PROCEEDINGS OF THE SECOND THINK TANK ON WATER GOVERNANCE

4 November 2011
10:00 to 15:45
Premier Hotel, OR Tambo International Airport, Kempton Park

TABLE OF CONTENTS

LIST OF ACRONYMS

AWARD	**Association for Water and Rural Development**
CMA	**Catchment Management Agency**
CMS	**Catchment Management Strategy**
DWA	**Department of Water Affairs**
DWAF	**Department of Water Affairs and Forestry (pre-May 2009)**
EQ	**Emotional intelligence**
EWR	**Environmental Water Requirements**
ICMA	**Inkomati Catchment Management Agency**
IWRM	**Integrated Water Resource Management**
NGO	**Non-government organisation**
NWA	**National Water Act**
NWRS	**National Water Resource Strategy**
SMART	**Specific, Measurable, Achievable, Realistic, Time-related**
UNESCO	**United Nations Educational, Scientific and Cultural Organisation**
WISA	**Water Institute of South Africa**
WMO	**World Meteorological Organization**
WRC	**Water Research Commission**
WUA	**Water user Association**

WELCOME

Ms Karar welcomed everyone on behalf of the WRC. It was the responsibility of each person to ensure that change took place, whether in bridging the divide of a discipline to understand others, or dealing with the changing climate in all areas of governance. This event would present opportunities for sharing knowledge and creating space for change, anticipating that a community of practice would emerge to take the science forward. A variety of speakers, who had applied their minds to different angles of change, would share their insight with the forum. She thanked Dr Dickens for his assistance in putting together the programme for this think tank.

Mr van Zyl welcomed the participants on behalf of DWA and WISA's Management and Institutional Affairs Division. He gave a brief overview of the structure of WISA and indicated that participants would soon be invited to become active partners with WISA to find solutions to move into a SMART (Specific, Measurable, Achievable, Realistic, Time-related) new era of water management.

KEY NOTE PRESENTATION AND WORKSHOP

Leading Change: The Human Dimension (Dr Karen Ortlepp, School of Management, University of KwaZulu-Natal)

Dr Ortlepp introduced the topic of her presentation, explaining that she would lead a process that looked at leading change with an emphasis on the human dimension of change that included sections of active participation from delegates.

Participants were invited to form small groups to discuss the difference in the water sector for people entering it now compared to those who entered it a generation ago. The following feedback was received from the participants:

- **Legislation had changed the way the water sector functioned in terms of parameters and dynamics and this demanded a different response from people working in the sector.**

- **The younger generation of people who worked in the water sector were more adaptable, more open to change and more aware of technology than the older generation.**
- **Diversity in organisations today was much greater than in previous years. The big challenges related to diversity in organisations no longer centred around race, culture and gender, but concerned the management of different generations, each with differing perspectives and values.**
- **Knowledge used to be in the hands of a few experts but it is now available to everyone.**
- **Nowadays people have a voice and a choice in all issues that affect them.**
- **Nowadays there is a real urgency to manage the water resource more effectively.**
- **The availability of knowledge in this new era meant that appropriate skills were necessary to manage the knowledge if it was to be useful in the changing water sector.**
- **Different needs and challenges in the various communities have to be managed correctly.**

Although some challenges raised by the participants were unique to the water sector, observations from the corporate world, education sector and NGOs indicated similar challenges in terms of change. Some of the challenges and opportunities faced by organisations operating in a sector with unique needs, and in the global environment, related to:

- **Turbulence and rapid change**
- **The knowledge era**
- **Diversity in all aspects of life**
- **Globalisation**
- **Legislation**
- **A democratic society**
- **Evolving work and family roles**
- **Skills shortages**
- **South Africa as a society of surplus and scarcity.**

The corporate world worked on the premise that an organisation would collapse if the rate of change in the work place were less than the rate of change in the macro-environment. Change was taking place in every sector and should be managed and embraced rather than avoided.

The implications of change for leadership of organisations included:

- **The importance of providing hope for the future to those in the workplace, as change often unsettled people and caused them to resist change**
- **The acceptance that not all the answers were obvious, and that people could find answers by sharing their knowledge and expertise**
- **Being comfortable with contradictions and some chaos instead of controlling situations by managing them**
- **The ability to handle continuous change and embrace it**
- **Leaders not simply being managers, but positively impacting on the atmosphere in a workplace by becoming facilitators and coaches**
- **Understanding what motivates and inspires people**
- **Nurturing and retaining talent in the organisation, especially in the context of a shortage of skills**
- **The development and enhancement of leaders' resilience and emotional intelligence.**

Vision was a key aspect to leadership and change management. Leaders should ensure that people buy into, and take ownership of, the vision of an organisation, and recognise that constant change leads to discouragement and change fatigue. It was important for

leaders to prioritise and plan the change process, as well as to acknowledge achievements from one set of changes before moving to the next set of changes.

Most sectors had come to the realisation that people were the source of competitive advantage. The people dimension was crucial in any biophysical intervention aimed at the sustainability of water resources. The results of most studies on large-scale change interventions showed that up to 80% of change management programmes had failed.

Although the introduction of change to an organisation required a focus on overt aspects such as systems, procedures, products and financial resources, important covert aspects such as beliefs, assumptions, perception, attitudes, feelings, individual needs, group dynamics and culture should receive equal attention or they would lead to failed change management programmes and become obstacles to achieving change.

Delegates participated in a non-verbal exercise, which illustrated the experience of change from the individual's perspective. Delegates commented as follows about their perceptions of the exercise:

- **There was a feeling of awkwardness and self-consciousness. The greater the change that was required, the greater the sense of awkwardness.**
- **More preparation time would have helped to become accustomed to the change.**
- **Less change was more acceptable.**
- **More information and communication around the reasons for the change and the intended outcomes would have been helpful.**
- **The non-verbal aspect of the exercise was stressful, as opinions and thoughts could not be exchanged.**

In situations of change, most people tended to first think about what they could lose and not what they could gain from the change. People tended to feel very alone and become doubtful about their ability to adapt to the change interventions. It was the role of leader, when introducing change, to explain the value of the change for each individual and help people to connect and engage with one another in the situation. People were at different levels of readiness for change, and many were concerned that they did not have sufficient resources to change. Once the pressure to change was removed, people sometimes reverted back to their previous behaviour. Leaders should ensure that the momentum for change was maintained and positively reinforced over time.

Some reasons for resistance to change included:

- **Fear of the unknown**
- **Lack of information**
- **Misinformation**
- **Historical factors such as tradition and customs**
- **Threat to core skills and competence**
- **Threat to power base and status**
- **Organisational culture of low trust**
- **Poor relationships**
- **Fear of failure and reluctance to experiment.**

Ongoing transparent, honest information that was communicated with reassurance and positive reinforcement were essential elements in avoiding potential conflict resulting from resistance to change. Different perspectives should be able to be voiced and heard during the process of introducing change. Understanding the concept of organisational trust was becoming more prevalent in the field of organisational behaviour. The introduction of change was better accepted in organisations where trust and respect between management and employees, as well as between individuals, was evident. Building trust and making trust part of the organisational culture was a major challenge of

leadership. Successful change interventions were substantially hindered in organisations where people worked in silos, where there was no sense of connectedness, and relationships were poor. Organisations should allow people to be innovative and to take calculated risks, while understanding their role in the change process.

Studies of individuals' emotional responses to change identified a pattern similar to the pattern of emotions as a result of grief. Awareness of 'bad news' was followed by a process of denial, anger, bargaining, depression and ultimately acceptance.

Some of the factors that contributed to successful change, underpinned by leadership, included:

- **A sense of urgency to change**
- **Identifying short-term wins**
- **Individual motivation and commitment**
- **Employee ownership of ideas**
- **A critical mass of support with people of influence**
- **Resources**
- **Change anchors.**

The concept of leadership had evolved over time from demand and control leadership to servant leadership. A servant leader was someone who:

- **Was motivated by desire to serve others**
- **Was highly collaborative and interdependent**
- **Gave credit to others generously**
- **Was sensitive to what motivates others**
- **Focuses on gaining input and buy-in from all parties**
- **Empowers all to win with shared goals and vision**
- **Listens deeply and respectfully to others**
- **Develops trust across constituencies and breaks down hierarchies**
- **Makes it safe to learn from mistakes.**

The concept of emotional intelligence (EQ) underpinned servant leadership, and focused on aspects that were not obvious or clear-cut. EQ was about people's ability to manage themselves and their relationships effectively. The four components of EQ were:

- **Self-awareness**
- **Dealing with feedback and controlling impulses**
- **Empathy and building relationships**
- **Learning from experiences and changing behaviour to get different results.**

Delegates were invited to complete a simple quiz, which allowed them to estimate the level of their EQ. Although it was possible to develop the techniques of EQ, leadership and resilience, some people were born with the predisposition to be leaders and showed a natural talent in that direction.

Leadership together with resilience were the most essential contributing factors to bring about successful change. Practices of exemplary leadership were:

- **Modelling the way and 'walking the talk'**
- **Inspiring a shared vision, initiating visions and building a process that gave others a sense of ownership of the vision**
- **Enabling others to act, continually challenging the process, questioning and looking for better ways to do things, and giving people the resources necessary in order to meet the challenges of change**
- **Encouraging the heart of people through change and celebrating the successes.**

The DVD, The Art of Possibility by Benjamin Zander, demonstrated the principles of servant leadership and showed that leaders should never doubt the capacity of the people they lead to accomplish whatever their leaders dreams for them. The inspirational message provided several points for reflection.

Discussion

Mr Muller: Change in the water sector differed from change in a single organisation in that the water sector involved a large system comprising many organisations with many leaders, different visions and political views. The need for strong leadership, for the correct steps to be taken towards introducing change and arriving at a common vision, were even more important in the complicated context of the water sector.

Mr van Zyl: Resistance to change should be defined in the context of a broad background of culture, attitude, political differences and the inability to carry out change because of disengagement from taking responsibility and taking action.

Comment: Recently, it has become evident that the development of lateral thinking and EQ is crucial in all spheres of life, particularly in leadership. To what degree is it worthwhile that sectors or industry start to incorporate these essential elements in building expertise?
Dr Ortlepp: Leaders who demonstrate EQ and creative thinking, and not only technical skills, have become sought after in the corporate world. A balance is required between the 'soft' skills (EQ) and the 'hard' skills, which include boundaries, parameters and systems that enable people to be the best they can be and to achieve the vision that is set for them.
Dr. Dent: These concepts (of EQ and creativity) are not about losing control but about containing control at the right places and being creative at the right times.

Comment: Music is a universal language and can replace words with feelings. Music therapy can be used to help people to find synergy.
Dr Ortlepp: Music is often used in team-building exercises and in conflict management strategies, and is a wonderful media for building bridges.
Comment: A supportive environment of a group that builds self-confidence and reflects a willingness to learn is necessary before introducing change to the broad organisation.
Dr Ortlepp: It is essential that leaders give feedback about positive progress made in the change process, and that they are courageous enough to also give feedback that is negative and difficult to communicate, in a constructive, uplifting manner.

Comment: It has been said that if you want to change people's behaviour, you need to change the way you measure them. In the water sector, it is not always clear what we are trying to achieve, or what we are measuring through implementing changes.
Dr Ortlepp: It is true that what you measure is what you will get in terms of behaviour. Positive reinforcement of steps towards change is essential.

Ms Karar: Dr Ortlepp's presentation was enlightening. Although the points she made seemed obvious in some respects, they have to be translated to the management of the common property resource; water which is the focused on natural resource here.

CHANGE IN THE SOCIAL BIOPHYSICAL REALM: INTRODUCTORY PRESENTATIONS

Frozen Minds
Dr Chris Dickens, Institute of Natural Resources, University of KwaZulu-Natal

Technicalities, procedures and strategies involved in the management of water often take precedence over the relationships between people in an organisation, and individuals' perceptions, feelings and experiences. Change interventions could not be successful unless people's minds were attuned.

An old perspective on this matter uses the Sanskrit language, which was known as the parent language of all European languages, and texts called the Veda that were approximately 4000 years old in their written form. The Veda was essentially a text book on how to live. Some of the concepts captured by the Veda involved the three Guna, described as everything in the universe, which could be divided into three qualities, Sattva, Rajas and Tamas. These qualities overlap each other, or one of the qualities can dominate over the others.

Each quality had specific characteristics. Tamas absorbs consciousness, Sattva conducts consciousness and Rajas reflects consciousness. The Veda suggested that love, or the 'natural in between' was the substance that connected all people and was always present. However, love was affected by the three Guna. Love influenced by Tamas was called Moha, which was constricting, binding and morbid. Love influenced by Rajas was passionate, active, enthusiastic but inconsistent. Love influenced by Sattva was pure, calm, trusting, peaceful, wise, open-minded, constant and secure.

The qualities influenced management in the workplace and could offer solutions to the way that change was managed. Sattva cultivated wisdom and was cautious of ego, which was the attachment to something that resulted in ruin. Wisdom could be taught consciously through practice and experience, by accepting the interdependence of all things, and by being of service to others. An adaptive manager was required to demonstrate the following characteristics:

- **Wisdom**
- **Expansive in outlook**
- **Free-thinking**
- **Unconstrained by ego**
- **Self-confident**
- **Self-reliant**
- **Willing servant.**

Adaptive Management in the Planning and Execution of Transdisciplinary Social-Ecological Research

Prof. Tally Palmer, Institute of Water Research, Rhodes University

It has become evident in recent times that instead of research ending up a shelf, the work needed to be transformed into something that made a difference.

The idea of 'Akili', or 'wise knowing' was introduced to bring together a wide range of disciplinary thinking and practice-based people to answer questions and to get to know each other. This idea was funded by the South African Netherlands Research Programme in Alternatives in Development (SANPAD) under the project, 'From policy to practice: enhancing implementation of water policies for sustainable development', which provided the opportunity to develop interesting and challenging ways of engaging with complex situations. A transdisciplinary team was built as a result of the research community that wanted to interact across boundaries and to start seriously working to solve problems, to practice ideas and develop practical skills.

From a theoretical and thinking point of view it was worth reading about and understanding what it meant for a system or an entity to be complex, and what general complexity thinking was about, as these led to the nature of social-ecological systems. Metaphorically speaking people were the planet, and society as a complex system interacted with an embedded biophysical system, which interacted to create a complex entity. There were theories of eco-systems, of physical systems and of social systems, but there was no actual theoretical and conceptual understanding of the integrated system called a social-ecological system. Some of the ideas that were helpful in this interaction were resilience and social learning. Knowledge would be co-created if these ideas were brought into water resource management. Knowledge co-creation meant that research was not merely done and the results handed over to someone to be used, but that the people who would use the research would engage in research with the people on whom it might be used. This co-creation of knowledge opened boundaries and brought uncertainty, yet it was reminiscent of the centrality of context and of the importance of scale and feedback.

Useful lessons had been learnt from building transdisciplinary research teams. Some of these lessons were:

- **Engagement with people and co-creation of knowledge among managers and users required working across boundaries.**
- **A certain amount of serendipity was required in the construction of the research team, taking into account the principles of diversity and capability.**
- **Sharing literature across boundaries, particularly as a means to cross the language divide between disciplines, was important.**
- **In terms of building transdisciplinary teams, the exercise had proved to be interesting and engaging, yet challenging because people in the research and intellectual environment were judged and rewarded mainly in specific disciplinary areas. It was therefore necessary to engage not only with the practical questions of making things work, but also in the development of an intellectual shared epistemology in order to articulate complex social-ecological systems in a language that was accessible across disciplinary boundaries. This process required imagination and rigour.**
- **It was important to engage in developing a shared understanding of quality. Rules for quality science were clearly set out, and the debates internationally and nationally always concerned excellent science and seldom concerned excellent research. However, shared notions of quality, or a well-developed notion of quality in the transdisciplinary boundary, did not exist and would have to be articulated.**
- **The need for a shared language in transdisciplinary teams was evident. The underpinning epistemology, or ways of understanding, related to the ways that things**

were done and the methods used. These methods should be interrogated to identify which were used for what purposes, and how they were used in the changed context of a social-ecological system.

- **The importance of practising reflexivity and modesty, not habits that were usually practised in either research or management, were essential in order to co-create knowledge embedded in situations. The late Prof. Paul Cilliers spoke eloquently about modesty, saying that, 'The perfect predictive model is exactly the same as the highly complex reality and therefore of no use.' Models were only useful when certain elements were abstracted and simplified. Diversity was helpful because interpretations were partial, and partial visions from different perspectives enabled better understanding, or a more complex, rich understanding of a complex whole.**

Much fun was had in working with diverse people, especially the young scholars in 'Akili' who offered the hopefulness that was reflected in Benjamin Zander's, The Art of Possibility.

From Paralysis to Adaptive Action: The Inkomati Catchment Management Agency (ICMA) Case Study
Prof. Kevin Rogers, University of Witwatersrand

In 2006 the ICMA was established and a process of institution building took place over a two-year period. Early in 2009, the CEO requested Prof. Rogers' assistance to embed strategic adaptive management in the organisation and to change the focus from building the institution to practicing IWRM. The four main actors in this process were:

- **National Department of Water Affairs**
- **Regional Department of Water Affairs**
- **ICMA**
- **ICMA Governing Board.**

Initially, the ICMA was engaging in four main activities: the end of year report, the business plan, the strategic plan and stakeholder forums. The four actors followed linear, step-by-step planning for a known outcome. The paranoia of omission and fear of simplicity were evident in the organisation. A small group of people at the ICMA had almost no confidence and acknowledged a complete institutional paralysis. They were trying to manage the institution and the people in the institution instead of managing a common pool resource that required a shared future.

An efficient, optimal approach to reaching a desired system for IWRM management from a current system would not be possible. In reality, the original design of a shared future changed as lessons were learnt during the process of moving toward the desired system. Many factors affected both the trajectory and the desired system for IWRM, and it was necessary to establish a shared set of values that would determine the decisions made, as well as the following variable issues in planning, referred as the STEEP system:

- **Social issues**
- **Technical issues**
- **Economic issues**
- **Environmental issues**
- **Political issues.**

Strategic adaptive management consisted of five different components:

- **Shared rationality and purpose**
- **Adaptive planning process**
- **Adaptive system understanding**
- **Adaptive decision-making**

- **Adaptive monitoring and learning.**

The adaptive planning process comprised three components:
- **Defining the decision-making environment**
- **Understanding the STEEP system that was to be managed**
- **Where to go to and how to get there.**

The process focused on how adaptive management was done, referring to the management and leadership of change intervention using the concept of EQ. The ICMA was able to change the focus from building the institutions to practicing IWRM through the process of adaptive management.

The Minister of Water Affairs had requested the completion of the ICMA's Catchment Management Strategy (CMS) within a three-month period. In order to achieve this, the ICMA initiated a stakeholder-centred process in developing the CMS. This culminated in an integration workshop where achievable projects were derived from a set of objectives and corresponding actions. These actions would produce results that would be visible to all stakeholders. A technical team translated the outcomes of the workshop into a technically sound document, which was presented to and approved by stakeholders. The CMS was finalised within the given period.

The ICMA staff had grown through the adaptive management process and were constructively involved in the projects laid down in the CMS.

The Role of Participatory Agent-Based Social Simulation Modelling in Adaptive Management
Dr Mark Dent, University of KwaZulu-Natal

Modelling was an integral part of adaptive management, particularly strategic adaptive management. It was important to view a problem from all sides in order to find a solution. Even two dimensions of problems were often difficult to see.

There was often a contestation between the different views of the problem. In the water sector, there was contestation between the hydrological cycle and the human utilisation cycle. The environment required variability in order to bring about biodiversity, and humans required reduced uncertainty and risk.

A concept, documented by UNESCO, WMO and DWAF in 1998, when it was recognised that the water sector would require new and additional skills in order to be able to respond to the requirements of the NWA, referred to the people who surrounded the problem and attempted to address it as agents. Stakeholders in each sector were agents. They engaged with each other about water under the oversight of DWA. Some agents are powerful and some started their careers in the water sector in DWA. This engagement and interaction between the agents took place in an intense virtual network or 'cloud' that intercepted all stakeholders and all sectors, to build a conceptual whole.

The word 'social' in the title of this presentation denoted water allocation as a social process, as there was no scientific best way to allocate water. This social process took place in the 'cloud', where there was reasoning and option generation – a fundamental part of the whole process of water allocation. This was followed by a decision-making process led by the decision-making authority, DWA. Decisions had consequences. Confusion between the decision-making authority and the space to reason and visit consequences, often led to debates. It should be clear that although everyone was able to participate in the reasoning process, only DWA was authorised to take decisions. The decision-making authority would draw from the options generated in the reasoning process, including poor

options, in making decisions. Apart from conforming to the NWRS, DWA required the reasoning process to take cognisance of:

- **The triple bottom line (environment, social and economic aspects)**
- **Transparency**
- **Knowledge equity.**

Each sector had many resources. Sectors organised, controlled and monitored themselves, and gave feedback and leadership in the 'cloud'.

It has been stated that 'modelling is the process of making implicit assumptions explicit'. Mental models should be brought to the surface and connected in the 'cloud', and be visible to all sectors in a transparent manner. One of the most implicit assumptions in finding solutions to problems was that the problem was one-dimensional, whereas problems had several dimensions. Another implicit assumption was that DWA was in charge of water, but a much higher percentage of the rainfall in South Africa was absorbed into the soil or evaporated, and only a small percentage of the rainfall reaches rivers and dams. This suggested that perhaps the Department of Agriculture, Fisheries and Forestries should be the lead department with respect to IWRM in the country.

Another implicit assumption viewed 'water' as a 'sector'. Everybody was involved in water, as it was a common resource.

The following extracts from Claudia Pahl-Wostl's work, referring to social simulation modelling and participatory agent-based social simulation respectively, were highlighted:

'Combining ''soft'' subjective perceptions and ''hard'' factual knowledge in a participatory group model building process. … the distinction between soft and hard elements of knowledge is of gradual nature with a blurred interface.'

'Agent based social simulation is a very promising approach to represent the complex dynamics of social systems and to develop integrated models for human-technology-environment systems. It is an excellent potential framework for combining insights from different social science disciplines and it is particularly suited for being used in participatory processes.'

The Role of Feedbacks, Leadership and Self-Organisation in Adaptive Management

Dr Sharon Pollard, Association for Water and Rural Development [AWARD]

The water sector was in a process of transition and reform in terms of governance. Currently the sector was experiencing much uncertainty and unpredictability, and it had become necessary to find new ways of managing. Adaptive management responded to this need.

The IWRM framework challenged those in the water sector to think differently and to see different perspectives, and to move from linear to reductionist approaches to IWRM, recognising the systemic nature of problems related to water that required systemic and collective actions and solutions.

The Shared Rivers Initiative programme was centred on rivers in the lowveld that were shared with Mozambique and Swaziland. The programme served as a praxis of IWRM. There were many concerns that despite the new policies with regard to IWRM, the state of the rivers continued to deteriorate, particularly the Olifants River. The area comprised six main rivers and catchments flowing into Mozambique, three water management areas in South Africa and two transboundary basins: the Limpopo and Inkomati, adding an

international transboundary water-sharing aspect to water governance.

Part of the programme looked at compliance of the flow component of the environmental water requirements (EWR) in lowveld rivers against a benchmark of sustainability of EWR in defined developmental periods before and after the implementation of the NWA. It was shown that the incidence of non-compliance increased substantially in all the rivers except the Sabie River following the implementation of the NWA. A synthesis report resulting from interviews with about 180 people indicated a range of reasons for the increased incidence of non-compliance. One of the key issues that emerged was the lack of feedback loops and self-organisation, and gaps in the process of learning. It was important to recognise that a bundle of strategies, not a single policy or strategic action, was required in the implementation of IWRM. Despite the negative picture concerning non-compliance, the report also indicated signs of improvement in the context of IWRM.

It was important to follow the set of principles behind IWRM (particularly the need to view the catchment as a system and the need to involve stakeholders in IWRM) in the contestation concerning the term 'IWRM'.

In terms of IWRM process in the Crocodile catchment, and the response of stakeholders to the challenges presented by IWRM, there were multiple perspectives involved in water resources management. The complexity of institutional arrangements for participation in IWRM presented challenges to the ICMA which was responsible for bringing all stakeholders on board.

The current situation with regard to the feedback loops involved in monitoring various benchmark activities by the ICMA, showed interaction with the Crocodile Major Irrigation Board, which in turn interacted at the level of self-regulation. Insufficient state regulators in water governance reform resulted in reliance on self-regulation. Another important feedback loop was between the ICMA and the Kwena Dam bailiff. The Kruger National Park undertoook monitoring in the reserve and alerted the ICMA of any problems related to IWRM. The feedback loops between the ICMA, the DWA Regional Office and DWA were currently weak and required strengthening. The set of feedback loops with Mozambique and Swaziland were currently fed through the National DWA and were unsatisfactory. It was important to support the multi-scale feedback loops in IWRM and water governance reform. Leaders in the process of water governance reform in the Inkomati catchment, although inexperienced, showed willingness to learn from their mistakes and to work with stakeholders.

The IWRM process in the Letaba catchment was similar to that in the Crocodile catchment. However, feedback loops in the IWRM process were lacking in the Olifants catchment, where there was evidence of severe constraints around organisational management due to the lack of leadership.

In terms of water resource management at the local level in communal areas, it was important to recognise the existence of dual legal plural systems. The co-existence of these systems should be addressed. It was difficult to establish functional feedback loops in the current land tenure reform environment, and there was conflicting understanding relating to responsibility.

The work done in the lowveld had shown that it was essential to:

- **Develop an integrated systems view as the basis for planning and action to support IWRM**
- **Support self-organisation and robust, multi-scale feedback in an environment of integrated, adaptive action and management**
- **Provide for emergent leadership and governance for transformation and sustained action**

- **Be attentive to participatory and representative platforms for collective action and learning**
- **Have recourse for unlawfulness and the regulation of unlawful use**
- **Note that lags in the implementation of IWRM were inevitable and better understand the emergence of a sustainability discourse.**

South Africa's Potential for Adaptive Management, its Day-to-Day Challenges and Resulting Windows of Opportunity
Mrs Sabine Stuart-Hill, School of Bioresources Engineering and Environmental Hydrology, University of KwaZulu-Natal

The implications of climate change on the water resource should create a sense of urgency and fuel the discussions and future actions concerning IWRM.

The vulnerability approach to climate change called for an adaptive and integrated approach focusing on reducing vulnerabilities. In order to arrive at such an approach, it was important to know the effects of climate change in a specific location, to be aware of the relative importance of different groups and sectors, and to know the extent to which regions, groups and sectors were able to address the effects of climate change.

It was necessary to take time to consolidate efforts in the constantly changing environment. Government and governance should regain predictability, taking into account the economic and social dimensions in times of change. The South African regulatory environment, including the NWA, presented a unique landscape and huge potential to facilitate the change process by:
- **Building resilience of the systems by using adaptive cycles that offered repetition of actions as well as phases of repose in order to consolidate.**
- **Integrating change within organisations, although this was demanding for the organisation as well as individuals, as tenacity and planning reliability were essential for governance.**
- **Mainstreaming social learning and changing individual actors by including and applying newly learned knowledge.**

Building adaptive capacity called for good understanding of the overall system, constant uptake of new information into decision-making processes, and flexibility and responsiveness to change.

Some of areas of strength where adaptive management could be exercised were:
- **Recurring five-year review cycles, which allowed for the incorporation of new knowledge, and prioritisation of important issues**
- **Supportive organisational structures, such as catchment management agencies (CMAs) and water user associations (WUAs)**
- **A holistic view of IWRM, such as the land-to-water link in the NWA.**

The areas of concern, which could restrict adaptive management, included:
- **The shortage of skills and capacity, taking into account the innovative management approach and organisational transformation of the NWA**
- **The absence of an empowered civil society**
- **The existing technical control paradigm**
- **The lack of an open information system and communication plans and platforms.**
- **Day-to-day challenges relating to stressed catchments and a stressed environment in terms of economics, society and the environment**
- **The lack of implementation and enforcement of policies**

- **Interference of short-term political interests.**

It was unrealistic to refer to participatory management under the adaptive management paradigm. There should be clarity about who should become involved, in what way, at what level and in what dimension. The participants at leadership level, referred to as champions, required certain characteristics in order to be able to act and become the multipliers of the knowledge of adaptive management. Institutional memory should be created over time. The champions had a role to play in their own organisations as leaders of adaptive management processes and planning, as well as in a participatory process, which required interaction, communication and cooperation.

The windows of opportunity for the water sector indicated urgency for integrative, adaptive and participatory action, and were evident in the context of climate change, regulation and policy.

THE WAY FORWARD

(Panellists: Dr Dickens, Prof. Palmer, Prof. Rogers, Dr Dent, Dr Pollard, Dr Stuart-Hill)

Mr van Zyl introduced the discussions by stating that, although there was much discussion about the numerous problems in the water sector, it was necessary to find solutions without further delay.

The following points were raised in discussion:

- **With regard to legal pluralism mentioned by Dr Pollard, there is a challenge in terms of managing the elements that led to legal pluralism. How should one go about integrating these challenges into adaptive management?**

- **There are always efforts in place to manage feedback from macro-systems, but not much effort has been made to put in place systems that look at addressing the feedback from social systems. What is Prof. Rogers' opinion about putting in place methods to manage feedback from higher social systems and governance?**
  Prof. Rogers: Feedback from social systems does take place although not enough, and not in all areas. It is important to improve the feedback loops, by listening to and learning from the stakeholders.

- **In terms of environmental targets that are socially determined, to what extent does the country as a whole share the vision that has been set out by the technical people. For example, the water sector believes that wastewater treatment is a real problem, but the politicians do not believe that this is a problem. This indicates that we are working with visions that are not shared. How can we translate what has been presented at this think tank into language which is shared more generally by the community?**

- **South Africa is one of a few countries in the world where there are two sets of legislation managing the water, namely water services and the water resource. The two aspects are integrated in the management of water.**

  Dr Stuart-Hill: The existence of two sets of legislation is a positive issue. Each set of legislation clearly defines the area covered in that legislation. It is interesting that many experts indicate that the Water Services Act is implemented to a greater extent than the NWA. One of the reasons for this may be that the former has fewer ambiguities and clearly defined roles and activities, whereas this has not been achieved in the NWA. Although the NWA defines clear responsibilities, they are not reflected in the accountability.

Dr Pollard: The research looked at six categories, in each of which there was a lack of integration between water resource management and water supply. From this perspective, it is not helpful to have legislation that separates the two. All the municipalities were fond to be unlawful in terms of water services. It became clear that some of the municipalities were not acting illegally wilfully. They have a vision given to them through a different level of legal instrument, which instructs them to give water to people under any circumstances. The ageing infrastructure and the lack of core technical skills is a reality in all municipalities that were interviewed. The lack of integration between water resource management and water services is a major constraint to achieving equity and sustainability in IWRM.

- **Is there readiness to address the skills and capacity shortages, and which are the scarce skills identified in the sector that would be required to facilitate the change process? There is no succession plan in place as part of the sector skills plan. This issue must be addressed.**

  Dr Stuart-Hill: There are different types of capacity, but in the context of adaptive management, the skills and capacity related to institutional memory are currently problematic. Transformation of government departments often involves the replacement of a high percentage of staff over a period of ten to 15 years. Economists and human resources experts would agree that this 'staff turnover' reflects on the stability, as well as the institutional memory of the organisation. Technical skills are available in this country, but are not found in the right places. The specific, complex set of skills required for IWRM and adaptive management is unclear. It is difficult to know how to prepare students for the different levels of skills required in this environment. More effort is needed in this regard.

- **Perhaps more academic studies are required in order to add value to what is already being done in relation to adaptive management and participatory management in South Africa. Feedback mechanisms are in place, and regular meetings are held to assess progress in the water sector.**

  Dr Dickens: The problem is that these mechanisms are not fully participatory.

  Prof. Palmer: The research done by some of the presenters at this think tank had been a roundtable with people on the ground in local municipalities and communities in rural and urban areas, asking people what they want in their catchments and from their municipalities, and the way they want water governed. The point of this method of research is that people are listened to, and this allows for the real problems to be addressed together in co-creating knowledge. Adaptive management is absolutely founded on communication with the people of the country.

  Dr Pollard: Care should be taken with the notion of representative governance, as people do not always realise the level of the decision being made.

  Dr Dent: The IT realm is very integrated and can be used as an example to the water sector. They have succeeded in being creative, co-existing in a positive way. Sharing is important and will not result in a lack of control. In terms of structure and organisation, South Africa has much to learn and will have to catch up with the rest of the world. There are huge communities of practice in the world in terms of connectivity.

  Dr Stuart-Hill: Although adaptive management is happening in certain areas, it is very fragmented. It is not clear how to find a joint vision for adaptive management in South Africa. Participatory management means that it is necessary to go beyond co-

designing ideas and solutions to co-decision-making. It is unclear how a government can do this, and what platforms would be necessary.

- **Dr Pollard's research on the Olifants River has shown that one of the reasons for the lack of compliance is that there is no single person or measuring point that gives feedback and helps solve problems related to the over-exploited system. The weakening of technical management, at the same time as greater demands are being placed on it, is a global phenomenon. A concern in the discussion on skills and capacity is that there is an assumption that technical capacity will continue to function, and insufficient emphasis is placed on monitoring, measuring and collecting data that create options for discussion around IWRM. Governance cannot be optimal if it takes into account the selective choice of priorities of communities and individuals, which often distract from the core technical activity of water management. South Africa cannot afford to make a choice to protect the environment without understanding the costs and the implications of this choice. Does the panel believe that the technical skills that are in place now and into the future are adequate to perform the function required in the broader management approach?**

  Prof. Rogers: It is necessary to consider the best way to apply the skills that are available. The ICMA is doing IWRM in accordance with its CMS, even though the Minister of Water Affairs has not signed off the CMS and DWA has not yet taken a decision with regard to the CMS. The CMS is a statement from the people about what they think the ICMA should be doing with regard to IWRM.

- **If you were asked to give the Minister of Water Affairs one practical way to implement adaptive management, what would it be?**

  Prof. Rogers: Develop confidence in people to make the necessary decisions.

  Dr Stuart-Hill: The approach that the DWA regional offices are supposed to build up CMAs is flawed. A different body should create CMAs, as there are too many conflicting interests, power issues and threats of change within the regional offices. More effort is needed in the area of monitoring and enforcement, instead of writing more policies. Political interference in water should be stopped, as it fuels what is already an emotional issue and creates a limited view to the resource.

- **Complex issues are confusing and should be solved by naïve models. We call problems challenges, and we try to find one solution to all of them instead of solving the smaller problems as they arise and acting without delay. We should go back to basics.**

Prof. Palmer: Living and working in South Africa brings both despair and amazement. It is clear that there are real problems such as ageing infrastructure, the lack of planning, and a technical gap. There is also a sense that research can come into practice, and a group of skills sets that is useful can be made available in a way that has been unusual up to now. It can become more common for research to be practised. Much of the discussion at this think tank has been about what is possible and new ways of doing things.

CLOSURE

Ms Karar concluded that the forum had called for pragmatism is all aspects of IWRM. She thanked the WISA management division for partnering with the WRC in organising the event, and the panel and the delegates for their contributions to and participation in the think tank.

APPENDIX A: ATTENDANCE LIST

SURNAME	NAME	ORGANISATION
Adey	Samantha	Breede-Overberg Catchment Management Agency
Beukman	Ruth	GUP-SA (Regional Office)
Bourblanc	Magalie	University of Pretoria, CEEPA
Colvin	John	
Connolly	John	KCS
Crafford	Jackie	Prime Africa Consultants
Dauberman	Evan	Uthingo
Dent	Mark	University of KwaZulu-Natal
Dickens	Chris	Institute of Natural Resources
Dreier	Lynette	Private researcher
Erasmus	Heather	Write Connection CC (Scribe)
Goss	John	Cinnabar – FETWater CMA Expertise Development Network
Gyedu-Ababio	Thomas	SANParks
Hardwich	ED	Cwenga
Hermanus	Pinkie	Mbombela Local Municipality
Holden	Richard	TCTA
Jonker	Lewis	University of the Western Cape
Jumman	Ashiel	South African Sugarcane Research Institute
Kamalie	Ashaadia	Cape Peninsula University of Technology
Karar	Eiman	WRC
Khambule	Masego	Department of Water Affairs (DWA)
Kopung	Seboka	North-West University
Le Roux	A	Uthingo Sewage
Maqubela	Namhla	Transalloys (Pty) Ltd
Mbewe	Alfred	Inhlankagnipho Consultants
Meissner	Richard	CSIR
Meyer	Bernard	Anglo American Platinum (Amplats)
Mokotedi	Tsholofelo	Water Sector Manager
Moletsane	Mokhele	DWA
Msimango	Ntokozo	Lindokuhle Engineering
Muller	Mike	University of Witwatersrand P&DM/NPC/DBSA
Ndiritu	John	University of Witwatersrand
Nkhata	Bimo	International Water Centre Africa: Water Research Node, Monash South Africa
Okonkwo	Adaora	DWA
Ortlepp	Karen	University of KwaZulu-Natal
Palmer	Tally	Rhodes University
Peterson	Sandra	Water Sector
Pittock	Jamie	The Australian National University
Pelpola	Kalinga	*PELCO Development Consultants (Pty) Ltd, Sri Lanka*
Pollard	Sharon	AWARD
Pretorius	Bev	United Cities & Local Governments of Africa (UCLGA)
Ramasar	Vasna	CSIR
Ramsay	David	David Ramsay & Associates/ WISA
Ramsuchit	Danny	Gold Fields
Riddell	Eddie	University of KwaZulu-Natal
Rogers	Kevin	University of the Witwatersrand
Roman	Henry	Department of Science & Technology
Rössle	Werner	ERWAT
Sekgobela	Benny	Department of Environmental Affairs
Steenkamp	Johan	Eskom

Stuart-Hill	**Sabine**	**University of KwaZulu-Natal**
Tanner	**Andrew**	**Aurecon Pty Ltd**
Tempelhoff	**Johann**	**North-West University**
Thombeni	**Ntombehle**	**SAAWU**
Twala	**Billy**	**Ikamva Strategic Insights**
van Niekerk	**Peter**	**DWA**
van Tonder	**Theuns**	**Anglo American Platinum (Amplats)**
van Wyk	**Eddie**	**DWA**
van Zyl	**Fred**	**DWA**
Vermeulen	**Abri**	**Eon Consulting**
Vermeulen	**Danie**	**UFS**
Wheal	**Melisa**	**WISA**
Wilker	**Koos**	**ERWAT**
Winde	**Frank**	**North-West University**
Zandberg	**Dot**	**WISA**

APPENDIX B

water affairs
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

INVITATION

2nd GOVERNANCE THINK TANK

4th November, 2011

Time: 9:30 am

Venue: The venue is close to the OR Thambo International Airport. The exact venue details will be sent to you once you have submitted the registration form.

Registration:

Please fill in the attached registration for and send it to Mrs Zagry Scholtz at zagrys@wrc.org.za or fax: 012-331 2565 before **31 October 2011**. Please note that space is limited.

There is no registration fee. Delegates are responsible for their own travel and accommodation arrangements and cost.

Background

In September 2009, the first think tank was organised and hosted by the DWA and the WRC. It was attended by close to 40 water professionals who deliberated over a whole day issues related to governance; such as, what do we mean by decentralisation? Why use hydrological boundaries for the management and/or governance of water resources? What is the strategic role that only the state can play? What do we actually mean by public participation? What is the role of local government in Water Resource Management, theoretically and practically? The proceedings and a discussion document emanated from that event which was followed by robust electronic discussions for a couple of months thereafter.

Invitation

The Water Research Commission, the Department of Water Affairs and the WISA Management and Institutional Affairs Division invite you to the second Think Tank to be held at a venue close to the OR Thambo International Airport on the 4th November, 2011.

At a basin scale integrating aspects related to the biophysical, social and economic dimensions of water management is more challenging than initially anticipated after the wide endorsement of the Dublin principles in the early 90's. A decade on, numerous attempts have documented successful case studies from around the world but with huge challenges of upscaling. Some interesting findings came to the fore;

The dynamics of governance at the different administrative levels when superimposed on hydrological boundaries invariably resulted in complicated institutional arrangements with unclear roles, responsibilities and inter-relationships.

Decentralisation to the lowest appropriate levels, in some instances, have pre-empted some institutional fits which were mismatched in numerous settings specially regarding the establishment of river basin authorities.

Stakeholder participation has yielded varying successes in spearheading and mobilising the necessary resources for managing water resources at a catchment level especially in the absence of a clear state role as referee preventing interest capture.

The role of the state as the referee and a player in skewed settings with regards to knowledge, income, services, etc. has contradicted the decentralisation efforts.

Literature is full with all the wisdom that is shining on us in hindsight from the numerous partially successful implementation of IWRM.

In this traditionally technical field, water managers have of late realised that people come at the centre of any biophysical intervention aimed at the sustainability of water resources. With the decentralised management drives, decision makers and the wisdom of making good management decisions is residing with many people and at many interacting levels. In the quest of better management, the contemporary 'issues' related to water management have become more interdisciplinary and complex.

Learning by doing, has been coined as the good way to avoid making the same mistakes in the management of water resources over time and space. However, this is not the only term coined during this period when researchers are adamant to identify the critical success factors for implementing good management principles dealing with the very fluid biophysical and social continuum all along to ensure economic prosperity, social upliftment and ecosystem sustainability. Hence, the broad topic for discussion will be on the fast evolving field of study broadly referred to here as "**Adaptive Management**".

Adaptive Management as a discipline has evolved in the last few decades with gaining a lot of momentum in the last 5 years. According to Wikipedia (the internet free encyclopedia), adaptive management is "*a structured, iterative process of optimal decision making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring. In this way, decision making simultaneously maximizes one or more resource objectives and, either passively or actively, accrues information needed to improve future management. Adaptive management is a tool which should be used not only to change a system, but also to learn about the system (Holling 1978[1]). Because adaptive management is based on a learning process, it improves long - run management outcomes*".

Of course the nuances to this concept are numerous now and warrant a shared understanding and appreciation to yield the desired improved management of water resources at large. On the other hand we have to deal with the threat of change in our thinking, decision-making and even institutional setups. **This Think Tank will allow for sharing the very fundamental human psychological response to change**. It will then explore numerous interpretations and techniques that are evolving around us. The aim of the think tank will therefore be to share these developments, to identify the synergies between the different techniques on offer and to find a way forward in creating solutions for South Africa and its current as well as future challenges under global change.

[1] Holling, C. S. (ed.) (1978). Adaptive Environmental Assessment and Management. Chichester: Wiley. ISBN 0-471-99632-7. According to Wikipedia, the free encyclopedia (http://en.wikipedia.org/wiki/Adaptive_management, Accessed on 26 September 2011)

2nd GOVERNANCE THINK TANK

AGENDA

9:30	Registration and refreshments	
10.00	Welcome	WRC, WISA and DWA
10.30	Key note presentation and workshop Key note address: "**How do we react to change**" Workshop themes: Nature of change facing organisations today and those in the water sector in particular Typical responses to change including reasons why people resist change and the typical 'cycle' people go through when dealing with change The nature and role of leadership in the context of the above - with specific focus on emotional intelligence (and possibly 'resilience') Suggested strategies for developing one's leadership skills including emotional intelligence and resilience	Dr Karen Ortlepp Organisational behaviour specialist; Business School, University of Kwa Zulu Natal
12.15	Discussion	All
12.45	Lunch	
13.30	Panel discussion on the status quo of adaptive management in the water sector in South Africa and on future needs Introductory presentations (10 min each) on the topic of change in the social biophysical realm followed by a panel discussion with facilitation	
	Frozen Minds	Dr Chris Dickens; Institute of Natural Resources, UKZN
	Adaptive management in the planning and execution of transdisciplinary social-ecological research	Prof Tally Palmer; Institute of Water Research, Rhodes University
	From paralysis to adaptive action: The ICMA case study	Prof Kevin Rogers; Wits University
	The role of participatory agent-based social simulation modeling in adaptive management	Dr. Mark Dent; University of KwaZulu Natal
	The role of feedbacks and self-organisation in adaptive management	Dr Sharon Pollard; AWARD

	South Africa's potential for adaptive management, its day-to-day challenges and resulting windows of opportunity	Mrs Sabine Stuart-Hill; School of Bioresources Engineering and Environmental Hydrology, UKZN.
15:30	Closure	WRC, WISA and DWA

Registration form:

2nd GOVERNANCE THINK TANK

4th November, 2011

Please complete the form and send it to Mrs Zagry Scholtz at zagrys@wrc.org.za or fax: 012-331 2565 before **31 October 2011**

Title		**Initials**		**Surname**	
First name					
Institution					
Postal address					
e-mail					
Telephone					
Cell					
Fax					
Any special dietary requirements					