Regional Research on Biodiversity: Improved Knowledge as a Basis for Better Livelihoods

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Biodiversity is the key to life on earth: human existence – with food, medicines, fibres, fuel, building materials, and many other facets of what we know as civilisation – was only able to evolve because of biodiversity related ecosystem services.

Starting perhaps with primitive organisms and eventually, through a series of changes or evolutionary stepping stones, plants, animals, insects, and the whole fabric, both animate and inanimate, of this dynamic planet developed into the rich variety of life forms we see today. Human beings used all this biodiversity to build

Mountain landscape comprising rangelands, forests, and water resources – precious ecosystem services provided by the Hindu Kush-Himalayas

Agroforestry innovations in Khonoma, Nagaland, India

their civilisations and their wonders of science and art, but used it to such an extent, and heedlessly, that today global change in general, and climate change in particular, is threatening the very foundations of human existence.

Now that the effects of climate change and the loss of biodiversity are becoming a priority issue, the Hindu Kush-Himalaya (HKH) region wants to join other nations worldwide to help preserve our global genetic heritage and make it available as a source for the improvement of livelihoods. At this juncture, however, it is evident that the cornerstone on which sound policies and efficient strategies depend is missing. There is a lack of reliable data derived from scientific observation and of trained manpower to carry out the research – both of which are needed for environmental assessment and sound decisions on development issues and global assessments.

Long-term regional data – a regional need with global implications

Attentive observers can quickly see changes; but, as Professor Körner so aptly reminds us, plausibility is not proof. The IPCC and other agencies have often signalled the serious dearth of data from this region. When compared to other parts of the world, this region is lacking data in many disciplines because it is understudied or the data generated are not accessible. One particularly poignant and telling example that illustrates the situation vividly comes from the IPCC Assessment Report No. 4 which points out that 28,115 significant, observed biological changes were reported for Europe but, during the same period, only 8 were reported for the whole of Asia!

Only rigorous long-term observation will make it possible to acquire the amount and quality of data needed for this region. This is a tall order since the HKH region comprises some of the most difficult topography in the world. Research conditions are difficult, altitudes are daunting, and long periods of isolation have to be accepted as a sine qua non for serious Himalayan researchers. Another problem is that there is only a weak tradition of collecting and sharing data and often no resources to do so either. ICIMOD looks on this 'dearth of data' as an enormous challenge but not as one that cannot be addressed. The acquisition of long-term scientific data is possible if regional members are

willing to 'Hold hands across the Himalayas'. Professor Messerli reminds us that regional collaboration is the key to success in our endeavours. Global programmes with decades of experience are willing to help with technical backstopping. These programmes have the expertise and are motivated to work with us in the HKH because the data that could be shared would benefit not only the HKH but also the whole world by contributing to improved climate change models, preserved genetic heritage, and so forth.

Sharing global knowledge and making the most of regional experience

The governments in the HKH region are often painfully aware that they do not have the information either to respond to their local communities or to fulfil their commitments to international agreements. With limited capacity how can this work begin? Global agencies, which have the know-how in natural sciences, can help with technical solutions, but so far these efforts have been bilateral and the approach has been fragmented. Since neighbouring member countries in the HKH share the same challenging mountain terrain, biological diversity, and climactic conditions, every one of them would gain by sharing data collected in selected, representative locations. This is the approach suggested by Professor Messerli and the ICIMOD team. A concrete proposal for long-term studies in the HKH by using sample sites in 'transects' or north-south 'corridors' from east to west across the HKH, has been made. The proposal is still in the initial stages and many of the practical details have to be worked out in connection with the regional member countries. At the 'International Mountain Biodiversity Conference', which was held late last year at ICIMOD, it was reassuring to see that the transect concept was appreciated by the countries of the region and by global programmes who are ready and willing to provide technical knowhow.

Reaping maximum benefit from long-term research

Change is not a new phenomenon by any means. It is an inevitable process for all life on earth. But change has never been experienced at such a rapid rate in living memory. Historical records indicate that such rapid changes have not taken place previously. The 20th century was overwhelmingly a century of science and technology. Mountain communities who were not part of this scientific revolution were left behind and played only a rather marginal role. Climate change and the awareness of changing biodiversity and the need for sustainable ecosystem services make the mountain communities guardians of a global heritage, of regionally essential goods, and of a local basis for sustainable livelihoods. Mountain communities need to be empowered to make the most of this and to see a future in their changed environment.

Both global and regional institutions can make this happen by working together. While ICIMOD's regional member countries (RMCs) – the countries of the Himalayas – have agreed in principle to work together for long-term monitoring, national institutions and governments now need to buy in to all of these endeavours and plan a course of action to implement the plans proposed. The Himalayan countries need to take ownership of activities in their environments and need to assume responsibility for mobilising resources and managing the day-to-day practicalities that monitoring entails. For those who have very little experience in collecting primary data, the task may seem daunting – ICIMOD is ready and willing to help them by sharing methodologies and in linking to global programmes which can provide technical backstopping. For member countries which are already well on their way with data collection, ICIMOD can help by providing long-term vision, a platform for sharing data, and linkages to global programmes as needed.

> "Regional collaboration is the key to success in our endeavours"

Collecting data by using Trans-Himalayan transects is a viable way of overcoming the deficit in basic data, but these data alone are not sufficient. The work does not stop with collection: data need processing, analysing, and sharing to be useful contributions to policy formulation and for use by decision makers. Only then will data collection help reduce poverty at the community level. ICIMOD can play a role in making data relevant at different levels of complexity – with elementary techniques for integration of data and visualisation to extensive and complex tools and methods of modelling, simulation, and decision making. ICIMOD can also help by incorporating shared community-based knowledge and indigenous experience. Here the scientific data observed can be combined with traditional ecological knowledge to produce tangible outcomes for work in reducing risks of water-induced disasters, improving agriculture by better management of ecosystems, and many others. These will facilitate reduction of poverty by making livelihoods more secure and lands better yielding

and more profitable than is currently the case. On a more global level, this hard data will help communities to benefit fully from the 'access and benefit sharing' of biodiversity resources and 'payment for ecosystem services' schemes intended for them. Here ICIMOD can provide a platform for sharing and accessing the tools to facilitate both the preliminary, geo-referenced visualisation of the data all the way up to and including the extensive and sophisticated processes for modelling, simulation, and decision-support systems.

Opportunities for enhancing livelihoods through use of non-timber forest products, North East India

What is the relevance for local livelihoods?

Collecting basic data on biodiversity in the HKH might seem irrelevant in terms of local livelihoods, and of interest only to scientists. While this is one aspect to be considered, data also provide essential knowledge for a much wider range of endeavours, all of which aim to improve the lives and livelihoods of communities in remote mountain areas. Changes in biodiversity are important indicators that something fundamental is affecting the ecosystem and that it can have ramifications for animal husbandry and agricultural production. Changes in biodiversity also affect the ecosystem and the services it provides: slope stabilisation, for example, is hampered and erosion processes exacerbated by the disappearance of traditional autochthonous species.

ICIMOD sees biodiversity as a source of wealth which can be harnessed. Medicinal and aromatic herbs, non-timber forest products, honey and milk, and horticultural produce are all examples of mountain-specific products which are increasingly in demand. Organic products from remote mountain areas have special characteristics and part of their appeal is the fact that they originate in far-flung areas – this has proven to be a potential source of branding and pricing for these products. Conserving and managing biodiversity, therefore, is an essential element of sustainable development strategies in mountain areas.

What role can ICIMOD play?

Although ICIMOD's primary concern is to create an environment conducive to knowledge exchange and sharing, it also supports attributes of knowledge for development. It facilitates sharing and exchange between and among regional research institutes, universities, and think tanks; and helps them collect and share social, economic, and environmental data on and in the HKH region. ICIMOD, as a knowledge, learning, and enabling centre, can really play an instrumental role as a platform for exchange between its RMCs. The Centre has a transboundary 'regional' vision; but, having said that, it can also be instrumental in bringing on board global programmes and helping to customise their knowhow for adaptation to the Hindu Kush-Himalayan region. ICIMOD is a facilitator – RMCs need to 'buy in'and and take on their share of the responsibility. In addition, through its involvement in the proposed Himalayan University Consortium (HUC), ICIMOD can be engaged in developing the capacities of regional partners and propagating global approaches to problems on a Himalayan scale.

ICIMOD's expectations

ICIMOD will work hard to reduce the scientific uncertainty about climate change in the HKH region and secure increased regional ownership and active participation: this will include coordinating biodiversity research. The data will serve the purpose of both scientists and researchers who are looking for ways to use biodiversity as an effective instrument in poverty reduction: this is very pertinent to development methods. Trans-Himalayan transects are a practical solution to the unwieldy problem of how to coordinate data collection over such a vast area. ICIMOD will promote the development of research and knowledge and, in future, help in the training of well-qualified people from the region who will then take up the responsibility of long-term monitoring. From the vision to reality can take a long time, but with cooperation from all parties concerned, perhaps the future is not as far away as it seems!