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The WRC operates in terms of the Water Research Act (Act 34 of 1971) and its mandate is to support water research and development as well as the building of a sustainable water research capacity in South Africa.

TECHNICAL BRIEF

Water resource management

What role for environmental ethics in water resource management?

A newly-completed Water Research Commission (WRC) study investigated the role of environmental ethics in socio-ecological systems and water resource management.

Background

Despite developments in water resource policy, law, monitoring, regulation, management and research, the health and functionality of South African aquatic ecosystems continue to deteriorate. At the same time, there is a growing recognition that humans are integral components of complex social-ecological systems; as such, their beliefs, values and actions have direct implications, whether intended or unintended, for the environment.

This WRC project rose out of the fact that we are increasingly confronted by the complex and interwoven nature of the complex situations, in which we, as humans – indeed, as all life on earth – find ourselves. Our location and role (as humans), as integral components of social-ecological systems, including our particular and far-reaching powers to impact upon those systems, is critical to the functioning and well-being – indeed, the potential survival – of those systems.

This raises the implication that we (as human) may reasonably be seen to have responsibilities to the broader environment, which responsibilities go beyond our own species and individual personal and social welfare. This nature of this responsibility, and the principles upon which it is argued, is the domain of environmental ethics.

This project was thus concerned with the development of a framework for environmental ethics, which is appropriate to water resource management in South Africa. It also aimed to propose future research directions in environmental ethics and values in social-ecological research and management.

Results of the desktop study

A combination of desktop study and project team meetings were used in the course of this project. The desktop research identified the following major themes in the literature:

- 1. The role (central and otherwise) of human beings, and its ethical implications in the human-natural environmental relationship.
- 2. The usefulness (or otherwise) of the idea of intrinsic value in considering the ethical status of, and ethical behaviour towards, components of the environment.
- 3. That the socio-ecological environment may be seen as an integrated unit, in which the various components parts all have inherent value, and in which human beings do not have primary status, but in which all aspects are interrelated, and support each other.
- 4. That water and other components of the aquatic ecosystem may thus be seen as having intrinsic value in their own right, as well as instrumental value.

Country analytical review of environmental ethics

The project team then undertook a detailed analytical review of the application of environmental ethics in water management in four different cases in Bangladesh, India, South Africa and the USA. This allowed for a comparison of a range of ways of thinking and underlying approaches to environmental ethics – with very different outcomes in terms of, for example, being able to accommodate constituencies with different values, and to the overall aquatic ecosystem.

The case studies were carefully selected to reflect diverse issues and practices in water resource management.

In two of the four cases, the wider social-relational perspective seems to have been compromised – in one case, in an anthropogenic way (emphasising a human-oriented

value preference) and in the other, in a potentially non-anthropogenic way (emphasizing the priority of nature).

The other two cases have sought to emphasise the wider social-ecological system and its interrelationships – although in interestingly different ways.

These case studies showed a range of ways in which ways of thinking about environmental ethics manifest themselves in actual situations. Environmental ethical theories also do not manifest themselves in such a manner that one finds only one strand of thinking about environmental ethics manifesting itself; to the total exclusion of others.

Any ethical approach, in as much as it involves principles in terms of which values (and categories related to those values) are to be related to each other, would seem to involve an inescapable element of ranking and trade-off of values, and by implication, of rights related to those values.

The nature of such trade-offs would seem to relate to hierarchies in terms of which principles of evaluation may be related to each other, or to the levels of incorporation at which the system boundaries are drawn. This, in turn, would variously influence whether particular people or creatures or plants are classified as being 'insiders' i.e. as 'moral members', or as 'aliens' – and what kinds of rights they are seen to have.

In this regard, whether water is seen as having inherent and/or only instrumental value would be influenced by the taxonomic scope and scale, and criteria, being employed to draw system categories and boundaries.

Ecosystem health needs to be conceptualized and managed in terms of an approach to the ecosystem as an integrated unit, in which the health of the biophysical and the social-economical aspects are seen as mutually sustaining and interdependent. This calls for a systemic-relational approach to environmental ethics, in which we move towards locating the central value in the overall systemic health, rather than its components.

This implies taking the potentially difficult step – certainly from a policy and administrative perspective – of decentring the human component, which has hitherto been prioritized. Instead, we need to redirect our focus to the social-ecological system as an integrated whole, to see it as the unit of worth, towards which decision-making, and developmental and preserving action, is directed.

Conclusion

The final report argues for the need for a systemic-relational ethical approach, in the light of the fact that social-ecological systems are best understood as integrated complex systems. It then puts forward a set of principles which are seen as essential to a systemic-relational environmental ethical framework:

1. The systemic-relational (SR) perspective considers the social-ecological system as an integrated unit. It accordingly interprets, and ascribes value to, and takes action in regard to, the social-ecological system, as an integrated unit, and as a dynamic complex system.
2. The theoretical/intellectual perspective of the social-ecological system as an integrated unit has the consequence that we also need to see the social-ecological system as an integrated unit, as the central good, or value, to be pursued in seeking to interpret, evaluate or manage the social-ecological system.
3. There needs to an active de-prioritising of any particular component of the social-ecological system, including the human being.
4. Part of how we understand integration is that the various components of a system express and uphold the system, and uphold and serve each other. Each component therefore has intrinsic value, inasmuch as it is an expression and an enabler of the ultimate value, which is the system as such; each component also as instrumental value; inasmuch as it upholds both the system and other components.
5. Inasmuch as each component of the system may be seen as having both intrinsic and instrumental value, each component is worthy of respect. Worthiness of respect implies that, in any decision-making situation the intrinsic qualities and claims of all involved components and parties must be held for as long as possible.
6. Seeking to respect all components of the socio-ecological system, and to regard them as having intrinsic value for as long as possible, has the implication that the attitude of inclusiveness must be consciously adopted as both a moral and as a managerial practice.
7. Different – and potentially conflicting – values require to be balanced and accommodated in the management of water resources. This needs to be done in such a way that the central value of the social-ecological system as an integrated unit, and its health/functionality, is upheld as the primary goal.
8. Rational ethics is concerned with the various components as part of a system, in ongoing systemic interaction. It therefore needs to be sensitive to factors which – whether for environmental, historical, political or whatever reasons – are more entrenched factors influencing that interaction, as opposed to those factors which are less deep-seated, and hence are more open to circumstance and change.

9. Relational ethics promotes the active search for, and management of, the interconnectedness of the components of the social-ecological system as a primary value.
10. The systemic-relational framework of environmental ethics by itself will be inadequate to achieve such a protection of the primary of the social-ecological system, and of its health and functionality. This will require, inter alia, a range of policy, institutional and training measures.
11. The above principles are all partial approaches and attempts at solutions. By definition, we, as human beings, cannot have a complete understanding of the full range of interactions, processes and complexities of a social-ecological system. An attitude of provisionality and humility is therefore central in seeking to understand and manage such a system.

These principles outlined above guide thinking about and application of, specific values. Accordingly, the final report outlines and discusses key values operating in the water sector (such as equity, sustainability, efficiency, inclusivity, and health of the aquatic ecosystem) as well as more practical factors which influence the way that these values play out in on the ground situations.

Various policy and management issue are considered in the report and various suggestions are made relevant to the realization of a systemic-relational set of environmental ethics, and a social-ecological approach to water resources management.

These include the enabling policy, institutional and managerial conditions necessary for realizing the aims of ethically grounded water resources management (in as much as an ethical framework is a necessary, but not sufficient condition, in this regard).

These include:

- Realising the aquatic ecosystem as a healthy, integrated unit
- Achieving greater democratisation and participation (inclusiveness) in water management institutions
- Polycentric governance of social-ecological systems
- Balancing/trade-offs of values within water resource management.

Further reading:
To order the report, *The role of environmental ethics in socio-ecological systems and water resource management* (**WRC Report No. 2342/1/15**), contact Publications at Tel: (012) 330-0340; Fax: (012) 331-2565; Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.