

Data sharing for sustainable development in less developed and developing countries

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Introduction

There is a clear and strong relationship between natural resources and development. This is more evident in developing countries. Decision makers more especially in developing countries have a challenge of implementing policies, laws and strategies which will promote the sustainable utilisation of the resources to realise sustainable development. A key area of decision-making concerns economic and environmental trade-offs, a highly political process (Bullock and Cosgrove, 2009). Developing countries more especially those less developed are not only faced with the challenge of insufficient and unreliable meteorological observation networks but also with the challenge of sharing such data and information. Data and information management is also poor and disseminating data is still a challenge. "We might not have all the information we would like to have before acting, but we do know enough now to begin to take significant steps" (de Gooijer et al., 2009). These challenges have become a hindrance to sustainable development in many nations. These challenges have become a hindrance to sustainable development in many nations. Most developing countries rely on the natural resources for their development. Lives and livelihoods depend on the natural resources for development. Therefore, for this development to be sustainable, a rigorous management including

monitoring of the resources is extremely important.

Observation networks as a challenge for sustainable development

Without observation networks there won't be data available for dissemination. Therefore, networks are a necessity for data sharing. In most developing including less developed countries, these networks still provide insufficient data and information. This results to observational gap as identified by Grabs (2009) as well as data scarcity. Observational gaps are due to failure to observe and collect data or from lack of access to data (Grabs, 2009). If we understand the value of data we would have rigorous observation facilities. In most countries these issues are not prioritised and are handled by politicians who do not understand the value and importance of data and information. Natural resources are the cornerstone of development in developing countries since these are exploited for support national economies. It follows that data and information pertaining them are extremely important. Why then do we only value the resource and not the data as well as the information about them? Although models can be set-up and applied since they are capable of bridging this gap, it is apparent that most governments of developing countries do not fully support research and the application of models for various reasons. With these sufficient observation networks it will be possible to set up models, support and improve forecasting for different several purposes, conduct resource assessments at all levels to enable us to make better informed decisions about the resources.

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Data sharing as a challenge for sustainable development

Data and information are also key ingredients for development. Therefore, they are a bridge through which we gain understanding about the natural environment. Development is not possible without data and information. Sharing of natural resources data and information promotes integrated land and water governance. Data sharing may be hindered by inadequate observation facilities, and lack of understanding of the value of data and of the importance of sharing. Data availability and provision has become a very sensitive issue in some developing countries. Collecting data is not enough; it must be analysed and converted into information and knowledge, then shared widely within and between countries and stakeholders (Muller, 2009) to focus attention to natural resources problems across all scales for it to be meaningful. It is only when the data has been collected and analysed that we can properly understand systems affecting our resources (Muller, 2009) which have to be considered in environmental resources governance.

Benefits of sufficient and reliable observation networks and data sharing

With information about the current and future natural resources availability and variability both in time and space, as well as about trends, we can reduce environmental and social risks and prepare for the future uncertainties (Bullock and Cosgrove, 2009) thus realising sustainable development. Making informed decisions is made possible by accurate, consistent and sufficient data. Information and tools for decision-making under uncertainty will help to avoid making decisions for the short term that have irreversible harmful environmental and social effects over the long term (Bullock and Cosgrove, 2009).

Why then are these nations not willing to share data and information?

Attempts to make datasets available to the global community have been hindered by economics and ownership-related problems (Gupta et al., 2014). Security concerns in the SADC region and some parts of Africa are one of the major reasons and excuses for not sharing data in spite of agreed protocols. The question to ask is: how then does the developed world make it possible to share their data and information without any obligations? For example, non-compliance to international agreements by a nation on the quantity of water abstracted from the water courses within its jurisdiction could result to the nation not willing to reveal data and information about abstraction levels of the water resources.

Unwillingness to share due to lack of understanding of the value of data as well as information, and lack of understanding of the importance of sharing is another major reason for not sharing. Commercial competitions, political issues, protection of reputation, no adherence to international protocols and lack of research activities focussing on resources assessment are some other reasons for lack of information as well as withholding information. Some data and information are gathered but later become unavailable because they tend to remain with research consultants who are often hired to do some research. Technological advancement also causes loss of data and information mainly in developing countries. These remain a challenge to developing countries. It hinders (unwillingness to share) regional and global projects that have to build on shared datasets for scientific and applications-oriented purposes (Grabbs, 2009) and also hampers environmental research in most parts of the world (Gupta et al., 2014).

Possible solutions and opportunities for sustainable development

Widespread availability of large-sample datasets is a key for further progress (Gupta et al., 2014). Countries should be obliged to enter into agreements/ treaties and be compelled to establish reliable networks, improve their networks, obliged to maintain their observation facilities, to share data and information for the integrated land and water governance. Setting up of incentives and instruments should be considered to promote data sharing among countries. Strict monitoring among countries should also be advocated. Although governments claim that networks are expensive, there are other simple ways and techniques to make these affordable so to provide sufficient, accurate and consistent data.

Training on best data and information management systems and practices can help improve data availability and reduce data loss. A further step is to secure data following the end of large projects and general rules of access to these data after completion of projects by consultants should be developed (Beniston, 2012). Data rescue programmes can assist to retain historical information and to expand knowledge bases (Grabs, 2009). Good natural resources management will depend upon reliable information rescue systems and institutional sustainability of natural resources information and knowledge. Where possible and appropriate, natural resource observations should be shared. This has a potential to eliminating observational gaps. Awareness of the value of information, importance of sharing and building capacity, as well as securing sustainable funding for establishing, improving and monitoring networks is essential. Therefore, more human and financial resources should be allocated to meet development objectives. Promoting model-derived data is desirable although governments in developing countries do not fully support such

developments. Proper management of our natural resources, including water resources is a crucial component of growth, social and economic development, poverty reduction and equity, and sustainable environmental services (Bullock et al., 2009). Developing countries should take advantage of the rapid development and growth of new techniques, strategies and tools which offer great opportunities for filling the gaps in observations, assessment and monitoring (Beniston et al., 2012).

Issues for further discussions

After the observation networks have been improved more emphasis must be on resource assessment and monitoring so to provide accurate, sufficient and consistent data and information. In most countries monitoring does not exist at all. One of the questions to be rigorously addressed is: why do we really fail to have reliable and sufficient observational facilities and why do we fail to provide the only uncertain data these insufficient networks provide? Of course one of the excuses nations could give is that some areas are not easily accessible. However, in some countries most areas are accessible but still they lack good networks. One possible answer to address these questions might be that we do not understand the value of data and information. Even if we do understand we tend to withhold the data due to unwillingness to share information. This has, and will continue to hinder development in many countries.

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