People And Resources DYnamics Project (PARDYP), Phase II

External review

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final report

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The review team addresses its deep thanks to all the persons involved in this review mission. In each of the countries visited - China, India, Nepal, and Pakistan - we appreciated the friendly and open atmosphere, the very well organised programme, and the interesting and useful exchanges, which allowed us to gain deeper insights on the project. Last but not least, the ICIMOD team, and especially the resident co-ordinator of PARDYP who gave us all the required information and arranged all the meetings, the logistics and infrastructure in Kathmandu, assuring a smooth implementation of the mission.

Executive Summary

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CROSS-SECTIONAL THEMES	Watershed management; capacity building in research
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TYPE OF COOPERATION	Technical co-operation (TC)

Subject description

The PARDYP project is in its 2nd phase, ending in December 2002. In its first phase (1996-1999), the project focus was on biophysical research. After an external review in1999, the project focus was reoriented towards a more participatory, farmer-based approach, as it was felt that resident populations did not sufficiently benefit from the project during phase 1. However, it appeared that along with the change of focus, a large number of activities had been launched, including extension activities and farmer coaching. Based on its Terms of Reference the present review mission had to propose, among others, strategies to focus on a few priority areas.

Evaluation methodology

The review methodology included the following elements: (i) the study of the documents provided by PARDYP / SDC, including the CD-ROMS produced by the project, (ii) briefing meetings in Bern and in Kathmandu (for parts of the review team), (iii) individual visits to the four countries involved in the project by the consultants, (iv) meetings with ICIMOD and the regional co-ordinator in Kathmandu, including with the DG of ICIMOD.

Major findings

Very committed country teams in China, India, Nepal and Pakistan implemented the project according to their own priorities and interests, based on country specific concepts they developed. Many successes could be noted, and farmers in rural communities in the watersheds appreciated the support they received from the project. As a matter of fact, the project focused on general agricultural development in Pakistan and India, it was more oriented towards governance and policy in China, while it retained its emphasis on water and soils in Nepal. Today we observe that the project as a whole is lacking focus, largely due to a poor project document in which no clear priorities have been set.

Training and capacity building: the project teams received training in PRA and the project underwent a reorientation as it responded to priority setting exercises that were carried out. Individuals or whole teams have been trained in PM&E and PRA and specific topics like GIS, multimedia and HYMOS (hydrological data management). According to the project document, training and capacity building was mainly planned at farmers' level, which is obviously not sufficient. Capacity building must be seen as a strategic approach in relation with the (newly defined) role of the project.

Hydro-met, the strong link: implementation of a common approach and standardised methodology for data collection resulting in a large and impressive database. The introduction of HYMOS software and training facilitates standardised data collection, and data processing by the project teams (across sites). Now, it is time to use the data, and to assess what kind of data should be collected in future, and for what purpose.

Interdisciplinary approach: rather than interdisciplinary, the project has become multidisciplinary during phase 2. A major challenge for phase 3 will be to achieve a true integration, e.g. in the development of complex watershed models linking biophysical and socio-economic aspects, e.g. for simulation and elaboration of scenarios. Interdisciplinarity does not just happen by adding socio-economists to the teams. Complex research hypotheses must be formulated, and adequate – integrated – research approaches need to be developed.

Linkages: some linkages at policy level have been established, but they will need to be strengthened for increased impact in future. More operational linkages with partner organisations, specially those dealing with implementation will play a central role. In future, the project should not be involved in pure implementation of development activities, the outputs of the project need to be redefined.

Publications: many scientific publications and CD-ROMs have been produced by PARDYP during phase 2. The information published on the CD-ROMs should remain available, i.e. the access to this information should not be compromised by

copyrights. Publishing is an important activity for a research project, but the quality of the publications and their adequacy with respect to the clients' groups are essential.

Lessons learnt and main recommendations for phase 3

PARDYP is not a development project and given its history, current objectives and more importantly its current staffing composition and structure, it has no comparative advantage in implementing development activities. Therefore its focus should remain where it has its known strengths and potentials: developing research outputs such as approaches and technologies that work, models for policy stimulation and formulation, etc. and make sure that these outputs are widely used and have a development relevance for a whole watershed.

In other words, the PARDYP approach should remain an **interdisciplinary, watershed approach, the project focus should be applied research, conducted in a participatory and interdisciplinary approach**, **with strong emphasis on utilising the outputs of research, exchanging results and experiences, and influencing policy formulation.**

Today, PARDYP has a weakness in terms of research hypotheses. Such hypotheses (key questions related to the utilisation of natural resources in the watersheds, including biophysical and socio-economic factors) should be formulated at country level as well as for the Hindu-Kush Himalayas' Region. Only this will allow to assess which data is required, which information is missing, etc.

Support will be required in various forms: scientific support from the universities (UoB and UBC, possibly also others depending on the needs and competencies), financial support from donors (who should not expect quick results from PARDYP, due to the complexity of the field of research of the project). The steering bodies should improve their performance: the steering committee should assume its guiding function and the technical advisory groups should be recomposed and redefined in order to provide effective scientific guidance.

The project management, including financial and reporting procedures, should be improved and if possible simplified. Capacities in planning, monitoring and evaluation should be strengthened.

Linkages with different partners will be crucial during phase 3. Partners which can translate research results into practice (e.g. extension services, NGOs, development projects, private enterprises, etc.), partners to convert research results into policies (decision makers, etc.), and partners with whom scientific information and research results can be shared (other watershed management initiatives in the HKH region, research institutions, etc.).

The regional dimension of PARDYP has not been properly planned so far. This explains partly why more has not been achieved at this level. In future, commonly agreed objectives will be required, and clear mandates / responsibilities for regional issues shall be given to the country teams.

1 Introduction: history and background

The International Centre for Mountain Development (ICIMOD) has a mandate for the middle mountain watersheds of the Hindu-Kush-Himalayas. ICIMOD was established in 1983 and nearly two decades later still remains as relevant as ever because these mountains and their watersheds remain under severe ecological and economic stress, in part, due to the rising populations and increasing demands, in the upper and lower slopes and in the valleys and beyond. Natural resource degradation, rising poverty, inaccessibility and vulnerability continue to characterise mountain communities. As an institution, ICIMOD has, from the outset, attempted to understand and address issues of *degradation* and made it a deliberate part of its mandate. Few International Research and Development Institutions have put as much an emphasis over such a long period, as ICIMOD has, on researching degrading watersheds from such a wide range of biophysical, environmental and, recently, socio-economic parameters. The focus on studying complex, diverse, risk prone and degrading environments may be taken for granted but many stakeholders (donors and policy makers included) in the public research system are only recently exerting pressure on research establishments to opt for the poor, by making shifts towards understanding and addressing problems and issues in marginal areas.

Two major initiatives of ICIMOD (both funded by IDRC Canada) preceded the People And Resource DYnamics Project (PARDYP) project being currently reviewed and have undoubtedly influenced the directions of the current program especially as they were undertaken in the some of the same watersheds. The first is the Mountain Resource Management project (1989 to 1996) and the second was the Rehabilitation of Degraded Lands in Mountain Ecosystems project (1992 to 1996). The first was Nepal specific and the second involved watersheds in China, Nepal, Pakistan and India. Both these early projects received strategic support from the Resource Management and Environmental Studies program of the University of British Columbia (UBC), Canada.

PARDYP is considered as a Research for development project designed at the outset as a long term integrated project concerned primarily about natural resource dynamics and the degradation process. A total of five watersheds were included in PARDYP: two in Nepal, one each in India, Pakistan and China. In PARDYP, ICIMOD was able to broaden the partnership (and funding support) to include not only IDRC but also the Swiss Development Co-operation (SDC) which became the major donor. The strategic inputs and support of the University of British Columbia was continued even as the University of Bern was brought in as an additional player to support PARDYP.

The first phase of PARDYP (Oct 1996- Sept 1999) was devoted to the establishment of the research infrastructure, human resources, systems etc. A large mount of very useful information was generated and a conference report is available with the highlights from that phase. It is generally accepted that in Phase 1, the bio physical research dimensions received more emphasis than the social, institutional and economic issues. The second phase of PARDYP (Oct 1999 to Dec 2002) was designed to enhance the community based approach and to target poverty reduction and improved management of natural resources. The project was expected to include a focus on the development/use of participatory, community based, decision making processes and the development of relevant methodologies (suggested by the external review team of Phase 1).

As PARDYP considers pursuing a third phase South Asia is faced with political challenges resulting from the border conflicts between India and Pakistan. The events of September 11th 2001 and the subsequent political and military interventions in Afghanistan have influenced day to day life in many countries in the Hindu Kush Himalayas region. Nepal too is faced with its most serious political challenges in recent decades affecting work in both of PARDYP's Nepal watersheds (refer also to chapter 3.1).

Review process and TOR

This external review of the second phase of PARDYP was undertaken on behalf of the Swiss Development Co-operation (SDC), the International Development Research Centre (IDRC) and the International Centre for Mountain Development (ICIMOD) between March 15th and 27th 2002 (refer to the Terms of Reference in the Annex). Members of the review team were Dr. Dominique Guenat (team leader), Dr. Peter Bieler, Dr. Jit Pradhan "Bhuktan" and Dr. Julian Gonsalves. In order to maximise the use of travel time, team members each directly visited the different countries and only upon return to Kathmandu had their first meeting as a team. Reviews were undertaken of the China site by Dr. Guenat, of the India site by Dr. Bieler, of the Pakistan site by Dr. Bhuktan and the Nepal site by Dr. Gonsalves. The analysis of country reports and the regional review was undertaken in Kathmandu starting the 21st of March and lasted until the 26th of March. The arrangements and visit at ICIMOD was co-ordinated by Roger White, Regional co-ordinator for PARDYP.

The review team undertook a range of approaches in conducting the country reviews and this is reflected in the different styles in which the country reports are written and presented. The country-specific experiences were initially used as the basis for deriving issues for further exploration during the regional review. Through a participatory card-exercise and a brainstorming session a range of issues were identified for inclusion. This initial listing of issues were shared with the Director General of ICIMOD, Dr. Gabriel Campbell and the DDG Dr. Binayat Bhadra as well as representatives from SDC Mr. Markus Schäfer and Mr. Karl Schuler (Second Secretary and Assistant Resident Co-ordinator in Nepal). This session not only provided opportunities for these stakeholders to contribute to this listing of issues but it also gave them an opportunity to receive (brief) first hand reports from the country visits. Meetings were also organised with ICIMOD senior staff including the Regional Co-ordinator and senior management staff. Members of the review team were briefed with CD ROM's prepared by the Nepal team in support of regional initiatives. A participatory and consultative approach by the reviewers led to the regional overview report and suggestions for future options. This preliminary report was presented to ICIMOD senior management on the 26th March 2002. The mission members departed for the various countries on the 27th of March 2002. The finalisation of the report was undertaken electronically and presented to SDC and IDRC on April 15, 2002.

The team was able to carry on its work under a rather tight schedule, thanks to the co-ordination and support efforts of the Regional and Country co-ordinators and their respective staff. Their support is deeply appreciated and acknowledged by the reviewers.

2 Watershed Approach

It is generally accepted that natural resources are best managed on a watershed basis. Watershed development aims not only to conserve the land, water and forest resources but also to ensure optimum production from these resources. However watershed development is a means of developing the natural resource base and not an end in itself. Watershed development is also often about changing power relations and property rights and ensuring equitable access to resources. The extent to which local communities work together and take collective action is another important dimension of participation in watershed development. In successful watershed development work, new assets are created and consequently the issue of distribution of benefits becomes relevant. Equity is not an easy objective to attain and must be planned for. The ultimate goal of watershed development is its contribution to improving livelihoods through the generation of employment (farm / off-farm) opportunities, enhancement of productivity, creation of assets and the empowerment of local user groups and communities. In fact watershed management might be simply defined as natural resource management aimed at securing livelihoods.

Resource issues in watersheds are interdependent (agriculture, water, forests, livestock, etc.) and becoming increasingly so. Agriculture and forestry are closely linked because of their interdependence. It is logical therefore that interdisciplinary approaches would have to be featured heavily. It is not very often that one sees interdisciplinary *research* being done on a watershed basis and PARDYP might stand out as being one of the few research for development projects in Asia that has undertaken long term studies in such a wide range of soil, meteorological and water issues. The Third Quinquennial review (QQR) of ICIMOD (July 2001) in fact found PARDYP to be one of the few examples in ICIMOD where different thematic areas were integrated.

Watershed based work of PARDYP is undertaken at a range of levels: *plot levels*, *sub catchment levels*, *watershed levels* and *regional levels*. The nature of the R and D interventions differ, depending on the levels one works at. For example, more soil erosion measurements may be done at the *plot* and *sub catchmen*t levels, but a bigger emphasis on learning and synthesis might occur at *watershed levels* and a thrust on sharing and policy dialogue would be more evident at the *regional levels.* Scaling up therefore has different connotations and implications at different sites. Often the size of the watershed is determined by the objective of watershed development. Large macro watersheds may be relevant in planning of command area development for irrigation projects. On the other hand micro watershed of 500 - 700 hectares would be adequate for planning soil, water and biomass regeneration treatments. If the objective is to serve individual farmers, water harvesting on individual farms using farm ponds can be featured on farms even in a small area. Whatever the size of implementation it is important that delineation of watersheds is done properly wherever possible seeking the aid of aerial photography and remote sensing data and orthophotgraphs (as PARDYP has done).

Networking around watershed management also occurs at different levels for different audiences and for different purposes. In China the goal of networking around the PARDYP site could be a means to promote expansion from a small watershed to a larger watershed within the country. In Nepal networking might aim at better utilisation of lessons by other stakeholders within the same watersheds it has worked in all these years. In India the focus on the process and partnership

dimensions might stand out as a better way to scale up (than to resort to replications). It might appear that each site has to evolve its own objectives, given the local realities. The role that PARDYP Regional Co-ordination office plays is also conditioned by these location-specific realities and might evolve/change over time.

Some scientific publications, e.g. by *Walling D.E.,* serve as reference in the discussion on the relevant size of watersheds, as far as biophysical factors are concerned. On the other hand, when it comes to include other factors, such as socio-economic factors, in more complex research, the relevant watershed size may change, depending on the research hypotheses.

3 Results, dissemination, and impact potential

3.1 Project context

PARDYP is operating in a presently very unstable political environment across the region. While the watersheds in India and China are located in stable areas, Pakistan went through difficult periods and Nepal finds itself in a political situation where one of the two watersheds had to be definitely closed in June 2001 and the second one is presently not accessible as well. Additionally the relationship between India and Pakistan make exchange visits of PARDYP teams almost impossible. Only China and Kathmandu in Nepal can presently be meeting points for all PARDYP members. This context has definitely affected the smooth implementation of PARDYP. The following achievements have to be read bearing this in mind. The evaluation team, however, does not see any immediate consequences that need to be considered (refer also chapter 6.4 Risk assessment).

3.2 Achievements during phase II

The present report acknowledges the comprehensive national annual reports that provide excellent information on the activities and continuous findings in the present phase. They express the dynamics of the respective country teams, both in terms of interpretation of the components and in the wide range of activities. The evaluation team discusses the respective relevance of activities in the individual country specific reports in the annex of this report and the issue of their spread in chapter 3.3. This section therefore concentrates on the lessons learnt in the multiple technical and organisational achievements.

3.2.1 Towards research with participatory approaches

The external review of PARDYP phase I recommended a shift in focus of the project[1] towards the farmer as a client rather than as an 'object of research'. As a consequence, the project teams received training in PRA and the project underwent a reorientation as it responded to priority setting exercises that were carried out during own PRAs. This was probably when the diversity of each watershed took its own dynamics resulting in a more general agricultural development focus of the project in Pakistan and India. China undertook a more governance and policy related focus and Nepal retained its emphasis on water and soils. The approach to respond to individual farmers, however, was recognised by most teams not to be efficient resulting in a needed orientation towards more community based approaches. In general it can be noted that PARDYP has evolved from a high profile in hydrology and soil fertility of phase I into an integrated approach in phase II with a rather diffuse profile.

This orientation, however, does not mean that the project did not try to define its responses of farmers' priorities to fit the project's components. Requests for support for drinking water supply (in India and Pakistan) was not taken up by the project teams, but the teams acted by bringing in other specialised agencies.

The fact that priorities were identified through PRAs and that research is carried out on-farm is at times considered to be equal to participatory research. The same

[1] Refer also to chapter 3.4

applies for activities as a result of using PRA. However, it takes more to introduce a new idea than merely demonstrating its usefulness. China has therefore translated the approach into the concept of Participatory Technology Development (PTD). India has not formalised its approach according to a concept, but shows traits of PTD, even though not consequently implemented while adhering to its demonstration approach. The risk in this, however, is that the project assumes the role of an extension actor, engaging in individual farmer coaching, creating expectations with farmers that can not be fulfilled and ultimately takes upon tasks that are not its own while spreading into a multitude of activities. The lack of a clear definition of the project role and the focus of the project design is again contributing to this situation (see 3.4). Linking with those actors that can maintain such services to farmers beyond the project's duration seems essential.

With regards to PM&E most of the teams received training at some point. While China and in some parts also India apply the concept to farmers and at community level, it is not applied to their own functioning (see also 4.1).

Recommendation:

- In order to maintain the participatory nature of the project, while also concentrating on its role, refine the experiences within the regions into true PTD and PM&E concepts. Adapt these participatory approaches to local priorities, build capacities, and apply where applicable.

3.2.2 Capacity building of PARDYP teams and communities

In all countries very committed and motivated project teams are now in place. Individuals or whole teams have been trained in PM&E and PRA and specific topics like GIS, multimedia and HYMOS (hydrological data management). The result of those training activities are certainly felt in all teams and individual capacities are reported to be improved in all countries even though this element was not part of the project document. Where project staff have also other responsibilities within their institution (besides PARDYP as in China) the potential to make such capacity building available more widely within the host institutions is highest. However, in most teams the staff are project employed and not core staff. This means that capacity building efforts have less of an institutional impact since once the project ends, the staff leave their host institution. Further, capacity does not only improve through courses and training events, but also through the subsequent follow-up, as well as exposure and access to information and new ideas. Unfortunately the information exchange between the country teams was very limited (see also 4.2) and was directed to national co-ordinators. This potential was not exploited in the set-up except in the last few months when an exchange of results was reported.

Through the direct involvement of farmers in PARDYP's activities including specific training carried out or facilitated by the teams, the effectiveness of the project is expected to be considerable even within the limited area of the watershed. In some countries the farmer to farmer dissemination of acquired knowledge is reported to be high (China and Pakistan) and the exchange of further experiences considerable (India). The project has gained visibility in the watersheds as farmers appreciate those activities related to livelihood and economic interests (three of the seven project components: common resources, on-farm resources, and livelihood potentials). The trend to work through community organisations rather than pilot or individual farmers might increase the effectiveness of this aspect as experienced with

forest user groups in Nepal or community land development in India. This should imply that community institutions are identified and not newly created by PARDYP wherever possible. The activities in the component 'community institutions' have led to a better understanding of community decision making (India), to an understanding of a partnership (China, India) or a means to implement the project (Nepal and Pakistan). It has to be kept in mind, however, that this is the outcome expected of a development project. PARDYP therefore has to situate its role in the triangle of research-development-policy (see 3.4) and only focus on making strategic contributions to reviving and strengthening local institutions and relying on specialised local agencies wherever possible for whatever capacity building efforts are required.

Recommendation:

- Define capacity building as a strategic approach to be distinguished from building scientific capacity and the capacity of rural communities and local institutions in the context of the role of the project (see 3.4.2).

3.2.3 Linking biophysical dimensions with socio-economics

The ambition to complement PARDYP's strong initial profile on biophysical research with a complementary socio-economic orientation can be realised only if the necessary competencies are made available in the team. This is still not the case in the Nepal team where a special focus on social and institutional capacity is needed. And further, inter-disciplinarity is not automatically falling in place. Nepal and China still operate according to the project components and the integration of technical and socio-economic aspects develop slowly. India and Pakistan are operating in a matrix structure of responsibility and implementation that allows an improved understanding of linkages, even though the consequences are not always and immediately visible. However, a first outcome of this attempted shift is the increased development relevance of published articles and papers, especially that socio-economic results are published as well. However, as in other activities, conceptual ideas of how to supplement the biophysical database with socio-economics are not visible. Country synthesis attempts in Nepal and China remain exceptions of efforts to link databases on a watershed level.

Another important aspect is the project's attempt to streamline gender and equity in all activities. While important baseline surveys and analysis were carried out, the synthesis and conclusion remain on the surface. Due to cultural particularities Pakistan has established separate offices for women and men. All countries, however, have specific activities addressing women. The gender mainstreaming in the understanding of a 'differentiated approach' and a clear equity orientation is still missing and highly recommendable.

Recommendations:

- While developing explicit country concepts for watershed development (see 3.4.1) the relationships between disciplines should become obvious and as a consequence the teams' composition should be adapted.
- The gender approach in terms of mainstreaming and the orientation towards equity has to be defined as a cross-cutting issue to allow the structure to truly integrate the topic. Further, thorough backstopping is recommended.

3.2.4 Hydro-Met: the strong link

The initial selection of the watersheds did not demonstrate the variability of watersheds across the HKH, but rather their similarity, in terms of hydrology and soil fertility. Differences can be imagined in the gravity of the degradation of natural resources (not assessed). The regional comparison has therefore to be based on the assumption that the biophysical environment is generally similar, while concentrating on other factors such as socio-economic or policy related factors and methodological issues as the variable parameters for sustainable watershed development. One might ask whether it makes sense to attempt a regional comparison where watersheds serve as 'replicates' and less as 'factors' or whether the research hypothesis is a different one. The water and erosion studies of PARDYP have three spatial focus levels, i.e. plot/household, watershed and regional scale. The potential and application of the data generated need to address respective products.

The main achievement in the hydrological part is the implementation of a common approach and standardised methodology for data collection resulting in a large database. The respective measuring stations are maintained and data is collected both manually (farmers get a small remuneration to do so) and by data loggers. The introduction of HYMOS software and training facilitates standardised data collection, as well as data processing by the project teams. All countries have started analysing their time series and are able to produce GIS maps to some extent. Their utility beyond possible publication is not perceived in the countries though good conceptual ideas are available on a regional level (draft of 'Analyses Manual for Water and Erosion Studies in PARDYP', chapter 'Introduction'). Even though these results could be and are used for watershed planning purposes the use of the data for developing watershed concepts or models are not spread. It has to be noted that the long involvement of the University of Bern (UoB) and the constant presence of a staff with a regional interest has contributed to the today's excellent organisation of data on a regional level. It remains to be decided whether the time series are sufficient to achieve a defined goal, or whether the data collection should be extended for pure research purposes.

The establishment and extension of erosion plots has gained great importance within the country teams. Their set-up is tempting to create straight forward data-series easy to publish – if the analysis due to the variability of slopes would not make it complex. The extrapolation and subsequent quantification of erosion in terms of its development relevance is questionable. The demonstration effect of the erosion plots are certainly high for those farmers that have access to such sites.

Recommendation:

- Based on a clear understanding of a watershed research hypothesis for each national watershed concept and keeping in mind what the project is expected to achieve, make strategic decisions on how to continue collecting and analyse data. Reflections on the usefulness of data accuracy have to concur with a view of the planned project's products (see also 3.4.2).

3.2.5 About institutional capacities, linkages and partnerships

Due to the lack of capacities in their own teams or institutions or simply because of their role as part of their respective host institutions, some teams have linked themselves with other institutions or external competencies and have formed partnerships. In China, some activities are outsourced, in India local consultants are used to address specific questions and in Pakistan and Nepal linkages to other projects (SDC and IDRC) have been established. In China, the collaboration with an ICRAF initiated program is being initiated. While a high number of linkages with the respective institutional landscape has been established in all countries, only few have led to the handing over of operational responsibilities. Individuals and groups are directly addressed by the project, which is not sustainable. Operational linkages e.g. handing over activities to line agencies or extension systems, would enhance sustainability and the potential of impact beyond the present watershed.

Linkages on policy level are multiple. In China the project has direct links to policy implementations (reforestation and upland conversion policy) improving the leverage of its activities. In India links to the planning commission of new state government has influenced the priorities of its planning, spreading the experience made in PARDYP. The Pakistan team has succeeded in joining forces in forest management resulting in making up to 60% of the national partners reported annual activities. In Nepal such links have been limited to participation in policy meetings. The use of new methodologies like GIS, GPS and Orthophoto for regional planning purposes is certainly an excellent idea. Efforts in Nepal involve communities for planning of their community land. It seems, however, that the tools can be politically sensitive (covering strategic areas of the country) and it is recommended to establish a link to local relevant institutions from an early stage.

Recommendation:

- Based on a clearly defined role for PARDYP (3.4.2) and with a view to sustain the services presently given to farmers, develop operational agreements with partner institutions and allocate respective funds.

3.2.6 Communication: reporting and publishing

Country teams have produced a range of publications over the two phases of PARDYP. In scientific terms, Nepal has produced some hundred, India over thirty, and Pakistan around 20 publications of scientific nature. China has no record so far. While the contents has gained of socio-economic and development related nature (see above) the high number of publications in Nepal is due to many guest scientists and student researchers, but also due to repackaging of same information for several presentations. However, a strong desire to communicate results and findings made in PARDYP is commendable and should be continued, especially that the project has generated a great deal of data. So far, there is little material produced that could directly address clients like development actors or policy makers. Nepal has produced a few thematic leaflets that could certainly be one line of products that PARDYP could agree to continue to use and possibly expand upon. In terms of future focus (see chapter 3.4) product lines and categories might be important to define in order to strive towards a scaling-up of its potential impact. ICIMOD's in-house capacity in publishing and information sharing can certainly be better exploited. It's slow publication approval procedure that delays the release of publications has to be urgently reviewed because it is affecting the use and

dissemination of valuable information. Certain categories might be approved within the project.

All countries produce comprehensive annual reports that summarise in an excellent way the activities and results of the respective period. UBC as well as India, Nepal and China have invested considerable effort to compile the information on CD-ROMs. While the efforts to publish annual reports on a multimedia basis are commendable and appreciated, the platform could be improved towards more user-friendliness. The fact that the materials cannot be used (copy pictures or text parts, print parts of it, etc.) and the misleading technical gadgets in common computer applications can be frustrating. The rationale behind the production of such time intensive productions has to be reviewed towards target clients, user friendliness, objective (efficient posting vs. make available information), etc. As good as the first impression of the medium might be the synthesis of the data produced must not be compromised because of 'packaging' efforts.

A special concern is expressed that the information published on the CD-ROMs remains available. It is important not to compromise the wider sharing and use of material by adding copyrights or restricting their use in any way. Such information is to be used and should remain in the public domain.

Recommendations:

- The communication of PARDYP's results and findings should remain an important task of the project. An increased and deliberate focus on synthesising lessons at country and regional level shall value the database. ICIMOD should assist in the definition of product lines according to potential clients (research community, policy makers and planners, and development actors) to increase PARDYP's visibility while PARDYP shall produce such outputs in partnership of those target users. ICIMOD shall also be a more efficient facilitator in the review procedure for PARDYP's information products.
- The production of CD-ROMs shall receive attention and treated as with other publications, putting an emphasis on speedy reviews, wider use and keeping in mind the audience : for public use.

3.3 Scaling up the PARDYP's impact potentials

3.3.1 Spreading the impact potentials of PARDYP

PARDYP has numerous unutilised impact potentials in the spheres of research, development and policy. Both the products and processes generated by the four country projects are relevant for more effective community-based watershed management within and outside HKH Region. The knowledge, approaches and methods, including various environmentally ennobling productive and protective livelihood options generated have tremendous impact potentials. As a research for development initiative, PARDYP is also evolving an array of institutional innovations of relevance to policy.

The initial efforts of PARDYP in documenting the research findings and the successes distilled from practical experiences (including some of best practices), has been encouraging. The current state of limited regional interaction and sharing of ideas and experiences has, however, been a constraint to the process of regional learning. Country projects and PARDYP Regional Centre should intensify efforts to

systematically document these outputs with “impact potential” and develop into more user-friendly materials. A more critical issue is that of the need for proactive sharing of them regionally as well as globally, through multiple methods and approaches. This is essential to promote the spread and scaling up of the impact potentials of PARDYP towards stimulating multi-dimensional, community-based watershed development initiatives among as many parties and to as many degraded watersheds of the region as possible.

The community-based watershed management interventions initiated by PARDYP, being implemented through community organisations and/or in partnership with existing institutions can potentially be replicated in other watersheds within the country in local initiatives. Capacity building of the partner community organisations (COs) and institutions is, however, necessary to enable them to undertake this kind of extension exercises at their own initiative. Some COs in PARDYP Pakistan are willing and preparing themselves for replicating PARDYP in other nearby watershed communities.

Recommendation:

- Intensify the process for documenting and developing of user-friendly sharing materials for well defined groups of users and purposes, insisting on the quality and the relevance of the products. Ensure that concerned national authorities within and outside the project implementing country are fully aware of the innovative watershed management approaches and methods. And, facilitate the strengthening of performance capacities of partner community organisations and national/local institutions for local replication of PARDYP initiatives in their own initiatives.

3.3.2 Widening the partnership in-country and regional levels for utilising project’s learning

All the four country projects, more or less, have linkages with one or more local and national partner institutions and agencies. The partner agencies in various countries, are at various stages in this new approach of operating projects on a collaborative mode and PARDYP deserve special compliments for this. The regional experience during the Phase II indicate that PARDYP lacks and will continue to lack all necessary resources (expertise, technologies, material inputs and money) to meaningfully implement (*on its own*) the complex integrated watershed interventions in a participatory manner. It will therefore have to leverage resources from other agencies and share with them what it has. A more pro-active and systematic approach to initiating, building and widening partnership will be necessary. It seems that several governmental, non-governmental and private organisations are interested to partner with PARDYP indicating that the project has some attractive and comparative advantages.

Many of the watershed management principles emerging from these practices in one watershed of a country can be adapted elsewhere within the region. The PARDYP Regional Centre has thus an opportunity to capitalise on them and explore and initiate scaling up the PARDYP’s partnership at regional level.

Recommendation:

- Develop a regional strategy to initiate, build and widen the partnerships within the country and regionally.

3.4 Project focus

In the terms of reference of the present review mission (see annex), it says “In view to reduce the broadness of the project phase 2 and the high number of activities, the review team shall **propose strategic options to focus on a few priority fields of actions** (...)”. This request suggests that there may be a perceived lack of focus or clarity in the phase 2 project document. This feeling is shared within the review team, as well as virtually all country teams of PARDYP. The vague formulation led to very different and free interpretations of that document, with the result of having today different conceptual frameworks applied within the same project (see below and in Boxes 1 to 5).

3.4.1 Discussion of the project structure

The **project overall goal** as formulated in the project document for phase 2, can remain unchanged: “To contribute to balanced, sustainable and equitable development of mountain communities and families in the HKH region”. However, it would be preferable to specify, at the end of the sentence, e.g. *“through interdisciplinary, applied research”*. This might avoid the misunderstanding about the target group, the nature of activities and the priorities observed during phase 2.

The **project objective** contains three elements, namely:

research (to build on and generate knowledge and facilitate the exchange and dissemination of information and skills in the middle mountains of the HKH)

development (to enhance the capacities and options of families and communities, especially those that are marginalised in the use and management of natural resources in mountain watersheds and thereby to increase household and community benefits)

policy (to stimulate and engage in wide range policy dialogues through the involvement of policy makers at local and higher levels in the research activities and in the development needs of people in the four project countries).

Without a clearly defined hierarchy between research, development and policy, the objective remains vague, and leaves the door open for interpretation. And this is what may have happened within PARDYP phase 2.

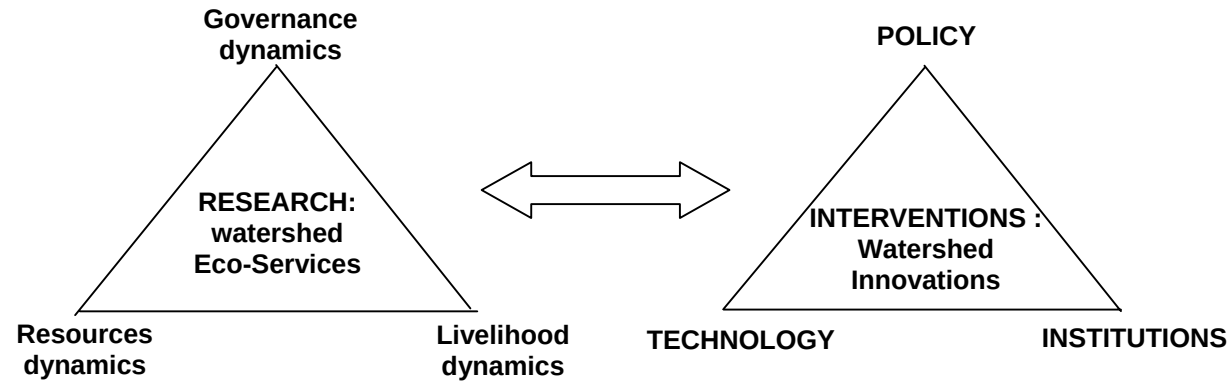
The project **components**, corresponding to the **expected results** (or outputs) of the project, are not very clearly goal oriented and they do not all follow the same logic: some are transversal issues (e.g. gender and equity, community institutions) others are resources oriented. The underlying concept is often unclear. At a first glance, component 7 “Implementation and management” appears to cover the regional objectives of the project. But when looking closely at the planned activities, they remain vague. As a result, the project document contains an almost endless list of **activities**, comparable to a shopping list, from which each country could select those activities corresponding best to its needs.

In response to the lack of clarity of the project document, Nepal and China have developed their own conceptual framework for the project, and they have implemented their activities along that concept. Pakistan and India have not formally established such conceptual frameworks, but they have still worked along own concepts. This may be seen as a very positive output, with each country evolving its own conceptual frameworks, but it bears major disadvantages with respect to the comparability of results at regional level. To add to the diversity of conceptual

frameworks, University of British Columbia has also developed its own (see boxes 1 to 5).

BOX 1 ***Conceptual framework in PARDYP China***

The China PARDYP team developed its own conceptual framework for the project. It is very comprehensive, showing the various interactions between governance, resources and livelihood dynamics on the one hand, and the links between research and policies on the other hand. In view of a possible modelling of the watershed dynamics at a larger scale, this framework will be extremely valuable.



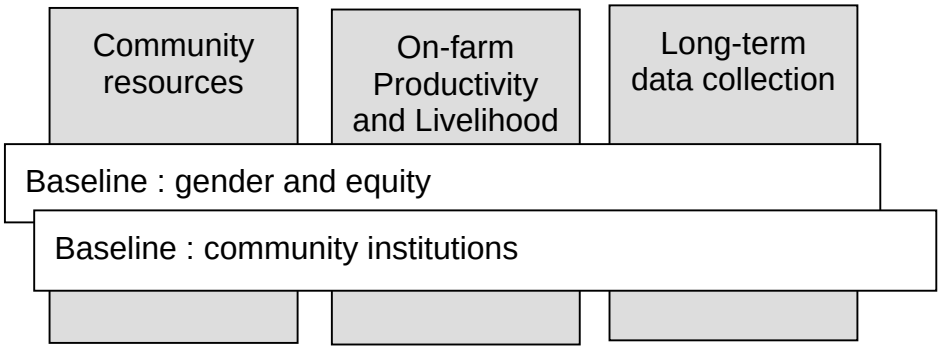
The conceptual framework further develops the three types of dynamics described in the above chart.

The **resources dynamics** consist in forest, soil and water resources, and their interactions in time and space as well as in terms of perceptions.

The **governance dynamics** are dealing with power, rights and relationship in interaction with decentralisation, participation and accountability.

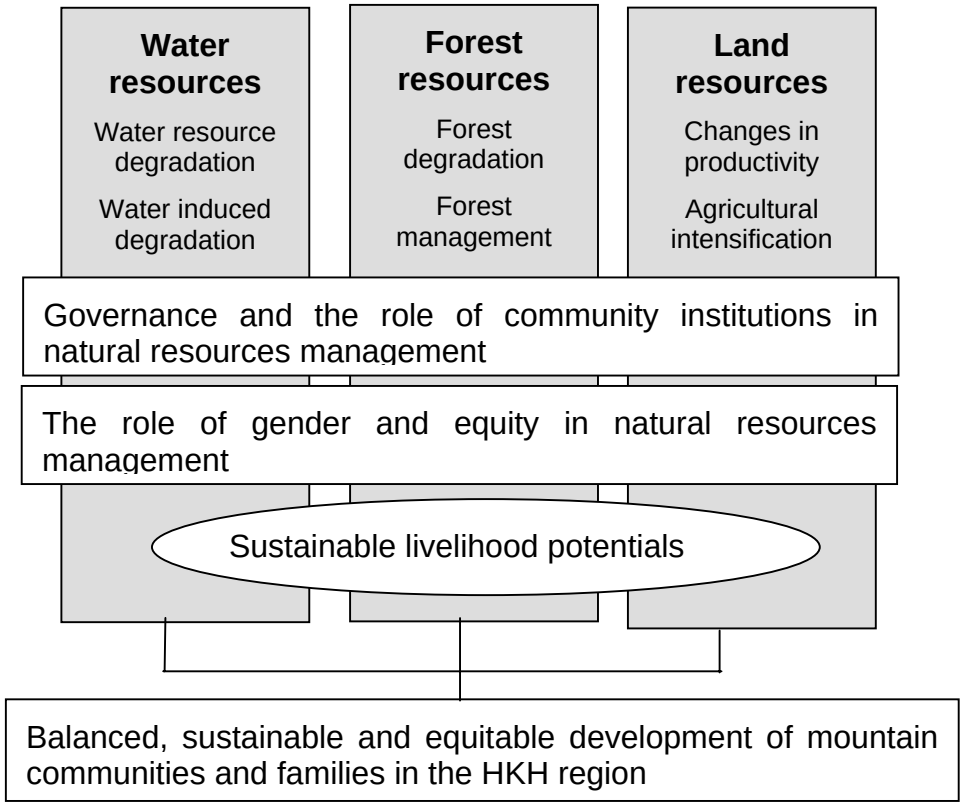
The **livelihood dynamics** consist in the physical, the social, the human, the financial and the natural capital exposed to a vulnerable context (history, ecology, policy, market, employment, population, etc.), dealing with livelihood strategies (intensification, diversification, farmland expansion, etc.), in relation with community institutions, and resulting in various expressions of livelihood status (poverty, employment, income, living conditions, quality of life, etc.).

BOX 2 ***Conceptual framework in PARDYP India*** *(based on consultant's perception)*



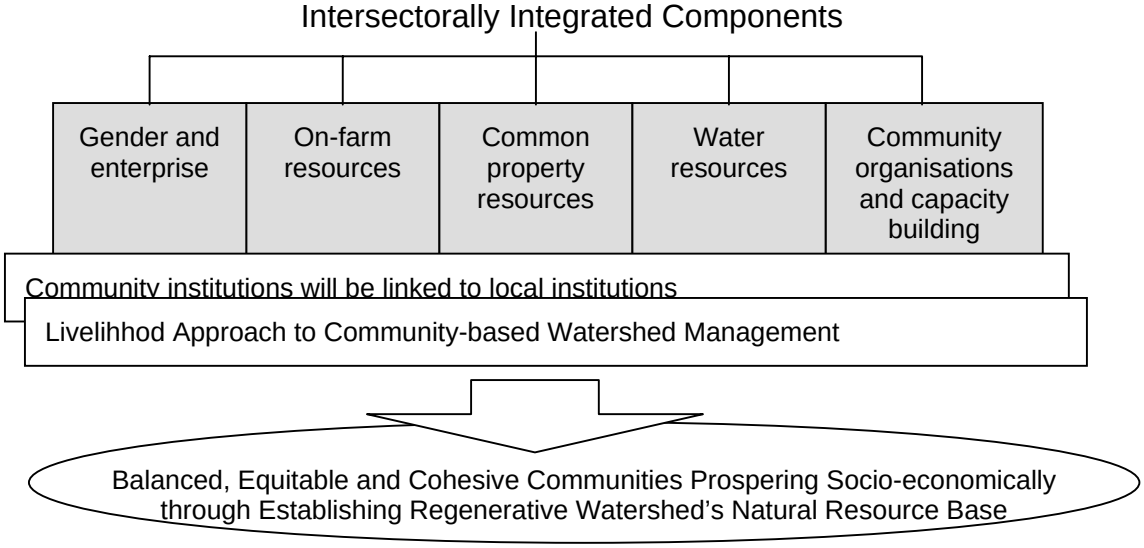
The concept underlines the strong social-component and respects the entry point to be the people of the watershed, rather than the classification of natural resources. The approaches are expressed by their transversal character.

BOX 3 ***Conceptual framework in PARDYP Nepal***



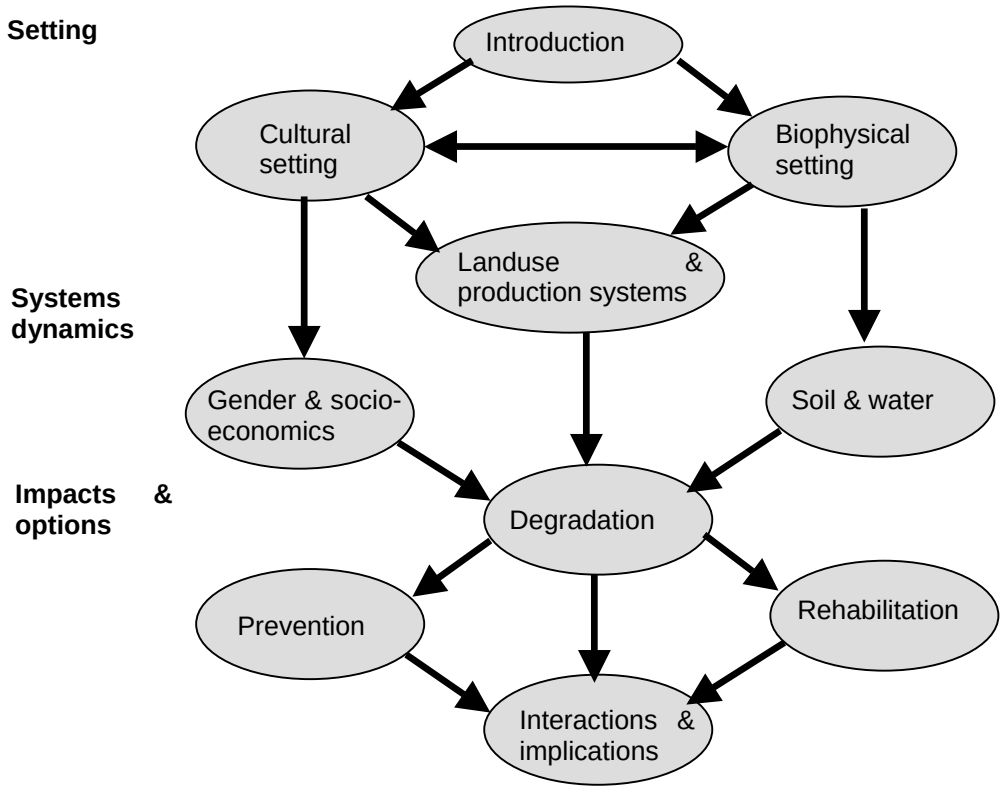
The concept is structured along the following steps: status, process understanding, scenarios, solutions, and recommendations, in the domains shown in the above diagram, i.e. water, forest and land resources, community institutions, and gender and equity.

BOX 4 ***Conceptual framework in PARDYP Pakistan*** *(as interpreted by the consultant)*



The concept is structured to emphasize that building well-informed community institutions linked to existing development institutions enable local people to pursue sustainable watershed management as a enduring source of livelihood and this will lead to sustainable, equitable & balanced development

BOX 5 ***Conceptual framework (approach) of University of British Columbia***



The validation of such conceptual frameworks, or their use for modelling with clear objectives in mind (e.g. upland – lowland compensation), is a challenging task. An example of "bioeconomic modelling at the micro-watershed level" done in Honduras could be considered by PARDYP to explore this new ground for the Hindu Kush Himalayas (refer www.ifpri.org/divs/eptd/dp/dp32.htm).

Recommendation:

- The diversity of conceptual frameworks evolved by different countries may be seen as an opportunity. These concepts should now be refined, and validated against the expected outputs of the project. The comparison of well documented conceptual frameworks at the regional level, that are relevant to address various aspects of resource dynamics in watersheds, would be a highly significant output.

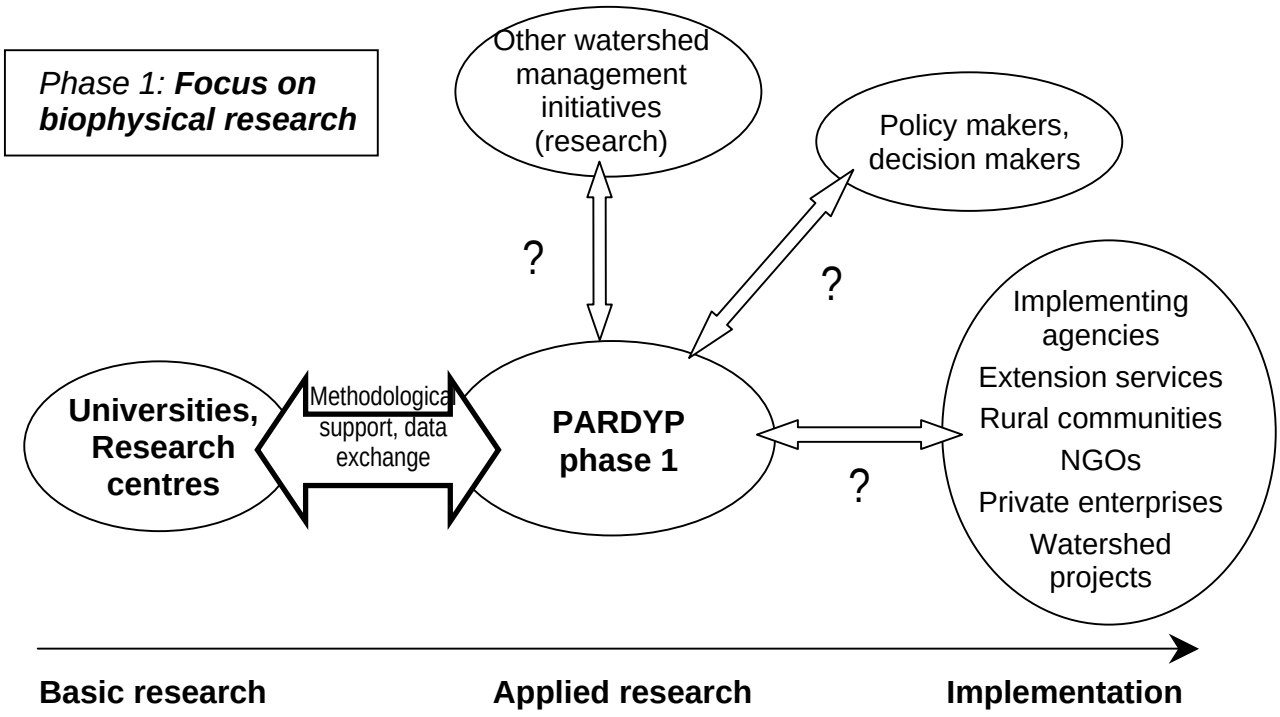
3.4.2 What is the role of PARDYP: research, development or policy?

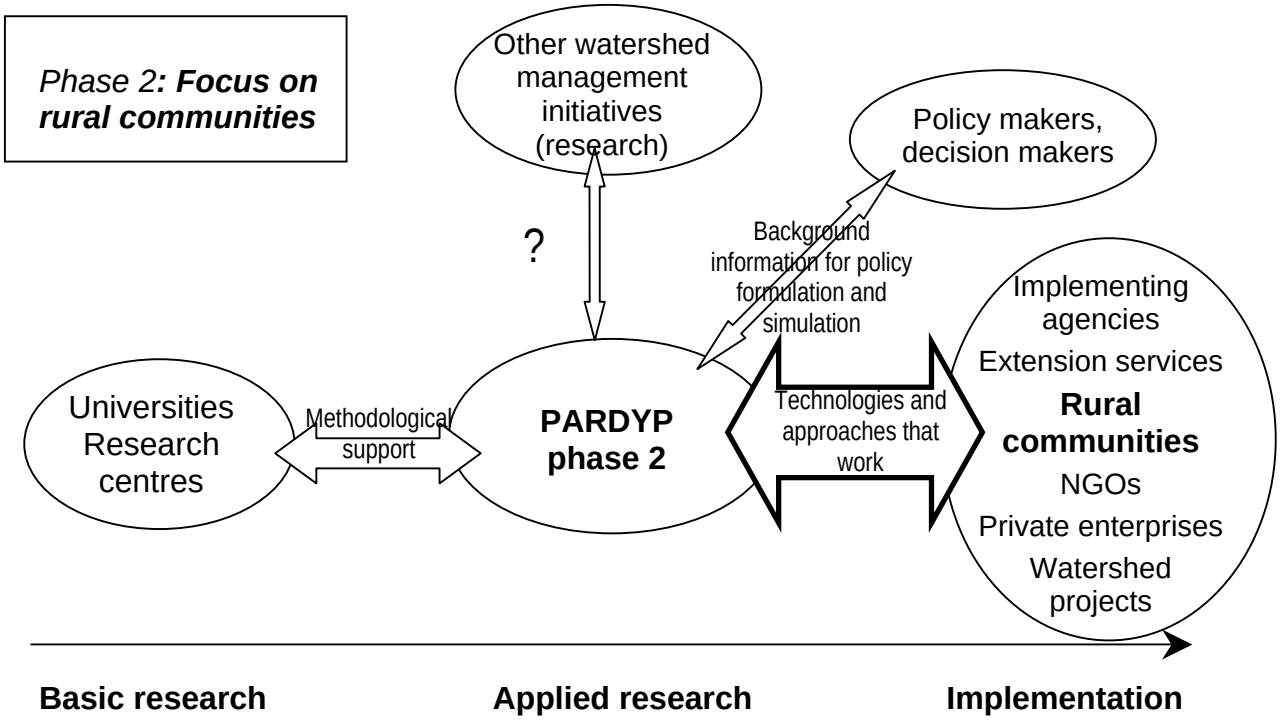
The watersheds in the four countries are comparatively small, with a limited resident population. Taking the example of China, **it cannot be the objective of PARDYP to develop that particular watershed, with its 4000 people**. The watershed should rather be seen as an action research "laboratory" where new knowledge is generated on the dynamics of resources, including the interactions between biophysical and socio-economic factors. Beyond the watershed, the interactions with the lowland, on a larger scale, are also relevant challenges, where PARDYP can play a significant role.

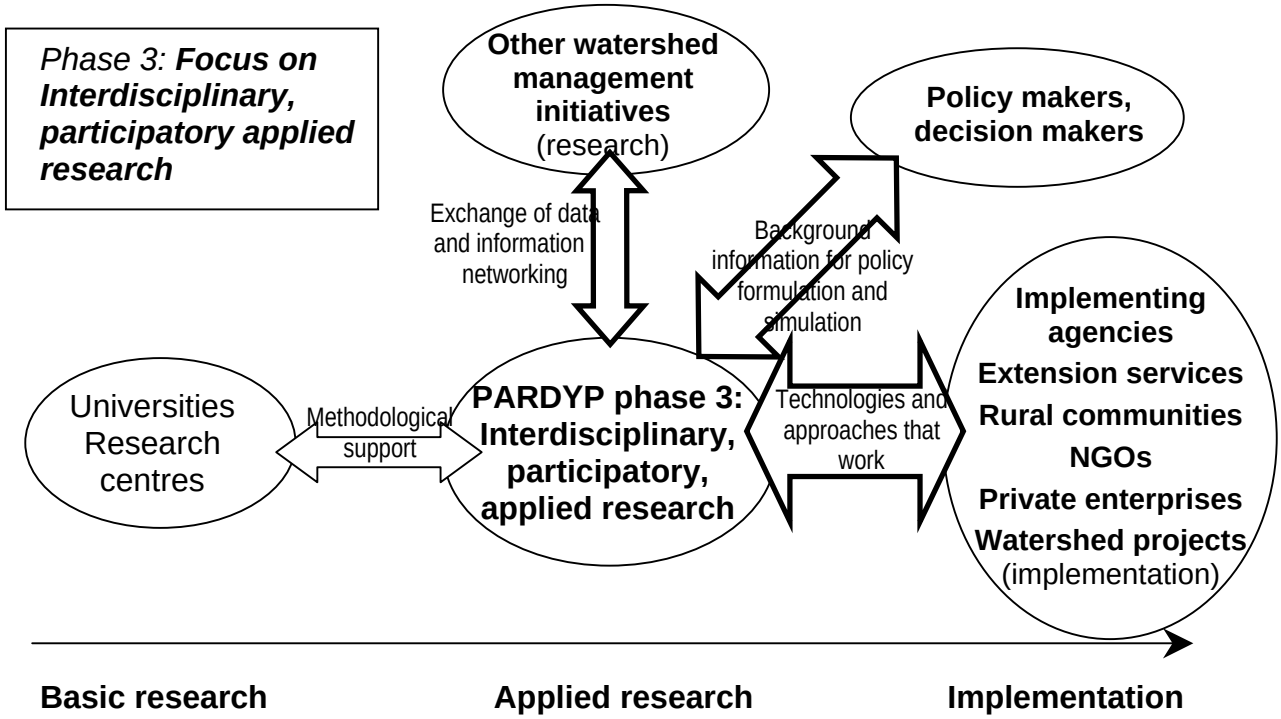
PARDYP's role has changed between phase 1 and phase 2. While it is located somewhere between basic research and implementation, it has moved closer to implementation during phase 2 (see charts below). Based on the analysis of the

comparative advantage of PARDYP and its members, the review team made an attempt to redefine the inputs and outputs of PARDYP within that R&D landscape.

PARDYP's position and focus during phase 1, phase 2 and in future







What kind of **inputs** will PARDYP receive (besides financial support)?

- Support from research institutions (methodological, and theoretical)
- Information and incentives from other watershed management initiatives
- Requests / demands from policy and decision makers
- Feed-back and requests from extension services, from implementing agencies, from NGOs, private enterprises and possibly also from rural authorities and communities, as well as from other watershed management projects.

What kind of **outputs** will PARDYP produce?

- Information, data sets and research results to feed into a network of watershed management initiatives and to exchange with supporting research institutions (client/partner = members of a network of watershed management initiatives)
- Background information on processes and complex interactions in watersheds for policy formulation (client = policy makers, decision makers, planners)
- Models allowing policy simulation and scenarios testing (client = policy makers, decision makers, planners)
- Scientific publications and other publications (client/partner = scientific institutions)
- Tested and adapted methods, approaches, concepts and technologies to be disseminated through implementing agencies and other public and private partners in the field (client = implementing agencies, extension services, rural communities, NGOs, private enterprises, watershed management projects)

The above list of outputs is not exhaustive and will have to be reviewed and if necessary completed during the planning process. Considering that the demands of rural communities are unlimited, the activities for the next phase in the field of development should be constrained to areas that are directly relevant for the sustainable management of the watershed resources. For that, the project needs to jointly develop a clear set of criteria, also taking the specific strengths of the country teams into consideration (refer to the review of achievements, chapter 3.1).

***Recommendations*:**

- The mission recommends reorienting the focus of PARDYP on applied research, while also emphasising the linkages with partner organisations. This will clarify the role and position of PARDYP, and also the type of outputs to be expected from the project.
- The expected project outputs during phase 3 should be carefully assessed in the planning in terms of relevance for the clients / partners, feasibility, and relevance for development.

The focus of the project in each country depends also to some extent on the focus of the hosting institution:

- In Nepal: **ICIMOD** is a documentation and knowledge centre with focus on applied and integrative research, on dissemination, communication, capacity building and policy change. During phase 2, the focus of PARDYP in Nepal has been on applied research.
- In China: the **Kunming Institute of Botany (KIB)** is a research institution, dealing with natural sciences and integrative research with policy linkages at high level. Its priorities, as well as its mandate, are therefore focused on research, with the aim to contribute to policy change and dialogue. During phase 2, PARDYP has nevertheless done almost as much development as research activities. The development activities kept to some extent an action-research character. Nevertheless, in China, first signs of conflicting interests between the objectives of PARDYP and those of KIB are visible.
- In India: the **G.B. Pant Institute of Himalayan Environment and Development (GBPHED)** has a research mandate as well as a development mandate. In this case, development is understood as demonstrating and implementing technologies at farm level. During phase 2, PARDYP India has done as much non-research, development activities (with an implementing role) as applied research.
- In Pakistan: the **Pakistan Forest Institute (PFI)** has a mandate of research and education in the field of forestry and allied subjects, and its scope of interest lie in forestry research, silviculture, forest genetics, range management, watershed management, dry zone afforestation, forest products and biological sciences. However, development activities are also implemented by the PFI.

Obviously, none of the institutions involved in PARDYP is a genuine development agency implementing projects. This is another reason to focus the project on applied

research rather than on development[2]. The question is then what kind of research, in which fields, and for what purpose?

Recommendation:

- Concentrate on activities which have indirect bearing on the livelihoods of large numbers of people by focussing on the conservation and rehabilitation of the resource base they rely upon.

Besides the core activities linked with applied research, a limited number of accompanying activities will probably still be necessary – e.g. in the field of community activities – partly in response to the expectations created among the population within the watersheds during phase 2.

Recommendation:

- Activities purely related to livelihood improvement should be discontinued by the end of the phase or handed over to more adequate partner organisations.

3.4.3 Activities and underlying hypotheses at regional level

Even though they are not explicitly formulated in the project document, there are some underlying hypotheses for PARDYP at regional level. The watersheds were selected throughout the Hindu-Kush Himalayas, based mainly on biophysical criteria for comparability and for their representativeness of a portion of the worlds' largest mountain range.

The first hypothesis is probably that data collected and processed in a similar way will give comparable results and will allow to understand complex interactions in terms of land use, resources degradation, sediment transport and soil fertility.

A second hypothesis could be that the regional set-up will foster scientific exchange, development of methodologies and capacity building of the country team members through common training, etc.

Today, the challenge is to identify and to agree on a common denominator for the four countries, leaving enough space for country specific concerns within PARDYP. It will be a task of PARDYP to go through a process of identification of such common interests. A tentative set of interests could be outlined as follows:

- To refine and document the various conceptual frameworks evolved by the country teams, and to validate them against expected outputs related to the complexity of natural resources management within the watershed approach
- To analyse time series of Hydromet data at regional level (consolidated analysis)
- To develop methodologies and approaches for integrative research with the objective to develop appropriate models and approaches to address specific issues, such as upland – lowland compensation, or the impact of specific policies on the livelihood and the management of natural resources.

[2] Another option would be to change the project into a development project, in which case the partner organisations should probably be different.

Given the political context in the four countries, it is likely that the results in socio-economic issues, livelihood, etc, will be hardly comparable.

Recommendation:

- Identify / agree upon a common denominator to the 4 countries through a participatory process and objectives for those issues.

The guiding principles for project implementation (refer chapter 5 of the project document of phase 2) remain largely valid for a new project phase: interdisciplinary approach, participatory action research, gender & equity and social issues, stimulating policy discussion and change, etc.. However, they should be critically assessed and lessons learnt should be integrated in the new project concept. An attempt to assess these guiding principles has been done during the review in China (refer annex, China country report).

3.4.4 Interests of stakeholders within the project set-up

Not all the stakeholders within the PARDYP set-up have the same interests. This is an attempt to identify the main interests and to pinpoint possible conflicts of interest:

The institutions hosting PARDYP in the countries: possible conflict of interest between the orientation of PARDYP in its phase 2 (target group = farmers and rural communities) and the objectives of scientific institutes (objective = publications).

- ICIMOD as a hosting institution of the regional co-ordination: interested to have a field based project dealing with integrated watershed management.
- Donors: interested to see an impact for development. Referring to the "Guide for the rapid appraisal of regional initiatives" (SDC, 2000) PARDYP is typically a broad focussed regional initiative dealing with a complex issue and producing meta-products (e.g. research results). For this kind of initiatives, the following remark applies: *"in the case of complex themes (e.g. natural resources management, rural development, urban development, etc.), achieving the "meta-products" will require more time and resources than for simple themes. It is likely that donors' commitment will decline as the expected results are delayed, especially if the regional initiative is not strongly linked to similar activities / projects at bilateral level"*.
  Therefore, in the case of PARDYP, time and patience are required from donors' side.
- The Universities of Bern and of British Columbia are interested in research opportunities in the HKH region and in research results that can be used in other contexts (e.g. Andes – Himalayas comparative study).

Recommendation:

- Donors! Please show patience and give PARDYP time. Quick results should not be expected from complex research issues.
- Promote interchanges with (bilateral) projects dealing with watershed management issues within the HKH, specially those funded by SDC/IDRC.

4 Project set-up and management, role of ICIMOD

4.1 Project management

4.1.1 Planning, monitoring and evaluation

The country projects were yet to embark on systematic formulation of **annual operational plans** with detailed budget estimate. Their annual plans were a categorical list of activities without timeframe, targets and indicators, and without human and financial budgets. Some country projects drew annual operational plans from the project document presented as quarterly and monthly work plans. They implemented the monthly work plan. Every month-end, the project team reviewed the month's progress and on that basis formulated/adjusted the work plan of the coming month. The country co-ordinator facilitated quarterly review and adjustments. Although this is a useful management practice for monitoring the *relevance* of the project, such plans would not necessarily steer the project towards the objectives.

Participatory **monitoring and evaluation** (P, M&E) has been envisaged in the project document as one of the 12 guiding principles of PARDYP II. Conduct of P, M&E and impact studies is one of the major activities under the livelihood component of the project. However, only rudimentary project M&E existed in all country projects. Moreover, it was not necessarily designed as a mechanism to steer the project towards its objectives. Day-to-day activities kept the PARDYP field teams busy. The country co-ordinators remained always concerned with ensuring timely implementation by facilitating the project activities, delivery of inputs, fund management and related co-ordination tasks. Routine and periodic review exercises focused mainly on whether planned activities were carried out. Seldom did the team reflect on the relationship between the ongoing activities and the project objectives. They prepared the semi-annual and annual progress reports, and financial statements more as an obligation to donors through the Regional Co-ordinator rather than as an integral part of project management and team learning. Staff indicated that a lack of skills prevented them from using and applying M&E for instructional or project learning purposes.

Recommendation:

- Ensure that systematic planning and M&E become an integral part of the project management designed to enhance learning for improving the project's relevance, effectiveness and efficiency. Timely project monitoring from the regional centre is also required.

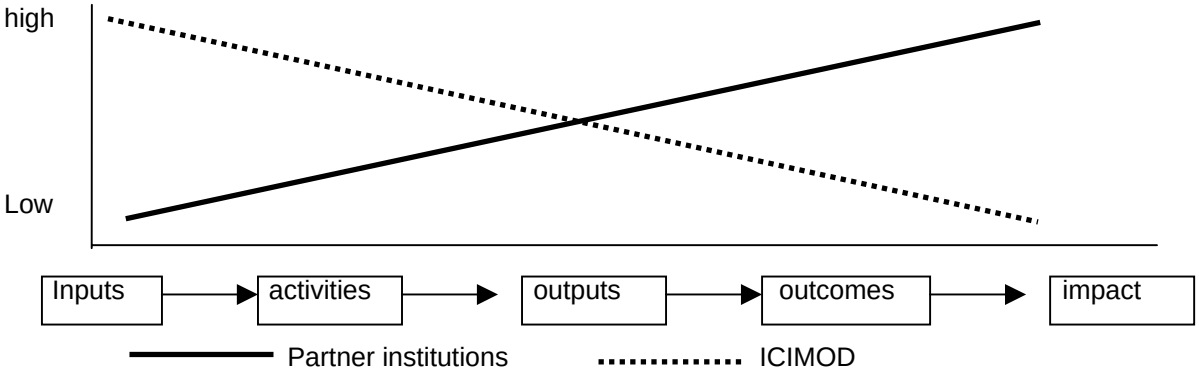
4.1.2 Impacts vs. outcomes

PARDYP is implemented as separate country projects by national partner institutions (NPIs). The process includes an emphasis on a result-chain consisting of inputs, activities, outputs, outcomes, and eventually impacts. Ideally, at the "inputs" end of the process, ICIMOD,[3] through its Regional Co-ordinator, has most control over decisions and events (project budget and design, choice of partners, location, timing,

[3] ICIMOD plays various roles in the project (see chapter QQQ???). At times, it is difficult and also a bit artificial to separate the project co-ordination from ICIMOD.

etc). At this stage, the NPIs have the least influence. However, once funding starts to flow, activities start and the country project team/NPIs become increasingly active, the balance of influence begins to change. As the project progresses, country project's/NPIs' capacities get strengthened and their performance (effectiveness, efficiency and relevance) improves. Thus the country project/NPI (not ICIMOD), produce impacts (long term, large scale, sustainable benefits). ICIMOD should be accountable for strengthening the capacities of country projects/ NPIs (outcome) and "impact" should be within the accountability domain of the country project/NPIs.

Relative influence of ICIMOD along the result chain of PARDYP



Source: adapted from Smutylo, 2001 (Crouching Impact, Hidden Attribution: Overcoming threats to learning in development programs), IDRC, Ottawa

Recommendation:

- A clear division of responsibilities and accountabilities for the production of results between ICIMOD and the NPIs is therefore essential. This will have implications for balancing of resource allocations for the two crucial components of the result chain.

4.1.3 Financial management and fund allocation issues

Budget cuts had to be introduced at the beginning of phase 2, due to over-programming and because of a budget deficit at ICIMOD in March 2000. As no additional funds were available from donors' side, the programme had to be trimmed. As a result, the regional component was cut to its minimum, leaving the regional co-ordinator with virtually no budget to travel to the member countries.

All country projects have a fairly workable financial management system in place. Planning and budgeting, however, was less systematic and had a bearing on financial management practice. Since only the line items were accounted for it was not easy to determine the expenditure by project components.

The country projects reported that considerable delays in disbursement of funds by ICIMOD had been a lingering constraint to the smooth implementation of projects. ICIMOD on the other hand reportedly faced the problem of not receiving financial statements in time from the country projects, without which it could not transfer the funds.

In the case of India, the country project has a US Dollar account[4] but ICIMOD has difficulties in transferring project funds from Nepal in US Dollars due to GOI – GON agreement that transactions be in Indian rupees

Recommendation:

- Establish a sound financial management system in all country projects and ensure timely financial monitoring. Further ensure that country co-ordinators provide timely and complete annual work plan which include financial statements and projections.

4.1.4 Facilitation support for project management

The Phase II project document promised that ICIMOD would undertake some support activities to enable the country projects to plan and implement project activities. Country projects differed with respect to understanding the project concepts, approaches and strategies (see 3.4), and project management framework. There is need for providing support for capacity development in strengthening and systematisation of project planning, monitoring evaluation mechanisms, financial management system, inter-agency co-ordination and institutional partnership management.

Recommendation:

- Orient, train and provide adequate support in setting up a sound project management mechanism for ensuring the sustainability of the project's impact in each of the country projects. Build in a provision for capacity strengthening and scaling up.

4.2 Project set-up

4.2.1 Regional interaction, communication within PARDYP

Historically PARDYP has evolved from a former regional initiative of rehabilitation-oriented projects with a strong emphasis on hydrology. The project document of phase II highlights the regional character of the project only in its component 7 'Implementation and management'. ICIMOD as facilitating agency has certainly taken the role of an overall administrative leadership especially in terms of financial management and the dialogue with the donors and partners like SDC, IDRC, UBC and UoB. In terms of technical leadership and in regional co-ordination procedures, no clear Terms of Reference have been developed. Elements that would enhance the regional potential could include: regional planning, regional synthesis, facilitation of regional responsibilities, network promotion between regional responsibilities, capacity building support, liaison with donors, regional reporting, etc. Such clear guidance would certainly make the regional character of the project more evident and

[4] The standard ICIMOD practice (and also envisaged in the Project Document) is to disburse funds to Bhutan and India in Indian currency but the Indian national partner institution required the Centre to send the project fund in US Dollars. The country project had opened a US $ account. Although Nepal Rastra Bank permits ICIMOD to send out money from its UD Dollars account, the lengthy Nepalese bureaucratic process involves months from the time of application to actual transfer of convertible currency.

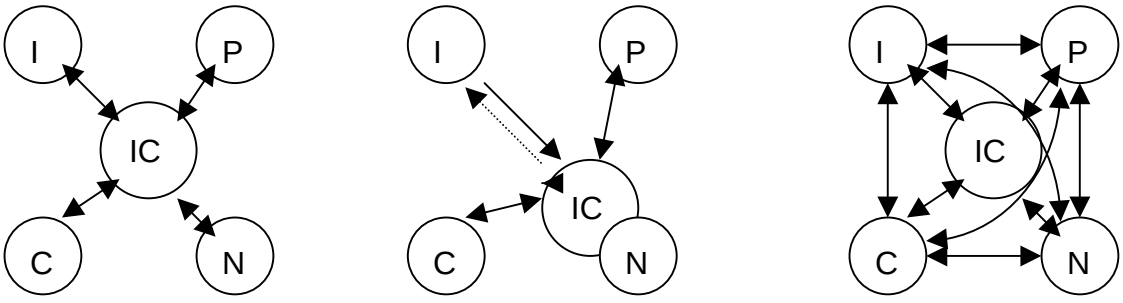
the position of a regional co-ordinator more attractive. So far, only a few scientific procedures have been standardised to facilitate common data collection in support of regional data analysis. No common regional work plan has been discussed or established.

The project set-up as it was implemented may have fostered primarily a one way communication of ICIMOD to national PARDYP teams. Irregular visits of the regional co-ordinator served as the only vehicle in sharing ideas between the countries. Annual meetings of country co-ordinators have facilitated the exchange of approaches and activities on this level. A number of specific meetings brought together some country team members. Between the countries no regular exchange has been facilitated or formalised. Actually, in 2001 only the annual national reports have been exchanged between the countries. The regional co-ordinator was perceived primarily as the focal point for submission of reports and work plans. Country teams expect ICIMOD to provide financial, technical and methodological support (techniques and software, and as a source of new ideas).

The need for a regional mechanism was not only stressed by all countries during this evaluation, but was also implemented to some extent by the backstopping institutions like UoB and to a much lesser extent UBC. ICIMOD has used the advantage of hosting the Nepal national team to invest in regionally relevant responsibilities (see below). The desire to have a regional exchange is expressed by all teams, but little has been implemented. The evaluation team feels the need that the project set-up should provide the necessary incentive. There is no need to necessarily base a regional team within ICIMOD, but country specific competencies should be built upon. Country teams can be given a regional mandate or responsibility – and small budget. Such a set-up would certainly be of great benefit for the project and would facilitate the exchange of data and results.

The figure below compares the set-up in the project document with the one implemented and then proposes a potential new model. The specific role for the Nepal team is explained below. IC (PARDYP with ICIMOD) would also include backstopping of Universities and others. The role of ICIMOD (discussed in chapter 4.3) might change according to its mandate of information sharing and according to its capacity to provide technical backstopping to a central piece or reduced to the linkages themselves (the arrows).

Set-up in Project Document *Implemented set-up* *Potential set-up*



The Nepal national team operates under different circumstances compared to the other country teams, as it is not located and accountable to a national host institution but to ICIMOD, the implementing agency. This certainly gives the Nepal team comparative advantages in terms of access to information and facilities, but it also

receives an unofficial regional mandate. The Nepal team is hard to distinguish from a (formally not existing) regional team and acts with the expectations that the country teams are automatically clients of their products. While the comparative advantage to do so is obvious, especially given their background of being the longest in the field, it also created mis-understanding with the other national teams. There is a need to clarify the mandate of the Nepal team and to clearly distinguish between their national and regional responsibilities and to have some of these responsibilities extended to other country teams as well. A regional work plan would also clarify the specific responsibilities and priorities in this respect.

Recommendation:

- Exploit the full potential of the regional set-up by developing a clear regional work plan. Regional responsibilities for each country team have to be defined. The roles of UoB and UBC as well as ICIMOD – incl. the terms of reference of the regional co-ordinator - have to be considered in this design.

4.2.2 Steering and advisory bodies: role and efficiency

The project has allowed itself two supervisory bodies. The Technical Advisory Group (TAG) does not seem to have the necessary scientific or technical competencies. It did not meet on a regular basis, but often overlapped with the overall steering of the project. Its primary function, to provide operational guidance during the work planning, to identify needs, to review the relevance and efficiency of certain technical issues was not adequately undertaken .

The Steering Committee on the other hand had the task to monitor the annual progress, approve work programmes and budgets and to discuss questions of the operational implementation of the project. While the Committee has met on a regular basis, it has not really seriously engaged in providing guidance. The Committee has not taken up suggestions and expressed needs of the new regional co-ordinator to improve the operations of the project on a regional level. SDC and IDRC both have experiences in bilateral watershed programs in Nepal, China, possibly also in Pakistan. In order to make better use of these experiences PARDYP could play the role of a node of exchange. The Steering Committee could facilitate the establishing of such a platform.

Recommendations:

- The Technical Advisory Group (TAG) should be redefined and recomposed in order to provide scientific guidance to the project. Key scientists of the country teams with regional thematic responsibilities should join the TAG on an ad-hoc basis (as needed) to address the content of the research components.
- The Steering Committee, with the present composition of members, shall respond to the guiding needs of the regional co-ordinator and serve as a node for exchange of experiences of donors working in the same countries.

4.2.3 Support of UoB and UBC

Both Universities have their specific competencies that are made available to the national teams using different strategies. While UoB has a permanent PhD student

as a link within the project structure, UBC participates in special events. As a result their support is felt differently in the four countries. UoB sees itself as having a regional mandate while UBC has a clear focus on Nepal and marginally on China. UBC is not currently perceived to have a role at all in both India and Pakistan. In terms of co-ordination the channelling of funds through ICIMOD for UoB makes their contribution to PARDYP accountable to ICIMOD itself. UBC is funded directly from IDRC and therefore does not report to the regional co-ordinator. Their value added to PARDYP as a whole is not seen clearly. It was unclear to the evaluation team what additional agenda UBC, through other IDRC funding, has in the region, especially in China. A CD-ROM comparing the China watershed with a South American one seems to run on its own dynamics, as it does not adequately acknowledge PARDYP's contribution.

UoB has a clear profile in hydrology and provides acknowledged technical competencies to the project. The evaluation mission is convinced that together with an agreed regional work plan this backstopping responsibility could be considerably improved to a higher efficiency. It would also contribute to a common understanding of the research hypothesis in this specific field. UBC is visible mainly through its CD-ROM production that is now being adopted by country teams. Its competence in watershed concept analysis or others in terms of added value to the whole of PARDYP should be better defined.

The evaluation team has identified the lack of competence for complex regional analysis, e.g. in the field of the general concept of the watershed approach or policy linkages. Thus a further backstopping role for these institutions (mentioned in other chapters) might be considered.

Recommendation:

- Assure the accountability of UoB, UBC, and possibly other institutions to the project and attribute clear regional responsibilities (in relation to the national team responsibilities). Seek their support in arriving at research hypothesis on a regional level, complementing the national ones. Assure planning and reporting procedures as well as efficient fund-flows as agreed upon in the Steering Committee.

4.3 Role of ICIMOD

4.3.1 The mandate of ICIMOD

ICIMOD is the International Centre for Integrated Mountain Development located in Kathmandu. The primary objective of the Centre shall be to help promote the development of an economically and environmentally sound mountain ecosystem and to improve the living standards of mountain populations, especially in the Hindu-Kush Himalayas Region. ICIMOD works mainly at the interface between research and development, and acts as a facilitator for generating new mountain specific knowledge of relevance to mountain development. At the same time, ICIMOD attempts to ensure that new knowledge is shared among relevant institutions, organisations, and individuals in the region. As such, ICIMOD functions as

A multidisciplinary documentation and information centre on integrated mountain development;

A focal point for the mobilisation, conduct, and co-ordination of applied and problem-solving research activities;

A focal point for **training on integrated mountain development** with special emphasis on the development of relevant training materials for the training of trainers; and

A **consultative centre to provide expert services** on mountain development and resource management to the HKH countries.

ICIMOD is presently undergoing a reform of its structures, partly due to the fact that the funding structure of the institution is changing. GTZ for example will reduce significantly its core funding, using the funds for project support. The structural reform of ICIMOD is based on the recommendations of the 3rd Quinquiennal review of ICIMOD that took place in 2001[5].

4.3.2 ICIMOD and PARDYP

ICIMOD plays different roles with respect to PARDYP, namely:

- the role of a donor (ICIMOD contributes substantially to PARDYP, partly in kind),
- the role of an implementing agency (ICIMOD has the overall responsibility for PARDYP implementation)
- the role of a facilitator (regional co-ordination of PARDYP)

As a **donor**, ICIMOD's contribution to PARDYP demonstrates the interest of the institution for the project. This interest is obviously resulting from the fact that PARDYP fits very well in the mandate of the institution (refer 4.3.1) and is a unique opportunity for ICIMOD to have a field based project dealing with integrated watershed management, over the HKH range. PARDYP is part of ICIMOD's Mountain Natural Resources Division.

As an **implementing agency**, ICIMOD has the overall responsibility for PARDYP, and is accountable to SDC and IDRC. To fulfil this role, ICIMOD must have in-house competencies and experience relevant with respect to the project focus. Today, the comparative advantages of ICIMOD in this regard are certainly in the field of publications and communication and in its dense network of partners throughout the HKH region. The competencies of ICIMOD in watershed management are attested by the recent request of FAO to ICIMOD to host an Asia-wide workshop on Watershed Management. Weaknesses are mostly in technical support, on the one hand because there are no experts in some relevant fields (e.g. social scientist), on the other hand because of the very limited availability of the in-house experts for PARDYP. Within the frame of the on-going restructuring, it might be worthwhile for ICIMOD to identify priority areas in which in-house expertise should be enhanced. Watershed management could become a key theme of ICIMOD's new structure.

As a **facilitator**, the role of ICIMOD is to provide infrastructure and services, on the one hand to the country team of Nepal, on the other hand to the regional co-ordination. Outstanding project management competencies, including monitoring and evaluation should also be provided. This role will need to be redefined / strengthened in the next phase.

[5] The above information was taken from the ICIMOD homepage (www.ICIMOD.org)

4.3.3 Place of PARDYP within ICIMOD

At present, PARDYP is one of the largest projects in the portfolio of ICIMOD. In the present organisation chart, despite its integrative, interdisciplinary character, PARDYP is treated as any discipline oriented project. In future, if more consideration is given to the interdisciplinary approach of PARDYP, it could serve as a forerunner for integrated thinking.

Recommendations:

- Redefine / strengthen the role of ICIMOD as a facilitator for PARDYP
- ICIMOD: identify priority areas of research and enhance in-house expertise (e.g. in complex, interdisciplinary watershed approaches)

5 Summary of recommendations

This chapter summarises all the recommendations formulated in the text of chapters 3 and 4. They are grouped in a different way, in order to facilitate their integration in the planning process.

Project focus

- The mission recommends reorienting the focus of PARDYP on applied research (i.e. interdisciplinary, participatory, applied research), while emphasising the linkages with partner organisations. This will clarify the role and position of PARDYP, and also the type of outputs to be expected from the project.

Strategies and concepts

- In order to maintain the participatory nature of the project, while also concentrating on its role, combine the experiences within the regions into true PTD and PM&E concepts, adapt to local priorities, build capacity and apply according to where focus is set and where applicable.
- Define capacity building as a strategic approach to be distinguished from building scientific capacity and the capacity of rural communities in the context of the role of the project (see 3.4.2).
- While developing explicit country concepts for watershed development (see 3.4.1) the relationships between disciplines should become obvious and as a consequence the teams' composition should be adapted.
- The gender approach in terms of mainstreaming and the orientation towards equity has to be defined as a cross-cutting issue to allow the structure to truly integrate the topic. Further, thorough backstopping is recommended.
- Based on a clear understanding of a watershed research hypothesis for each national watershed concept and based on what the project will achieve, make strategic decisions on how to continue collecting and analyse data. Reflections on the usefulness of data accuracy have to concur with a view of the planned project's products (see also 3.4.2).
- Concentrate on activities which have indirect bearing on the livelihood of large number of people by focussing on the conservation and rehabilitation of the resource base they rely upon.

- Activities purely related to livelihood improvement should be discontinued by the end of the phase or handed over to more adequate partner organisations.

Donors and ICIMOD

- Donors! Please show patience and give PARDYP time. Quick results should not be expected from complex research issues.
- Promote interchanges with (bilateral) projects dealing with watershed management within the HKH, specially those funded by SDC/IDRC.
- Redefine / strengthen the role of ICIMOD as a facilitator for PARDYP
- ICIMOD: identify priority areas of research and enhance in-house expertise (e.g. in complex, interdisciplinary watershed approaches)

Project set-up and management

- Based on a clearly defined role for PARDYP (3.4.2) and with a view to sustain the services presently given to farmers, develop operational agreements with partner institutions and allocate respective funds.
- Ensure that systematic planning and M&E become an integral part of the project management designed to enhance learning for improving project's relevance, effectiveness and efficiency right in the project design and through timely project monitoring from the regional centre.
- A clear division of responsibilities and accountabilities for the production of results between ICIMOD and the NPIs is therefore essential. This will have implications for balancing of resource allocations for the two crucial components of the result chain.
- Establish a sound financial management system in all country projects and ensure timely financial monitoring. Further ensure that country co-ordinators provide timely and complete annual work plan which include financial statements.
- Orient, train and provide adequate support in setting up a sound project management mechanism for ensuring sustainability of the project's impacts in each of the country projects with built in provision for capacity strengthening and scaling up.
- The Technical Advisory Group (TAG) should be redefined and recomposed in order to provide scientific guidance to the project. Key scientists of the country teams with regional thematic responsibilities would join the TAG on an ad-hoc basis to address the contents of the research components.
- The Steering Committee with the present composition of members shall respond to the guiding needs of the regional co-ordinator and serve as a node for exchange of experiences of donors.
- Assure the accountability of UoB, UBC, and possibly other institutions to the project and attribute clear regional responsibilities in relation to the national teams as well as research hypothesis on a regional level complementing the national ones. For the same purpose assure a clear flow of funds as well as planning and reporting procedures agreed upon in the Steering Committee.

Outputs and communication

- The expected project outputs during phase 3 should be carefully assessed in the planning in terms of relevance for the clients / partners, feasibility, and relevance for development.
- The communication of PARDYP's results and findings should remain an important task of the project. An increased and deliberate focus on synthesising lessons at country and regional level shall value the database. ICIMOD should assist in the definition of product lines according to potential clients (research community, policy makers and planners, and development actors) to increase PARDYP's visibility while PARDYP shall produce such outputs in partnership of those target users. ICIMOD shall also be a more efficient facilitator in the review procedure.
- The production of CD-ROMs shall receive adequate emphasis and be treated (as with other publications) with regards to free public access .
- Intensify the process for documenting and developing of user-friendly sharing materials for well defined groups of users and purposes, insisting on the quality and the relevance of the products. Ensure that concerned national authorities within and outside the project implementing country are fully aware of the innovative watershed management approaches and methods. And, facilitate the strengthening of performance capacities of partner community organisations and national/local institutions for local replication of PARDYP initiatives in their own initiatives.

Regional dimension

- Develop a regional strategy to initiate, build and widen the partnerships within the country and regionally.
- The diversity of conceptual frameworks evolved by different countries may be seen as an opportunity. These concepts should now be refined, and validated against the expected outputs of the project. The comparison of well documented conceptual frameworks at the regional level, that are relevant to address various aspects of resource dynamics in watersheds, would be a highly significant output.
- Identify / agree upon a common denominator to the 4 countries through a participatory process and objectives for those issues.
- Exploit the full potential of the regional set-up by developing a clear regional work plan. Regional responsibilities for each country team have to be defined. The roles of UoB and UBC as well as ICIMOD – incl. the terms of reference of the regional co-ordinator - have to be considered in this design.

Considering this set of recommendations, the mission formulates an additional recommendation referring specifically to the phase 3 planning process.

Phase 3 planning process

- The mission recommends to pay great attention to the planning process for phase 3, and to seek advice from a person having a broad experience in interdisciplinary, participatory, applied research, and who knows what kind of outputs should be expected from such a project.

6 Options for the future

The set of recommendations formulated in the previous chapters result in a scenario for PARDYP phase 3. This “base scenario” is outlined hereafter. In a second step, alternative options are discussed.

6.1 Base scenario

The project’s overall goal is “to contribute to balanced, sustainable and equitable development of mountain communities and families in the HKH region, *through interdisciplinary, applied research*”.

The base scenario is designed to positively influence the livelihoods of increasingly large numbers of people in each of the countries within the region by enhancing the quality and relevance of added research so that products generated are widely used.

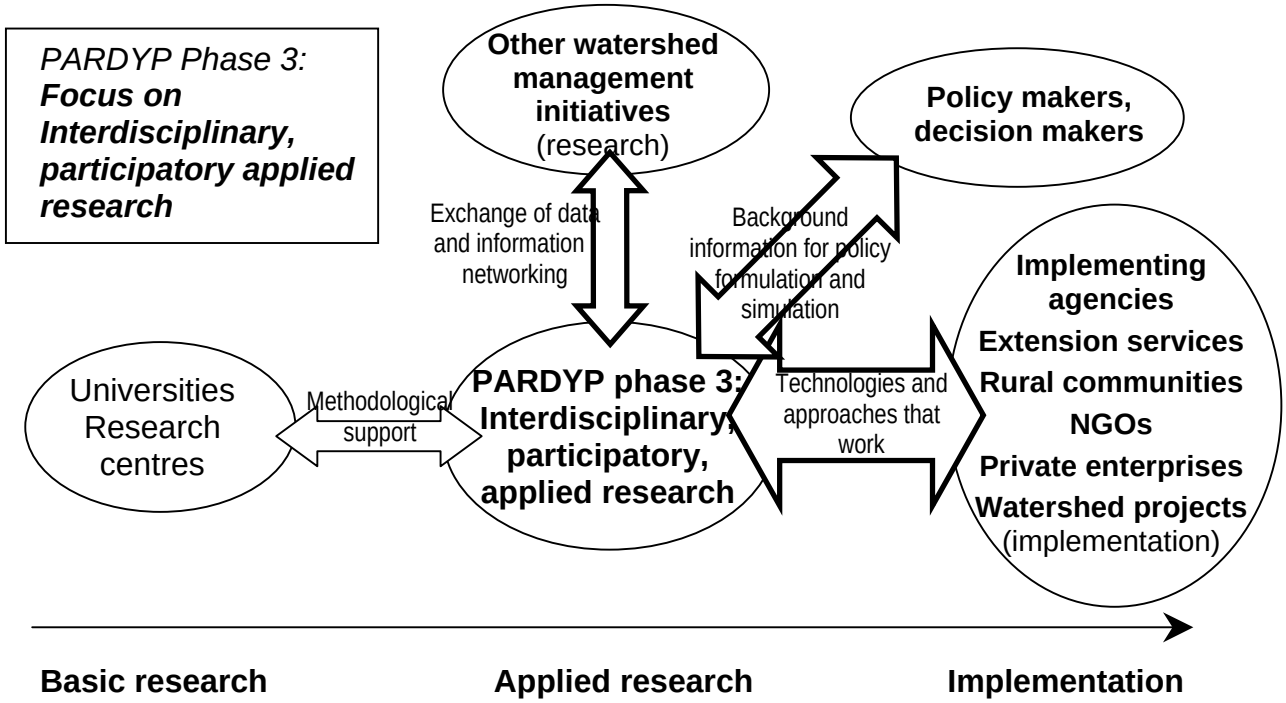
As in phases 1 and 2, the approach remains an interdisciplinary, **watershed approach**. However, as shown in the figure below, the focus is on **applied research**, conducted in a participatory and interdisciplinary approach, with strong emphasis on utilising the outputs of research, exchanging results and experiences, and influencing policy formulation. PARDYP phase 3 has three target groups:

- **development actors**: implementing agencies, extension services, rural communities, NGOs and private enterprises, watershed management projects (if development oriented)
- **policy makers**: policy and decision makers, and planners, at various levels
- **research actors**: universities and research centres, watershed management initiatives (if research oriented)

PARDYP is oriented towards the generation of **knowledge related outputs / products** for the identified clients (target groups). A key strategy to enhance the use of the project outputs is the **strengthening of linkages**, i.e. operational linkages with the range of target groups. The project focus is on activities which have indirect bearing on the livelihood of large number of people, by focussing on the conservation and rehabilitation of the resource base they rely upon (i.e. pure livelihood improvement activities are discontinued / handed over to more adequate development actors).

The **regional character** of the project is reinforced, with shared responsibilities by the country teams. Each country team will **take the lead in one specific theme** where it is particularly competent. A set of regional activities (common to the four countries) is defined, leaving space for country specific activities.

The project remains **limited to the presently participating countries** (China, India, Nepal, Pakistan), i.e. no expansion but rather a consolidation of the achieved results and an improvement of the quality.



6.2 Discussion of issues raised for the future option

Scaling up to larger watersheds, keeping the micro-watersheds as focus

There is a clear advantage of the approach addressing the current size of the watershed. Scaling-up would entail a different research hypothesis that is already implemented by other regional research initiatives like MSEC. Scaling-up is advisable only if opportunities for co-financing with other partners arise, like this is the case in China (e.g. ICRAF). Such a punctual scaling-up for one country would not result in changes of other strategies, nor in the number of countries involved.

Boost the regional office at ICIMOD with a regional team and with adequate resources

The evaluation team sees a disadvantage in such a centralised concept. On one hand an important aspect of capacity building in country teams would get lost. On the other hand the incentive to share data and results is not obvious. Further, the ownership of the outputs is already shown to be low in the present special role of the Nepal team.

Linking with bilateral projects having a watershed approach supported by some donors in HKH

As such projects probably have development character, they are rather seen as clients of PARDYP outputs rather than equal partners. However, such partnerships are encouraged in PARDYP and should/are considered in the present set-up (e.g. Pakistan).

Expanding to more countries

An expansion to more countries would mean that an additional country would have to start from scratch. The value added is only seen if the selected watershed in that new country would be in a distinctly different (additional) climatic zones of HKH. The

research hypothesis across the region would have to be reformulated, the financial implications reviewed.

If the motivation to expand to other countries is pure 'replication' the value added is not seen. It is seen as ICIMOD's role to disseminate the knowledge generated by PARDYP across the HKH region.

Moving to next watersheds

As PARDYP has a scientific historical genesis this does not make sense to the review team if PARDYP should build on the present achievements. As PARDYP would in this case take a development role the partner institutions would have to change as their mandate is not adequate enough. The impact potential would be reduced to the watershed and lose the potential of knowledge generator.

6.3 Exit scenario

An exit scenario was also discussed, even if the mission does not support it. If the project was to be discontinued, it should still go on for at least two years to make best use of the generated knowledge. This scenario consists in focussing on networking and exchanging on watershed issues, limiting the field work to demonstrations (no more new research) and to the consolidation of the results produced so far. This consolidation consists in the production of outputs (writing up and publishing) in the four countries. This scenario would at least make sure that what has been produced so far would be used in the best possible way.

6.4 Risk assessment

The following risks were identified by the review team in view of a third phase of PARDYP:

- The unstable and unpredictable political situation in Nepal is considered as a serious threat for the future. What will be the consequences for the Nepal country team if it remains impossible to work in the field?
- The situation between India and Pakistan, which makes travelling between the two countries very difficult.
- Another risk is that India and Pakistan country teams may show a low interest in the proposed focus on applied research. This may be due to a wrong perception of applied research based on a participatory approach (in such a case, the PARDYP regional co-ordinator will have to explain and convince)
- Finally, there is a risk that in one or another of the PARDYP watersheds, adequate partners for dissemination are not available.

Annex 1: Country report China

PARDYP review, China

D.Guenat

March 2002

Contents

1. Review process in China

The visit to the China PARDYP site started with a meeting with the project team in Kunming on Friday March 15th 2002. The programme was briefly presented based on the CD-ROM6. On the next day, flight to Baoshan where another meeting was held with the almost complete team, i.e. including the staff posted in Baoshan. The persons in-charge of specific sectors of the project presented their work in a more detailed way and some issues were discussed. On Sunday, visit of the watershed, starting from the top village. A few farmers were met during the visit, which gave the opportunity to exchange on their perception of the project. At the end of the day, a one hour brainstorming session with the team allowed to get an overview of the strengths and weaknesses of the project – from the team members' perspective – and to collect their ideas for a possible 3rd phase. On the fourth day, we flew back to Kunming where extensive discussions were held on various issues of the project with the team. The main points were the following:

- Review of activities in each project component and discussion of their link to the project objective
- Review of the project strategies, assessment of their application, and formulation of recommendations
- Analysis of structure and partnership, identification of weaknesses at this level
- Focus of the project in a possible 3rd phase: research or development?
- Elaboration and discussion of options for the future
- On Tuesday morning (5th day of the visit) the remaining open issues were discussed with the country co-ordinator.

2. History and background information

The watershed of Xizhuang, in the prefecture of Baoshan, was a forest rich area with many big trees in the past (records from around 1940). Forests degraded in the recent past and today, the only remaining primary forests are located in natural reserves.

1984 was a turning point for the forests (degradation was stopped and rehabilitation could take place) with the implementation of the national forest policy (forest allocation policy, i.e. property transfer from the State to collective property and to household level).

Incentives for farmers to plant trees, as well as aerial seeding of trees (2 varieties, pines and shrubs) are measures to rehabilitate the forest, together with a number of projects / initiatives such as the Mekong river reforestation.

Result: forest coverage increased from 24% in1974 to 38% in 1998, with an even more significant increase in the small watershed of Xizhuang (project watershed). Today, in Baoshan there are still 20'000 ha of degraded forests, mainly in lower elevations. The Government's objective is to rehabilitate these 20'000ha within 10 years. Therefore the forestry staff has been strengthened.

Today, one key issue in the watershed is the rehabilitation of degraded land in connection with the government's policy of *upland conversion*. The successful implementation of this Government's policy can be explained as follows:

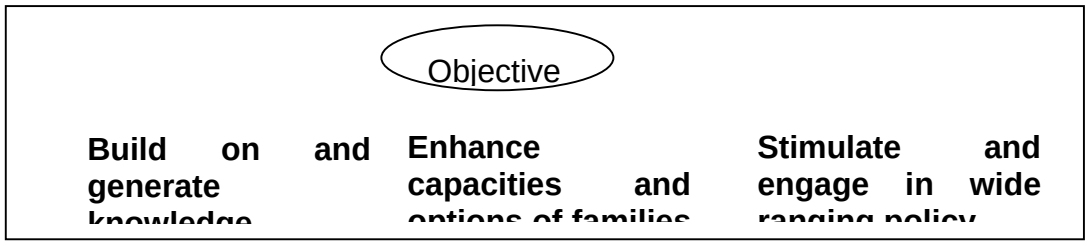
- Strong Government support (strict policy but along with accompanying measures: compensations in cash and in king – as grains)
- Intensification of agricultural production
- Increasing importance of off-farm income opportunities for farmers, which means partly decreasing pressure on natural resources in the watershed.

[6] CD-ROM with multimedia presentation of the programme, objectives, main activities, team, etc.

3. Project focus and achievements during phase 2

3.1 Project objective and main activities

In this section, the 7 components of the project were reviewed (based on the project document for phase 2) and the main activities undertaken in China during the present phase were listed. Then, each of these activities was allocated to either research (R), development (D) or policy (P), which are the three components of the project objective.



Project component	*Main activities during phase 2*	*R*	*D*	*P*
Community institutions	• mainly forest management	**X**	**X**	
	• watershed governance analysis	**X**		**X**
Inequity and gender	• gender analysis (survey)	**X**		
	• socio-economic analysis (income)	**X**		
	• some livelihood activities focussed on women		**X**	
Water resources	• hydrological level: time and spatial distribution of water	**X**		
	• water availability and demand analysis	**X**		
	• water quality	**X**		
	• action in water harvesting		**X**	
	• meteorological pattern	**X**		
	• land-use and erosion monitoring	**X**		
Common resources	• survey on environmentally fragile areas	**X**		
	• gully erosion control		**X**	
	• rehabilitation activities	**X**	**X**	
	• forest resources survey + Non Timber Forestry Products (NTFP)	**X**		
On-farm resources	• Participatory Technology Development (PTD) process: crop improvement, income generation, intensification, diversification, agroforestry, livestock		**X**	
	• capacity building		**X**	
	• soil fertility analysis, survey on bio-fertilisers, action in green manure	**X**	**X**	
Livelihood potentials	• focus on tea, including market analysis	**X**	**X**	
	• pesticide survey	**X**		
	• development of NTFPs for sale		**X**	
Implementation and management	• training on Geographic Information System (GIS), Participatory Monitoring & Evaluation (PM&E), Hymos for hydrology, multimedia, gender, project cycle management	*	*	

* capacity building for the PARDYP team

Comment

The above table shows that only very few activities implemented during phase 2 can be linked with the policy dialogue objective. On the other hand, the other activities are almost equally balanced between research and development activities. In the discussions with the China PARDYP team, it became obvious that the project is lacking a clear focus (doing research or development?). Being not precise and coherent enough, the project document was not really used as a reference by PARDYP China to implement the activities. Another conceptual framework was elaborated instead (refer chapter 6).

3.2 Achievements during phase 2

Some of the activities mentioned in the above table are detailed here to illustrate the work achieved by the project team during the on-going phase. More details are included in the annual report 2001.

Water resources

Considering that there are serious yearly fluctuations in rainfall (due to macro-climate), it makes it difficult to identify the specific impact of singled out factors within the watershed. During the past 5 years, 3 years were normal to dry, while the past two years were excessively wet, which caused extensive soil degradation in the watershed.

Hydromet data collection and analysis

Hydro-met data collection was continued from phase 1. However, with the specific training of the staff and the introduction of the software HYMOS, the data was not only collected but also processed by the project team, which is a significant improvement.

Erosion measure and observation

Three types of erosion are recorded in the watershed: point, sheet and riverbank erosion. As far as control measures are concerned, the main activities conducted during phase 2 were done in forestry, e.g bamboo nursery. Few on-farm measures to control erosion so far. The heavy rains of the past two years have ruined most of the efforts of the project team.

Erosion was also observed visually and mapped, as well as measured in erosion plots.

Project documentation with multimedia

Production of a CD-ROM presenting the main features of the watershed, the general context, the research methodology, results, indicators, etc.

Participatory technology development

During phase 2, PTD was applied to design and manage farm activities. Several activities were developed successfully in response to farmers' needs:

- Tea nursery
- Peach tree distribution for plantation
- Soybean crop introduction
- Walnut tree grafting
- Goat raising ("passing the gift" concept). Goats were banned in order to protect forests. Nowadays, they are again allowed, as forest trees (pines) have grown enough and are no longer threatened.
- Water harvesting for improved double cropping (specially for the maize crop)
- Bamboo nursery

The approach with farmers and their communities included small grants (some livestock activities), credit in kind (e.g. with the approach "passing the gift"), training (grafting walnut trees), or training and advice for economic, unsubsidised activities (tea nursery).

3.3 Farmers' perception of the project

For farmers in the watershed, as expected, the livelihood and economic activities are the ones that are perceived and appreciated. The research activities and data collection are either not known or only partly understood (what they are , their purpose, etc.).

Farmer-to-farmer extension seems to work very well for some of the techniques introduced by the project, such as tree grafting.

One lady farmer who does the recording of meteorological data for the project admitted that she did not know the purpose of the work she was doing.

Another farmer explained that the main problem in his village was drinking water supply, partly due to a long lasting conflict with the neighbouring village. The project tried to act as mediator in the conflict, but without success. The intervention of the project to find a sustainable solution to the problem is being considered.

3.4 Present strengths and weaknesses as assessed by the project team

The project staff was given the opportunity to assess the project work during the on-going phase. The result of this self-evaluation is given in the following table:

Strengths	Weaknesses
Hydrology	
Hydrology data monitoring, complete and representative	Some data not always reliable (farmers' recording)
3 years with little rain and 2 years with a lot of rainfall (good for comparison)	Equipment for hydrology partly too old
Satisfactory accuracy of hydrological data	Upper catchment too small for monitoring system (peak = flash)
	Transport facilities partly inadequate
	Hydrology component has a strong focus on research, not on application (i.e. unprepared to answer farmers' expectations)
	Instruments' accuracy for hydrology records inadequate
	Lack of communication between hydrology and other components
	Difficult to combine hydro analyses with PARDYP objectives
	Interactions between forest and hydrology are not yet completely understood
Livelihood improvement	
Training on grafting	Need more planning and clear budget for development
New varieties of fruit trees (economic tree species)	Changing focus of the project from phase I to phase II, from rehabilitation to development
Training on PTD, livestock, grafting, etc.	Not enough investigations before making proposals to farmers (forestry)
Positive attitude of researchers	Responsibilities not clearly shared between farmers and project team
PTD process with livelihood impact on local community	Not enough communication with farmers, villages and township downstream
Family (household) based tree nursery	How to meet farmers' expectations (appropriate species combining cash revenue with sustainable management of watershed)
Agroforestry activities (fruit trees combined with crops)	Marketing analysis, specially at macro level (incl. national markets)
	Most difficult site for rehabilitation, and difficult species were selected
Rehabilitation & forestry	
Interactions in vertical line (e.g. within forestry, hydrology)	Lacking focus in activities, activities all over the watershed instead of demonstrations in specific catchments
Strong monitoring system of complex interactions (still to be improved)	Rehabilitation: repeated plantations without success
Watershed not too far from Baoshan city	Hydrology & forestry are main focus of the project, agriculture underrepresented
Representativeness of small watershed for the area (forest types, degradation, etc.)	Not enough interactions between project components
Data collection (in spite of some weaknesses) thanks to professionality of hydro team	Not enough preparation for project implementation (rationale)
	Emphasis on site development during phase I (farmers were forgotten)
	Convincing farmers for long term usefulness of natural resources management

	Integrated analysis
Gender	
Farmers' training	Women's role not sufficiently considered (they take increasing responsibility for natural resources management)
General issues, regional issues, project management and approaches	
Good and hard working, committed project team	Not enough communication with other sites (regional approach)
Many different technologies involved in the project (incl. Computers, Hymos software, monitoring, etc.)	New ideas from other sites not really made available
Human resources (interdisciplinarity)	Link between research and development (= unused potential)
Regional project (potential)	Communication with farmers on research issues
Very clear ideas of what we are supposed to do (project components)	Communication within the project team (not enough interdisciplinary)
	Not linked to any government policy, planning, etc. therefore no impact on local government policy

Watershed size

The PARDYP China team is of the opinion that the size of the presently analysed watershed is too small to answer some key questions related to natural resources dynamics and their interactions with socio-economic and other factors. Therefore they suggest a scaling up of the watershed, from the Xizhuang watershed to the Donghe7 watershed. The factors that would be investigated in the larger watershed in connection with the present watershed are the following:

- To investigate the demand and supply pattern of water for agriculture (upland and downstream) and for other sectors of the economy, as well as for drinking purpose.
- To analyse and improve the understanding of the water distribution patterns in time and space.
- To get a more accurate picture of the interaction between hydrology, rainfall and geology.
- To investigate the influence of urbanisation and other socio-economic factors on the dynamics of natural resources within the watershed.

In the large watershed, there are 7 permanent and 5 additional specific hydrological stations having long term records, with which it would be possible and relevant to make links.

3.5 Guiding principles

In chapter 5 of the project document, a set of guiding principles describe how the project should be implemented. In another self-evaluation exercise with the project team, these guidelines were assessed in terms of how far and with what success they were applied during the on-going phase of the project. For each of these guidelines, some recommendations were also formulated in order to facilitate their implementation during a possible 3rd phase.

Guidelines	***Assessment***	***Recommendation***
Interdisciplinary approach	• Conceptual level: good understanding of the interdisciplinary approach • Practical level: interdisciplinary team working mainly in own discipline with few	• more communication (field, office), exchange of information • team planning, regular team meetings • interdisciplinary fieldwork • capacity building in interdisciplinary work (using

[7] Donghe watershed : 1700 km2, with elevations ranging from 900 to 3070 m asl, and three distinct zones : upper mountain area (>2000m), middle mountain area (1400-2000m) and the lower areas (< 1400m). This watershed includes urban areas such as Baoshan, flat areas in valley bottom, deep hot valleys in low elevations. There are karst areas all over the watershed.

	interactions	capacities available in the team)
Participatory Action Research (PAR)	• a lot of experience and achievements at household & community level • watershed level: requires more multi-community dialogue & experience sharing	• continue with PAR • document the PAR process • link PAR to participatory planning & management
Gender & equity and social issues	• some key findings and understanding of gender issues • not enough understanding of marginalization process	• more action required to link gender with development • get better understanding of marginalization process
Stimulating policy discussion and change	• research level: good conceptual framework for policy analysis • not enough communication between team and policy makers	• involve multi-government agencies into project process • analyse knowledge and data to draw information for policy dialogue
Identify and test proven interventions	• Some technologies have been tested in the field • successful implementation of PTD approach	• mechanism for extension & dissemination of success stories in other watersheds • mechanisms for sustaining the process initiated (PTD)
PM&E	• most team members are trained in PM&E • PM&E applied to development activities and some water resources activities • conceptual structure of PM&E accepted by team members and farmers	• how to shift from PM&E facilitated by outsiders to farmers own PM&E?
Training and capacity building	• introduction of new technology and software • enhancement of capacities at field and farmer level • changing attitude of staffs from local partner agencies (Baoshan)	• identify the needs and key functions in interdisciplinary research and watershed management • informal training to be emphasized for specific topics • better use of regional capacities for training (PARDYP)
Regular communication	• insufficient communication with other PARDYP teams and with ICIMOD, except the hydro-meteorological team • insufficient communication with farmers on research issues	• more planning for regular communication at country and regional level • more feedback from others, web • mechanisms to inform farmers of research activities and results

Dissemination and communication	• dissemination mechanisms with ICIMOD and other stakeholders inadequate • comparison between Andes & Himalayas (meeting) • Co-operation with the Dept. Of Sc. & Tech. for project implementation and dissemination	• link up with other watershed management projects • ICIMOD should identify and document success stories on watershed management in the world + www.links • more communication & advocacy at the policy level
Technical publication	• inadequate scientific publications within the PARDYP project • good data synthesis and presentation in the multimedia	• writing workshop at regional level in different components • summary document / booklet on how to establish watershed management project (lessons learnt, publications)
Integration of findings	• more analysis of key drivers of watershed degradation • comprehensive watershed framework for analysis is missing	• better understanding of key links between different components (interdisciplinary & inter-regional analysis of findings) • develop modelling for different scenarios.

4. Institutional set-up and linkages

The PARDYP China project is hosted by the Kunming Institute of Botany (KIB), which is part of the Chinese Academy of Sciences (CAS). KIB used to be together with the institute of ecology. After restructuring, the two institutions were separated and the PARDYP remained with the KIB. Later the institute of ecology had to be closed down, leaving a gap in terms of scientific support in ecology. Today, the KIB is building up again an expertise in this area. Being located in Kunming, the KIB collaborates with a few partner institutions situated in the vicinity of the watershed, as shown in the following table:

Institution	**Area of expertise**
Kunming Institute of Botany	Country co-ordination
	Community forestry
	Gender
	Land use
	Erosion monitoring
	Participatory technology development
	GIS / multimedia
Chengdu Institute of Botany	Vegetation
Yunnan climate centre	Meteorology
Baoshan Bureau of Hydrology	Hydrology
Baoshan Forestry Bureau	Forestry
Kunming branch of the Xishuangbanna tropical botany	Soil fertility

The country co-ordinator of PARDYP China, Dr. Xu Jianchu, is not only professor at the KIB. He is also the executive director of an NGO[8] – the Centre for Biodiversity and Indigenous Knowledge (CBIK) – in Kunming. Today, CBIK is running a number of partly large projects with international partners, which represents a great potential of synergies for PARDYP China. On the other hand, the very tight agenda of Dr. Xu makes it impossible for him to be a fulltime co-ordinator of PARDYP, which sometimes causes some delays, e.g. in reporting. However, it must be said that China has the additional difficulty that all reports need to be translated in English, while this is not the case in the other PARDYP countries.

4.1 Capacity building

The staff of PARDYP employed by the KIB is partly engaged on other projects as well. This may limit its availability to implement some project activities, but at the same time, in terms of institutional capacity building, additional knowledge and skills can be utilised and spread very quickly within the institute. Capacity building takes place also within local partner institutions, such as the Baoshan Bureau of Hydrology, e.g. with the introduction of the Hymos software.

4.2 Partners and linkages

Poor relation	+/-	Good relation
Natural village: less organised, individual based;	Farmers: IK, information, guide	Good relations with farmers and communities
No collaboration with women groups or customary institutions	Administrative village organisation (Qingshui): relation OK but not very good	Baoshan Forestry Bureau: Transport, co-ordination, Guide, accommodation
Administrative villages: different perspective and less accountable to farmers	Local government: field survey permission, information	Good relation with meteorological station
Baoshan government: inadequate communication, e.g. extension services		Good relations with GIS researcher in other institution (Kunming)
No collaboration with forest users groups		Good relation with the Lijiasi administrative village org.
Baoshan Forestry Bureau don't have training in PM&E → difficult		Good relation with Baoshan Hydrology Bureau, regular communication
Bad relationship between Lijiasi administrative village and communities		ICRAF: working on watershed approach
Conflict between 2 communities on water issues		Good relations at the household level
No link with marginalised groups		Good relation with the Kunming Inst. of Ecology*
		Good relation and co-operation with the Kunming

[8] In China, an NGO must have links with an official institution to be operational (i.e. getting funding and implementing projects)

		Center for Agronomy and Meteorology
		Good co-operation with Baoshan Forestry Bureau for Agroforestry, tea nursery &Training projects
		Good relations wit the Baoshan Forestry Bureau and Agriculture Bureau
		Watershed approach for Provincial Government
		Local farmers: hospitable & helpful

* this is in contradiction with the first paragraph of chapter 4. The mission could not sort out this incoherence.

In future, the PARDYP China team considers that the following partnerships should be focussed on:

- communities (natural + administrative)
- marginalised women groups
- government extension agencies (Baoshan)
- policy makers at provincial level

One potential partnership for PARDYP that should be carefully considered is with ICRAF, which is apparently interested in working in the larger Baoshan watershed.

4.3 Support from the universities of Bern and British Columbia

The support provided by both universities to PARDYP China was considered as very limited and too discipline oriented, while the needs are more in the field of integrative thinking. Being complementary in their disciplines, the two universities should interact more. This way they may be in a position to deliver the expected inputs.

4.4 Importance of PARDYP for the Kunming Institute of Botany

For KIB, PARDYP is an important project because of its focus on the ecosystem level (spatial information) and its potential for an integrated (holistic) approach. With this in view, the capacity building process – at individual, at project and at institutional level – should focus on this integrated approach.

5. Regional issues

The Chinese perception of the regional approach of PARDYP is the following: the project was set-up as a regional initiative as a continuation of the former rehabilitation project. It is at the same time the idea of donors, of ICIMOD and of the participating countries to make it regional. Today the question is to know what is the mutual benefit (if any) of the network members.

Some exchanges involving China did take place, particularly with Nepal (e.g. Chinese water harvesting specialist went to Nepal). On the other hand, there were virtually no interaction with India or Pakistan.

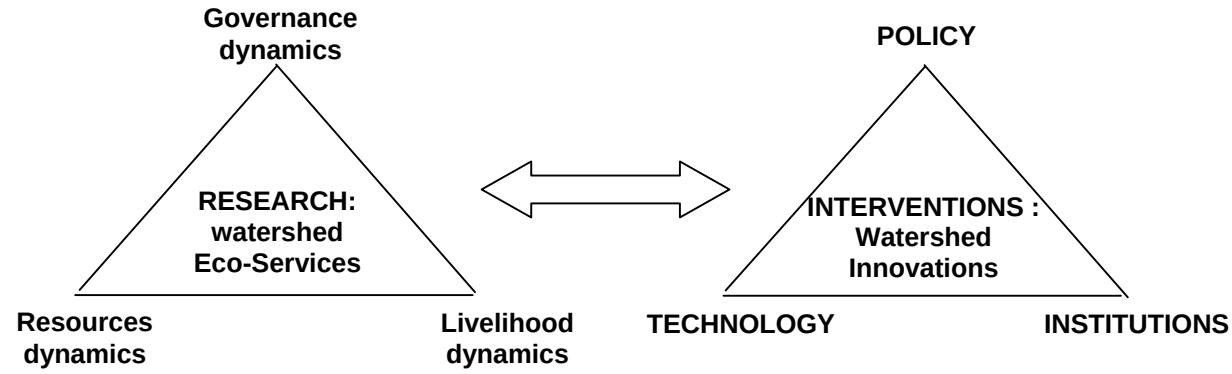
Comparability of watershed and results: the 5 watersheds included in PARDYP are more or less comparable as far as parameters linked with hydrology and soil fertility are concerned. However, there are serious limitations to the comparison, since some of the sites do not have or do not share their data. When it comes to comparing socio-economic issues, this was not seen as a priority when the project was designed, and there is only little expertise in that field.

In the case of PARYP, the regional approach does not lead to economies of scale.

6. Conceptual framework in PARDYP China

The China PARDYP team developed its own conceptual framework for the project, which is worthwhile mentioning here as it is very comprehensive, showing the various interactions between

governance, resources and livelihood dynamics on the one hand, and the links between research and policies on the other hand. In view of a possible modelling of the watershed dynamics at a larger scale, this framework will be extremely valuable.



The conceptual framework further develops the three types of dynamics described in the above chart.

- The resources dynamics consist in forest, soil and water resources, and their interactions in time and space as well as in terms of perceptions.
- The governance dynamics are dealing with power, rights and relationship in interaction with decentralisation, participation and accountability.
- The livelihood dynamics consist in the physical, the social, the human, the financial and the natural capital exposed to a vulnerable context (history, ecology, policy, market, employment, population, etc.), dealing with livelihood strategies (intensification, diversification, farmland expansion, etc.), in relation with community institutions, and resulting in various expressions of livelihood status (poverty, employment, income, living conditions, quality of life, etc.).

7. Options for the future

7.1 Impact of PARDYP in China

In China, it cannot be the goal of PARDYP to develop the Xizhuang watershed and its 4000 inhabitants. The expected impact of the project must be at a different level, the watershed serving as a 1 to 1 laboratory to generate knowledge, to understand the interactions as exposed in chapter 6 and to test approaches – namely in the field of livelihood improvement – allowing the participatory development or adaptation of technologies for rural communities.

Focus of the project in future

The discussion whether the project should be rather oriented on research or development in future lead to the following list of arguments for and against either option:

	Focus on research	***Focus on development***
Arguments for	• research institutions leading the project • good relation with local data collectors (Baoshan Gov.Agencies) • Research based team composition and disciplines • Inadequate information on resources dynamics for decision makers • capacity development of team members through research process	• learning by doing • convert research result into field realities • address local needs (technical, livelihood, income, etc.) • for ethical reasons (long-term involvement in one area without returning anything...) • test validity of research results • no other actors will develop this watershed

	• Increase scientific knowledge in general	
Arguments against	• 6 years old project • adequate data available • too far from the field	• we are not a poverty alleviation institution • staff insufficiently trained for development • difficult to work with farmers • too far from the field • less impact on large scale • regional set up less relevant • more time-consuming

7.2 Watershed size

In chapter 3.4, the watershed size and the Chinese perception of it was already discussed. The PARDYP network should be a forum where the potential, scientific justification and appropriateness of scaling-up experiences from a small watershed to a larger one are debated. And if the present capacities of PARDYP are insufficient to discuss such issues at the appropriate level (scientific, policy making, etc.) then such capacities should be hired in for such occasions.

7.3 Brainstorming about options for the future

Unanimously, the team members are thinking that we need a 3rd phase of PARDYP. A number of ideas were formulated about what a third phase should consist in. Later, with the PARDYP team in Kunming, options for the future were sketched and briefly discussed. However, the discussion must go on! There are some obvious contradictions in the statements which were purposely kept in the text to show the diversity of ideas and visions.

The ideas of the (almost) complete team in Baoshan are reflected below while the options developed in Kunming are listed further down.

PARDYP Phase 3 must ...

Capacity building

- Training of staff not to be neglected (batteries must be reloaded!)
- Hydrology staff needs training on agricultural and development issues (and on how to meet farmers' needs)
- Training on development for the staff

Project focus

- More focus on development, still combined with research
- More focussed research for development
- Link R&D

Linkages

- Integrate Government initiatives to get impact at that level
- Closer link between disciplines (more interdisciplinarity)
- Farmers' network

Strategy

- Expand watershed
- Keep focus on small watershed
- Knowledge for extension (scaling up), Scaling up
- Watershed management

- Long term monitoring of hydrology data is essential to draw relevant conclusions

Policy

- Knowledge and data to be analysed and used for policy impact
- Dialogue with government

Regional

- Focus on sharing of lessons (between countries)

The options 1, 2 and 3 have in common the need for a synthesis of existing knowledge and the strengthening of the links between research and development. It appears also that the three options are not exclusive, i.e. they can also partly be combined. Option 1 is the most ambitious one, specially since it includes a complex modelling for policy formulation and support. This must be considered as a real challenge for PARDYP.

Option 1: Small watershed → large watershed => policy dialogue
→ links between research and development to be strengthened
→ synthesis of existing knowledge
→ watershed approach for more holistic thinking: how to convince policy makers?
→ participatory planning, integrated watershed management by involving different stakeholders
→ modelling for different scenarios

Option 2: Stick to small watershed => dissemination and extension of success stories
→ multistakeholder dialogue and planning within small watershed
→ strengthen links between research and development
→ synthesis of existing knowledge
→ enhance capacities of government extension system
→ farmer to farmer extension

Option 3: watershed network in Yunnan province => learning and sharing
→ strengthen links between research and development
→ synthesis of existing knowledge
→ develop efficient channels for communication

When it came to chose one of the options, the PARDYP China team members present were split, 50% voted for option 1 and 50% for option 2.

In case option 1 is selected, a collaboration with ICRAF might lead to interesting synergies, with PARDYP continuing investigations in the small watershed but in connection with the larger project, in the Baoshan watershed. Formal links between the two, a common set of research hypotheses, could serve as a unique example, including for the PARDYP network.

In any case, the reinforcement of capacities in interdisciplinary, integrative research will be a key for phase 3 in China.

8. Assessment and comments by the consultant

My visit to PARDYP China was very well organised, and extremely interesting. I met a team of highly committed people, in Kunming as well as in Baoshan. Even if this was an external review, I seized the opportunity to involve the project team as much as possible in reflections about the project (see point 3.1, 3.4, 3.5, 4.2, 7.1 and 7.3). This participatory approach was highly appreciated by the team, who mentioned at the end of the visit, that such contributions should be more frequent (i.e. not only at

the time of reviews). I am also grateful to the team members who made special efforts to explain specific parts of the project in English.

One major strength of the PARDYP China project is the fact that it is implemented by an institution which is involved in many other projects with several other international donors. This has a high potential of synergies that should be used in the best possible way. This of course is linked with the very dynamic personality of Professor Xu.

Some comments

- Many achievements, some success stories with farmers (e.g. walnut grafting, peach trees, soybeans, bamboo nursery, tea nursery, etc.)
- Successful implementation and development of the scientific part of the project in the field of hydrology and meteorology, with improved data collection and processing
- Little integration, activities are going on next to each other (hydro-met data collection, and erosion control demonstration / measurement, etc. on the one hand and activities with farmers on the other hand.
- The PARDYP China team has mixed feelings about continuing the project in the present form because of the lack of focus, because of the potential and limits of the small watershed approach, because of the impression of not getting substantial support from ICIMOD, etc.
- The PARDYP China team has a great potential to contribute to the regional programme, provided it gets a clear mandate for that. Its main strengths are in the fields of research – policy support interactions, a good way to make best use of the large amount of data and the wide experience collected so far. A solid (competent) scientific support will still be required as far as complex modelling is concerned.
- Project management: this point was not investigated in details, but it would be very useful to introduce clear procedures (e.g. with simple formats and guidelines) for reporting, budgeting and m&e.
- The successful implementation of the project in China depends to a large extent on the person of Prof. Xu. Considering the heavy workload of Prof. Xu, it would be advisable to transfer part of the project responsibility to another person, however under the guidance of Prof. Xu.
- The options for the future as discussed in chapter 7 are very relevant, and the recommendations formulated in chapter 3.5 should be considered in the next phase. It is important to note that the three options outlined do not exclude each other, but they can be complementary.
- The possibility to collaborate with ICRAF and to link the knowledge gained in the small watershed of Xizhuang with the large watershed of Baoshan should be carefully assessed; this is seen as a great potential by the consultant.

9. Persons met during the review in China

Dr. Xu Jianchu, Kunming Institute of Botany, country co-ordinator
Mr. Chen, deputy director of forestry bureau Baoshan
Ms. Ma Xing, hydrology bureau Baoshan

Mr. Li Ging Hong, former director of the hydrology bureau Baoshan
Mr. Gao Fu, Kunming Institute of Botany, in charge of hydrology and erosion monitoring
Ms. Yang Li Xin, Kunming Institute of Botany, social forestry and livelihood activities
Mr. Duan Shangbiao, hydrology officer; Baoshan
Mr. Li Jia Tong, director of hydrology bureau Baoshan
Ms. Stéphanie Mas, Kunming Institute of Botany, PM&E, PTD and reporting
Dr. WangYuhua, Kunming Institute of Botany, GIS & multimedia specialist
Ms. Sha Liging, Kunming Institute of Botany, soil
Ms. Ai Xihui, Kunming Institute of Botany, GIS and field survey
Dr. Yang Yong Ping, deputy director of the Kunming Institute of Botany
Dr. Pei Sheng Ji, head department of ethnobotany, Kunming Institute of Botany
and farmers in the Xizhuang watershed

Annex 2: Country report India

PARDYP-India: National Evaluation Report

Peter Bieler

Introduction and review process

The visit to the India-team of PARDYP took place from 15 to 19 march, whereof the first and last day was utilised to travel between Delhi and Almora. The evaluation started by meeting the team in Almora, then drive to Kausani (entry of the watershed), one and a half day visit of the watershed on foot (Bheta Gad River) and a subsequent half day workshop in Kausani with the whole team. A short visit at the G.B. Pant Institute concluded the short interaction. As the visit included a weekend and additionally with a meeting of the management staff of the Institute, there was no opportunity to meet any person outside the project (e.g. from other ministry, line agency, NGO) nor from the management of the Institute. The visit was very well organised and went very smooth. The sometimes occurring language difficulties were met and did not jeopardise the overall impression.

The following report does not repeat history, description of watersheds, results and achievements reported elsewhere. It also does not attempt to give scientific appreciation of individual activities. It is rather meant to add value to the project while opening new roads. It has to be understood that the impressions summarised in this report are entirely based on this short visit and can certainly not be exhaustive nor reflect the whole reality. It is therefore to be understood as a pitch for further reflections and constant improvement of such a project as PARDYP.

PARDYP and People

The India-Team

The entire India-team of PARDYP gave an extremely motivated and professional impression. The multi-disciplinary composition of the team (consisting of 1 co-ordinator, 8 scientific and 6 technical staff) seemed adequate for the project and the high qualifications (7 of the scientific staff have or are under PhD training) was impressive. It could not been assessed whether the right qualifications were used for the right responsibilities, especially in the highly specified component of hydrology where a high capacity is needed. The visit to the watershed demonstrated the well lived inter-disciplinary approach in the sense that in spite of each team member's responsibility for a component (according to the project document), every one was able to step-in with competence for other colleagues on the site. The ownership of the project's activities was generally equally shared with the team members but also with the farmers that proudly explained their achievements.

The record of seven PhD and other thesis completed within PARDYP India is impressive. Even though most of the scientific staff received between 10 to 20 days of training in phase II of PARDYP, more capacity building was requested from the team (see SWOT below). Capacity building of the India-team was considered an important aspect during phase II of PARDYP. However, the fast staff rotation in the team did not result in the high expected impact of this endeavour. The reason for the fast staff rotation is that except for the co-ordinator, all team members are funded by the project and do not have a permanent employment at the G.B. Pant Institute. In the Indian context, job security, i.e. a government employment with long-term benefits and retirement plan, is an important aspect. Job opportunities and increased competence are consequently leading to this drift-off of staff. Therefore, capacity building has a high personal importance for the individual staff, but has limited impact potential on the host institution in terms of scaling-up of achievements and increased capacity of institutional staff.

Farmers

PARDYP is well known in the watershed. Pilot farmers and farmers' groups seem to distinguish between activities for their immediate benefit (livelihood, on-farm, community lands) and clear-cut research and data collection (hydro, met, soil measurements and observations). Farmers involvement is variable. In terms of their own time it is certainly substantial, while their financial contribution is variable: seeds and production inputs are provided by the project, while expenses for materials e.g. the poly-houses are shared between farmers and the project. The evaluation could not assess the quality of participation in decision processes that go beyond the identification of priorities within the PRA, but has certainly appreciated the conclusions and various cited approaches (see below).

The host institution

The host agency of PARDYP in India is the G.B. Pant Institute of Himalayan Environment and Development (GBPHED), an institute of the Ministry of Environment and Forests of the Government of India. Located in Kosi-Katarmal near the city of Almora (in the newly formed state of Uttaranchal – former part of Uttar Pradesh) it is also the working location of the whole PARDYP scientific team and the co-ordinator (a field station in the watershed itself allows the permanent presence of the technical staff and some marginal sample preparation). In its mandate the GBPHED includes 'in-depth research and development studies, to identify and strengthen the local knowledge of environment', and 'to evolve and demonstrate suitable technology packages and delivery systems for sustainable development of the region in harmony with local perceptions'. It has a mandate across the Indian Himalayan Region (IHR) and is recognised – through its four additional sub-units across the northern region – as the nodal agency for R&D programmes in the IHR by the Planning Commission and the Ministry of Environment and Forests. The orientation of the Institute is clearly technology focused and strives towards the approach of demonstrations that are expected to be replicated through farmer-to-farmer extension and with the subsidised support of the Institute itself. The strong socio-economic component as it is well developed in the PARDYP project team underlines the improved potential for dissemination due to a better adapted technology development. The institute underlines its ownership of PARDYP by the fact that the national co-ordinator is a core-staff and a contribution to the project by the host institution.

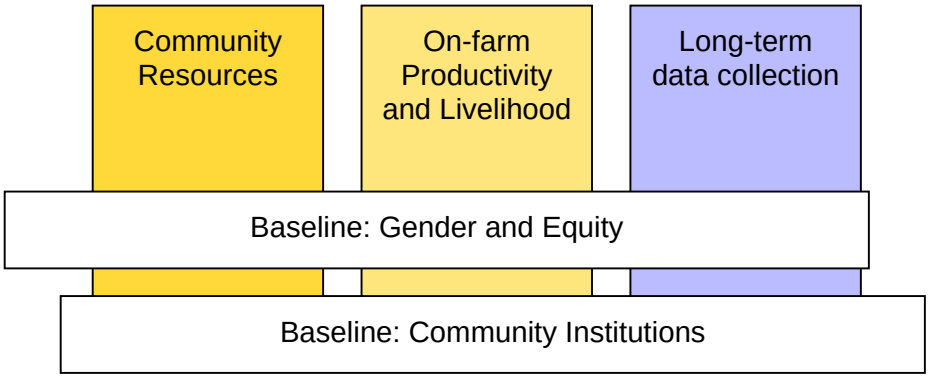
Achievements

Project design

Probably due to the non-addressed complexity of watershed management in the project document, the inter-relationship of the seven components is not obvious and tendencially leads to the 'compartmental' fulfilment of activities. Hence the project does not really have a profile at a first glance. Together with the project staff the Pardyp-India-story was developed demonstrating the relationship of the components by its logic implementation. In the resulting design, it was obvious that the two components 'institutions' and 'gender and inequity' were of cross-cutting nature. They included the use of participatory approaches to understand communities, identify and prioritise issues and problems, and to define common actions. They also include the identification of existing resource maps for planning and already existing activities by other institutions active in the watershed for the exploitation of synergies. The two components are considered as the baseline of the project's approach. The implementation of PARDYP eventually has three main aspects: (1) the sustainable management of community resources, incl. the regeneration of degraded lands; (2) the sustainable on-farm productivity and livelihood, incl. income generating activities and conservation of natural resources; and (3) the long-term data collection for regional planning purposes, incl. hydro, met, soil and socio-economic data. For the first two aspects, a participatory micro-planning is essential and also the establishment of community defined indicators to monitor the projects' achievements.

For the scaling-up of achievements beyond the watershed, institutional linkages (see below) have been established and are exploited through activities like policy dialogue, training, collaboration with NGO, farmer-to-farmer extension etc.

Figure: Consultant's perception of PARDYP-India set-up



While the project design as described and shown above is an interpretation of the consultant, the strong social-component was clearly underlined by the project team and therefore respects the entry point to be the people of the watershed, rather than the classification of natural resources. Does it correspond to the teams understanding of the conceptual framework for its watershed approach? (Recommendation 1)

Equity and Gender

During the evaluation visit only one woman was met (a farmer). The project team itself consists of men only. The project component inequity and gender is addressed in specific surveys and is reported with semi-digested data (see annual report 2001). The conclusions of the findings were not so obviously incorporated in the activities of other components. Limitations for this is likely to be the project structure and its components. There is no concept related to 'equity' in terms of equity related to gender balance or inequity related to social (cast) structures or poverty. Therefore, the issue did not receive adequate attention so far. In the field, some specific activities related to marginalised farmer communities could be visited. Such activities had similar contents as those with pilot farmers but differed in the process of 'dissemination' (e.g. use of revolving fund mechanisms within a self-help group in Maulidhar). It was noted that in terms of 'development', marginalised communities probably needed a different balance of 'software' (empowerment) and 'hardware' (technical) supply than upper class farmers. Finding a balance between software and hardware supply as well as strategic decisions on what technology makes sense for what kind of farmer 'enterprise' might make sense in future. (Recommendation 2)

Long-term data collection

The long-term observations of hydrology, meteorology and erosion plots are well established, maintained and documented sites. While the data is reported in the annual report the quality of the same is not assessed in this report. The methodology is standardised across the region (ICIMOD manual) and should allow a regional interpretation of the data in terms of water household of the watershed. The observation sites are run automatic (data logger) and/or manual (readings taken by farmers or students for a monthly ''salary''). The socio-economic data is supplementary component to the national data set, but has less the character of a time series. While a research hypothesis in hydro-met data collection was available, the same for the quantification of erosion plot measurements was not convincing. (Recommendation 3)

Farmers' on-farm productivity and livelihood

The fact that the PRA has lead to a priority exercise with the community and that as a result those identified needs did not correspond with those of the Government plan, has a well documented character that goes beyond the project. The work hypothesis in these two components is probably the increase of cash income through crop diversification including the identification of specific market potentials (e.g. local tourist industry). According to the host institute's mandate, the first impression of the PARDYP activities was that of a strong demonstration character. While the quality of the activities seem professional (see also national annual report 2001) the spread of activities was visible and acknowledged. Consequently the project has not a clear 'profile', but is perceived as a general agricultural development project9.

The on-farm and livelihood components (according to the project document) are flowing into each other and can not be distinguished easily (see project set-up above). The fact that the inter-disciplinarity is being implemented shows that there are good examples of thought through commodity interventions on farmers level. For example, the economic data of the activities in terms of investment and economic gain are well collected through farmers' record books and are analysed by the PARDYP team. Cross-synergies of components are mentioned frequently (e.g. water measurements as a decision basis for the establishment of fish ponds). Also, individual demonstrations on pilot farmers level are not left alone but are getting a community (organisational) aspect added. For the fisheries part of activities, a farmer group led 'community fish pond' serves as a security valve in case of failure of a farmer. This shows that development goes well beyond the pure demonstration approach. In general the project team has realised that it should move its focus from individual farmers to farmer communities in order to exploit a wider impact potential. (Recommendation 4)

[9] Even though the project had to refuse to respond to certain priorities coming from the PRA

However, the fact that most farmers receive follow-up visits of the PARDYP team every other day is proof of reliability, but also indicates a non-sustainable system of extension that could not be maintained by any institution once the project ends. Partnership agreements with those actors that have a mandate to spread would be useful.

Community Resources

Community activities in terms of land rehabilitation seem to be one of the strength of the India component, but has unfortunately not gained regional acceptance so far. The approach made a clear integration of socio-economic aspects (problem of scarce fodder for the cattle) with natural resource management (choice of species and agronomic practices) making proof of a solid research and development hypothesis. Further aspects including the classification of water streams and the potential of community land use planning has excellent development potential.

Communication and Publication

So far (1996 to 2002) the Indian PARDYP team has published a series of some thirty articles in scientific journals, four articles in newsletters and bulletins contributing to the dissemination of results on one hand but also making proof of the analysis of their data collected on the other hand. The publications seem to have a good balance addressing technical as well as socio-economic topics and address issues that have a more strategic character (e.g. land use planning).

The number of publications seems reasonable to the research and development balance found in the field. During the evaluation the India-team assessed its individual time investment in research and development related activities. The scientific staff attributed a median of 45% of their working time as research related, while the same was 40% related to 'extension' and development activities. This balance gave an indication of how the project's balance looked like. Individual responsibilities however made the range of these attributions rather high, going as high as 75% of research for one scientific staff.

The team has developed its own CD-ROM which allows an interactive browsing through the annual report and the findings of PARDYP so far. This development is independent from the regional component of PARDYP (University of British Columbia). Like the regional CD-ROMs produced, the objective and target of such a high input media (in terms of staff time) has to be thought of in order to facilitate its use. It has certainly helped to develop its own conceptual ideas on PARDYP. It also shows that a whole lot of interesting data was collected and analysed, but that the conclusion part remains to be done.

Scaling-up vs. replication

While there is no clear strategy on how the results of the research part go beyond the watershed, the concept of the development part of the watershed has its roots in the partner institution itself. It is based on the assumption that government institutions play the role of technology providers and that farmer-to-farmer dissemination and replication is in their own responsibilities. PARDYP makes the exception in this institutional framework that it includes considerable effort in the 'software' component, i.e. include farmer's priorities and evaluation criteria throughout the processes, but also organisational matters of communities that go beyond perceptions, but have an empowerment character. Latter aspect is to be congratulated, while we can ask ourselves how much a scientist's time should be invested in rather traditional 'extension' activities. As a whole the teams activities have no top-down character but rather observe on a partnership basis (Participatory Technology Development – PTD) on how farmers integrate technologies (e.g. poly-houses) into their seasonal calendar (Mr. Girish Tiwari, Talla Nakuri). The use of pilot farmers, however, is maintained as a basic strategy.

One potential for scaling-up is exploited with the institutional linkages established in PARDYP. As indicated in the figure below, there are a number of primary, secondary and tertiary linkages exploited, all having different degree and leverage potential. They address the farmer level as much as the policy dialogue, where PARDYP had influenced the Planning Commission in the state of Uttaranchal (personal communication by Dr. L.M.S. Palni, former director of GBPIHED). Different nature of these linkages could be envisaged, e.g. contractual or partnership arrangements (Recommendation 5)

Project Management and Implementation

Co-ordination and project planning, monitoring and evaluation

The project co-ordinator has a very positive feed-back from the whole team and certainly plays an integrative role in the whole project. His guidance is firm, but allows a high degree of motivation of the young team. The autonomous working styles of individual as permitted by the co-ordinator as well as the decision structure was not visible at this moment.

While participatory monitoring is said to be introduced as a tool on the level of collaboration with farmers it could not be verified. It is however a most important tool in PTD. This planning and monitoring tool is essential.

On the project level, no planning and monitoring was undertaken on a regular basis in its true sense. Apparently, the project co-ordination under ICIMOD had not required any project management instruments. The only relevant document related to this is the annual planning document, consisting in a 2.5 page of listing of broad activities (on a component basis) that have no indication of time frame nor responsibility, and hence does not relate to any budget. This work-plan was discussed in a regional meeting of the national co-ordinators, but did not gain any value added nor contributed to a common understanding. The meeting (taken place on 14-18 January 02) rather had the objective of information exchange. This type of project management has obviously no potential to be reviewed by its own staff. The relevance of the project's activities and its accuracy in implementation is therefore not reviewable for the time being, as the project document in itself does not allow guidance in this respect. This is probably one of the weakest aspects of the project. (Recommendation 6)

Financial matters seem to be a bottleneck for the implementation of the project. Due to the fact that the project has a US$ account (reasons are not clear), ICIMOD has difficulties in transferring the project money from Nepal to India in this currency. According to ICIMOD the transfer into an Indian Rupee account would be a matter of few days while the current transfer takes up to six months! For 2002 the project can expect the disbursement of money from ICIMOD by June. As GBPIHED can not buffer the missing funds, the project can not be fully operational for a period of time – not even pay the salaries of its staff.

Regional set-up and ownership

The India team of PARDYP does hardly see ICIMOD beyond the regional project co-ordinator. It is perceived in a similar role as a donor. Except the national co-ordinator and the responsible scientist in the water sources component, the team had so far little or no interaction nor scientific backstopping. The national co-ordinator attends one or two regional meetings per year (organised by ICIMOD) while the regional co-ordinator has visited the team once in phase II. The advantage of making part of a regional set-up is not seen even though the reporting (annual report and the annual yearbook with the hydro-met data is supplied to ICIMOD headquarters) is fulfilled on a more or less regular basis. It was said that 'with the actual management instruments we are not serious about a regional synthesis, except for the yearbook where UoB has taken a lead'. For the future, the team expects the regional component to be strengthened in terms of communication, capacity building, and common procedures/methodologies.

The backstopping and value added of the University of Bern (UoB) in the Hydrology part is felt as positive, while the role of the University of British Columbia (UBC) beyond the production of CD-ROMs is not seen at all.

Due to the non-existence of a co-ordinated project management across the countries, the India team has full ownership of the project and is implementing largely their own identified priorities. However, the PARDYP team in India has so far no concepts developed that would allow an analysis of the watershed approach on its specificity. The concept of a watershed approach seems to be largely the understanding of an inter-disciplinary approach.

SWOT Analysis

The following analysis is the perception of the India team about its own performance. It was done in a participatory exercise during the evaluation mission.

Strength	Opportunities
• Experience working with people on the ground • Acquisition and utilisation of baseline data (hydrometh, water quality, soil fertility) • Participatory approach (incl. On-farm research) • Prepare village-level plan • Strong team in a good institutional background • Multidisciplinary team with interdisciplinary approach • Identification of livelihood options • Better understanding of natural resources • Research and analytical skills • Established good examples for demonstration • Excellent co-ordination of national activities • Recognised as a reliable partner by population	• Interpret long-term data for recommendations • Expansion of projects in other watershed • Exploit expertise and achievements of phase I • Exploit regional set-up for common framework (methodology, modelling) • Keep up pace with increasing community requirements • More focus on community than individual farmers • Establish better links to market development • Exploit regional nature by e.g. regional newsletter to have broader impact potential • Build on established trust with communities for higher leverage • Exploit regional set-up for skill development
Weaknesses	**Threats**
• Not timely availability of funds limits implementation • Skill development and training is insufficient • Weak regional supply of common instruments (e.g. common software for CD-ROM) • Limited exposure to other country teams • Job insecurity: constant danger of losing staff • Weak documentation, synthesis, communication with ICIMOD, donors, beyond Province level • Change in objectives from phase I to II	• Political instability in the region • Fund-driven other schemes in project areas (e.g. subsidies) • Replacement of team member • Natural calamity (e.g. earthquake) • Change in policy in Govt. of India or G.B. Pant Institute

Conclusion

On a very short note, the PARDYP-India team does an excellent job in combining research and development into a truly inter-disciplinary watershed approach. While some recommendations could improve and further develop the project's impact, the main improvement seems to be on the project management and the identification of regional potentials, i.e. linkages with other PARDYP national teams.

Recommendations

1. The scientific and development experience and achievements should be translated into a concept describing India's unique approach of watershed development. This concept could contribute substantially to a regional exchange of findings.

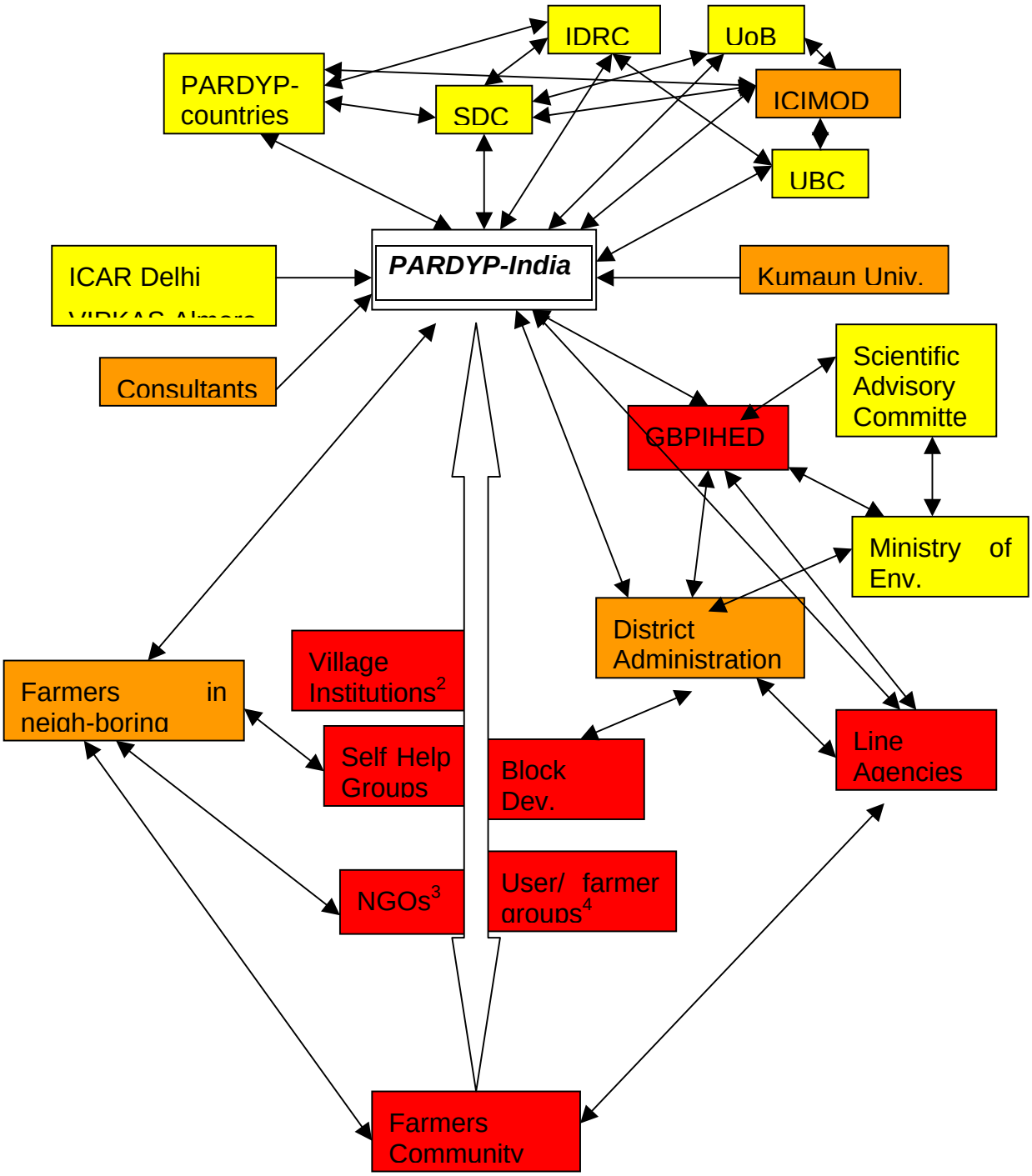
2. The development aspects (technologies and approaches) might gain of relevance if the structure of the social environment was better linked to the specific needs.
3. In order not to do research for research purposes, the activities shall be articulated with clearer research hypothesis. Where necessary research should be separated from development demonstration purposes (research relevance).
4. The insight gained to shift concentration from a individual pilot-farmer to a community approach will foster the aspect of farmers capacity in addressing their own priorities that go beyond the project (development relevance).
5. A clear idea for scaling-up the experience gained should go beyond the replication of PARDYP to a new watershed. The synthesis of the achieved results could lead to such an output.
6. Acquire and implement basic project management tools to enable the project teams self-evaluation and facilitate planning, review and budgeting exercises.

Contacts made

- PARDYP-India team
- Dr. K.S. Rao, Division Head of Sustainable Development and Rural Ecosystems Programme (GBPIHED)
- Dr. L.M.S. Palni, former director and present Division Head of GBPIHED
- Various farmers

Figure: Institutional linkages as seen and implemented by the PARDYP India team (18.03.2002)

(Partners: 1st priority: red; 2nd priority: orange; 3rd priority: yellow)



[1] Dr. R.K. Pandey: Hydro-Met
[1] Dr. K.K. Shah: Fisheries
[2] Village Forest Panchayat
[2] Village Panchayat
[3] Uttarakhand Sevamidhi
[3] Lok Chetna Mauch
[3] Mitaishi
[3] Brahmri
[3] Himalayan Trust
[3] Hillwelfare Society
[4] Mahila Mangal Dal
[4] Yurak Mangal Dal
[4] Magri Jauna Group

Annex 3: Country report Nepal

PARDYP Country Review: Nepal

Julian Gonsalves

The review process in Nepal

The debriefing by the Regional coordinator Roger White and P.B. Shah, Country Coordinator (Nepal) of PARDYP began at 3.30 pm on March 14th 2002, a couple of hours after this reviewer arrived from Bangkok. The first day involved an overview of the regional project itself. Tentative plans were discussed for the period starting March 15th to March 21st (after which the other reviewers were expected to arrive and the focus would shift to regional issues). Visits were made within ICIMOD, including with Dr Gabriel Campbell, DG of ICIMOD, Dr Eklabya Sharma, Head of Mountain Farming Systems, Professor Chen Guangwei, Head of Mountain Natural Resources. PARDYP Nepal team made a presentation on the Nepal program using CD ROMs. They demonstrated the use and application of Orthophotos for natural resource and socio economic surveys and analysis. Informal discussions were held with the wider team of PARDYP Nepal. Extensive reviews were made of the various publications and CD ROMs generated by the country program. Extensive discussions were also had over three days with the PARDYP Nepal country coordinator Mr. P.B. Shah as well as his team members especially Mr. Bhuban Shreshta and Juerg Merz. A short visit was made to the Jhikhu Khola watershed but our movements were severly limited due to the prevailing political situation. Plans to visit a second site were abandoned. No visits were possible to the communities or farms nor to the district authorities. Obviously this report is limited in its scope because of the inability of the reviewer to assess field trials and assess impact from the perspective of the primary stakeholder, the mountain farmers. Had this reviewer not made five previous visits to Nepal (including to the Jhikhu Khola valley) it would have severely affected the quality of this review. Visits were made to the field office and to the Horticulture Farm (a collaborator of PARDYP Nepal). Visits were made to Mr. Prakash Mathema, PARDYP focal person, Department of Soil Conservation and Watershed Management the lead agency on Watershed issues and PARDYP Nepal's partner in Government. Discussions were also held with Mr. Bickram Tuladhar, Head of the Planning Division of the Department of Forests. With a saving of time resulting from the inability to visit the field sites, this reviewer was able to look into a number of regional issues and review regional documents. A number of meetings were held with Roger White the regional coordinator in advance of the other reviewers. The role of the Nepal team in support of the regional coordination was also reviewed during this period.

.1 History and Background of PARDYP Nepal

The People and Resource Dynamics in Mountain Watersheds of the Hindu-Kush Himalayas project, now commonly known as PARDYP commenced in October 1996 and evolved from two IDRC funded ICIMOD projects: the Mountain Resources Management Project (1989 to 1996) and the Rehabilitation of Degraded Lands in Mountain Ecosystems ((1992 to 1996). These projects both included the Jhikhu Khola watershed in Nepal as the basis for the study. The findings from these two projects were discussed at a Planning Workshop held in March 1996 at which PARDYP evolved. A new project PARDYP was developed with the support of IDRC as well as SDC (late 1996) as a response to growing concerns about the pressure on natural resources (and related degradation) and the marginalisation of the mountain farmer. PARDYP was developed as an integrated research for development project. The first phase of PARDYP ran between Oct 1996 and September 1999. Results were presented at a workshop held in Baoshan, China,May 1999. This was followed by a planning meeting held May 1999 at which the various partner institutions, the donors and the host (ICIMOD) prepared the Phase 2 proposal, designed to run from Oct 1999 to Dec 2002.

This report will focus on the review of PARDYP Nepal. However, the Nepal country team is based at ICIMOD and also provides strategic support to the regional coordination program and, through it, assists in strengthening the capacities of other country teams too. This report

will therefore discuss some of these aspects though most of recommendations pertaining to regional aspects will be reflected in the main review team report.

The Nepal country team managed two watershed sites for PARDYP: the Jhikhu Khola site where it had previously worked and a new site in Yarsha Khola. Both sites actively contributed to the PARDYP goals during Phase 1. However during Phase 2 political events leading to the proclamation of an Emergency affected field work at both sites. The gravity of the problem resulted in a decision to close down the Yarsha Khola Watershed starting June 2001. In the Jhikhu Khola site there were restrictions but work continued until the last week of Nov 2001 when a " State of Emergency" was declared and all field activities indefinitely postponed even in the Jhikhu Khola site.

The Jhikhu Khola (JK) watershed is 11,141 ha and is located 40Kms. out of Kathmandu and is considered the most intensively used, middle mountain area of Nepal. The Yarsha Khola watershed-covering 5338 ha is located 190 km east Kathmandu in the Dolakha district of Nepal. This watershed also faces problems of rapid population growth, agriculture intensification and pressure on land and water resources.

These sites were chosen as field research sites because it was typical of marginal watershed areas under pressure from population increases and resulting intensification/overuse. These sites provided PARDYP Nepal and ICIMOD staff their first opportunity to be directly engaged in watershed based research, aimed at gathering long term information on land use, resource degradation, sediment transport and soil fertility.

2. The PARDYP 2 goals ,objectives and overall thrusts

Phase 2 of PARDYP had the following goal: 'To contribute to balanced, sustainable and equitable development of mountain communities and families in the HKH region'.

Some shifts in balance/ key thrusts are noted in the two phases as suggested by the language of project objectives and sub objectives as spelled out below :

Phase 1	**Phase 2**
Hydrology and sedimentation research	Water resources, its role in land degradation, water quality and water availability for households
Soil Fertility management research	Participatory on farm research to include soil fertility but also other farming systems
Generating socio economic research on resource management issues	Understanding equity issues in watersheds, mainstreaming gender considerations
Community based participatory assessments and technology development	Livelihood potentials associated with natural resources management
Partner – institution strengthening via capacity building	Understanding local institutions and developing community based methods for solving NRM problems
Promoting information flows on project outputs	Networking PARDYP, Web page
Forestry (CFUG) community forest user groups, Rehab Sites	Improving the productivity and management of common property resources
Regional modes of collaborative R and D	Improved management and coordination of regional projects

Partly in response to recommendations made by the reviewers of Phase 1, a stronger emphasis in Phase 2 was placed on social and institutional issues, community based institutions, strengthening of gender , a farmer-as-client orientation, and a more direct

emphasis on common – resources and water resources. This shift is reflected in the nature of activities being reported and the topics of the papers being written. The attempt to balance previous research efforts (that were biased towards biophysical research) has yielded significant results and has been noted and appreciated by this reviewer .The current foci of PARDYP Nepal is more relevant to dwellers in the mid mountains of Nepal. However, in attempting to respond to communities (as part of the development dimension), on such a wide range of issues, PARDYP staff became engaged in a wide array and often disparate range of field interventions ranging from polyhouses, drip irrigation, tree planting, biofertiliser trials, rice variety trials, (mushroom production), vegetable trials, IPM, water saving devices, hedgerow and cover cropping trials, fodder grass/shrub introductions .In addition a number of appropriate technology type activities centered around water harvesting have also been tried out. The issue being raised is not about the nature of these activities per se, but about whether some of these developmental activities should be undertaken by other stakeholders with whom PARDYP, under the guidance of an in-house specialist (local institutions specialist and a participatory methods/technology development specialist) could partner with .

3.Strengthening the "D" component in the R and D work of PARDYP Nepal :staffing issues

The team at PARDYP is still heavily characterized by geographers, geologists, meteorologists etc. The shift to more farmer and community oriented/based work and a bigger emphasis on some of the ideas proposed by the past reviewers (reflected in the seven components) suggested the need for staff with social science backgrounds within the PARDYP Nepal team but at the time of the review these strengths were missing. PARDYP Nepal must urgently bring on-board "new" staff expertise in at least two areas: local institutions development and participatory methods. What is needed are people who can relate to and are able to work at the VDC levels, individuals with a strong practical orientation rather than an academic one. PARDYP Nepal has to find mechanisms to share, apply and promote the utilization of the data and knowledge that it has accumulated. Thanks to the highly successful Community Forestry program such talent is available in Nepal govt. policy.

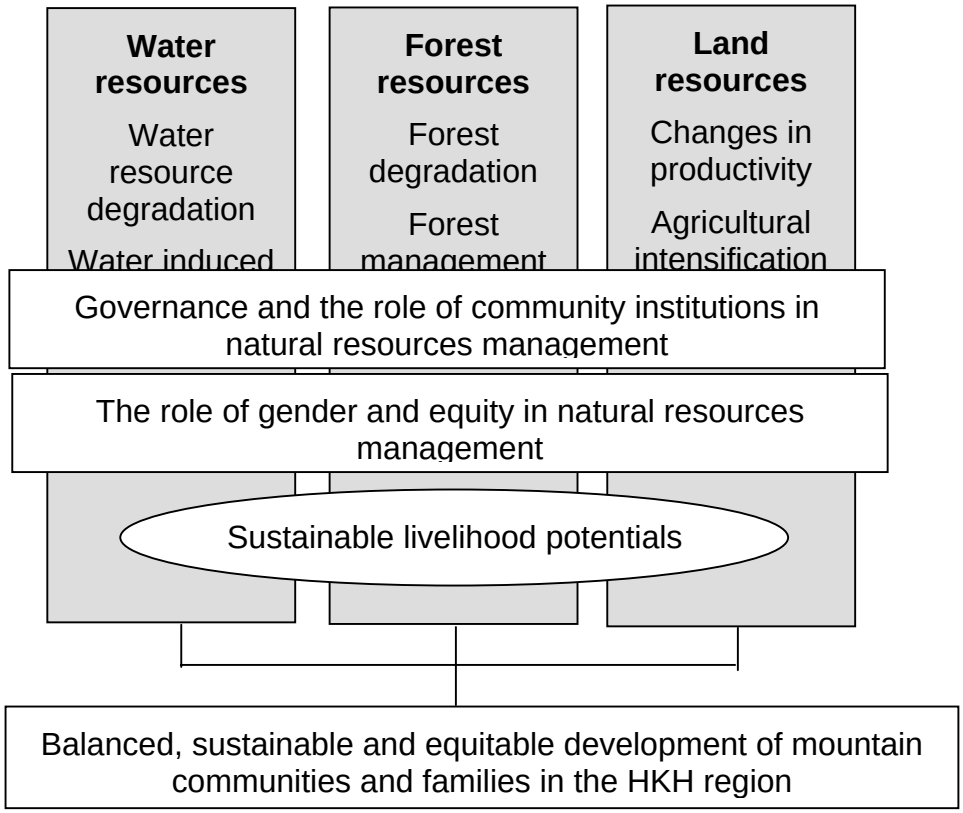
The inclusion of staff with these backgrounds will also help the Nepali team deal with the dilemma posed by their inability to respond to requests emanating from the community (a natural consequence of community level assessments !!). These experienced, field-oriented specialists will not be "doers" but will be facilitators and resource linkers helping establish linkages between local user groups and external resources institutions (NGOs, Government, INGOs) and service providers. They will liaise with local authorities so that the utilization and application of new knowledge garnered via the project becomes a local development planning matter rather than a direct concern of PARDYP Nepal. This methodology can be tested in the two impact areas (see lighthouses) proposed for the Hokse and Patheliket sites.

4. A new organizing framework centred around natural resource themes :soils, water and forests

The seven components of PARDYP as they evolved in Phase 2 brought more attention to socio-economic issues including a major shift towards community institutions and gender dimensions (now well recognized in Nepal) but the negative effects of compartmentalization were also noticeable. Another unintended effect was the very wide range of interventions that emerged which are difficult to manage and monitor.

PARDYP Nepal has emphasized three themes: forests, water and land and is emerging as the basis for a possible new reorganization of themes, with Local and Community Institutions as one cross cutting theme and Gender,Equity and Tenure as a second cross cutting theme. It might make sense for PARDYP to focus on these three major natural resource areas as integrating themes, each of which include biophysical, social and institutional issues .It would also help ensure that gender and equity and community institutions are not compartmentalized (an unintended effect of having them listed separately among the seven components). The Nepal team has already tested this organizing framework as a way of bringing together all the data and experiences on water issues resulting in synthesis (which they intend to build upon). In such an approach, sustainable livelihoods are considered as outcomes . Such a framework has already been vetted internally within the Nepal team and might be a way of streamlining the focus in Phase 3.

Conceptual framework in PARDYP Nepal



The concept is structured along the following steps: status, process understanding, scenarios, solutions, and recommendations, in the domains shown in the above diagram, i.e. water, forest and land resources, community institutions, and gender and equity.

5. Watershed based work in Nepal : ripe for wider sharing across the region via a networking mode

Resource issues in watersheds are interdependent (agriculture, water, forests, livestock, etc) and becoming increasingly so. It's logical therefore that interdisciplinary approaches would have been featured in PARDYP Nepal. While the modes of operation of the Nepal country teams are to some extent compartmentalized (because of the 7 project components) the nature of accomplishments in Phase 2 suggests that, relative to Phase 1, an "interdisciplinary orientation" is indeed falling in place. This in spite of the fact that the team currently lacks social scientists. The evolution of the three organizing frameworks are an excellent integrating mechanisms for the range of studies: water, land and forests (gender, institutional issues and equity considerations are an integral part of these themes and not separated out). A good example is the efforts of the Nepal team to undertake country synthesis of data collected from the watersheds 'Water and erosion studies' and 'Water and food' and ' Water and health'. Biophysical, social, gender, institutional, health issues are included.

The potential for PARDYP's work to serve as models to influence efforts in other countries even outside of the HKH areas is significant. It has an on the ground track record of doing sub catchment and watershed based research *which might* be of relevance to a large number of watershed programs that are on the drawing board . Many Watershed Development programs within the HK region, which do not (and probably never will) have the resources to engage in *research* themselves, might be able to use the lessons from PARDYP if the sites are used as

training grounds and if the materials are properly disseminated. PARDYP through its Nepal site and possibly the three other country partners might be able to make a strategic contribution to up scaling what is now known about a range of dimensions pertaining to watershed based research for development. By engaging in networking at different levels.

The potential also exists for PARDYP, in the third phase, to initiate a knowledge exchange network of policy makers, researchers, academics and development workers interested in sharing lessons and experiences on Watershed development. Apparently no such network exists. ICIMOD has recently been requested by FAO to host an Asia-wide workshop on Watershed Management as a possible follow through to the Participatory watershed management work of Prem Sharma and his colleagues in the later 1980s and early 1990s. This might be a good opportunity for ICIMOD to offer to host the formation of a new network as it has previously done with the Himalayan Forum for Forest Conservation and Management (HICOM) and the Himalayan Grassroots Womens' Natural Resource Management Network (HIMAWANTI).

The fact that ICIMOD has its "own" watershed sites (in this case in Nepal) provides its staff an opportunity to keep their feet on the ground and to undertake research, constantly reminded about the realities of the primarily stakeholders: middle mountain dwellers. If ICIMOD were to nurture the emergence of a new network such as suggested above, the fact that it has its own sites adds to its credibility ie it will not be perceived as just an academic pursuit like so many other networking efforts these days are.

Finally, one of the recommendations of the Third Quinquennial Review of ICIMOD (July 2001) is stated as follows " for the future it will be important to increase knowledge sharing with some of the larger-scale examples watershed development in the region" in order to upscale presently localized experiences. This same review found PARDYP to be one of the few examples in ICIMOD where different thematic areas were integrated. This is another dimension of PARDYP's watershed work that merits wider sharing.

6. A focus on natural resources management in degraded environments

Few International Research Institutions have put as much an emphasis as ICIMOD/PARDYP has on degrading watersheds by looking into a range of environmental factors (including erosion, water quality including nitrate and phosphate content from fertilizer use in the valleys, soil fertility decline, eutrophication of waters, degrading common properties etc). The focus on studying degrading environments is a preoccupation of PARDYP and possibly taken for granted. Many stakeholders today (especially donors, civil society, policy makers) are urging research establishments to make a shift to marginal areas and natural resources management issues and away from the heavy emphasis on commodity and plant breeding work (which the private sector is increasingly engaged in). For nearly a decade some members of the PARDYP Nepal team have had a bias for working on issues that directly affect the poor.

The PARDYP 2 phase has brought in more attention to water quality issues and the large numbers of papers generated in 2002 are a strong evidence of this focus . Two sub themes have guided this effort: water as an agent in land degradation and water as a resource, which is degrading. Research studies and options have been generated on such issues as water demand and supply, public health issues centered around water, eutrophication of water bodies, irrigation water use, water harvesting, alternative methods for water harvesting and application . An impressive effort has also been noted to synthesize the data, package them and converting them into knowledge that can be used such as posters and CD ROMs (see examples of posters that have been generated).

In addition work has continued on issues such as sediment and erosion issues and related meteorological work that PARDYP Nepal was already well known for in the first Phase. This highly technical effort is needed to monitor environmental dynamics and rates of changes in HKH watersheds. The need for maintaining the data sets cannot be overemphasized because of their relevance to planning (a topic discussed elsewhere in this report). However over one third of the Annual (2001) budget seems to be spent on hydro-meteorological, erosion and sedimentation studies and ways should be explored to reduce this and allocate to other components (item 2 above) such as those that were introduced in the second phase One implication of this would imply the need to decide what kinds of data still need to be collected. Also the fact that one site has been closed down will in itself contribute to savings but this may not be enough

A clear example of how PARDYP Nepal is slowly attempting to relate research to development action is to be found in its spring renovation work involving 5 springs in the JK watershed. Using a range of measures around the catchment area contamination was controlled and yield maximized. However from its survey work a total of 319 water springs were identified in JK and 215 in YK watersheds. The potential for applying what was learnt in the initial five spring innovation sites is enormous if local user groups and VDCs are engaged.

The objective that PARDYP has for improving the productivity and management of the commons was brought in only in Phase 2. Currently PARDYP Nepal is targeting the Community Forestry Sector via this work and involves local institutions: the forest user groups. This focus of PARDYP in the second phase is to be specially commended because of its direct and indirect relevance to the poor. This work of PARDYP involved growing partnerships also with line agencies such as the District Forest Office and the Department of Soil and Watershed Management and 40 user groups in Jhikhu Khola and 12 in the Yarsha Khola Watersheds. What is specially impressive about this work is the fact that it targets degraded community forest areas, areas that have been allocated to local communities but which they had previously shown little interest in. Innovative gully treatment techniques using cement bags filled with soil were used followed by the introduction of fodder grasses and shrubs and other plants of relevance to livelihoods: eg bamboo and broom grass. These community based initiatives, managed by local communities, with PARDYP Nepal playing a facilitating and support role makes for a very sustainable approach for restoring the degraded commons. The potential for expansion of this work using the orthomaps and Forest User Groups is substantial and is also discussed elsewhere.

The focuses on work on the commons often have implications for the poor and their livelihoods. Staff reports that with the transfer of community forests to local communities free grazing has nearly been stopped in most communities. With the increase in forest cover and fodder sources livestock patterns have changed In fact the in the Jhikhu Khola valley visited by the reviewer the recent and rapid growth of the dairy industry often results in the need to declare a “milk holiday” ie a day when the local coop does not buy milk!! Most of this growth has taken place as a result of farmers themselves deciding, that, with free grazing restrictions and increased access to fodder

from community forests, it was time to reduce their animal stocks and concentrate instead, on a few (quality) milk producing animals. While discussing this issue of livelihoods, one might ask the question if PARDYP Nepal should directly engage in Livelihood development and exploration or whether it should focus instead on the restoration, rehabilitation and conservation of the natural resources and in that manner, indirectly influence larger numbers of stakeholders: if the forests, water and land are in good shape, livelihoods would be influenced too. It might be a more useful approach to foster conditions that promote better and more secure livelihoods rather than to directly engage in livelihood promotion a rather complex task that requires a substantial commitment of resources. Secure livelihoods might better be considered the outcome of efforts to secure a well-conserved natural resource base. Engagement in livelihood then is undertaken only under very special situations that warrant such interventions (eg when no other local agency can undertake it). Meanwhile focusing on methods to rehabilitate, restore, conserve and manage natural resources in the commons might allow PARDYP to reach thousands and even hundreds of thousands of poor people. Using forest user groups, water user groups and leasehold user groups one can utilize a social infrastructure that is already in place but currently under utilized/deployed. .

7. Strong community based institutions: a key to long term sustainable resource management

A major and highly noteworthy accomplishment of the Phase 2 program is the stronger emphasis on community institutions. In the JK Watershed in Nepal an inventory of community level institutions was undertaken using local enumerators for surveys and consultations with the local government authorities. In the JK watershed there are a total of 12 VDCs, 2 municipalities. There were a total of 216 registered (“formal”) Community Based organizations (CBOs). Out of these 42 were forest user groups, 26 were leasehold forest groups and 38 were savings and credit groups (to mention the main categories). There are 26 NGOs in the area. All these constitute potential allies and partners in any effort to utilize the wealth of accumulated data and experience in JK

Nepal’s two decade long program has helped regenerate degraded forests by having communities establish forest management systems to conserve and expand forest resources. Within the JK watershed, the Forest User Groups (FUGs) are considered the most active and best-endowed groups, with resources and assets within their control (ie the forests and their products). There are around 10,000 FUGs in Nepal

PARDYP has done well to engage these groups in its community-based work, especially in the interpretation, validation and use of orthomaps generated by the project. The project should expand the use and engagement of the FUGs in all its developmental activities.

There are other user groups that can be accessed including the Leasehold forest groups. Degraded forestland is now leased to user groups for such uses as agroforestry for a period of 40 years. These user groups should feature more strongly in PARDYPs future work. Some of PARDYPs known strengths and comparative advantages in rehabilitation and management of

soils can be applied to the needs of these user groups. Agroforestry options might also be easily featured. These groups can also be targeted for on farm trials because they are organized as sub groups. Water user groups can be targeted in efforts to utlize what is know about water issues.

A heavy emphasis is being placed on user groups. This is because these institutions are already in existence and many are known to be active in their communities. However studies undertaken by PARDYP indicate that CBOs "have a weak voice" and suggest a need for them to be linked up with one another. The project would do well to undertake a program to support these CBOs (especially FUGs, leaseholder forest groups, by helping strengthen institutional capacities, improve organizational performance and the establishment of participatory monitoring systems . Methodologies for strengthening local FUGs are already well tested in Nepal and it's only a matter of accessing experienced trainors and materials from other projects. A first logical step would be for PARDYP Nepal staff to do the rounds in Kathmandu, visiting offices and resource centers of the various bilateral forestry programs, NEPAN, the network dedicated to the use of participatory methods, LiBird the NGO that promotes Participatory Action Research, and the UK Forestry Group all of which have done a huge amount of work in the past in some of the areas being suggested

In long run an effort to federate the various groups may be pursued but this must evolve out expressed need and only after strengthening of the individual FUGS.

PARDYP cannot respond to all the needs identified during the various surveys and studies that it is engaged in. Nepal country staffs are already faced with this dilemma of how to respond to community level needs. Local user groups including those mentioned above constitute the best opportunity that PARDYP has to contribute to development efforts. Pardyp Nepal can assess problems, develop prototype solutions and then scale up, by nurturing and facilitating linkages, vertically and horizontally among local institutions.

8. The development of a participatory action research orientation and the establishment of "lighthouses" or impact areas

The Review Mission, after assessing Phase 1 of PARDYP suggested the need for "carrying out participatory rural appraisals, working with community groups and carrying out on-farm and farmer led research".

The use of PRA's and Gender analysis tools has reportedly been used in work. However discussions with staff and a review of the most recent annual report does not suggest that a specially strong emphasis on Participatory Research approaches (PAR) has been internalized. It's not apparent either that a systematic and medium term training and capacity building emphasis on PAR was undertaken. If PARDYP is to engage in research and development, its staff would have to be provided a lot more training and preparation (recognizing that PAR is a lot more than PRA or Participatory Rapid Appraisals). The reviewer would also encourage 1-2 staff to link up with NEPAN in KTM and join in on their monthly meetings for updates on the use of Participatory Methods. Finally an opportunity for staff to participate in the course on Participatory Action Research organised in the Philippines by CIP-

UPWARD might also be considered especially since it is tailored to Agriculture and Natural Resource Issues and is among the very few such training opportunities. Training of staff in Participatory Monitoring and Evaluation could have wide application including for such issues as water (see IIED PLA Notes Issue 35 which provide an inkling of the wide repertoire of options available for applying participatory methods to water). The forestry sector is another rich area for identifying participatory methods. It would be difficult to build local capacities in the use and application of participatory methods if staffs themselves are not exposed to such methods.

The use of Participatory Research Methods implies the need to do work with farmers on their farm. PARDYP Nepal should be conscious of the value of doing as much of its work on farm (via user groups) rather than on institutional farms because of the limited learning/scaling up value of such approaches.

PARDYP would do well to target individuals within local user groups for future PAR work. In addition to FUGs, there is another important stakeholder group that might be more actively engaged: Leasehold Forest User groups and Water User Groups. It would also be ideal if such farm based PAR work were limited to the two sites where PARDYP plans to establish what this reviewer calls (in this report) impact sites or “lighthouses.”: Hokse and Patlekhet. The idea of impact sites was already under consideration by PARDYP Nepal staff and this reviewer is only strongly endorsing that idea by emphasizing the value of limiting R and D interventions to specific geographic sites(micro watersheds?) and then using these sites as learning centers and focal points for discussions.

A range of technologies has already been identified for each of the two sites. However PARDYP Nepal should also explore opportunities to work on the basis of promoting principles rather than specific technologies because its now well understood that concepts and principles lend themselves to scaling up better than specific technologies. To quote one example: if PARDYP Nepal staff have come up with the research conclusion that that in order to reduce sedimentation in water bodies, degraded areas should receive first attention how would one proceed to apply this knowledge? I would take that principle, derived from sedimentation studies, and then seek their suggestions from a local user group on how to proceed with the planting of trees and other forms of vegetation in the degraded areas . They might do a matrix ranking of trees to access the advantages of various options and then decide which trees to plant and where. Unless there are special reasons to question those decisions, the facilitator would allow that to be done and only then determine what outside support is provided. Such an approach would be a way to harness and nurture local technology development and testing. This is what PTD or Participatory Technology Development would look. There would be differences, obviously, from each user group doing it differently. But it would be their trial, building upon their priorities and knowledge base!! Hopefully these outputs/outcomes would lend themselves to scale as a result of farmer-to-farmer and community-to-community transfers. The success of the Community Forestry Program in Nepal is really associated with the introduction of social technologies and policies and not just about tree species and related technologies.

In the context of the above discussion one would have to be strategic about the plans linking PARDYP Nepal with the Godavari Training and Demonstration site. At this point in the history of PARDYP it is an attractive proposition for engagement as staff are not allowed to go to the field sites (until the political situation improves). Its important that PARDYP is able to ensure that staff don't end up preferring to do work on the research station and neglect field work (when permitted). This is a potential concern for the future. Meanwhile there could be a role for the Godavari site to serve a demonstration, training and education function not only for PARDYP but for other ICIMOD activities. PARDYP can utililize this facility to prepare and set up permanent displays based on their R and D activities. As such it would be a learning center of sorts. But current plans for PARDYP "to test new ideas at the research station levels and also to test and develop farmers ideas" (annual report 2001) might have the unintended effect of detracting staff from engaging in on farm Participatory research work in the manner discussed earlier. There is a role for Godavari as a learning and training center, as an information dissemination and education facility (for NGOS, INGOs , Students, etc) and as a nursery site for mass production of tree seedlings and grafts . Much is now already known about the limitations of institutional farms as action research sites and PARDYP would do well to build on that learning and redirect its objectives for what it can do with an otherwise excellent facility at Godavari .

PARDYP Nepal has done some innovative work in using GIS and GPS outputs for participatory community forest mapping. Women were trained to read maps. Women groups helped validate maps and to delineate forest boundaries. PARDYP has already done a commendable job having engaged as many as 23 FUGs in Community Forestry Mapping along with socioeconomic characteristics. This activity involved the DFO (Dept. of Forestry) as well as the VDCs. PARDYP has orthophotographs for the entire Jhikhu Khola valley. These photos show VDC based infrastructure, VDC boundaries, springs and dug wells location. Such maps also show various land types (degraded lands, rice lands, mid lands, forest lands, grasslands and shrub land).

All information collected by PARDYP, Nepal are Geo-refereed (Natural Resource/ Socioeconomic Condition) were analyzed through GIS. Due to its spatial nature anyone can verify and do similar kinds of survey in the future to quantity the dynamics.

The data sets generated by PARDYP and the methodology for involving local communities are an outstanding approach that demonstrate the value of linking indigenous local technical knowledge and computer/remote sensing technology. PARDYP has not, however, thus far made major use of the various maps it has generated. The fact that they are cheap to reproduce suggest a need to get them out quickly to as many stake holders (in the JK watershed) as possible. However merely sending these materials out without an orientation and training on their use wont help. On the other had a long training is not envisaged either. Short one-day workshops held at the VDCs could bring in all line agencies, user groups and NGOs for orientation and appreciation sessions. Kits can be provided with maps and other pertinent information including other PARDYP dissemination materials. Such

workshops can even be conducted at Godavari during the fieldwork ban period.

9. Sharing generated knowledge with decision makers(policy makers, administrators) and planners

The Depts. of Soil Conservation and Watershed Management and the Dept of Forestry have both emphasized their interest to translate data for planning purposes . In fact they are already conscious about the large amount of data collected thus far. PARDYP Nepal can partner with them in the conduct of single day workshops for planners and policy makers and bilateral donors and NGOS and INGOS within the Watershed .A very useful starting point would be for PARDYP to share the results of its various studies and to provide each of them with CD ROMs and printed materials as well copies of the maps generated via the project. Better linkages can be facilitated between such groups as well between the community level institutions and these support organizations.

The emphasis on the use of CD ROMs as a mechanism for sharing must be continued and multiple copies of the CDs made.. Its important however not to compromise the wider sharing of materials by adding copyrights or restricting the use of materials in anyway. Such materials are to be used and should remain in the public domain since so many people made contributions (including primary stakeholders at community levels). It would significantly reduce the sharing of the materials and the dissemination of leanings, if the authors, compilers or institutions restrict the use of materials via copyrights or similar restrictions.

The matter of PARDYP links with Policy is continuously raised. PARDYP staff might not be in a position to do policy research themselves. However it might make sense for PARDYP to consider the preparation of "Policy Briefs" similar to those done by IFPRI, IDS, etc. The emphasis would be in generating materials for use by district planners and administrators and for those engaged in Watershed based interventions. The preparation of these policy briefs might benefit greatly from the involvement of ICIMOD staff in other divisions that have done such work (eg Participatory Forest Management). Short duration in-house workshops could be organized specifically to generate such recommendations. Such workshops must seek the help of people who are well versed with deriving policy recommendations. They can be organized back to back with the annual PARDYP regional meetings.

On the general matter of generating materials for policy makers links might be sought with IFPRI in Washington that does an excellent job generating policy briefs especially the 20:20 program

In general it can be said that the PARDYP Nepal team have done very well in disseminating its experiences in JK and YK watersheds using CD ROMS but most of this sharing has so far been international and regional and not national. The CGIAR Mountain Program will be developing multimedia programs featuring both the watersheds in Nepal (among others). In addition the Nepal watersheds were featured in the IDRC funded study comparing watersheds in the Himalyan and Andean watersheds. This activity involved

strategic support from the University of British Columbia. Some of these CD ROMs produced for other audiences and needs have yet to be used within Nepal to influence local policy and planning .It is highly recommended that a list be generated and that this be done soon . The opportunity for Nepal policy makers, donors, and other planners to compare the Nepal experiences with other experiences would be valuable way of sharing knowledge garnered from cross comparisons of watersheds.

Annex 4: Country report Pakistan

PARDYP PAKISTAN: A REVIEW REPORT

Jit Pradhan "Bhuktan"

Introduction

Hillkot watershed (1600 ha), the PARDYP site in the Mansera district of the Pakistan's North West Frontier Province is located at an altitude of 1342 to 2672 metres. It has a humid temperate climate with temperature ranging from –5.7°C to 34.6 °C and maximum rainfall of 264mm occurs in June. The 11 target villages have a population of 7500 growing at 5-6% annually. It has three ethnic groups – Swati, Gujar and Syed. The area has 48% forest with scanty trees, 40% rainfed farmland, and irrigated farmland and rangeland 5.6% each. When the project started in 1998, most villagers were engaged in agriculture but 76% of incomes came from off-farm and only 24% from farming sources. Main crops were rice, maize and vegetables. Average land holding size of 1.0 ha was tilled by average household size of 8 under three types of land tenure arrangements – owners (11%), owners cum tenants (14%) and tenants (75%). The literacy rate was 37%. Although PARDYP Phase II was supposed to be initiated in the two adjoining watersheds - Hillkot and Sharkool, the second phase interventions focused only in Hillkot.

The Phase II PARDYP was started with community consultations, and raising awareness about the project, its scope, objectives, and communities' role in project implementation. The team used PRA to explore, document and sensitise target villagers about the local environmental and socio-economic situations including the corresponding risks in livelihood of the local people. Project sensitised the communities about the need for organised action to prevent and minimise these risks, and that led to community organising. The community organisations (COs), thus, became the local bodies through which PARDYP has been implementing project activities focusing on community needs while sourcing necessary expertise and techniques from several local and national institutions.

Methodology

I undertook the review of PARDYP Phase II, in Pakistan from March 11 to 16, 2001. I spent 4 days in travel. I consulted with the Central authorities and national partners of PARDYP in Islamabad, the Pakistan Forest Institute (PFI), the national executing agency in Peshawar, and local partner institutions in Mansera and Shinkyari. During my two and half days in project site, I gathered field data/information through interview with 45 individuals, three community reflection workshops, and three focus group reflections of PARDYP field team, and three field observation walks covering 34 project activities being undertaken by 4 COs in four partner communities including the six various hydro-met establishments. I used participatory techniques in exploring/verifying the findings and documenting proposed actions for solving the current issues and improving the project performance if extended to the new phase.

Watershed Approach

The project has adopted community-based approach to "integrated natural resource management (NRM) research for development" (NRM) interventions in the watershed. Since farming suffices livelihood for less than year, most people in the poverty stricken watershed extracted and sold forest products, and until they remain poor they would continue harming the resource-bearing watershed. Since holistic CD was not within the scope of the "research for development" mandate of PARDYP, it focused research activities on the critical community needs. PARDYP, thus, invited a challenge to make

"watershed management as a genuinely gainful source of livelihood" for the local residents. The project team has been working tirelessly on an action research mode in various modes of partnerships with local communities and leaders toward successfully testing this ambitious but critically relevant research hypothesis.

PARDYP process in Pakistan involves, (a) gradually making communities aware of the way the degenerating natural resource bases in the watershed is threatening their livelihood; (b) facilitating them into organise into viably sustainable community organisations (COs); (c) building their collective capacities, mainly through adaptive research and experiential learning, to manage their watershed as a sustainable way of eking family livelihood; and finally (d) linking the COs with the local and national institutions to access necessary support services before the project.

Project Focus

The project has fairly balanced focus on research and development. The project team believes that development initiatives (essential for mobilising community participation) must be based on the finding of continuous research, and the development experiences must guide subsequent research. Since the changes taking place in natural and social environments of the watersheds impose new challenges and provide new opportunities, research is essential to ensure relevance of watershed management initiatives to these changes, particularly the peoples' changing needs and capacities. The project team opines that "research" and "development" is mutually reinforcing exercises, the focus of PARDYP must be on "balancing the relationship between the two" rather than choosing one in the neglect of the other.

The following examples indicated the way the project has been in the process of sequentially integrating research and development in the second phase:

1. The project used the findings of participatory rural appraisal (PRA) that established in the beginning the general situations of natural resources, economic conditions, prevailing agricultural and forestry practices, and social structure and processes in determining and designing the research and development agenda for each of the project components. This was how the project team contextualised the PARDYP's regional scope to this particular watershed, although PRA has not been repeated.
2. The project has been continuously measuring the hydrological, meteorological and erosion trends in the watershed for the last 3 years, sharing the results with the communities for the last 2 years to sensitise them about the situations and their implications to their livelihoods. Most of earlier suspicious villagers, having understood the importance of the information, are now cooperating with the project in conduct of numerous farm trials of improved technologies towards diversifying and raising farm productivity by arranging crops and forest species that are appropriate to local climate and soils. Many have adopted diverse soil protective measures including planting of thousands of trees on the slopes. The project has been able to attract a significant number of local and national institutions for partnership as a strategy to access much needed resources that the project dearly lacks because of being a source of the rich hydro-met data of the area.
3. The comprehensive soil survey study in the entire watershed has generated reliable information on basic land resources, agricultural potentials of various kinds of lands, and the state of soil erosion and related land hazards. The project has used the findings on physiography and soils, land capability, land use and soil erosion in designing and facilitating COs identify suitable and profitable tree and crop species

and pursue farm trials on economically gainful forestry and farm development activities in their land conditions.

4. The research on “erosion control in degraded patches of the watershed” has enabled the project to initiate farmers’ trials and demonstrations on rehabilitation of degraded land using indigenous plant species, spreading the locally evolved technologies on a farmer-to-farmer extension mode.
5. The “inventory of forest trees focusing on losses of trees and lopping intensity, regeneration status, height, length and growth of tress” has enabled the project to design and implement a set of locally appropriate tree plantation activities to address, fuel wood, fodder, building materials and income needs of the local people. This initiative is aimed at enhancing community actions on establishing and maintaining permanent vegetative cover in the watershed while building a sustainable natural resource base for the community.
6. Using the findings of the “assessment of energy needs and energy use patterns” the project has started community and household level tree nurseries and fuel wood tree plantation. To reduce the escalating local fuel wood demand and prevent over-extraction of forest, the project, in partnership with the Pakistan Council for Renewable Energy Technologies (PCRET), the project arranged demonstrations of and training on various renewable energy options (use of solar energy and efficient use of wood fuel).
7. Based on the study on “medicinal and economic plants” that found the watershed suitable for and niche of diverse kinds high value non-timber forest (NTF) products, the project has initiated farmer’s production trials on various local NTF species that have ready high commercial demands. The Ministry of Food and Agriculture has encouraged the project for this initiative for increasing household income as well as enhancing biodiversity in the watershed.
8. The preliminary study of watershed and forestry related national, provincial and local level policies has enabled the project facilitate an action research on joint forest management between the government and the local communities. This new kind of institutional arrangement, if successfully tested, is likely to replace the existing Pakistan forest policy of 1927.

The PRA and subsequent community interactions have enabled the project to adequately understand the critical needs of the watershed communities. The project has learned that if it does something is not relevant to the community needs the local people would not participate in project activities. Except for the hydro-met establishments (which not all the villagers perceive as directly addressing their needs), many other project initiatives have been address local communities’ needs (awareness, income, food, fuel, fodder, seeds, water, soil fertility, organisation and the like). Although it has been quite challenging to design research that also address the development needs of the people, the project has increasingly been successful in masking most of its farmers’ trials relevant to the local people’s needs, and this way facilitating local participation in its research for development initiatives. However, local people hope that the project will become more development oriented in near future as it has done sufficient research in past years. The have been expressing some of their additional development needs for the project to consider which include supply of materials inputs (seeds, tree seedlings, fertilizers, pesticides) in grants, production credit, and basic infrastructure (drinking water, feeder roads, irrigation, schools). Since these needs do not fall within its current scope, the project is helpless and thus has invited some dissatisfaction from some local leaders.

Highlights of the Core Activities and Core Results of the Project

PARDYP Pakistan treats the project document as the principal guidelines for its planned community-based research for development interventions in the Hillkot watershed. All the components envisaged in the document are annually planned and implemented in a highly integrated manner.

Community institutions

The project has organised 7 of the 11 village communities (564 households with over 5000 population) with 6 female (136 members) and 7 male (257 members) community organisations (COs) in the watershed. Still at a preliminary organising stage, the COs is definitely emerging as primary partners in various project activities. If the ongoing organising process systematised further with adequate staff training on (currently deficient) CO processes, these COs are likely to emerge as viable local institutions with potentials for taking up and continue the project initiatives after the project life.

The project forester coordinates this crosscutting component. A male and a female community organiser organise communities in target villages for all other components but all sectoral field staff organise their respective component activities in each CO in relation to every other. Every CO has equal opportunity to participate in all relevant project activities. Through these COs, the project has been able to identify partner farmers for various participatory trials, train over 200 CO members (including 20% females), and organise a three-day annual farmers' day (which over 3000 local, national and ICIMOD individuals attended).

The project has not pursued the participatory monitoring and evaluation (PME) at the community level as envisaged in the project document owing to lack of skills among the field staff. The project has realised the need for PME as a tool for community organising and collective capacity strengthening, thus, request for relevant training for field staff.

Gender and Inequity

This has been treated as a crosscutting component. Owing to the strictly gender segregated social structure of and gender inequity in the target traditional Muslim communities, the project suggests that at least for a couple of years, it is necessary to organise project activities separately for male and female sectors. The two female field staffs (a community organiser and a horticulturist) are facilitating activities in six female COs. Because female CO members do not visit the male dominated main field office, the project has a separate female project field office exclusively for the female villagers.

Compared to 2 to 3 years ago, the female CO members are more open and the male family members have begun to allow them to meet visiting project staff and go out for training and filed trials. The female CO members have monthly savings and intra-group lending activities, 42 women have undergone various vocational training, and are engaged in such income generation activities as fruit preservation, winter vegetable production, handicraft making, fruit and forest tree plantation, tree nursery raising and the like.

Until the recent past, the landowner class of people considered the tenants as inferior class and hardly mix up with them. With very intensive social awareness and community mobilising initiatives of the project, the landowners have accepted the tenants as their fellow brothers and sisters, and have started to mix up with them as equal CO members.

Livelihood potential

This crosscutting concern has been the main focus of on-farm and common resources management components. Although, it is maintained this as component, most field staff are involved in activities like livelihood related research & extension activities that are

duplicated in other components, The project team suggests for its merger with gender and iniquity under a new component, “Gender and Micro enterprise Development” and it should mainly focus on women.

Common Property Resource (CPR) Management

This is one of the major project components led by a forestry specialist but all project staff work as a team to implement its plan in partnership with the 13 COs focusing particularly on local commons – land and forest

Process for Joint Forest Management has been initiated and a partner institution (ITC) identified. Socio-economic baseline data and resource inventory are undertaken, and user groups and 393 right holders have been identified. Three community trials on rehabilitation of degraded lands are ongoing with multi-purpose tree and indigenous species plantations, and putting up erosion control mechanisms and social fencing. Results indicate improved soil fertility (OM and NPK) and increased vegetative cover is visible. Having found out Rs. 2,485,200 worth of NTFPs transacted in year 2000 within Pakistan, nursery trials were conducted that identified 20 species locally suitable and acceptable. In social forestry front, communities are made aware of its importance and so far planted 29,642 trees in 10 communities and 8 farmer nurseries and 4 household nurseries are established to meet increasing demands and for incomes.

To reduce women workload and pressure on natural forest reserves, 13580 plants on over 10 ha in 15 communities are planted in phase II. More will be planed in 2002 as villagers' demands have increased. Collaboration with ICIMOD-RET section and PCRET Islamabad established and a rural energy survey completed in 7 communities. Farmers' study tour to PCRET was and a RET exhibition in project site was attended by over 500 villagers, and 19 persons are trained in use of solar energy devices but villagers are reluctant to use these very expensive devices.

The project has initiated collaboration with over seven various national institutions and some trainings are organised to develop skills on plantation management, nursery raising, rehab measures, honeybee keeping, and the like for over 200 villagers.

On-farm Resources (OFR) Management

An agronomist heads this component but all team members are involved in planning and implementation of OFR activities. Although this looks like a livelihood/agriculture intervention, it comprises several farm trials towards attaining farm level biodiversity, vegetative coverage and incorporation of soil protective measures in farming practices. Considerations for raising household food and income securities with gender concerns are found in most of the following OFR trials being conducted in farmers’ fields.

The trials on double & multiple cropping systems have been rapidly replacing the traditional mono-cropping system with improved early maturing wheat and maize varieties; and triple cropping system of Tomato+ Maize+ Radish. The trials on improving crop productivities has increased_maize yield from 4000 to 7533 kg/ha, wheat from 1396 to 3275 kg/ha, rice from 1400 to 2950 kg/ha, and tomato 10 to 16 MT/ha. Based on similar trials and demonstration, the project has successfully introduced 3 new maize, 4 wheat, 2 rice, 2 tomato and I onion varieties including 5900 plants of various improved fruit species and some new seasonal vegetables, pea, radish, turnip and cabbage. Over 50% farmers have been growing wheat after rice (that otherwise remained fallow) including seed production, off-season vegetables. The ongoing adaptive trials on organic farming, use of bio-fertilisers, strawberry cultivation including increasing cropping intensity are in progress in farmers' fields

A trial on productive control of erosion has shown that legume intercropped with potato is relatively more effective in reducing soil erosion during heavy monsoon. To increase local biodiversity and to diversify household incomes, several adaptive trials are ongoing. For example, 10 households have planted tea in 10 acres under the technical supervision and support of a commercial tea research centre a fruit nursery trial on farmer's field is ongoing with over 300 different fruit species grafts.

A number of trainings have been arranged for villagers on fruit & vegetables preservation, plant propagation, mushroom farming including some farmers' visit to government research and production farms and the like. And, collaborations have been established with five national institutions

Water Resources/ Hydrometeorology:

Six Hydrostations in different catchments, six meteorological stations at different elevations and four erosion plots at different land uses are maintained. Readers taking data twice day from hydrostations, thrice a day from met stations, flood sampling during flood and automatic down loading of data bi-weekly. Data kept at properly and analysis using Excel and Hymos.

In hydrology front, the project has been continuously measuring of water level, discharge and low flows, established rating curves, sediment analysis of stream samples, spring surveys. It has also been continuously monitoring data on rainfall, air and soil temperature, sunshine record, Evaporation, Wind speed, Humidity, Comparison within watershed. Data is /will be used for tea plantation, mushroom cultivation, fish farming and water harvesting. In erosion plots, data are being gathered on total sediment losses, Runoff from different plots-Comparison between four plots for 3 years; relationship between, rainfall & runoff, runoff and sediment, nutrient status of different land uses are being studied. A laboratory has been set up for sediment analysis. Some participative trials on water harvesting and drip irrigation are being prepared. The Field Hydrologist got training in Hymos and then he trained local villager readers on data collections in Hydromet & sediment sampling, and lab attendant on sediment analysis

Interdisciplinary research/approaches

The project understands the fact that the multiple factors contributing to the prevailing environmental and poverty conditions in the watershed are mutually interlocking. To effectively address such a complex conditions, working together is simply an imperative. The field scientists – forester, horticulturist, agronomist, hydro-meteorologists, and community organisers - work together as an interdisciplinary team. Every month the team plans and review together every sector of the project in relation to every other sector. Although each specialist is responsible for specific sector, other staffs are deeply involved in planning and implementation of each and every other sector. This is because work in one sector has implication to every other sector. This way, no one is indispensable and one can attend the work of another sector in absence of the specialist of that sector.

Project is Management

Pakistan Forest Institute (PFI) as a national partner of ICIMOD implements PARDYP in Pakistan. PARDYP is one the key projects of PFI but except for the national project coordinator, who is a PFI faculty member, the rest of the project staff and workers are recruited from outside. The PFI Director General (DG) has the overall responsibility of the project to the ICIMOD. The country coordinator manages the project while coordinating with the PFI and other national and local partners, and reports to the DG of PFI.

The project has a total of 16 staff that include a country coordinator, six professional staff, two administrative staff, three field assistants, two drivers, and two attendants. The

Country Coordinator has organised project management office at the PFI, Peshawar over 300 kilometres away from the project site. The project field office in Hillkot watershed has been divided into a male and a female stations. The male station is the main field office where all male field staffs do office and have their night shelter. All the 257 male members from 7 male COs frequently visit the male station. The male station is equipped with telephone, electricity, water supply and Internet facilities with two computers. Since the 136 conservative Muslim women members from six female COs cannot come to the main project office, where the two female staff have housing, office and meeting and training facilities exclusively for the female CO members.

Based on the community needs and findings of various research findings but essentially in adherence to the project document, the team formulates annual work plan. The annual work plan is broken down into four quarterly work plans and 12 monthly action plans for each of the seven components. What the team actually implements is the monthly action plan. The team undertakes monthly review cum planning meeting at the end of every month where it reviews the progress against the monthly plan and revise the monthly plan for the coming month. The practice is indeed admirable but the formats used for plan and progress report lack target outputs and resource allocation and use and time frame, thus how much is achieved with what quantity of input is not known. The current one is simply activity planning and reviewing through which the project management can track number and type of activities performed and what not but not the quantity of output produced. Without target outputs, time and other resources planned, it is not possible to evaluate the effectiveness, efficiency and relevance of the project interventions. Having realised the drawback in their practice the team requests ICIMOD for training of project staff on planning, monitoring & evaluation and reporting as soon as possible.

Project's Mechanisms for Extending research Findings

Until now, the project has been conducting various research activities mainly for identifying and pursuing various development initiatives in the watershed area. However, some of the research activities are also relevant to other agencies, particularly for PFI and some partner organisations. The main extension mechanisms of the project include (a) participatory adaptive agricultural and forestry trials; (b) extension pamphlets; (c) community awareness meetings; (d) community organizations; (e) Farmers Day for male and female; (f) farmers' visits to the trial sites; technology sources; (g) demonstration plots and promotion of farmers' mini nursery; and (h) demos on pruning of existing fruit trees that restores normal fruiting from already degraded one.

Role of ICIMOD in PARDYP Pakistan

Overall the PARDYP Pakistan stakeholders rated the contributions of ICIMOD generally satisfactory. Except for delays in timely release of project fund, ICIMOD's support has been quite effective for smooth implementation of the project. Various reflections and interviews listed the following role and contributions of ICIMOD to the project:

1. The Regional Coordinator has been a great source of encouragement and support for maintaining the morale of the project staff, resolving management issues, and smooth implementation of the project.
2. All the ICIMOD staff in Regional PARDYP Team (Roger, Farooq, Kamal, Juerz Merz, Bhuvan, PB Shah) have been visiting to and/or communicating with the project that have been great support in addressing some critical technical needs and resolving related issues.
3. The ICIMOD Beekeeping Specialist linked PARDYP to NARC HPRI that provided training and organized a honey fair, and donated two beekeeping colonies; they

come frequently advise on proper beekeeping and monitor the status of bee in the two colonies. HPRI also invited and briefed 20 project farmers and demonstrated the proper beekeeping management in Islamabad.

4. ICIMOD sends information materials and publication including from The Mountain Forum that have been very useful to field staff and visiting researchers
5. The ICIMOD Energy Specialist visited the project site and has been guiding on adoption of new RET practices, farmer tour to PCRET (committed fund yet to receive). This resulted in a RET exhibition although PARDYP paid the expenses.
6. Several senior ICIMOD staff attended the Farmers' Day in September 2001 that boosted the morale of project staff, communities, NGOs and Government.
7. ICIMOD keeps on updating the hydro-met software that helps the project keep pace with the rapid advancements taking place in this field.
8. Project also has received some irrigation materials for vegetable production
9. ICIMOD invited and supported the participation of the two hydrologists in HYMOS training. It has also invited a staff for a training on equity and poverty reduction
10. Invitation for annual national coordinators' meeting; planning meeting of in PARDYP II planning.

The two major weaknesses on the part of the ICIMOD were (1) delayed disbursement of project funds and (2) not pursuing the conduct of studies and provision of technical assistance as envisaged in the project document

Role Played by IDRC: IDRC sponsored the country coordinator to China to participate Community-based NRM Workshop in Goyang, China from March 2000. IDRC through ICIMOD invited and sponsored one PARDYP staff to participate in the CBNRM workshop at Chaingmai, Thailand in 2001. IDRC sends useful publications including regular communications and good advices from Dr. Graham, Dr. Taylor, and Dr. Roni of IDRC. PARDYP Pakistan has sent a proposal for a participatory action research on Joint Forest Management to IDRC.

Role Played by SDC: PARDYP has regular contact with SDC Office Peshawar and Islamabad. SDC NRM Project at Peshawar has provided training on ICM for two PARDYP staff at Project for Horticulture Promotion at Abbotabad; and jointly with PARDYP provides training to thirty farmers at the project site.

National and Local Partners and their Role in PARDYP

PARDYP lacks several technical expertises to meet the community demands in the course of research exercises. To tap the expertise from proper sources, it has initiated various kinds of collaborative relations with at least 13 different local and national organisations that ranges from local agricultural and forestry research stations and projects, government and private tea and fishery research institutes, to national agricultural, honeybee, renewable research councils, including some NGOs (Sarhad Rural Support Programme for community mobilisation) and the like. All the partner institutions rate PARDYP very high for its community based-research initiatives, particularly for establishing a real-life testing ground rich with climatic data and collaborating community people in a typically degraded watershed of Pakistan. PARDYP has been receiving technical assistance and technologies from these partners in a very cost effective manner. The long-term interest is to build the relationship towards linking these institutions with the community organisations.

Role of PARDYP in Strengthening Capacities of National Partners

According to the authorities of PFI, PARDYP has been more a new path setting project and less capacity building collaborative arrangement between ICIMOD and PFI. Given the only 4% forest cover left in Pakistan, PARDYP experience has been that the nation needs

a new breed of forest graduates who would not protect forest from the watershed communities but mobilise the communities themselves for natural resource conservation as well as for regeneration of the fast degrading watersheds. The project has shown a new horizon of possibilities for restoration of forest in the country through partnership with the local communities.

PFI is national institution to address the research needs of the nation in the sphere of NRM. It considers that its GIS technical capacity enhanced while developing GIS materials for the project, and its technical capacity enhanced in hydrometeorology in the course of updating hydromet system of PARDYP by ICIMOD. With the support of PARDYP, PFI scientists have been able to engage in some research activities that directly address the national needs. PARDYP makes TOR without research grant from the project. It gives nominal transport, food and lodge, and, computer typing and printing facilities. PFI has been an academe but through PARDYP, it has been able to go out and serve the needs of the communities while advancing scientific contributions. PFI has been developing a new people and community oriented NRM management perspective in the nation thus instilling the same among the students and faculties. Over six graduate PFI students and two Ph. D students from Agricultural University Faisalabad have done field studies for their thesis in the project area covering the new fields such as equity, poverty, NTFP marketing, and various areas of sustainable mountain development. In addition, The PFI faculties have been frequently visiting and interacting with the PARDYP communities and undergoing experiential learning on participatory mode of NRM interventions.

Exchanges of Results between Partners

Not much research exchanges have taken place but PARDYP Pakistan has been sharing annual reports, yearbooks and extension materials with ICIMOD, local and national institutions and graduate students. It shares research reports with ICIMOD, national partners, and it sends all necessary information including photographs of different PARDYP interventions to ICIMOD for developing CD-Roms and for websites.

Long-term assessment of watersheds

Consultations with NPI, and project team and community reflection indicated that attaining a sustainable biological regeneration of the watershed through socio-economic development of the community people is a long-term process. To expedite the process, however, the project has an exit strategy – to gradually organise and capacitate community organisations in each of the eleven village communities into sustainable and viable local social institutions and systematically link them to the related government, non-government and private institutions within another 10 years time. Once the institutional linkage become functional, project like PARDYP would not be necessary. The time period is estimated for the ongoing research for development interventions in the Hillkot watersheds where trials for alternative community-based watershed management approaches and methods are being and will be tried out and established. Since the principles of these approaches and methods can be adapted elsewhere within and outside the Pakistan part of HKH Region, replication to other watersheds can be pursued in much cost and time efficient manner. It can be regenerated but it will take a longer years.

Options for Improving the Performance and Management of the Project

Some of the options suggested by various partner institutions and the country project teams are summarised below:

1. Training on P, M&E and establishment of Project level strong PME system and ICIMOD to monitor the project at least twice a year
2. ICIMOD to help in analysis of sediment in stream due to soil erosion.

3. Full orientation, training and technical assistance in systematisation of project management system, and all field staff in their respective field of specialized research areas.

Suggestions for Streamlining the Project Activities for the Next Phase

PARDYP Pakistan has to focus on a few priority fields of action (to reduce the broadness of the Phase II Project by reducing components) in which the project has comparative advantage

1. Component on community institution should be used as a crosscutting common support facility. I a separate staff organises the community and others implement project with the community, there is likelihood of conflict. Thus, train and use the component leaders to facilitate community organizing as an interdisciplinary team assisted by the existing community organisers.
2. Because components such as common resources, on-farm resources, and water resources can take care of livelihood and the livelihood component should be eliminated and a “gender and enterprise development” should be a new integrated component to focus on gender equity. Equity will be incorporated to all components
3. The components where the project should concentrate and produce results of great relevance and impact potential for next years include a) Community organisation and capacity building; b) On-farm resource management, c) Common property resource management; d) Gender and enterprise development.
4. Expansion of the project to one another watershed (Sharkool), which was indicated in the Phase II. The watershed map featured on the project document includes the Sharcool watershed site also. Also the project should be replicated to the other parts in the vicinity of these watersheds so that the project site would become a contiguous area comprising smaller watershed patches in the proximity.
5. Stating the project on the upper/north side of the Pakistan HKH region that has different ecological and socio-economic setting thus allow comparison with the country.

The options for the development of the project in the next project phase

The project and other stakeholders believe that the project has been an excellent learning facility. Communities said that they have just begun to realise the importance of the project for them. Earlier they were suspicious and thus missed opportunities to take advantage of the project. Since the project has started to demonstrate its relevance and effectiveness and gaining recognition both locally and nationally, communities and local government are prepared for active partnership. Thus, all quarters of the project stakeholders recommended for the extension of the project to a new phase. Several options and suggestions they made which are summarised below:

1. High emphasis on organisation and capacity building of partner communities towards building them vibrant community institutions, and directly linking them to existing development institutions.
2. Extension of project to other typical watersheds that provide opportunities for determining more diverse watershed related issues and for developing varieties of community-based approaches to NRM in diverse kinds of watershed.
3. Replication of the project interventions to neighbouring communities within and outside the watershed in the initiatives of the community organisations themselves.

4. Sharpening the focus of the project on the watershed issues that are relevant to the local, national and regional contexts.
5. Intensification of participatory adaptive research on some of the NRM technologies that have potentials for addressing the household-livelihood needs as well as biological regeneration of the watersheds.
6. Deepening the project's focus on a limited number of development activities to more number of poor households that the trials so far have indicated having high potentials to raise household income and productivity.
7. Gender segregated approach to community participation in research and development interventions with more favourable supportive facilities for the female sector of the watershed communities.
8. Adequate provisions for training of project professional staff members in all relevant aspects of the project management and technical areas.
9. Grants for income generating activities and enterprise development. Some support for development of local infrastructure such as water supply, feeder roads, health and educational establishments.
10. More support for capacity building of CBOs so that they can perform better to produce impacts.
11. More systematic organization of partner CBOs and linking them to national institutions so that they can help replicate the project interventions on their own initiatives and can take over and continue it even after the project phases out.

List of Individuals Consulted and Interviewed in the Context of PARDYP Pakistan Review 2002

No	Name	Designation	Agency
1	Dr. Basir Ahamed Wani	Deputy Inspector General of Forest cum Director General of PFI	Ministry of Environment, Local Government & Rural Development, Islamabad
2	Dr. Moammad Ayazh	Director of Forest Research	Pakistan Forest Institute, Peshawar
3	Mr. Hakim Khan	Country Coordinator, PARDYP	Pakistan Forest Institute, Peshawar
4	Dr. Raja Ul Haq	Silviculturist	Pakistan Forest Institute, Peshawar
5	Dr. Hanif Gul	Forest Entomologist	Pakistan Forest Institute, Peshawar
6	Dr. Muhammad Raffique Sardar	Director of Education & Range Management Officer	Pakistan Forest Institute, Peshawar
7	Ms. Meher Nigar Ashique	Director of Sericulture	Pakistan Forest Institute, Peshawar
8	Dr. Samsul Rehaman	Forest geneticist	Pakistan Forest Institute, Peshawar
9	Dr. Altaf Hussain	Asst. Forest Geneticist	Pakistan Forest Institute, Peshawar
10	Mr. Shakeel Haider Zaidi	Medicinal Plant Botanist	Pakistan Forest Institute, Peshawar
11	Mr. Shabir Mughal	Forest Botanist	Pakistan Forest Institute, Peshawar
12	Mr. Ashif Kamal	AWT/GIS Spewcialist	Pakistan Forest Institute, Peshawar
13	Mr. Latif Khan	Admin cum Finance Officer	PARDYP, Pakistan, Peshawar
14		Director General	Pakistan Council of Renewable Energy Technologies, Islamabad
15	Dr. Zafar Iqbal Zaidi	Principal Research Officer/Director	Pakistan Council of Renewable Energy Technologies, Islamabad
16	Mr. Azam Ali Khan	Assistant Director	Pakistan Council of Renewable Energy Technologies, Islamabad
17	Dr. Umar Hayat Khan of Fisheries	Deputy Director	Department of Fisheries, NWFP, Peshawar
18	Mr. Jan Nisar	Assistant Warden	Department of Fisheries, NWFP, Peshawar
19	Dr. Henri Suter	Dep Coordinator of SDC/Delegate Intercoperation	SDC Natural Resource Management Project, Peshawar
20	Miss. Arjumand Nozami	SDC National Programme Officer	
21		Director	Soil Survey Department, NWFP, Peshawar
22	Dr. Mushafir Gul	Deputy Director	Do
23	Mr. Taj Mohamed	Assistant Soil Survey Officer for Digitization	Do
24	Mr. Basar Ali	Assistant Soil Survey Officer for Land Evaluation	Do
25	Mr. Hafeez Akhtar Randhawa	Secretary of Food and Agriculture	Ministry of Food and Agriculture
26	Dr. Abdul Qayyum	Honeybee Specialist	Honey Bee Research Institute, National Agricultural Research Council, Islamabad
27	Dr. Moammad Siddhique	Senior Scientific Officer	
28	Sahibzada Irfanullah	Field In charge/Social Forester	PARDYP, Pakistan, Hillkot
29	Abdus Salam	Agronomist/Horticulturist	PARDYP, Pakistan, Hillkot
30	Mohammad Jehangir	Hydrologist	PARDYP, Pakistan, Hillkot
31	Tabassum Naz	Female Social Organiser	PARDYP, Pakistan, Hillkot
32	Sahista Qayyume	Female Horticulturist	PARDYP, Pakistan, Hillkot

33	Aurangajeeb	Field/Lab Assistant	PARDYP, Pakistan, Hillkot
34	Zulquar Nain	Field Assistant	PARDYP, Pakistan, Hillkot
35	Suhail Zokaib	Hydrometeprologit	PARDYP, Pakistan, Hillkot
36	Wilayat Khan	Community Organiser	PARDYP, Pakistan, Hillkot
38	Abdul Latif	Finance Officer	PARDYP, Pakistan, Hillkot
43	Khalid Javed	Computer Operator/Attendant	PARDYP, Pakistan, Hillkot
44	Shazma Anwar	Female Horticulturist	PARDYP, Pakistan, Hillkot
45	Amna Habib	Female Social Organiser	PARDYP, Pakistan, Hillkot