



KSA 5: Water-Centred Knowledge

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SCOPE

KSA 5 addresses the management of water-centred knowledge (created via the support of the WRC as well as other sources) and leads the effective dissemination thereof.

The scope of this KSA includes:

- Supporting knowledge creation by providing appropriate research management tools and logistic support
- Sharing and disseminating water-centred knowledge internally and externally
- Enhancing the credibility and relevance of the WRC through strategic positioning and strengthening stakeholder relations
- Providing strategic research advice

THRUSTS

The overall scope is further expanded in a number of thrusts which form the general framework of this KSA:

THRUST 1: SUPPORT KNOWLEDGE CREATION – RESEARCH MANAGEMENT AND LOGISTIC SUPPORT

Aim: To coordinate the research funding cycle and provide effective tools, systems and procedures to support knowledge creation in the WRC and provide a better internal and external interface with the research community.

This KSA provides support to the 'engine room' of the WRC, i.e. the four key strategic areas mandated to coordinate and fund water research. It supports the management of research projects, enhances innovation and provides the

tools and processes for protecting technological developments. It also links the financial processes with the technical fund management processes. This includes:

- Research management
 - Coordinate the annual funding cycle
 - Providing the logistics required for the flow of research related information into and out of the WRC
 - Increasing the user-friendliness of the WRC Fund Management System (FMS) for both external and internal users
 - Advancing the linkage between financial and technical management of research projects
 - Providing support to the research KSAs 1-4 with regard to proposal cycle and project management on FMS
 - Provide legal advice for contract management
 - Advance research management by developing interactive discussion forums
- Intellectual property management
 - Manage technology transfer and commercialisation
 - Manage the WRC patent portfolio and contracts related to licensing and commercialisation, benefit sharing and technology transfer
 - Provide support to strengthen the ability of academic institutions to manage their intellectual property
- Printing and distribution
 - Manage the quality-control process of WRC technical and technology transfer final reports
 - Manage the process of layout and printing of the WRC reports and other publications
 - Manage the effective distribution of research reports
 - Manage effective report distribution facilities (manual and electronic)

THRUST 2: KNOWLEDGE SHARING AND DISSEMINATION (INTERNAL AND EXTERNAL)

Aim: To effectively share and disseminate relevant knowledge in the water sector and within the WRC and to develop knowledge-sharing mechanisms/instruments to support the objectives of the WRC.

This KSA leads the participation of the WRC in knowledge-sharing and knowledge-dissemination activities (e.g. workshops, exhibitions) organised by the WRC, as well as by other organisations within the sector – locally, in the rest of Africa and globally. It strengthens the WRC's ability to exchange information and data on developments around water management issues. It also oversees the flow of water-centred knowledge to and from the WRC by improving access to external information and water-centred knowledge, and acting as a resource centre to meet the information requirements of the WRC and the water sector in general. This includes:

- Knowledge packaging
 - Develop and maintain innovative ways to share and disseminate WRC products, e.g. brochures, project briefing notes, Knowledge Review, media briefings
 - Support KSAs 1-4 with the production of Technology Transfer documents
- Promote the public understanding of science
 - Produce and publish *The Water Wheel*
 - Produce and publish special publications such as books and learning material
 - Support water-related youth and learner awareness programmes
- Ensure that scientific knowledge is globally recognised and exchanged
 - Manage the production and publication of *Water SA*
- Knowledge sharing (External)
 - Prepare media briefings, media conferences and press-club networking events in order to create and sustain an awareness and appreciation among the media of the WRC's position of leadership within the water sector (the media should automatically recognise the WRC as the main source of information on any water-related issue)
 - Develop and maintain the Electronic Water Knowledge Hub for easy access to all WRC publications and resources
 - Develop mechanisms for effective knowledge sharing and information transfer
 - Developing and implementing technology-transfer instruments
 - Exhibit at high-profile, water-centred conferences nationally and, if necessary, internationally
- Knowledge sharing (Internal)
 - Manage the WRC internal library
 - Organise knowledge-sharing events such as internal

- open days, guest lectures and regular research manager's meetings
- Enhance the effectiveness of knowledge dissemination
 - Create and apply new knowledge dissemination mechanisms
 - Maintain an effective interface between service providers and the WRC, and between users of WRC knowledge products and the WRC

THRUST 3: STRATEGIC POSITIONING AND STAKEHOLDER RELATIONS

Aim: To enhance the credibility and relevance of the WRC locally and globally.

This KSA supports the WRC in developing and maintaining strong stakeholder relationships to enhance the credibility and relevance of the WRC. This KSA supports the organisation in formalising relationships and maintaining relationships that are not KSA-specific. This includes:

- Establish working relationships with industry, decision makers and key stakeholders
 - Strengthen relationships through formal memoranda of understanding
 - Provide knowledge in a format that is fit-for-use
 - Deliver multimedia presentations to inform various target groups about the WRC and its accomplishments
- Establish and strengthen the relationship with a number of Parliamentary portfolio committees
 - Establish and maintain relationships with the planning commission and the Parliamentary portfolio committees of various departments including Water and Environmental Affairs, Health, Science and Technology, Agriculture, Cooperative Governance and Traditional Affairs, Human Settlements
 - Provide interactive information sessions to the portfolio committees and respond to their knowledge requirements
- Support national, African and global initiatives
 - Support national initiatives of key importance to the water and other related sectors where the WRC plays a significant role
 - Support other KSA initiatives through providing support related to exhibitions, media briefings, events management, etc.
 - Support African initiatives for building water science and technology in the continent (example: NEPAD's initiative to establish a network of centres of excellence in Water Science and Technology in five regions in Africa)
 - Establish and maintain bilateral relationships
 - Support global initiatives and partnerships through, for example:
- Linking to international associations such as the International Water Association, World Water Forum, etc.

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- Linking with the global research community through *Water SA*
- Prepare positioning material such as the WRC Annual Report, strategic messages, Ministerial and policy briefs
- Support the research community
 - Develop and implement mechanisms to recognise the research community
 - Improve the relationship and interaction with the research community (beyond the project)
- Promote the WRC at carefully selected opportunities
 - Contribute and/or advertise in selected media or periodicals (e.g. National Agricultural Directory, Local Government Handbook, WISA Directory) to coincide with events of special significance for water, e.g. Water Week, a water conservation campaign, etc.
 - Engage with the youth through science festivals, games and competitions to serve the dual purpose of positioning the WRC and stimulating interest in water-centred science, engineering and technology

THRUST 4: RESEARCH ADVICE

Aim: To provide strategic research advice related to the water sector, capacity, knowledge flow and ultimate impact.

The WRC is mandated to lead and co-ordinate water research in South Africa. It is also tasked to promote effective knowledge transfer and enhance knowledge and capacity in the sector. It is therefore important that the WRC understands all the elements driving the water knowledge cycle in South Africa.

This KSA focuses on researching various elements, drivers and trends affecting the dynamics of the water-centred knowledge cycle, from issues related to research capacity and overall funding of research by the sector to the effectiveness of research and its impact on policy and technology used by the sector. In the long-term this functional area may also provide the advice regarding sector needs and global trends, i.e., foresight and scenario studies.

Examples of research/studies to be carried out under the leadership of this functional area are:

- Assessment of the scope and extent of water research done in South Africa (funding, content, value as a role player and extent of global cooperation)
- Analysis of research capacity, demographics, current and future needs
- Impact of research, including methodology for impact assessments
- Long-term scenario building
- Assessing knowledge uptake and dissemination and establishing new effective mechanisms

CORE STRATEGY

Strategic context

The strategic context of the **Water-Centred Knowledge** Key Strategic Area (KSA 5) should be seen in the context of the WRC strategy as documented in the Strategic Plan 2010/11 – 2012/13. The WRC research portfolio addresses the full water cycle through the four research key strategic areas and links this to the knowledge cycle with the support from KSA 5.

Considering the sector trends both nationally and internationally, the role of KSA 5 is becoming increasingly strategic.

Sector threats

The South African water sector faces serious challenges that threaten its sustainability. The dominant risks, threats and challenges to the country being able to sustainably supply water to meet growth and development needs into the future include water availability, climate change, infrastructure, human resources, compliance and enforcement, raw water quality, financial support and water pricing (Water for Growth and Development Framework, Version 7). Threats in terms of a knowledgeable, productive water sector include the:

- Human resource capacity in the public sector – often qualified but less experienced people need to acquire a level of competence in a short period of time without the luxury of continuous mentorship
- Functioning and pursuing targets in a resource constraint environment
- Working in a complex and multidisciplinary sector and often across institutions and across disciplines
- Limited research capacity in certain of the water-related research areas and reduced ability to deliver – this will cause a medium- to long-term shortage of knowledge in these areas with knock-on effects on the quality of decisions made
- Shortage of South African students studying towards a higher degree in water knowledge – a balance is required between the need to continue research (creating knowledge) to ensure a sustainable water sector and the need to build capacity to export to other African states
- The lack of knowledge uptake in the sector

Relevance and impact

The perceived relevance of the WRC in the short term is to a degree dependent on the absorptive capacity for the knowledge in the sector. The WRC, through this KSA, needs to place more emphasis on understanding and enabling

knowledge uptake rather than focusing purely on knowledge dissemination.

Van Ryneveld and Sproule (2007) defined knowledge uptake as 'the active acquisition of disseminated information, the comprehension of the information and the ability of practitioners to apply the information in the field'.

While the WRC continues to generate water-related knowledge-based products which contribute to addressing the knowledge gaps in the water sector, it also seeks to better understand the mechanisms of knowledge uptake.

The role of KSA 5 is therefore becoming increasingly important for the continued relevance of the WRC and for the sustainability of the sector. The emphasis will now also move to understanding, developing and applying methodology to ensure that the water-related knowledge generated by the WRC is absorbed and applied to solve the water challenges that South Africa experiences. KSA 5 therefore aims to lead the knowledge dissemination programmes with an understanding of what the knowledge uptake drivers are. It also strives to influence the research KSAs to encourage knowledge sharing early in the research projects.

This KSA will also continue to support the organisation with knowledge creation and sharing through:

- Supporting research management and providing logistic support
- Developing effective internal and external knowledge sharing and dissemination mechanisms/instruments
- Enhancing the credibility and relevance of the WRC locally, in the rest of the African continent and globally

Key stakeholders

Internal stakeholders - Research managers and staff of the WRC

The needs of these stakeholders have been identified as having an effective management system for research funds, easy access to resources, an electronic document management system, and a dynamic interface with the local and global water sector.

External stakeholders

The KSA loosely defines its external stakeholders as knowledge creators and knowledge users (with an understanding that the same individual could dynamically move between being a knowledge user and a knowledge creator). Knowledge creators are typically researchers, students and consultants while knowledge users include the same group as well as government, educators, service provid-

ers, decision-makers, policy-makers, farmers, the media and community-based organisations in the water sector. This wide group of stakeholders requires the knowledge provided to be relevant and accessible to them.

Other stakeholders

This group includes local knowledge partners such as DWA, WIN-SA, WISA and SAICE. These organisations require water-centred knowledge, and the WRC can improve its knowledge dissemination by creating appropriate links with them, thus making water-related documents, data and knowledge more accessible to internal and external users. This group also includes continental and global stakeholders that work in collaboration with the WRC and in some cases formal agreements exist. Examples include:

- Water Research Foundation (WRF)
- IRD, CIRAD and CNRS (France)
- Department of Science and Technology (DST) bilateral co-operation programmes
- NEPAD Office of Science and Technology

Public

South Africa cannot progress to sustainable water resource management without the co-operation of the public, and the latter cannot co-operate unless they have sufficient knowledge and are able to contribute meaningfully. For this reason, the WRC contributes to enhancing the public understanding of science and contributes to youth education.

STRATEGIC INITIATIVES

National initiatives

- *WISA 2010*: KSA 5 participated in the biennial conference and exhibition of the Water Institute of Southern Africa themed: '2010 – A time to reflect'. The WRC exhibition stand which combined the traditional report distribution with electronic searchers for material was well received. Training and demonstration of the WRC's fund management system was also available at the exhibition stand.
- NRF Akili Complexity and Integration Programme: The WRC supports the NRF Akili Complexity and Integration Programme within the Human and Social Dynamics in Development Grand Challenge initiative to strengthen knowledge flow in the sector. This conceptual model suggests that through time research can build towards and include transdisciplinary research. Research that takes account of various research outcomes, including complexity and integration, acknowledges complex adaptive social-ecological systems, and therefore traverses scale and sector and will contribute to research

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outcomes that have a greater chance of meeting societal needs.

- IWA SA/WISA strategic relationship: The Executive Committee of IWA SA and WISA met on 22 June 2010 to discuss the future of the strategic relationship between WISA and the IWA SA. It was decided in the interest of the South African water sector that IWA-SA and WISA explore ways of incorporating the IWA Executive Committee as part of WISA governance, structure and activities. This approach will facilitate a global conduit for WISA and its numbers, whilst improving coordination of IWA-SA activities for the benefit of all South African members of IWA and WISA.
- Supporting KSA2 in the Adopt-a-River programme.
- The WRC supports the development of the Research Information Management System (RIMS) developed by the DST which has the potential to deliver auditable information on publications and intellectual property emanating from WRC-funded research from publicly-funded research institutions (Universities and Science Councils). The WRC is currently working with the DST and the development team to ensure that the WRC is a potential output user.
- Supporting the DWA in the development of the National Water Resource Strategy: The WRC is assisting the DWA in the development of the 2nd edition of the National Water Resource Strategy (NWRS-2), in particular the sections that deal with 'Monitoring and Information' as well as 'Knowledge Research'.
- Water research landscape of South Africa: DWA is currently reviewing all water-related Acts including the Water Research Act (Act No. 34 of 1971) as well as undertaking an institutional re-alignment to rationalise the number of entities reporting to the Minister of Water and Environmental Affairs. A high-level delegation from the Department visited the WRC on 3 March 2011 to inform the WRC of progress to date and to plan for a broader workshop held in association with the Department of Science and Technology. Three WRC directors as well as a research manager (KSA 1) participated in a workshop entitled: 'Re-defining water research landscape of South Africa' held at the CSIR Convention Centre on 10 March 2011.

Strategic positioning

Meeting with the Parliamentary portfolio committees related to water

It is of strategic importance to form a dynamic relationship with the Parliamentary portfolio committees related to water. This KSA therefore supported the WRC with specifically targeted interactions to strengthen the strategic relationship. Some interactions for 2010/11 included:

- The WRC CEO, a director and knowledge dissemination

- officer attended the Budget Vote Speech by the Minister of Water and Environmental Affairs on 15 April 2010.
- A WRC research manager and knowledge dissemination officer attended the Budget Vote Speech by the Minister of Science and Technology on 22 April 2010.
- Two WRC research managers briefed the members of the Portfolio Committee on Water and Environmental Affairs on acid mine drainage in South Africa, together with the Department of Water Affairs, and the Federation for a Sustainable Environment. A briefing session was held on 21 July 2010 in the offices of the Department of Water Affairs in Cape Town.
- On 21 June 2010 the WRC knowledge dissemination officer met with the content advisor for the Portfolio Committee on Rural Development and Land Reform and discussed collaboration between the WRC and the committee.
- A WRC researcher briefed the members of Portfolio Committee on Water and Environmental Affairs on eutrophication linked to the *Harties Metsi a me* Remediation Project, together with the Department of Water Affairs.
- Members of the WRC were invited to Parliament on 15 February 2011 to brief the Portfolio Committee on Water and Environmental Affairs about the WRC's involvement in solving the country's water-related problems and also to state the challenges the Commission faces.
- Members of the made inputs to the Green Paper on Climate Change in Parliament, Cape Town, on 3 March 2011.
- A WRC research manager and the CEO were invited by the National Planning Commission (NPC) to a meeting held on 15 March 2011 at the Union Buildings in Pretoria, on 'How to transition to a low carbon, climate resilient economy'. The session forms part of a series of working sessions which the NPC will use to crystallise ideas and make recommendations for inclusion as proposals in the National Development Plan.

Links with knowledge-dissemination organisations and knowledge sharing

- Bilateral agreement with Eskom: Recognising the strategic link between sustainable water management and energy generation, the WRC and Eskom have agreed to enter into a strategic research partnership through a Memorandum of Agreement and the formation of a Joint Research Committee. Through this partnership, Eskom and the WRC will jointly fund and undertake research on topics of mutual and strategic interest, covering climate change, water resource availability and accessibility, water quality, operation and maintenance, water conservation and water demand management, technology development and appropriate technology, excess water and acid mine drainage, residue management (ash, brine

and sludge management), ecosystems and remediation and groundwater impact as well as vulnerability and remediation.

- Bilateral agreement with SASOL: The WRC and Sasol are in advanced stages of negotiating an agreement to establish a strategic partnership to encourage cooperation and partnership in research and development for mutual benefit in line with the respective party's mandates. Ten WRC staff members visited the Sasol Research Laboratories in Secunda on 4 February 2011. The purpose of the visit was to familiarise WRC technical staff with the Sasol research laboratories and pilot plants and identify opportunities for collaborative research projects. It was agreed that the Sasol and WRC will not wait for the signing of the Memorandum of Agreement (although this should be given priority) to start collaborating on projects. In the interim, the parties will identify possible collaborative projects and Sasol agreed that they would consider making the research facilities available to researchers on a case by case bases.

Stakeholder survey and communication strategy

During the year under review the WRC developed a communication strategy that includes specific strategic objectives for enhancing uptake of knowledge created via WRC-funded projects, and which included a plan of action for the next three years. The communication strategy was informed by a detailed stakeholder survey as well as other strategic feedback and information (e.g. the WRC scenario studies). The survey was facilitated by an external party and included 462 individuals from central and local government, water institutions, industry, the farming community, the research community, NGOs and the media. The objective of the survey was to determine how effectively the WRC fulfils its role and achieves its vision and mission. It explored the nature and strength of relationship of stakeholders with the WRC and obtained perceptions about the WRC's image, structure, people, processes and output, as well as reasons for these perceptions. The survey found an overwhelming positive response to the WRC with direct correlation between familiarity (exposure) of each stakeholder grouping with the WRC and its perceptions about the WRC. Stakeholders indicated that the WRC:

- "Is a necessary organisation to ensure SA has enough quality water now and in future"
- "Makes a difference to the quality of life of ordinary South Africans"
- "Is globally recognised as a leader in water research"

40th Birthday celebration publication

The text for the celebratory book *Celebrating 40 years of Research Excellence in the Water Sector* was completed. The book focuses on the impact of the WRC over the last

40 years, in particular the nexus between water and society, health, economy and the environment. It also focuses on highlights such as the impact of the WRC research on membrane technology, climate change, weather modification and capacity building.

African leadership

- Establishing the NEPAD Network of Centres of Excellence in Water Science and Technology:
 - *Southern African Network*: The WRC continues to support the NEPAD programme on the African Network of Centres of Excellence in Water Science and Technology. A WRC Director assisted in two workshops of the founding members of the Southern Africa Network of Centres of Excellence in Water Science and Technology aimed at developing the business plan for the region. The WRC has been tasked to assist the NEPAD Office of Science and Technology (OST) to expand the Southern African Network to include more Southern African countries as the South African involvement is currently disproportionately high.
 - *West African Network*: A member of the IRD and a WRC director visited the National Water Resources Institute in Kaduna and the University of Benin, Benin City, Nigeria, from 30 May to 5 June 2010 to evaluate these institutions for their suitability for inclusion into the West African network. Both institutions qualified which means that there is sufficient critical mass to establish the West African regional network. The Université Cheikh Anta Diop's Department of 'Qualité et Usages de l'Eau' was formally designated as the NEPAD Agency's Coordinating Hub on Water Science for West Africa, thus formally establishing the West African Network of Centres of Excellence in Water Science and Technology.
- Assisting KSA 1 with UNEP – Sudan initiative: The WRC entered into an agreement with United Nations Environmental Programme (UNEP), Sudan, to host a delegation from Darfur for a period of two weeks, 16 – 31 May 2010. The technical delegation of water professionals engaged in a technical tour around South Africa aimed at sharing South African research knowledge on water issues which are similar to Darfur conditions. The tour also aimed at fostering working relationships with Darfur within the context of NEPAD and for the purpose of sharing capacity in water research in the continent. KSA 5 also assisted KSA 1 in hosting a parliamentary delegation from Sudan during the period 31 October 2010 - 7 November 2010. This delegation consisted of senior decision-makers in the Sudanese government and associated organisations, including Federal Ministers and Directors-General mainly from the Darfur states.
- European Union Water Initiative (EUWI) Africa Working Group: The KSA 5 director was invited to participate in and deliver a presentation at the European Union Water

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Initiative Africa Working Group Meeting held in Cape Town on 26 July 2010. The EUWI form strategic partnerships in specific regions to draw together government, civil society, private sector and other stakeholders.

- Supporting the United Cities and Local Governments of Africa (UCLGA): 'Local initiatives in promotion of the attainment of water and sanitation millennium development goals' is a project of the United Cities and Local Governments of Africa (UCLGA) in partnership with ICLEI – Local Governments for Sustainability Africa Secretariat supported by the European Union. Focal Point (in-country) representatives in 15 African countries have been identified by national associations of local government to participate in this a flagship project of the UCLGA. The WRC hosted the delegation participating in UCLGA Focal Point Network Working session (15-19 August 2010) on 17 August 2010 as part of their technical programme. Representatives from national associations of local government in Benin, Botswana, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Malawi, Mali, Namibia, South Africa, Uganda, Zambia and Zimbabwe, attended the information session on the WRC.
- Supporting the 3rd Africa Water Week, Addis Ababa: The WRC (KSA 5 Director) assisted in the development of the technical programme for a session entitled 'Institution building and capacity development for implementing the 'African Water Vision 2025: Science institutions and capacity building for managing Africa's water resources' at the 3rd Africa Water Week held in Addis Ababa from 21-26 November 2010. The KSA 5 director presented a paper on: 'Establishing and sustaining the NEPAD Network of Centres of Excellence for Water Science and Technologies in Africa' and represented the WRC at this event.

International player

This KSA supports many global initiatives managed by other KSAs. Examples include media support and exhibitions for international events. KSA 5 also assists with logistics for international delegations visiting South Africa. Specific initiatives undertaken during the year under review included:

- World Water Week in Stockholm: A WRC Director attended the 2010 World Water Week in Stockholm, Sweden, 5-11 September 2010 and delivered an oral presentation entitled: 'Minimising land use based water pollution through sustainable wastewater sludge management practices – South African Case Study' within Workshop 6: 'Minimising land use based pollution'.
- IWA World Conference and Exhibition in Montreal, Canada: The KSA 5 Director gave an oral presentation entitled: 'Commercialisation of a product for water supply in small communities – Africa' in the workshop programme entitled: 'Accelerating innovation in the water sector: Social entrepreneurs driving innovation' at the IWA

World Conference and Exhibition held in Montreal, Canada, 19-24 September 2010. The KSA 5 director also chaired the Specialist Group on Sludge Management Meeting on 21 September 2010.

- Hosting of a Chinese delegation: A Chinese delegation visited the WRC on 16 September 2010. The main objective was to establish partnerships with water colleagues in South Africa in order to understand the region's water research and development better; to learn more about the advanced construction of water infrastructure in South Africa and to promote communication and cooperation between South Africa and China on water resources.
- UN World Water Day 2011 and National Water Week 20-25 March 2011: The WRC supported the UN World Water Day on 22 March 2011 by exhibiting at the event held at the International Convention Centre, Cape Town. The event was a joint collaboration of UN-Water, the African Minister's Council on Water (AMCOW), the United Nations Secretary General's Advisory Board on Water and Sanitation (UNSGAB) and the United Nations Human Settlements Programme (UN-HABIT). World Water Day is held annually to highlight the importance of freshwater and the sustainable management of freshwater resources.
- KSA 3, KSA 5 and KSA 2 worked together in planning the parallel sessions for the National Water Week held on 20 March under the themes 'Fixing the leaks in urban areas –The South African experience' and 'Ecosystems as a natural capital and water infrastructure for developing countries'.

Improved commercialisation of intellectual property

New patent applications

The following two new patent applications were filed. Neither of these has been granted and both are still being prosecuted.

- **Remote data collector:** In particular, this invention aims to address the requirement to install a remote data logger in a location where data is to be collected, logged and intermittently retrieved. The invention includes a data recorder and a monitoring system. A South African patent application for this invention was filed on 22 July 2010.
- **Membrane bioreactor:** This invention relates to an immersed membrane bioreactor, and to a method for treating water. Existing membrane bioreactors have the disadvantage that they are damaged when dried, due to a change in the polymers from which they are manufactured. The membranes are also subject to damage when not handled carefully, i.e. by scouring or scratching. Existing membranes also require periodical chemi-

cal cleaning. This invention aims to address some of these shortcomings. A South African patent application for this invention was filed on 25 June 2010.

Alignment with the IPR Act

The Intellectual Property Rights from Publicly Financed Research and Development Act (No. 51 of 2008) (IPR Act) was passed to meet the growing need to effectively protect and commercialise intellectual property (IP) emanating from publicly-funded research. The WRC implemented interim guiding principles with regard to the WRC's position on intellectual property management in the period leading up to 2 August 2010, when the IPR Regulations became effective. The Regulations clearly articulate the processes which publicly-financed institutions should adhere to when dealing with the protection, management and commercialisation of intellectual property generated by such institutions. In particular, the regulations clearly emphasise the need to obtain statutory protection and ownership of intellectual property by publicly-financed institutions. In this regard, a WRC Intellectual Property Management Policy was developed, which was approved by the Board.

GROWING THE KNOWLEDGE BASE

Capacity-building initiatives

Strategic meetings with capacity building organisations

As the main funder of water research in the country, the WRC's relationship with the water research community is crucial for its effective operation. During 2010/11 the WRC put emphasis on meeting with as many universities as possible, to discuss their challenges and their current and future contributions to water research. The WRC representatives visited research organisations in the country and had informal discussions with the research directors/deputy vice-chancellors for research and senior researchers. Meetings were held with:

- Tshwane University of Technology (14 July 2010)
- Cape Peninsula University of Technology (21 July 2010)
- University of the Western Cape (21 July 2010)
- University of Stellenbosch (22 July 2010)
- University of Cape Town (22 July 2010)
- University of KwaZulu-Natal (23 August 2010)
- Durban University of Technology (23 August 2010)
- Mangosuthu University of Technology (25 August 2010)
- University of Zululand (25 August 2010)
- University of Pretoria (20 October 2010)
- Rhodes University (21 October 2010)
- University of Fort Hare (22 October 2010)
- North-West University (25 October 2010)

Student database

The FMS module for capturing student demographics was used for the year under review. Student name, gender, race, qualification, institution and country of origin were entered directly by the project leader or by the WRC coordinator in cases where the project leader submitted a report outside the FMS system. Of the 520 students supported by WRC-funded projects in 2010/11, 311 or 60% were from disadvantaged backgrounds. Of these historically disadvantaged students, the majority, 261, were Black, and 50 were Indian or Coloured. About 2% of the total number of students originated from countries outside the African continent. Of the total number of students 58% were males and 42% were females. The bulk of the students were working towards Masters or PhD degrees.

Regional WRC 101 courses

The WRC developed an informative one-day course/workshop for aspiring and new project leaders to understand the WRC research cycle, the research priorities of the WRC and the fund allocation for each of the priorities, and the process of preparing a comprehensive proposal. Tips were provided to improve the chances of proposal success, to manage the technical, administrative and financial aspects of a WRC project, understand the contractual and financial audit requirements and about the resources available to enhance the success of the project. Three regional courses were held in the year under review: Gauteng (3 May 2010), Western Cape (14 June 2010) and KwaZulu-Natal (21 June 2010).

Knowledge dissemination

Knowledge sharing events

- Weather Modification Workshop – supporting KSA 1: KSA 5 supported KSA 1 with all the logistical arrangements for the workshop entitled 'Possible resumption of weather modification research and implementation in SA' held on the 3 May 2010, Pretoria. Approximately 20 delegates attended.
- Celebration of International *Year of Biodiversity*: KSA 2 and KSA 5 jointly organised the seminar at Tswaing Crater on 17 September 2010 in celebration of the *International Year of Biodiversity*, which was co-hosted by the WRC, South African National Biodiversity Institute (SANBI), Ditsong Museums and the Departments of Water and Environmental Affairs.
- Media breakfasts: The WRC hosts workshops for the media specifically to inform and improve their knowledge on selected topics. The aim is to improve the quality of journalism related to water issues and to make the media aware of the WRC knowledge resources. KSA 5 and KSA 3, in association with the DWA, hosted

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a Media Breakfast on 7 October 2010 under the theme 'Drinking water quality' held at Willow Park, Kempton Park. A media article entitled 'incentives for clean water supply, SA are the first country to have incentive-based regulation for municipal water treatment, to encourage accountability and transparency' emanated from this event.

- The WRC held a media breakfast on 22 March 2011 at the WRC offices in an effort to educate the media on groundwater and the latest water availability studies.
- Internal Open Day: WRC staff members visited the waste treatment works and laboratories of the East Rand Water Care Company (ERWAT) on 7 July 2010. Prior to the visit; the WRC staff were given a presentation by the KSA5 Director on how wastewater treatment plants operate. ERWAT is a commercial wastewater management company which provides bulk wastewater conveyance and wastewater treatment services for 2000 industries and more than 3.5 million people who have access to sanitation services. The WRC staff also visited the laboratories, which provide the water industry with a wide variety of services in the fields of chemical and microbiological analysis, as well as expert advice on water-related problems.

Exhibitions

Exhibitions in which the WRC participated included:

- The Budget Vote, 15 April 2010, Cape Town
- *WISA 2010*, 18-22 April 2010, Durban
- Western Cape Provincial Government *Drought Indaba*, 24-25 May 2010, George
- *South African Women in Engineering*, 22 July 2010, Cape Town
- *AGRI SA Water Conference*, 11 August 2010, Kempton Park
- *International Society of Limnology (SIL) Conference*, 15-20 August 2010, Cape Town
- *WASTECON Conference 2010*, 4-8 October 2010, Kempton Park
- *Water and Poverty Alleviation - A Dialogue for Action*, 11-13 October 2010, Durban
- *IMESA Conference*, 27-29 October 2010, East London
- *Local Climate Solutions for Africa 2011, ICLEI Congress*, 27 February - 3 March 2011, Cape Town
- *UN World Water Day 2011*, 20-22 March 2011, Cape Town

Enhancing access to WRC publications

- The KSA continues to advertise and disseminate WRC publications at exhibitions, through press releases, the 'New from the WRC' feature in *The Water Wheel* and through publishing 'briefs'. The WRC is also continuing with the update and development of a series of brochures advertising relevant research reports related

to specific topics. The following brochures were developed/updated and published during the 2010/11 financial year: sanitation, water and health, groundwater and climate change.

- The latest research reports are now advertised in the WISA and WIN-SA newsletters.
- The redesign of *The Water Wheel* magazine was completed with the first 'new-look' issue published in May 2010. This issue was very well received by readers.
- The WRC developed an advertorial titled 'Liquid Gold' which was published in the March issue of *Sawubona* magazine, with the aim of targeting key international and local water sector travellers, and to coincide with *World Water Day* and *South Africa's National Water Week*.
- All research reports (> 1500) in the WRC Electronic knowledge hub have been tagged with unique categories and keywords, allowing users of the website to search either through a search function or to obtain lists of research reports on specific subject matter.
- Seven thousand (7 000) copies of the DVD entitled *Water is Life, a South African Journey*, developed by KSA 1, were included in the January/February 2011 edition of *The Water Wheel*.
- An A3 size brochure of the research portfolio of each of the KSAs, showing new, ongoing and finalised projects as well as recently published reports, was developed and submitted to the Chairperson of the Parliamentary Portfolio Committee on Water and Environment. The same documents were distributed internally.

Briefs

This knowledge tool attempts to communicate, in a clear and brief format, the outcome of various research studies to the water sector, with special emphasis on non-technical professionals, policy and decision makers. Another 31 briefs were produced during the year under review (the number in brackets refers to the report number):

Technical briefs:

- Water use of indigenous tree species (1567/1/08)
- Assessing the impact of research into rainwater harvesting (TT 444/08)
- The basement aquifers of Southern Africa (TT 428/09)
- Incorporating community-based procurement in the operation and maintenance of basic services (1714/1/09)
- Technology in strategic asset management: Existing and future needs (1785/1/09)
- Refining tools for evaporation monitoring (1567/1/08)
- Acceptance of membrane technology among rural consumers (1529/1/09)
- Water quality and cage aquaculture (1461/1/08)
- WR 2005 study (TT380-382/08)
- Impact of introducing zero-phosphate detergents (TT446/10)

- Water use of biofuel crops (1772/1/09)
- Licensing of streamflow reduction activities (1428/1/09)
- Conceptualising groundwater flow and storage within the TMG Aquifer (1419/1/09)
- Standards for municipal invoices (1664/1/09)
- Eutrophication research impact study (TT 461/10)
- Reticulated sewerage infrastructure (1671/1/08)
- Guidelines and training aids for small water treatment plants (1559/1/09)
- EDCs in drinking water – protecting human health (1749/1/09)
- Evaluating passive mine-water treatment (16231/1/10)

Policy briefs:

- Assessing the impact of research into rainwater harvesting (TT 444/08)
- Technology in strategic asset management: Existing and future needs (1785/1/09)
- Eutrophication research impact study (TT 461/10)
- Standards for municipal invoices (1664/1/09)
- Exploring the economic value of water in the Greater Letaba River catchment (989/1/08)
- SHAPE model for sustainable service delivery (1664/1/09)
- EDCs in drinking water – protecting human health (Report No: 1749/1/09)
- Wetland management in South Africa (KV 253/10)

Special policy briefs (not printed):

- Meeting the ecological Reserve in rivers of the Lowveld (K5/1711)
- Fish rehabilitation at Rondegat River (K8/922)
- Research on wetland management in SA (KV 235/10)

Ministerial brief:

- DDT for malaria control: Environmental and human health risk (1674/1/09)

Effective interaction with the media

- The WRC, in partnership with KZN Department of Agriculture, Environment and Rural Development, launched a campaign on 21 October 2010, on *Ukhozi* radio station, to inform communities about the existence of the WRC resource pack on 'Agricultural Homestead Gardening Systems'.

Examples of exposure in the print media included:

- An article entitled 'Water Research Commission calls for simplified municipal accounts' published in the May 2010 issue of the *SA Local Government Briefing* magazine, owned by the SA Local Government Research Centre.
- An article which appeared on 22 May 2010 in the

Business Times entitled 'SA running on empty' quoted a WRC research manager on the issue of mine water drainage.

- An article on a WRC study on DDT entitled 'The devil you know, the devil you don't' was published in the CSIR quarterly publication *Science Scope* Vol. 3, November issue.
- Two WRC articles appeared in the *Engineering News* of 6 August 2010 – 'Water Administration System improves agricultural productivity' and 'Water saving may result in agricultural productivity'.
- In the *Sowetan* of 22 July 2010 a WRC article entitled 'Moving towards a moveable toilet structure' was published.
- The WRC was quoted in a *Business Report* article entitled 'State to act on phosphate detergents' published on 29 October 2010.
- *The Star* newspaper published an article entitled 'Eskom to probe climate change with the WRC' on 10 November 2010.
- The WRC and Eskom signing ceremony was publicised on various SABC and Primedia radio stations, e.g. *Radio Pretoria* and *Classic FM*, and also on the *e-News* television channel on 9 November 2010.
- *Business Day* published an article entitled 'Eskom explores water-power symbiosis' on 16 November 2010.
- The article entitled "Government strengthens Eskom's balance" was published by *Legalbrief* on 17 November 2010.
- The Minister of Water Affairs, Buyelwa Sonjica, quoted the Water Research Commission in the article 'Climate Change boosts invasive alien threat' when she responded to an interview by the *Sunday Times* on 8 October 2010.
- Two WRC research managers' comments were included in an article published by the *Sunday Times*, 28 November 2010, entitled 'Study outlines costly effect of decreased water quality'.
- The WRC project 'A quantitative investigation into the link between irrigation water quality and food safety' was quoted in the *Sunday Times*, 19 December 2010.
- A WRC research manager was involved in a television shoot for the SABC2 children's educational programme *Rivoningo Water Week*, filmed on 18 January 2011.
- The *Sunday Times* article entitled 'Acid water threat mounts', published on 22 January 2011, reported comments from WRC research managers.
- An article entitled 'New technology freezes acid mine water' which quoted a KSA 3 project was published in the *Business Day* on 1 February 2011.

Several WRC staff members also appeared in the media, for example:

- A WRC research manager was interviewed about the Wastewater Treatment Conference held in East London, on *Igagasi 99.5 FM*, on 24 November 2010.

KSA 5: Water-Centred Knowledge

- A WRC research manager together with the WISA CEO and DWA Regulations Director took part in a debate on the issue of wastewater treatment plants in South Africa on *SAfm's 'After-8-Debate'*.
- The KSA2 Director was interviewed on *SAfm's 'Green Environment programme'* about the Ramsar event held at Emperors Palace from November 30 to 3 December 2010.
- A WRC research manager was interviewed on the SABC radio stations *Lesedi FM (Sotho), Radio 2000 and SAfm* about the WRC press release 'Risk factors associated with floods, the WRC warns', 26-27 January 2011.
- A WRC research manager was interviewed by *AgriTV* on 18 February 2011, in connection with the 'Wetlands Seminar' organised by the Agricultural Research Council's Institute for Soil, Climate and Water, together with the International Mire Conservation Group. The interview was flighted on 29 February 2011 on *SABC 2*.
- What happens when a pit is full? (11 March 2011)
- SA's practical achievement for irrigation water savings receives international recognition (26 January 2011)
- Risk factors associated with floods, the WRC warns (25 January 2011)
- Moving towards the improvement of small wastewater treatment works (23 November 2010)
- Measures to control alien fishes in the Cape Floristic Region (16 November 2010)
- ESKOM and WRC enter into a strategic research partnership (3 November 2010)
- Urgent measures are needed to increase food security in rural households (27 October 2010)
- Good science supporting safe drinking water in South Africa (19 October 2010)
- Groundwater brings hope for SA's driest regions (23 September 2010)
- Our biodiversity is our heritage (17 September 2010)
- Thumbs up for *Water SA* (15 August 2010)
- Moving towards a moveable toilet structure (13 July 2010)
- University degree not enough to make sense of your municipal account (10 May 2010)
- Warning against DDT spraying (29 April 2010)
- Dual grey- and drinking water reticulation systems could save SA's high quality water (16 April 2010)

Strategic press releases

The following press releases were made available on the website during the 2010/11 financial year:

- Groundwater use potential for South Africa (22 March 2011)

TABLE 1
WRC reports distributed to stakeholders in 2010/11

FWR	166
Institutes	4312
Municipalities	52
Private	9652
Schools	41
State Library	90
University/University of Technology	3798
WRC	273
WRC Board	6
TOTAL	18390

TABLE 2

Most popular reports distributed during 2010/11

Report no	Title	KSA	Total
TT 334/09	WET- Origins	2	359
TT 335/09	WET- Management Review	2	351
TT 336/09	WET- RehabPlan	2	345
TT 337/09	WET- Prioritise	2	318
TT 338/09	WET- Legal	2	370
TT 339/09	WET- EcoServices	2	368
TT 340/09	WET- Health	2	349
TT 341/09	WET- RehabMethods	2	349
TT 342/09	WET- RehabEvaluate	2	349
TT 343/09	WET- OutcomesEvaluate	2	349

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THRUST 1: SUPPORT KNOWLEDGE CREATION – RESEARCH MANAGEMENT AND LOGISTIC SUPPORT

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THRUST 2: KNOWLEDGE SHARING AND DISSEMINATION (INTERNAL AND EXTERNAL)

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