals want to manage their water resources to ensure integrated economic, environmental and community outcomes. The description of what a perfect system in relation to the water resource management from the different cases (Sections 7.2.2 and 7.5.2 from community perspective), is an expression of how the various localities express sustainability within a particular geographical setting at a particular time. What

it means is that, even within the same country, the interpretation of the concept may differ from region to region, person to person, institution to institution etc. and the need to have a framework for this purpose is important. ASP approach is an appropriate framework in this kind of situation. ASP could be described as a methodology of cultural transformation towards deliberative democracy and its application across regions could stand the test of time. The insights discussed above attest to this. As noted from the preceding discussion, each of the steps described in the ASP provided opportunities for learning about the system and how it can be managed. It also provided opportunity for individual input and collective learning.

As discussed in the earlier sections, the results from the case studies reflect collective perspectives based on group-derived learning which experts have not imposed. The result, as seen in Chapter 7, is a collective picture that contains surprises for institutions, community participants and 'experts' alike. The end result or ensuing conceptualisation of relevant water resources issues and related challenges was not anticipated at the beginning of the process. The ASP processes and the outcomes seem consistent with Meppem and Gill's reworked definition of sustainability as a 'learning concept' discussed in Section 3.7. Meppem and Gill advocate for a process that provides context for a sustained interchange wherein the great diversity of viewpoints and understandings of sustainability can be shared in a constructive way.

8.6 ASP Methodology and IWRM/GWP Agenda

The theoretical basis that underpinned the design of the ASP approach seems consistent with the assumptions underlying the whole idea of IWRM.

- the IWRM acknowledges complexities inherent in water resource issues;
- it advocates an integration of the various functions of water into a unified whole. This appears consistent with systems thinking; and

- it advocates a participatory process wherein all key stakeholders discuss water issues in a deliberative manner for collective decision-making in resolving the complex water resources.

Though proponents of IWRM did not explicitly state the theoretical basis, insight from the review of the GWP's TEC discussion papers is suggestive of complexity theory, systems thinking, and the communicative action. The ASP has provided explicit theoretical foundations for IWRM.

As discussed in Chapters 3 and 4, the dilemma faced by institutions, agencies and communities in facilitating the integration between different interpretations, with regards to water resources issues and ensuing management responses at different levels; which, in turn has resulted in the ineffective implementation of the IWRM concept to date. The ASP approach, through insights from the two case studies from Australia and Ghana, is demonstrating its potential to resolve this kind of situation.

The principles underlying the ASP methodology were applicability to both the Australia and the Ghana case studies. The ASP approach is proving worthwhile as a template to be applied elsewhere since the location specific element does not influence outcomes. The theoretical, practical and process relevance of ASP in IWRM planning processes is discussed in Section 9.2 of the next chapter.

Chapter 9 Relevance of Appreciative Systems Planning Approach in the IWRM Planning Process and Conclusions

9.1 Introduction

The need to ensure the sustainable management of water resources has been established throughout the thesis, from Chapter 2 through to Chapter 6. While there are differing approaches to water management, there is an acceptance of a common philosophy: the use of an integrated approach (Hooper 1999; GWP 2000; World Bank 2006). Terms such as integrated catchment management (ICM), integrated river basin management (IRBM) and integrated water resources management (IWRM) have been used interchangeably. All three concepts seem to be promoting an holistic approach in which the relationships between the economic, social and environmental systems are addressed (Chapter 2). Throughout the thesis, the IWRM concept and its implementation processes have been explored (Chapters 3 to 5). However, very little is offered in the literature in terms of the planning processes to achieve this integration, or a purposeful process in terms of being based on an explicitly articulated integrative procedure based on methodologically derived principles.

An appreciative systems planning approach proposed in Chapter 6 and applied in the two case study areas in Chapter 7 has provided insights, as discussed in Chapter 8, into its principles. In this final chapter, an attempt is made to articulate the relevance of the ASP approach in the IWRM planning process. This is followed by a summary of the thesis, a review of the thesis aims and the implications for theory and practice in terms of the conceptual and applied contributions of this study. Issues that need consideration in the application of the ASP approach and areas for further research conclude the chapter.

9.2 Relevance of the ASP approach to the IWRM Planning Process

As noted in Chapter 8, the appreciative systems planning approach presents a framework for advancing the IWRM agenda. The theoretical, process and practical relevance of the ASP approach in the IWRM planning process is discussed subsequently.

9.2.1 Theoretical Relevance

As noted in Chapter 6 and Sections 8.2.1, 8.2.2, and 8.2.3, the theoretical underpinnings of the ASP approach are based on insights from systems thinking, complexity theory, communicative action and an appreciative inquiry perspective. In their broadest sense, an appreciation of the thinking underlying each theory was revealed. The appreciative inquiry perspective was central to the development of this approach.

These theoretical bases are consistent with the broad framework of ecological economics (Chapter 1). EE favours 'procedural rationality', that is, approaches that are based on processes and procedures that can bring together the range of information and viewpoints necessary for informed deliberative decision-making in complex water resource issues. Given support for conceptual pluralism, Costanza (1989) stressed that, researchers should expect to find a wide range of approaches and ideas in addressing the myriad water resource issues rather than a coherent and consistent single point of view. The claim that understanding of complex systems cannot be reduced to calculations means that there will always be some form of creativity involved in dealing with complexity. The ASP approach therefore presents a framework through which to advance the resolution of complex water resource issues.

The ASP approach is strongly influenced by the theory of social constructionism which reflects a belief that there is no one reality but that multiple realities exist. Social constructionism posits, 'that human communication is the central process that creates, maintains, and transforms

realities' (Whitney and Trosten-Bloom 2003). The ever increasing water resource issues, and their threatening effects on our communities, require innovative theoretical and practical approaches, both in terms of a drive towards integration and in a call for the active involvement of all stakeholders in the planning process. Thus, the ASP approach presents a new challenge through which to advance the IWRM agenda with respect to water resource management.

In view of the complex nature of water resources and their management issues internationally, this study integrates ideas from the complexity theory (Section 6.4.1), systems thinking (Section 6.4.2), communicative action (Section 6.4.3) and appreciative inquiry perspectives (Chapters 5 and 6) towards a praxis for IWRM that will be in line with the realisation of the stated aims of that framework. The use of complexity and systems theories provided the background to understanding that community issues are as important as ecological and economic issues. Having said that, communicative action and appreciative inquiry provided the means for utilising systems thinking and complexity theories. Subsequently, this research contributes to the existing literature by substantiating the applicability of the systems thinking, communicative action and appreciative inquiry perspectives into designing an open-participative planning model for advancing the IWRM agenda globally. As noted in Chapter 8, the insights from the case study demonstrate the theoretical application of this study and its relevance.

In addition, the graphical presentation of outcomes from Chapter 7, depicts the systemic relationship between the issues and the need to approach them in an holistic manner. The issues need to be communicated between all users of the resource in a manner that will encourage the participation of all. The conventional reductionist planning approaches, as noted in Section 5.2, is based on the 'decomposition' and 'resynthesis' of problem formulation and design solutions to address problems. In fashioning more sustainable water management strategies, most water resource relationships cannot be reduced to simple causes and effects because they are merely parts of a much more convoluted set of complex linkages (Jaffe and Al-Jayyoust 2002). The ASP

approach utilises this complex view by accommodating a diversity of economic, environmental and community considerations where people with different backgrounds and perspectives provide opportunities to articulate their thoughts by making contributions from within an appreciative inquiry mode (Chapter 6). The ASP processes are an example of the power of transdisciplinary praxis and also a tool towards communication rationality as advocated by Habermas.

The outcomes from the engagement processes offer a dynamic systems learning community of practice setting wherein all stakeholders are able to systematically explore the understandings and perspectives of others in a controlled dialogue process.

9.2.2 The Process Relevance

The facilitation process in the ASP approach engenders a strong degree of ownership and empathy with participants (Chapter 7). The community understandings promulgated through this approach are much more aligned with a dynamic, holistic perspective rather than the static, linear and reductionist alternative that so critically underpins much of conventional water resource development and management decision-making.

The learning process, outlined in the ASP approach (Chapters 7 and 8), which leads to shared understandings of issues and in relation to pathways through which to resolve them, seems to be an appropriate response to water resource management. Through this collaborative approach, the prospects for facilitating shared understandings in relation to the issues at hand would seem to be maximised. This kind of practice integrates the intimate systems of understanding of a local village community with the scientific knowledge of researchers and the political/policy realities of the prevailing government administration.

As noted in Chapter 7, by bringing all the institutional stakeholders together in one meeting, new issues in relation to water were uncovered at the institution

and community levels. Looking at the depth of responses shared, participants were energised just by talking to each other about water resource management in the catchment area. This dialogue though, was limited to the group/participants present; the positive outcomes were catalysed by the facilitators toward new directions for more sustainable practices, in relation to water resource challenges.

The principles and means of the ASP approach enabled participating groups and individuals to express, share and analyse the complex and diverse realities of water issues (Chapters 7 and 8). The process encourages innovation through an open debate between stakeholders, rather than relying solely on existing ideas. Attention is given to strengths rather than problems or weaknesses. The ASP process encompasses many approaches and methodologies and is more sensitive to broader contextual issues and the interrelationships between the different dimensions and levels of capacity. The process can be used in conjunction with other participatory rural appraisal methods; however, the emphasis should be on strengths and the implementation of best practices rather than on weaknesses and problems.

The ASP approach adds to a growing body of knowledge by employing an engagement process that removes the cushion of expert-disciplinary support and exposes all participants equally to the task of telling the stories of what is working well in relation to the issue at stake. The disciplinary expert may share his/her best experiences on what is working well from his/her perspective and so will the farmer. ASP views experts as stakeholders and their knowledge is used to elucidate questions from the group and to support the decision-making process. Experts, therefore, need to contribute using a language that is understandable by the whole group rather than jargon or scientific words.

In addition, this research makes a methodological contribution through the ASP approach. As discussed in Chapter 5, most planning research in the water management area has utilised the problem setting mode of inquiry in the engagement process. However, this study breaks new ground by

designing and applying ASP and utilising an appreciative mode of inquiry that will support the IWRM planning process. Further, my attempt to outline and demonstrate a methodology for assessing performance against the definition of sustainability in a country-specific context is a further 'conceptual' contribution of the study.

Through the methodological synthesis of this thesis, the ASP has been able to provide AI's methodology with more explicit sound theoretical foundations than it currently has. In addition, AI advocates different ways of capturing information - drawing, painting etc. However, the literature seem silent when it comes to providing participants with an appreciation of the relationship between issues and how this contributes to the wholeness principle. The ASP through the process is able to present outcomes in a systemic relationship, highlighting the complexities involved in a phenomenon.

Finally, up to this time there have been no known empirical studies in water resources management that have used an ASP approach to discover what is working well in a catchment. It is hoped that by applying the ASP approach this study will become a reference point to overcome the dilemma in facilitating stakeholder involvement for improved water resources management.

9.2.3 Practical Relevance

As noted earlier in the previous chapters (Chapters 4, 5 and 6), the current IWRM concept does not elaborate on planning processes that incorporate the complexities involved in water management issues nor does it include approaches and methods towards adaptive water management strategies. The ASP approach is aimed at bridging this gap.

A practical approach that entails collaborative learning has the potential to enable government agencies to change their habits of thinking and to explore new ways of dealing better with water and related issues. The systems thinking framework, utilised in the ASP, also supports these government

agencies to cope with the uncertainties of the future and to perceive the consequences of their actions in the short and long term. It therefore embraces complexity rather than just acknowledging it. With ASP, such understanding is implicit and provides opportunities to jointly design strategies to abate the negative spiral, or to modify a negative trend of resolving water issues into a more positive one.

The results of this research do not preclude the ongoing need for academics and policy makers to investigate and remedy inequitable barriers to addressing the myriad water resource issues. The government and its agencies can also use this model to identify what is working well in terms of their policies and to integrate this with the institutions', communities' and individual perspectives for improved water resource management across countries. Given the potential contribution of water resources to the development of nations, greater attention should be paid to the identification of approaches which have the potential to elicit views from all stakeholders involved in the use of water resources.

The ASP approach presents an alternative to the conventional planning approaches in pursuit of proactive strategies among institutions to advance the IWRM agenda. The problem focus of inquiry, which characterises conventional planning approaches, takes longer (identification of the problem, narrowing all problems into one core, analysis of the problem causes and effects, turning problem statements into positives and beginning to resolve the issues). By starting with what is working well, the ASP approach shortens the time, and the energy channelled into discussion is enhanced.

9.3 Summary of Thesis

The Global Water Partnership (GWP) through its IWRM processes has advocated an integrative perspective for water management that is responsive to economic, environmental and community outcomes. However, very little has been offered in terms of processes to operationalise the concept. This

thesis has been set out to articulate a pathway through which to advance the IWRM agenda.

In Chapter 1, the thesis set out the research design processes in a systematic manner and set the tone for the more focussed investigations to be pursued in subsequent chapters aimed at addressing the overall aim of the thesis as indicated in Section 1.3.

In Chapter 2, the investigations began by establishing the relationship between water and livelihood issues and the need for an efficient water resource management strategy. This was in recognition of the fact that the status of being 'water poor', as discussed in Section 2.3.1, transcends all sectors and affects the livelihood security of the majority of the population of the world. This realisation has become necessary because it has been observed that the poor management of water resources causes health, environmental and economic losses on a scale that impedes development and frustrates poverty reduction efforts, as discussed in Sections 2.1, 2.2 and 2.3. These discussions were found necessary to provide the basis for exploring the whole idea of integrated water resources management, as discussed in Sections 2.4 and 2.5.

The history, background and status of the generic GWP/IWRM were thus explored in detail in Sections 3.2, 3.3, 3.4 and 3.5. This was to enable some consistent deconstruction of the key assumptions of IWRM as a policy priority area. As was discussed in Chapter 3, different assumptions are likely to incline researchers towards different methodologies (Burrel and Morgan 1979; Crotty 1998). To support a systematic process of deconstructing the 'theoretical perspective/methodological' underpinnings of the various recommendations and views of the TEC group in relation to IWRM praxis, some general 'models of meaning' in relation to water resources management were presented in Table 3.1. This was to provide a basis for the articulation and assessment of the assumptions involved and the particular truth claims that they embed (Burrel and Morgan 1979). Of particular interest for the review was the degree to which IWRM implies the need for some kind of consistent "paradigm shift"

or evolution of understandings in relation to sustainable water resources management and governance. Drawing from the review of IWRM from Mar del Plata 1977 to Kyoto 2003, through to the establishment of GWP and the subsequent publication of its TEC papers in Section 3.6, the observed conceptual model of IWRM seemed to suggest the need to embrace all stakeholders in the resolution of complex water resources issues. The IWRM principle II Section 3.5.1, indicates that stakeholders be given a voice in water planning and management processes, with particular attention to securing the participation of women and the disadvantaged across all levels (Jonch-Clausen 2004). The processes to operationalise these principles were not shared and this was the concern for this study.

In order to have a good practical appreciation of the IWRM concept, the study reviewed the current state of IWRM implementation globally in Chapter 4. The discussions looked at IWRM governance structures (Section 4.3.1.) and the processes as reflected in the IWRM framework (Section 4.3.2.). This was to assess the observed model with the conceptual model to determine the leverage point through which to design processes to advance the IWRM agenda. In the process it was observed that lessons learnt from the implementation of IWRM to date suggest that the planning processes adopted in the analysed countries seem to be contrary to the IWRM principle II (Section 3.5.1), and the need to highlight the planning process more than the plan itself was emphasised.

Based on the practical revelation discussed in Chapter 4, there was the need to re-assess the participatory planning approaches in Chapter 5. As noted in Section 5.2, in fashioning more sustainable water management strategies, most water resource relationships cannot be reduced to simple causes and effects, but are merely part of a very complex system of linkages (Jaffe and Al-Jayyoust 2002). It has been established that most planning models that have been used in water resources management have been based on the problem inquiry mode. As discussed in Section 5.4.1, the problem-solving mode narrows one’s gaze and distorts one's perception of depth into complex water resource issues. The participatory processes are believed to have

enabled all stakeholders to identify water resource issues and their resolution were seen to have proved compatible with 'top-down' reductionist planning approaches and have not made the needed changes and ownership as envisaged by its proponents. From the review of literature in Chapters 2-5, four key conceptual issues emerged. These included the need to recognise water issues as complex, the need to look at the issues from a systems view, and the need to communicate water issues across all levels in a manner that will embrace all ideas for improved water resources management. The need to identify a thoughtful planning process, which involves 'collective decision-making through authentic democratic discussion, open to all interests, under which political power, experts' knowledge, money and strategising do not determine outcomes' (Dryzek 1995), was identified therefore in Section 5.6. An appreciative inquiry approach was seen to be appropriate for this kind of process. It is a philosophy for change premised on the fact or assumption that in every organisation or community something works and change can be managed through the identification of what works, and the analysis of how to do more of what works.

Chapter 6 provided a space to discuss the wider "theoretical" implications of an appreciative inquiry perspective with a particular focus on how IWRM fits in this perspective. The discussion looked at how the AI might contribute to deriving greater insights into these water issues and into their resolution. Complexity theory, systems thinking and communicative action theory were seen to have some close association with the appreciative inquiry approach because of the integrative and holistic perspective of such theories. These were explored in Section 6.4. In Section 6.4.1, an articulation of AI and complexity theory implied that one cannot have perfect knowledge of complex water systems, due to, for example, strategic and institutional uncertainties that are involved in water resource issues; thus, emphasising the need to be modest about the claims we make about such knowledge. As has been discussed in Chapter 4, many water resource issues have been approached as separate, and fragmented and not as interrelated and interdependent components that form a complex and unified whole. Interventions provided have been guided by an instrumental purpose approach tied to what is

already known rather than exploring broader human and/or social purposes. The insights from AI's close association with complexity theory, systems thinking and communicative action theory provided a platform for a recommended open participative framework called the appreciative systems planning approach. As discussed in Section 6.7.1, the conceptual heritage of ASP is shared by the fields of ecological economics, appreciative inquiry, organisational learning, system dynamics and social ecology (cognitive mapping). It is argued that the processes of the ASP approach enable stakeholders to move away from the need to defend individual perspectives and view-points towards a more healthy willingness to listen to, and participate in, the evolution of more generally shared insights.

In Chapter 7, cases from the Macintyre Brook catchment (Australia) and the Savelugu catchment (Ghana) provided a testing ground for the proposed methodology. These cases were focussed around an attempt to critically assess IWRM implementations and to systematically explore the prospects for ASP to do 'better'. The compare and contrast approach should thus reveal both generalisable and location-specific elements of the IWRM planning processes.

Chapter 8 assesses how the theoretical syntheses have informed the ASP approach.

9.4 Review of Thesis Aims

In order to approach the research in a systematic manner, three aim statements were proposed in Chapter 1. These were:

- To develop a methodology for integrated water resource management planning processes customised to the particular ecological, economic and community settings that can serve as a framework consistent with the rhetoric embedded in the existing IWRM GWP agenda;
- To combine insights from appreciative inquiry perspectives to underpin a praxis synthesis consistent with the rhetoric of IWRM; and

- To explore improved ways to help stakeholders and communities own the process of change for improved water resources management.

An assessment of the thesis achievement indicates that throughout the study, the three aims proposed have been pursued in relation to its conceptual and applied contributions to knowledge. In relation to the conceptual contribution, the deconstruction of the 'theoretical perspective/methodological' underpinnings of the various recommendations and views of the TEC group in relation to IWRM praxis has provided the basis for an explicit articulation and assessment of the assumptions involved and the particular truth claims that they embed. Of particular interest has been the degree to which IWRM implied the need for some kind of consistent 'paradigm shift' or evolution of understanding in relation to sustainable water resources management and governance. This deconstruction required the combination of insights from complexity theory, systems thinking, communicative action theory and the appreciative inquiry perspective to address the observed conceptual model of IWRM, which seemed to suggest the need to embrace all stakeholders in the resolution of complex water resources issues.

Regarding the applied contribution, the study, through insights gained from the review of complexity theory, systems thinking, communicative action theory and the appreciative inquiry perspective, informed the design of the ASP approach, which has been tested across two very different case studies; the Macintyre Brook catchment in Australia and the Savelugu Nantom catchment in Ghana. The insights gained, therefore, provide advice to GWP, irrigation industries, and all water-related institutions in both Australia and Ghana as to how to proceed in relation to stakeholder and community engagement so that they own the process of change for improved water resources management. A method to engage stakeholders in IWRM planning processes has been an issue of concern for countries and institutions involved in water resources management. The ASP approach therefore provides a framework through which to address the decision- making process aimed at integrating social, economic and environmental outcomes.

9.5 Implications for Theory and Practice

The insights shared from the application of the ASP approach in terms of its theoretical, process and practical relevance has the potential to addressing the myriad water resource issues. Further, this model presents an opportunity for institutions, communities and individuals to reassess the way in which they engage with stakeholders in water management issues. As noted in Chapters 7 and 8, with the ASP processes, institutions and communities themselves learn more of what they know, and together present and build up more than any one person knows.

Most frameworks currently used in the planning process engage stakeholders, interpret situations, opportunities and policy formulation from within a problem-focussed setting rather than from an appreciative inquiry setting. The relevance of ASP processes is that it has the potential to change the personal perspective of stakeholders since the process exposes all participants equally to the task of telling stories in pair dialogues about what is working well in relation to the issue at stake, irrespective of their academic backgrounds and social status. The articulation of the ASP approach, provides a planning framework through which policy makers may address the myriad water issues from a broader perspective rather than the simplistic reductionist approaches that characterise most planning interventions.

This is not to say that current attempts at achieving sustainable solutions through a problem focus are ineffective. In fact, much has been achieved in the past. However, it is undeniable that many of the engagement processes used in the past have been compatible with 'top-down' reductionist planning approaches and have not made the needed changes and ownership as envisaged in the IWRM rhetoric. ASP bridges this gap. In the application of the ASP approach the following considerations should guide the process:

- *Socio-Cultural issues*. Because there are people involved in the IWRM planning process, the application of the ASP approach should focus on the interaction between different dimensions of people, their

background, values systems, cultural set up etc. or elements of these processes to both understand why different outcomes occur, and how these processes and interactions can be influenced to achieve desirable outcomes.

- *Networks and relationships*. It is important to focus on improving networks, relationships and communication during the engagement processes. Improving these relationships is important so that people are aware of a broader range of issues involved in water management, how these interact and the outcomes of the processes of change that are constantly occurring in their day-to-day lives.
- *Communication strategy*. In relation to the diverse values and perceptions of people within and across countries, the need to explore communication strategies to address location-specific concerns is important. Without relating to people on their own terms, there is little likelihood of engaging them in the process of identifying water resource management issues and agreeing on a vision for sustainable water resource management.
- *Facilitation.* The type of facilitation skills and qualities in the application of the ASP approach that are important in this context encompass interpersonal skills (attentive listening, respect, flexibility in approaches, rapport and trust building), participatory and experiential learning, handling conflict etc. At the community levels, the identification of key people within the localities to support and facilitate water management processes is critical. Often, people who have local knowledge are able to build rapport with community leaders and other community members more quickly than outsiders because they have some sense of identity with the social collective or group due to the sharing of common experiences. These skills may not always be the result of formal training. The facilitators, or change agents, in the application of the ASP approach should be well versed in the assumptions underlying the approach.

9.6 Areas that Need further Consideration in the ASP approach

The ASP approach might usefully be tested in more communities and institutions. Although the study provides useful insights into the differences in location among developed and in developing country contexts, the results need to be interpreted subject to the usual limitations of qualitative research. In particular, the focus on the relationships within the workshop participants from only two localities (although it improved the internal validity of the study) limits the extent to which the results could be generalised across localities. It may be that an application of the ASP approach across a broader geographic area with different economic and ecological settings might find different insights to explaining management of water resources. This was, however, beyond the scope of this study and is left for future researchers to explore.

Further to the above, other cognitive and personal characteristics such as choices of what worked activities could reflect the balance of power in a particular community and this may bias the results due to the reliance on the workshop participants, to make accurate judgements about the issues shared in this study. Also the views of these single workshop participants may not be the views of other participants who may be involved in the water-related institutions and who did not have the opportunity to participate during the engagement processes. However, the design was considered to be the most feasible given the availability of participants, time and cost constraints. In a future application of the approach, the issues shared should be validated.

Areas that need consideration from the above do not in any way render less significant the insights of the research.

9.7 Areas for Further Research:

The insights from the current research provide the following avenues for future research:

- The insights from both the institutional and community levels could be replicated and best practices used to improve the approach.
- The ASP approach could be applied at both the institutional and community level together. The study could also be singly replicated at the individual water-related institutions and settings including a comparison between urban and rural localities on water management issues.
- New programmes need to be developed and used to test the approach. In testing the model the research framework developed for this study could be expanded to complete the 4-D processes discussed in Section 6.6.4. Since change in complex water issues takes time, catchments could be selected across regions and pilot studies used to test these processes for between five and ten years to evaluate the result. The outcomes could inform improvement of the approach for replication into other areas. Thus, the overall task of future research is to enrich this theoretical framework.
- Identify what is keeping the IWRM flame burning. What are the driving forces? Can we build on the strengths and move ahead? If proponents, and sympathisers believe the concept is good, or an aspect of the concept is good, can we build on the best experiences, and dream about positive images of its realisation?

9.8 Conclusion

The outcome of the ASP process is enhanced knowledge and capability, action and change. With the ASP process the institutions and communities themselves learn more of what they know, and together present and build up more than anyone knew alone. It is not the reality of the outsiders which is transferred and imposed, but theirs which is expressed, built up, and shared,

and their confidence and capabilities which are strengthened. If people build on what has worked as part of a practical process, they are more likely to strive to ‘get it right’. Through ASP learning processes, where communities are engaged in exchanges, all interested stakeholders are able to develop shared understandings of their system and these understandings will help them identify and articulate current issues and opportunities, directions for change and sometimes innovative ideas about pathways through which to realise long-term sustainability of the water resources.

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APPENDICES

Appendix 1: Letter of Information

1st November 2006

LETTER OF INFORMATION

Dear Participant,

David Essaw is a Doctoral Candidate at the University of New England, Australia. As part of his research project, David is to 'explore improved ways of engaging stakeholders in the Integrated Water Resource Management (IWRM) planning process'. His proposed methodology will be tested across two very different case studies from Macintyre Brook Catchment, Australia and Savelugu Catchment, Ghana (both countries are members of the Global Water Partnership, an institution that promotes IWRM).

It is anticipated that your participation will enable the team to explore improved ways to help stakeholders and communities own and use IWRM planning processes for improved water resources management in their catchments. Should you agree to partake in the research, we will meet for a one-day workshop at a convenient venue close to you. If at any time during the workshop, you do not wish to participate in any of the processes you are free to withdraw.

For further clarification, you can contact David on dessaw@une.edu.au

Please keep a copy of this information for your records and accept my sincere appreciation for your participation, insights and valuable knowledge which would be vital to this project.

Sincerely,

……

On behalf of

David ESSAW
Centre for Ecological Economics and Water Policy Research
University of New England
Armidale NSW 2351, Australia.

Appendix 2: Letter of Appreciation

Dear Mr Amoateng Mensah,

Letter of Appreciation

This is to show my profound gratitude to the World Vision International (WVI), through you for the support provided during my research work on 'Integrated Water Resources Management' in Savelugu Nantom Catchment. I must say, the vehicle provided by the WVI for my day-to-day running, the Training centre for the partners' workshop, and diverse support received from your staff facilitated the research process. Once again accept my appreciation.

I hope the relationship I have established with WVI through my research work will be strengthened for improved service delivery in the water sector in future.

Regards

David

Patrick_amoateng-mensah@wvi.org

Dear Participant,

Letter of Appreciation

This is to show my profound gratitude to your organisation, through you for the support provided during my research work on 'Integrated Water Resources Management' in Savelugu Nantom Catchment. I must say, your ideas, time, resources, and physical presence during the workshop facilitated the research outcomes. Once again accept my appreciation.

I hope the relationship I have established with you through my research work will be strengthened for improved service delivery in the water sector in future.

Regards

David Essaw
PhD Candidate
Centre for Ecological Economics and Water Policy Research
University of New England, Armidale, NSW 2351
Australia

Dear Bunglung Community,

Letter of Appreciation

This is to show my profound gratitude to Bunlung Community for the support provided during my research work on 'Integrated Water Resources Management' in Savelugu Nantom Catchment. I must say, the ideas, time, resources, and physical presence of the community members during the workshop facilitated the research outcomes. Once again accept my appreciation.

Regards

David Essaw
PhD Candidate
Centre for Ecological Economics and Water Policy Research
University of New England, Armidale, NSW 2351
Australia

Dear Ligba Community,

Letter of Appreciation

This is to show my profound gratitude to Ligba Community for the support provided during my research work on 'Integrated Water Resources Management' in Savelugu Nantom Catchment. I must say, the ideas, time, resources, and physical presence of the community members during the workshop facilitated the research outcomes. Once again accept my appreciation.

Regards

David Essaw
PhD Candidate
Centre for Ecological Economics and Water Policy Research
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