Applications of PRA Tools for Knowledge Management in Climate Change Adaptation

Anmol Jain, Independent Researcher and Consultant, jain_anmol@rediffmail.com

Climate change is a serious threat to the mountain environment and to the sustainability of local livelihoods. Knowledge management is an essential tool for improving the understanding of mountain communities about the risks and vulnerabilities posed by climate change. Effective knowledge management is needed to enable communities not only to adapt their livelihoods to climate changes but also to take advantage of the opportunities such changes bring.

Participatory Rural Appraisal – a brief background

Participatory rural appraisal (PRA) uses methods that facilitate understanding of the problems and perspectives of local communities.PRA can focus on an entire community or on specific sections of the community such as women or self-help groups. PRA methods are used to analyse and understand different aspects of target communities or groups. Using a 'village map', the main resources and locations inside and outside the village are identified; a 'historical time line' charts the major changes and events that have occurred; and a 'problem ranking matrix' helps identify and understand the major problems faced. PRA methods are dynamic and evolve constantly according to the specific needs and innovativeness of the facilitators.

This methodology or concept was developed during the 1970s and 80s in response to a growing need for the participation of rural communities in planning and implementation of development projects. Active participation and understanding of all in the community are the essence of PRA; and consequently its techniques rely heavily on visualisation. PRA tools help increase awareness and understanding in the community about specific issues and problems.

ICIMOD has developed a framework for vulnerability and capacity assessment (Macchi 2011), and a more detailed PRA toolkit for use by field teams (prepared by Dhrupad Choudhury and Nani Ram Subedi, unpublished), that proved very useful for knowledge management. PRA tools help in the collection of information on the impacts of climate change on livelihoods and inherent coping capacities in mountain communities that is useful for policy makers, while also raising awareness about climate change in the local communities.

Communities and individuals need institutions and networks that learn and store knowledge and experience and promote flexible methods of problem solving to augment their adaptive capacities (e.g., www.resalliance.org). Only by improving knowledge about and awareness of climate change risks and mechanisms to address them will resilience to its adverse impacts increase.

In the northwestern Himalayan region of India, use of PRA tools contributed significantly to communicating the risks of climate change. A toolkit adjusted to local contexts and needs sensitises mountain communities to potential and existing risks; the relationship between climate change and resource dependencies and availability; and the consequences of inaction. It also helps people to identify and disseminate information about successful coping and adaptation.

Reflection and sensitisation

Mountain communities are experiencing climate change, but interaction about its nature and the impact on local livelihoods is limited to household level or with friends, neighbours, and relatives. The PRA toolkit provides a platform for reflection at the village or community level - which was really useful for the hill communities.

Significant changes in resources and livelihoods over a 10 to 20-year period were discussed through a Community Historical Timeline. Changes and events contributing to these changes were discussed collectively drawing from individual knowledge and experiences.

Using a Seasonal Calendar, the major weather events (precipitation and so forth) were discussed and noted. Community members were asked to rate the past as well as present intensity of each weather event on a scale of 1 to 5 (from lowest to highest intensity).

In most villages rainfall duration had declined over time while the dry period had increased significantly, as had average temperatures. At the outset, discussions reinforced the perception of community members (especially the elders) that climate change is taking place; and moreover facilitated understanding about the nature and magnitude of the change. For example, generally, the communities knew precipitation had decreased, but they only realised the magnitude of change when current precipitation levels were compared with the past and plotted on a chart. This instigated them to take the climate change issue seriously.

Participatory analysis of impacts on livelihoods

After initial sensitisation, participants selected a combination of tools to facilitate participatory analysis of the impacts of climate change on livelihoods. Ranking and analysis of specific use were needed to avoid recommending too many tools.

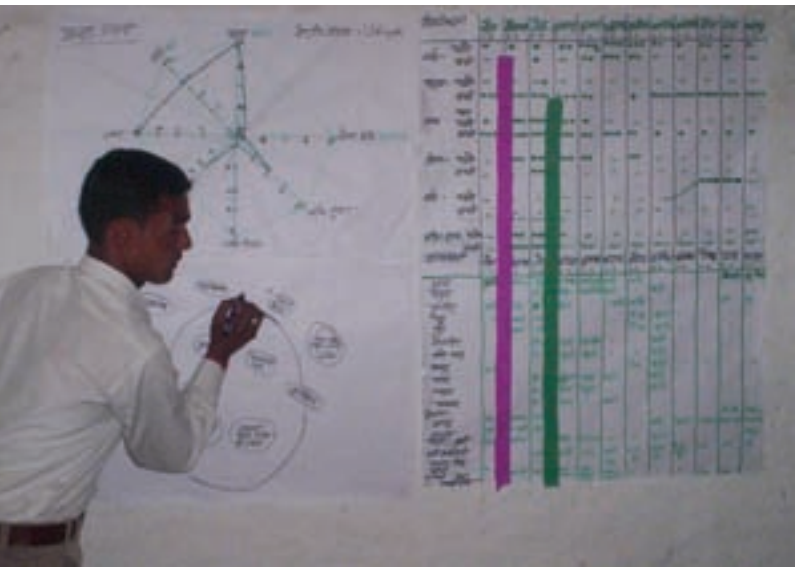
A Seasonal Dependency Matrix was prepared to identify the dependency of communities on various resources or occupations during the course of the year – at present and 10-20 years' ago. This facilitated a comparison of changes over time.

Subsequently, the impacts of changes in weather (mapped through the Seasonal Calendar) on community livelihoods were assessed through a tool called 'Community Ranking of Hazards'. Major weather events impacting livelihoods were ranked on a scale of 1 to 5 using a radar chart. The results indicated that the impacts of weather variations on local communities are increasing.

Impacts of prolonged dry spells and decline in duration of precipitation were found to be occurring in the case of agriculture, animal husbandry, and drinking water

supplies. In many villages the impacts were found to be so widespread that the opinion was that agriculture was a waste of time and money because seeds could not germinate due to lack of moisture. During discussions, participatory analysis of the relationship between major weather events and local livelihoods took place.

For example, in several study villages, people complained of increased pest attacks – particularly that of kurmula (a beetle which damages root tubers) – but they were unsure what caused the increase. It was found



that previously many kurmula eggs were destroyed by snowfall and cold temperatures during winter. Other factors and events such as frequent forest fires and increased damage by wild animals were used to draw linkages between socio-ecological changes and climatic conditions.

Case study

During participatory analysis, it was found that in several villages in Almora district, Malta apple trees had given fruit twice in a year. These changes in phenology worried horticulturalists who feared that double fruiting would result in crop losses and overall impairment of the health of the orchards. Participatory analysis led to the conclusion that such changes in fruiting patterns were due to drastic changes in the weather and climate.

Identification of coping and adaptation mechanisms, and institutional dependencies

To carry out this exercise, the seasonal calendar was merged with the seasonal dependency matrix, then the impacts of weather events (identified through community hazard ranking) on resource availability and different livelihood activities were discussed.

The merger of the two tools led to the discovery that in Almora district there was very little rainfall during the sowing season for rice. The people were asked how they were coping with this and it was found that some farmers had adapted by cultivating soyabeans instead while others had started cultivating 'mandua' (a coarse millet) since it is tolerant to warmer temperatures than rice and needs less water.

There were several other examples of the effects of a warming climate: the cropping season for potatoes was decreasing (from ca 5 to 3 months) and farmers had grown cauliflower and peas in the time left over (1.5 to 2 months), surprisingly getting very good returns; in Pagna village the cultivation of crops like mangoes and bananas was found to be well-suited to the warmer climate; in Tehri district buffalo husbandry is being relinquished because of lack of fodder and water but goat rearing is bringing economic gains. Apart from identifying coping strategies adopted by the communities, the tools facilitated dissemination of successful strategies throughout the study villages.

The dependency of villagers on institutions within the village and outside was ascertained with a Venn diagram on institutions. Community perceptions about the external help they needed to overcome the impacts of climate change were identified and documented. Such exercises provide development agencies with useful insights about climate-change impacts and the dependency of mountain communities on resources and institutions.

Conclusion

Use of the toolkit and associated discussions enables us to link local and scientific knowledge about climate change and this in turn helps identify suitable adaptation strategies to enable community responses to climate-change impacts on mountain livelihoods. Through innovative application of PRA tools, traditional knowledge and good local practices can be recorded and useful knowledge gained through peer learning for community-level knowledge exchange, sharing, and benefit.

Reference

Macchi, M (2011) *Framework for community-based climate vulnerability and capacity assessment in mountain areas.* Kathmandu: ICIMOD