Chapter 23
Linking Scientific Research to Development Agenda:
The Case of a Hydrometeorological Project in the Notwane Catchment, Botswana

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ABSTRACT

In recent years, the scientific community has been urged to undertake research that can immediately have impact on development issues, including national policies, strategies, and people's livelihoods, among others. While this is a fair call from decision makers, it should also be realized that science by nature is about innovation, discovery and knowledge generation. In this context, there is need for a balance between long term scientific investigations and short term scientific applications. With regard to the former, researchers spend years investigating (or need data of sufficient record length) to provide sound and reliable solutions to a problem at hand while in the latter, it is possible to reach a solution with few selected analyses. In all cases, it is advisable that researchers, where possible should link their studies to topical development issues in their case studies. In this paper, we use a hydrometeorological project in the Notwane catchment, Botswana, to show the importance of linking research to development agenda for mutual benefit of researchers and policy makers. The results indicate that some key development issues are being addressed by the Project and the scope exists to improve the impact of the project.

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INTRODUCTION

In one of the conference reports of the National Council of Teachers of Mathematics (NCTM) in the USA (Arbaugh et al., 2008), two interesting quotations have been highlighted, where researchers lamented that "Teachers and districts don't pay any attention to our research", while Teachers and District personnel, at the same time echoed that "Research has very little to do with the decisions I make on a daily basis". The authors observed that "Very little common ground appears to exist between researchers and practitioners in this scenario". Furthermore, even for those practitioners who seek to make decisions that are informed by educational research, the research they seek is often published in research journals that are difficult for practitioners to access/ or research is written in an academic style that makes findings difficult to interpret and apply (Arbaugh et al., 2008). Another perspective was offered by Falkenmark (2004), as a "paradigm lock" between scientists and stakeholders, isolating them from each other, (i.e. scientists by lack of proven utility of their findings, and stakeholders by legal and professional precedence and disaggregated institutions). Even more interesting, Ozga (2004) argues that "Current developments linking research to policy and practice pay insufficient attention to the complexity of relationships between policy-makers, researchers and practitioners and the extent to which they pursue different agendas".

Several years down the line, these sentiments seem familiar in most of our countries and more efforts are still needed to address them, in particular to bridge the gap between research and development policy and practice for improved socio-economic development (Feldman and Ingram, 2009; Serrat, 2010; Basil, 2011). For example, Moalosi et al., (2016), when assessing the innovation capacity within Botswana's creative industries, argue that "there is a weak link between the creative industries and research and development institutions and this has hindered the development and promotion of local technological capabilities within these industries".

As a contribution towards addressing some of these issues, we use the case study of a hydrometeorological project in the Notwane catchment in Botswana to highlight the need of linking research to development agenda. This is done by introducing the project, highlighting some topical research and development issues in the catchment, presenting the project result and linking them to development agenda. Conclusions and recommendations are drawn at the end.

THE PROJECT

The project was set up to address some of the major challenges in semi-arid areas, being (i) high spatial and temporal variability of rainfall and hydrological processes, (ii) the inherent non-linearity of response between rainfall and runoff, and (iii) lack of instrumentation of good spatial coverage to capture this high spatial variability (Pilgrim et al, 1988, Wheater et al, 2008). Through these, there arises uncertainty when spatial rainfall estimates are made from limited observations particularly when they are to be used in rainfall-runoff modeling at catchment scales (Mcintyre and Al-Qurashi, 2009). This particular problem is well documented for catchments within southern Africa (Parida et al, 2006, Hughes et al., 2010), and in the catchment under study (Parida et al., 2006).