Focus on CSIR Research in Water Resources

CSIR Natural Resources and the Environment
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ECO^2 – Sharing benefits from water resources

Socio-economic development depends on the reliable supply of water for industrial, mining, agricultural, potable and recreational purposes. These activities also generate waste products that are often discharged to surface water. South Africa's water resources are therefore coming under pronounced pressures, a trend that if set to continue, could render accelerated socio-economic development unsustainable.

The national water resources strategy indicates that the requirement for water reached 99% of the reliable yield in 2000. While some areas have significant unallocated resources, other areas are under significant pressure. One such area, the Olifants River (Limpopo Province), where the demand exceeds the supply by 32%, is already experiencing the symptoms of complex negotiations. In this case the building of the De Hoop Dam has been proposed to supply water for rural and urban use, as well as to support the expansion of platinum mining in the Steelpoort area. The five appeals against the development are based on ecological concerns, calling for a balance between development and protection in the framework of sustainable development.

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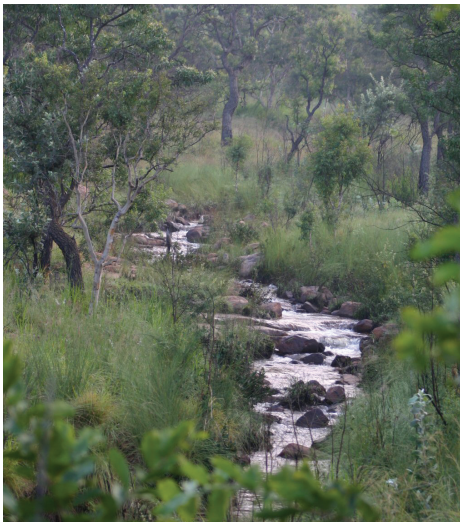

Similar challenges are experience in transboundary rivers in the southern Africa region.

The CSIR has developed an approach to give affect to the three pillars of the National Water Act, being equity, efficiency and sustainability. The focus is on how the natural resource base can be used efficiently and on a sustainable basis to promote socio-economic development. This framework represents a fundamental change from the old Apartheid government policy of preferential access, which, did not promote socio-economic development in the interest of all South Africans and also did not provide adequate protection of our resources. Instead, the new approach suggests that the country's natural resources can be deployed in a sustainable way to achieve the much-needed socio-economic development. The approach is vested in the "ECO^2" decision support framework. Firstly, water resources are characterised through biophysical surveys and potential socio-economic activities that can be supported by the resources are identified. Secondly, the potential benefits of these socio-economic activities are identified and then quantified in the context of macro-economic growth. These options, with their associated costs and benefits, are presented such that it facilitates public participation and the democratisation of the decision making process. In addition, long term sustainability of the water resource should not be traded for short term development needs.

The framework addresses a problem that debates about resources use are often characterised by a lack of awareness regarding the implications of decisions.

Everyone wants a clean and healthy environment to live in but it is important to understand that socio-economic activities that consume or impact on water cannot co-exist with pristine environments. You may not want heavy industry close to a river, but it provides employment and supports livelihoods. The decision-making process is aimed at developing an understanding of the implications of choices amongst all participants in the decision-making process. Once the decision had been made on how to manage the environment (pristine or modified) and which development options will bring about the best socio-economic benefits, government departments are responsible for resource allocation.

This approach also benefits the private sector, by providing them with balanced information regarding water use and benefits to direct future investment. The engagement with industry has been positive, with the value of water and the development opportunities being appreciated. As a result, investors have become less nervous about developments that depend on water resources because they now understand that assurances of water supply is linked to socio-economic benefits and they understand the socio-economic benefits brought about by their investment.

Recently, the CSIR applied the ECO^2 framework to areas where water resource use is highly contested between agricultural and industrial users and found that it provided significant clarity on the combination of use, which best contributes to accelerated socio-economic growth and sustainable environments. The structures are in place for better resource planning. It is now important to implement the options that promote accelerated socio-economic development based on the efficient use of our resources on a sustainable basis. Featured in Engineering News of 21-27 July 2006.

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