Regional Data Sharing for the Benefit of Mountain Communities in the Himalayas

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The context

Accurate socioeconomic, environmental, and biophysical data are vital for achieving sustainable development in the Hindu Kush-Himalayan (HKH) region. Human and financial resources are limited and policy makers, resource managers, and researchers need a firm basis for decision making. Impacts of climate and global changes extend beyond political boundaries; hence a regional approach to data access is needed.

Participants at an ICIMOD symposium on 'Benefiting from Earth Observation: Bridging the Data Gap for Adaptation to Climate Change in the Hindu Kush-Himalayan Region' in October 2010 concluded that earth observation information products and services were essential for determining adapation strategies and appropriate development interventions for the benefit of mountain communities in the HKH region.

Earth observation has a special significance in this region, with its high degree of inaccessibility. Technical presentations at the symposium discussed earth observation applications and their potential use to address the issues of climate change and its impacts on mountain areas. Subsequent discussions reinforced the need for regional cooperation to promote the use of earth observation in the HKH region.

Why is data sharing important?

Charles F. Bolden Jr., NASA Administrator, in addressing the Youth Forum during the Symposium stated:

"From space this is a world without borders – we all have a responsibility to cooperate to making our village, our country, our region and this planet a better place."

Global attention to climate change has instigated us to look beyond borders and make a joint effort to cope with its impacts. In the past, government agencies acted separately in collecting, storing, and disseminating data and information: they were agency-focused without considering integrated approaches to decision-making. In terms of climate studies, the HKH is often called a 'data scarce' region. The regional countries are at

different stages of development in terms of utilising information technology and spatial data. The data that are available are fragmented, heterogeneous, and not easily accessible. At the same time, global datasets lack the details needed to define mountain geography and ecosystems. Transboundary, issues, such as melting glaciers, greenhouse gases, aerosols (principally black carbon), biodiversity, and disasters due to extreme events, mean the efforts of a single country are insufficient to cope with them. While the

effects of climate change are more noticeable in the mountains, consequences such as changing water cycles and water storage impact communities downstream. Measuring, monitoring, and modelling changes are critical to facilitate informed policy decisions. Sharing data is indispensable for establishing policy objectives for global and regional priority areas such as climate change, environment, energy, and disaster management.

Why is it a problem in the HKH region?

The challenges of data sharing in the region are both technical and political. Regionally, observation and monitoring are inadequate and systems are fragmented and incompatible. Many observations come from research projects which lack long-term funding and coordination in planning, and implementation of observation networks is lacking. Traditionally, agencies store their data and are reluctant to share it regionally. Data policies are incompatible and in general, conservative in their approach.

Emerging opportunities

Emerging data-sharing policies in the HKH countries show positive changes, but they are slow in relation to the fast-growing needs and technological advances, especially satellite remote sensing. Nepal has now placed topographic data in digital format in the public domain: the pricing policy has been revised to make data more affordable; yet a comprehensive policy document addressing data updates, quality control, and standards is still needed.

The Government of India approved a 'National Policy on Data Sharing' in June 2010 which opened up the possibility of public access for scientific, economic, and development purposes. The Department of Science and Technology is the coordinating agency for working out what can be shared and a pricing policy. The Survey of India formulated a National Map Policy in 2005. It has Open Series' Maps to support development activities.

In Pakistan, the launch of an e-government programme in 2003 included GIS for agriculture, natural resources, and urban property mapping, but activities and policies for sharing data were not integrated. The national map policy restricts the distribution of spatial data. The National Framework for GIS Implementation in Bhutan, 2005, identified problems in sharing and using GIS data and produced an institutional framework for developing and implementing policies: the policies are still not formulated. The use of GIS/RS in Bangladesh has been quite extensive, particularly for flood mapping, monitoring, and modelling. In 2009, there was a study on compatibility of GIS data and development of guidelines for metadata, data-sharing protocol, and national GIS data policy: the recommendations have yet to be transformed into national policies.

China has a 'Scientific Data Sharing Project' which is drafting policies, regulations, and standards based on those existing in different industries. China has established many data centres and networks for environmental resources, agriculture, population and health, basic science, engineering and technology, and regional integration.

The above shows that the HKH countries are working on data-sharing policies and moving towards regional data

generation and sharing. Although sharing data across borders has not been considered explicitly, limited hydromet data are shared bilaterally. Data policies should be guided by a vision of 'information for decision making' to help bridge the data gap for the benefit of the region as a whole.

Need to work in partnership

Rapid advances in GIS/RS technologies and growth in users have raised concerns about data heterogeneity, duplication, and accessibility since the 1990s. What followed was the Spatial Data Infrastructure (SDI) as a collection of technologies, standards, policies, and human resources needed to improve access and use of spatial data. Executive Order 12906 of the US President (1994) established executive leadership for development of a National Spatial Data Infrastructure, and development of a National Geospatial Data Clearinghouse, spatial data standards, a National Digital Geospatial Data Framework, and partnerships for data acquisition. Since then, SDIs at global, regional, and national levels are being promoted to close the gaps in data, data standards, and data-sharing protocols and to avoid duplication and facilitate public access.

The World Summit on Sustainable Development in Johannesburg (WSSD 2002) emphasised the need for coordinated observation of the state of the Earth. Subsequently, the first Earth Observation Summit (EOS) in Washington in 2003 adopted a declaration of political commitment to develop a comprehensive, coordinated, and sustained Earth Observation System of Systems (GEOSS) and formed an ad hoc Intergovernmental Group on Earth Observations (GEO). A framework for GEOSS and a 10-year implementation plan promote the realisation of a future when decisions and actions affecting humanity are informed by coordinated, comprehensive, and sustained Earth observations. GEOSS aspires to involve every country and to cover in situ well as airborne and space-based observations. The GEO-VII Plenary held in Beijing in November 2010 endorsed the GEOSS Data Sharing Action Plan promoting 'full and open' exchange of data with minimal time delay, with few restrictions, and on a non-discriminatory basis at minimum cost. The plan emphasises interoperable systems of sharing data, collective optimisation of the observation strategy, cooperative gap filling, and harmonisation of standards of observation. GEO membership now includes 85 countries, the European Commission, and 61 participating organisations.

ICIMOD and development of a regional database

ICIMOD promotes regional cooperation through interdisciplinary and cross-sectoral partnerships. Over the past decade, working with national and international partners, ICIMOD has promoted the use of GIS and Earth observation applications to support its strategic priorities. Its Mountain Environment and Natural Resources' Information System (MENRIS) Division is a regional resource centre for such applications and is promoting a Regional SDI for the HKH region. The components in its approach are: a) to facilitate cooperation of groups with similar data needs; b) to generate awareness through outreach activities on the value of spatial data and data sharing; c) to promote awareness/understanding and application of national and international standards; and d) to facilitate data discovery through improved national catalogues and capacity building in national institutions.

ICIMOD has been a participating member in GEO since 2008. The membership and endorsement of ICIMOD member countries – China, India, Nepal, and Bangladesh – in GEO show the commitment of governments to use Earth observation for social benefit. In 2010, the US Agency for International Development (USAID), National Aeronautics and Space Administration (NASA), and ICIMOD established 'SERVIR-Himalaya' to complement initiatives already operational in Mesoamerica and East Africa. SERVIR ('to serve') is recognised as an early achiever of the GEO vision. The objectives of SERVIR-Himalaya are improving environmental decision-making through dissemination and analyses of earth observation information, and building a platform for regional monitoring of key environmental and natural resources through established networks of stakeholders in regional member countries and beyond. ICIMOD is preparing to use these networks and resources to generate data for a regional database accessible to all its RMCs and partners.

The Regional SERVIR-Himalaya Platform will be co-owned by ICIMOD and its RMCs through designated agencies. ICIMOD's role will be that of a custodian for harmonising and managing data. Rather than controlling data, it will add value and make it more applicable by sustaining a consultative environment and using the most recent technologies to develop a regional protocol. Hence, ICIMOD is committed to promoting regional cooperation by fostering better exchange of data and beneficial solutions to common regional issues.