

ESTUARIES

Study shows WRC to be major funder of estuarine research

An impact study of the estuarine research and related activities funded by the WRC has yielded some positive results.

Need for and purpose of impact study

In order to assist the WRC in maximising the overall benefits of future investments in estuarine research and related activities, it was deemed necessary to assess how WRC funding and involvement in estuarine knowledge generation has to date impacted the social environment, the economic environment and the health and welfare of the people of South Africa. In assessing these impacts, it has also been necessary to identify links between the WRC activities and those of other institutions, both national and international.

Beneficiaries of WRC research outputs

Four generic groups of actors in the field of estuarine science are key to the realisation of the societal, economic and health and welfare benefits of estuarine research outputs. These groups of actors, also representing potential beneficiaries of WRC research outputs, respectively include research funders, research providers, direct research users and society in general, the latter being indirect users of research. Successful research ultimately requires that the needs and expectations of all groups of actors be adequately addressed.

Framework for analysis of research impact

A framework for the analysis of research impacts, which incorporates the perspectives of the various groups of actors associated with WRC-supported estuarine research and related activities, was developed. The framework is characterised by a set of indicators based on appropriately worded questions and designed to quantitatively measure the institutional, organisational, economic and health effects of WRC research on each of the abovementioned actor groups.

These questions and indicators subsequently formed the basis for a detailed, Web-enabled questionnaire used to solicit expert opinion from a population of research funders, research providers and direct and indirect research users. An online professional survey package called *Survey Monkey*, used to administer the electronic questionnaire, allowed the easy creation, dissemination, collection and analysis of survey results. Survey results were supplemented with information derived from story-telling, selected personal interviews and a review of the published literature, prior to the drawing of final conclusions.

Conclusions

General

It was generally agreed that the WRC has provided strategic direction and been the principal funder for estuaries research over the past fifteen years or more. The credible, estuary-related scientific understanding and competence that has emerged in South Africa is largely due to WRC initiatives.

Estuaries research, supported particularly by WRC funding, and also by DWA and NRF funding, has had a significant and positive effect nationally and locally on the management of estuaries. The WRC approach to supporting research is singular in that it has encouraged and provided opportunity for innovation, whilst at the same time facilitating alignment with reality through feedback from managers.

Conclusions relating to impacts of WRC funded estuarine research and related activities on the social, economic and health and welfare environments are the following:

Impact on social environment

On the positive side:

- The WRC has been the principal funder for estuarine research in South Africa and WRC funded estuaries research projects are considered to be aligned with national priorities.
- WRC funding for estuarine research has had a profound positive impact in the development and propagation of tacit knowledge relating to the structure, functioning and management of estuaries. Moreover, through its reporting requirements and role as a knowledge hub, the WRC has been effective in making this tacit knowledge explicit and accessible to a broad community.
- Research excellence and professionalism have been positively influenced.
- Through its committed funding of estuaries research, the WRC is well positioned to leverage significant institutional support for research on estuaries in the future.

On the negative side:

- The impact of WRC funded research is constrained by capacity weakness within government (probably owing to high staff turnover) and a weak 'chain of custody' for estuary

management. Different organisations (Department of Water Affairs, Catchment Management Agencies, Marine and Coastal Management, Transnet, SANParks, provincial conservation authorities and municipalities) are all variously responsible for estuarine management. There is however poor evidence that all these bodies of state interact constructively to govern estuaries.

- WRC funded research has not been synthesised within a unifying context. Such a synthesis would make it easier to understand the social impact whilst providing direction for research to enhance this impact in the future.

Impact on economic environment

The WRC support for estuaries research has positively and significantly raised appreciation for the value of benefits that are being or can be derived from estuaries. However, the economic impact of WRC funded research is constrained by the present narrowly-conceptualised approach to socially oriented research on estuaries, which needs to be more systems oriented and integrated.

Impact on health and welfare

Improved health and welfare is the intent of research directed at sustaining estuary ecosystem processes and services, and of improving management of the use of estuaries. Although generally considered to be significant and positive, the influence on health and welfare has not yet been investigated specifically. As with economic impacts, the health and welfare impacts of estuarine policy and management interventions would be difficult to understand and benefits constrained as long as estuaries are not being treated as complex social-ecological systems.

The links between WRC activities and those of other institutions

Estuaries research funded by the WRC has a strong national orientation with minimal collaboration beyond national borders. WRC funding has had a positive and significant influence on collaboration among research providers based in South African academic institutions (universities and other research organisations).

Examples of such collaboration reside in the establishment of:

- An integrated research programme on temporarily open/closed estuaries;
- The Consortium for Estuarine Research and Management, that serves as a crucible for establishing goals and enabling stakeholders to pursue these collectively;
- The Eastern Cape Estuaries Research Programme; and
- The C.A.P.E. Estuaries Programme in the Western Cape.

The latter two examples illustrate both 'horizontal' collaboration (between research organisations) and 'vertical' collaboration, through which government departments have been drawn in to pursue collective goals.

The strong focus on the relevance of estuarine research outputs, particularly for policy and management, has been a positive and significant motivating influence for research providers and research users to collaborate and engage stakeholders. There remains, however, considerable scope for the WRC to use the foundation it has established to engage with other institutions in ways that could

lead to cost effective collaboration in a national estuaries research programme.

Recommendations for enhancing impacts

Recommendations can be made with regard to each part of the WRC's mandate with a view to strengthening the social, economic and health and welfare-related impacts of estuarine research and related activities funded by the WRC. The terms of the WRC's mandate are as follows:

- Promoting coordination, cooperation and communication in the area of water research and development
- Establishing water research needs and priorities
- Stimulating and funding water research according to priority
- Enhancing knowledge and capacity-building within the water sector.

Recommendations with regard to these terms are as follows:

Coordination, cooperation and communication

It is recommended that the WRC:

- Adopts a social-ecological systems interpretation of its mandate. This will enable it to provide leadership that accords with government understanding of water resources as embedded in complex social systems as set out in the National Water Act
- Supports research into institutionalisation interventions aimed at strengthening the 'chain of custody' for estuaries in South Africa.

Establishing research needs and priorities

It is recommended that the WRC considers using a social-ecological systems framework to determine research needs and priorities and to develop an integrated national estuaries research programme that is also responsive to regional needs.

Stimulating and funding water research

It is recommended that the WRC establishes research partnerships and co-funding arrangements to refine the determination of priorities and to expand research on estuaries within the context of social-ecological systems.

Enhancing knowledge and capacity-building

It is recommended that the WRC:

- Raises its expectations of research producers, requiring publications that are subject to peer review
- Be more explicit in its requirements for the development of the necessary competencies across the 'chain of custody' for estuaries in South Africa.

Further reading:

To obtain the report, *Impact Study of the Estuarine Research and Related Activities Funded by the Water Research Commission (Report No: KV 257/10)* contact Publications at Tel: (012) 330-0340; Fax: (012) 331-2565; E-mail: orders@wrc.org.za; or Visit: www.wrc.org.za