October 2009

TECHNICAL BRIEF

Rivers

Assessing River Health Programme research

The WRC commissioned a study to assess the impact of its research investment in support of the national River Health Programme.

How worthwhile is research?

The WRC is committed to ensuring that the publicly funded research under its management provides both research excellence and public benefit. With this in mind, the WRC commissioned, among others, a study to assess the impact of its research investment in support of the national River Health Programme (RHP) and of the WRC's role in the management of the programme. Research investments have been made into the RHP for more than a decade. Various public and private organisations have benefited in terms of improved river monitoring and management practices.

The RHP provides a good example of the development of 'response monitoring' as an approach that complements 'stressor monitoring' in the continuous assessment of the state of a river. Stressor monitoring relies solely on chemical and physical water quality variables as predictors of the likely environmental response to various stressors, while response monitoring entails the use of ecological indicators to characterise the actual response of the river to a disturbance.

A research and development (R&D) programme such as the RHP should be more than a mere collection of independent research projects; a key attribute would be its facilitation of interdependent learning among the multiple programme components. While mechanisms for measuring performance of individual projects are not uncommon, measuring the impact of investment in a broader R&D programme is not as straightforward. In the case of the RHP, it required the development of an appropriate assessment method.

Assessment method

While acknowledging the virtual impossibility of isolating the WRC's research investment from those of co-investors, the approach followed was to develop a novel assessment framework based on two research attributes, namely excellence and relevance. Three impact indicators were chosen for the assessment of research excellence, and another 11 for research relevance. Each of these indicators was rated using a five-point scale.

The indicators for ***research excellence*** were:

- Engagement in scientific peer-review process;
- Validation of critical components through rigorous scientific peer review; and
- Uptake within the wider body of science.

The indicators for ***research relevance*** were:

- Flexibility of research management in allowing research teams freedom to explore and be creative within bound of accountability;
- Diversity of participation in co-creation of new knowledge;
- International collaboration, i.e. the degree of participation in international research initiatives;
- Continuity over time through long-term commitment of individuals and organisations;
- Knowledge capturing and sharing;
- Improved river health;
- Increased capacity and awareness that enables stakeholders to take informed action;
- Improved policy;
- Adoption by implementation agencies of newly-created knowledge;
- Broader societal influence of the RHP;
- Advancement of RHP- and WRC-specific objectives.

Assessment results

The assessment revealed mixed performances associated with the different indicators or groups of indicators of research excellence and relevance. Particularly striking was the poor performance in the research excellence category where all three indicators scored low. Further disappointing results related to the degree of international research collaboration, the degree of improvement in river health and the influence on water policy environment. Acceptable ratings were achieved for diversity

of participation, continuity over time, increase of capacity and awareness, and adoption by implementers. The highest ratings were for flexible management, capturing and sharing of knowledge, the broader influence of the RHP and the achievement of RHP- and WRC-specific objectives.

An overall outcome was a sense that the WRC and its co-custodians had done extremely well in facilitating the transition from the development of technical methods to the establishing of operational monitoring routines. The WRC played an overwhelmingly positive role in enabling the kind and continuity of research that led to:

- Remarkable adoption by implementation agencies;
- Capacity and awareness creation among diverse audiences; and
- Impacts realisation throughout a much broader sphere of water research activities than those directly related to the RHP.

Particularly noteworthy is the high level of knowledge capturing and social sharing that took place. This success is largely attributed to the WRC's flexible management style and the resulting community-in-practice style of participation that prevailed among RHP practitioners.

However, the assessment also revealed a number of areas where performance could have been better. First among these is the overall impact within the body of science. Related to this is the low degree of international collaboration that has been achieved, while the impact on policy and actual improvement of river health are further disappointing features.

The poor performance for research excellence is probably a result of the major emphasis that was placed on understanding and catering for stakeholder needs and on facilitating practical implementation of the RHP. Interestingly, the RHP-related research was judged to have impacted positively on the areas society, the economy, the environment and community health, despite the poor performance in the areas of research excellence and international collaboration.

Although the RHP's objectives have largely been advanced, there is no evidence of improvement in the health of rivers, nor has the substantial body of river health information had much influence on water policy. The likely explanation is that the RHP has largely remained true to its main purpose of being a monitoring programme that generates and disseminates accurate and objective information.

Recommendations

Recommendations relating to the WRC and its research management process

- The WRC's professional, streamlined and flexible management process, which is much appreciated among the research community, relies heavily on having competent and experienced research managers within the organisation and is worth protecting as a high priority;
- The WRC needs to find a creative way of ensuring research excellence and international research collaboration as central issues in the selection and management of research projects;
- Insight gained from apparent strengths and weaknesses of the RHP and other WRC-supported research programmes should be used as a departure point for doing research on the enabling conditions for R&D programmes. Incorporating the results of such research into funding and management models for R&D programmes could have significant implications for future knowledge creation and application in the water sector.

Recommendations relating to future research in support of the RHP

- *International benchmarking*: It is recommended that a comprehensive benchmarking exercise be undertaken to see where the RHP stands against related international practices. Such an exercise could also help in identifying international partner organisations for strategic research collaboration;
- *Embrace the scientific publication process*: Support for peer-reviewed scientific publication is recommended as a means of ensuring that, where justified, the collective achievements of the RHP receive international recognition and that researchers benefit from the rich learning associated with the rigorous scientific review process;
- *Extension into management and policy domains*: Ways of linking RHP-derived information with policy, governance and management frameworks should be researched. This is the route along which the RHP can most directly influence the management and improvement of aquatic ecosystems;
- *Long-term research, development and implementation initiatives*: A number of long-term research, development and implementation projects aimed at significantly improving the operational influence and effectiveness of the RHP and ultimately bringing about improved river health, should be carefully designed and supported.

Further reading:
To obtain the report, *Assessing the Impact of Research Funded by the Water Research Commission in Support of the River Health Programme* **(Report No: TT 360/08)** contact Publications at Tel: (012) 330-0340; Fax: (012) 331-2565; E-mail: orders@wrc.org.za; or Visit: www.wrc.org.za