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# 1. INTRODUCTION

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What is the River Health Programme? The RHP is essentially a national initiative to assess and monitor the ecological state of the South Africa's rivers using standardised indicators to garner information on the long-term environmental trends of the country's freshwater resources. The RHP rests on the foundations of the biomonitoring of aquatic ecosystems, which has been defined as "the systematic use of biological responses to evaluate changes in the environment with the intent to use this information in a quality control programme" (Matthews *et al.* 1982).

Why is it important to implement the RHP in your province? The World Resources Institute says that freshwater systems are globally by far the most degraded ecosystem and that half of the world's wetlands were lost in the 20th century. This view is supported by the United Nation's Environmental Programme (UNEP). One of South Africa's most limiting resources currently is freshwater. South Africa's National State of the Environment Report of 1999, predicts that the demand for water will increase by close to 50% by the year 2030 from present requirements. It is hence essential that we begin to monitor and assess the state of our river systems NOW so that informed management decisions can be made to ensure that the goals of sustainable development can be met. The RHP is an ideal programme to make a significant and cost effective contribution to this.

There are currently seven biomonitoring indices of "ecosystem health" which are in various stages of development and use in RHP programmes nationwide. The primary indices, which are the most well known and widely used are: SASS (South African Scoring System) for the sampling of macroinvertebrates, which is used in conjunction with IHAS (Invertebrate Habitat Assessment System). The secondary RHP indices are the FAI (Fish Assemblage Integrity Index), IHI (Index of Habitat Integrity) and RVI (Riparian Vegetation Index) which are currently being used, but to a lesser extent. The tertiary RHP indices are the GI (Geomorphological Index) and HI (Hydrological Index), for which prototypes have recently been developed, but are not currently being applied routinely in the RHP. The WQI (Water Quality Index), although previously mentioned in the literature, has not been developed at this stage of the RHP.

Not only do these biomonitoring indices provide a useful set of tools for comparatively benchmarking existing ecological conditions and prevailing water quality, they can also be used to monitor the ecological recovery of rivers and sites after major chemical spills for example. In practice, however, biomonitoring lies somewhere between a science and an art. It relies on the use of scientifically proven and tested methodologies, but the actual interpretation of significance of the results also requires a certain "feel" that only comes with experience and familiarity with rivers being monitored.

However, the RHP is much broader than just the biomonitoring of rivers. The River Health Programme is a **people-driven process** which requires a **team effort** from committed individuals. It also requires communication, liaison, promotion, quality control, information management, reporting and management actions as key components amongst others (Figure 1).

What is meant by "implementation"? In a nutshell, "implementation" can be defined as: putting a theoretical concept (or core set of objectives) into practice or something tangible. It can also be described as "producing, carrying out, or executing, achieving and accomplishing". To achieve this, the following simple (yet crucial!) questions need to be asked:

- \$ **What is to be done?**
- \$ **Where is it to be done?**
- \$ **How and how often?**

- § **By who?**  
 § **For who?**

Therefore, the first step in implementation is to decide on a core set of objectives or principles for your particular programme (the “what” component). To recap, the broad objectives of the RHP are as follows (Roux, 1997):

1. **To measure, assess and report on the ecological state of aquatic ecosystems;**
2. To detect and report on spatial and temporal trends in the ecological state of aquatic ecosystems;
3. **To identify and report on emerging problems regarding the ecological state of aquatic ecosystems in South Africa.**

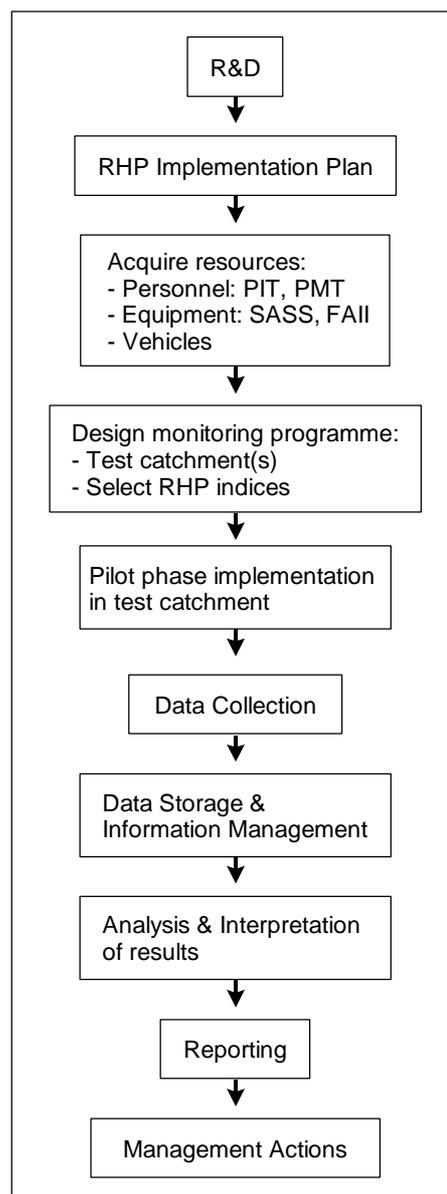
Murray (1999) proposes a fourth objective which essentially extends the reporting function of the RHP to aquatic ecosystem management.

4. **To ensure that all reports provide scientifically and managerially relevant information for national aquatic ecosystem management.**

The key ingredients for successful implementation of the above objectives can be found on the shelves marked: a well thought out and realistic plan, sufficient budget, dedication, commitment to putting the implementation plan into practice, patience and of course enthusiasm. Some of these ingredients (and in some cases where to get them!) for your RHP are contained in this manual and of course from wise old sages living in your area.

However, this manual is not intended to be prescriptive. The recipe and ingredients for implementing your RHP put forward in this manual are intended only as factors to consider when designing your particular programme (Figure 1). You, as the prospective implementer, have the discretion to choose which aspects you may find useful to include in your RHP design. Additional considerations not mentioned in this manual may also be pertinent to your RHP.

The underlying assumption is that each situation where implementation is required will be different, with its own unique set of practical considerations and conditions. Compounding this, is the capricious nature of reality - of ever changing circumstances and unpredictable eventualities. Prospective RHP implementers will probably encounter many obstacles (the majority of which are man made or from divine sources!) while on the implementation path. **Perseverance, flexibility** and **patience** are the qualities that you'll need to overcome these. Remember that opportunities present themselves in many different guises!



**Figure 1. Fundamental steps to RHP implementation.**

The RHP is a relatively new concept in environmental management in South Africa. As the programme has only recently emerged from the research and development phase, it can be expected that the RHP will take time to become fully integrated into environmental management strategies countrywide. Although there has been some implementation of the programme in some catchments in several provinces, full-scale countrywide implementation

remains on the horizon. Hence it is envisaged that further practical insights into implementing the programme will emerge with time, as more RHP practitioners become involved in the programme and share their experiences with the wider RHP community.