

Project Number 96-1300/40340

**People and Resource Dynamics
in Mountain Watersheds
of the Hindu Kush-Himalayas (PARDYP)**

Review Mission Report

Conducted By

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Mrs. Christine Grieder (SDC Agronomist)

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Submitted to PARDYP Management

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Kunming, China

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EXECUTIVE SUMMARY

People and Resource Dynamics in the Hindu Kush-Himalayas Project (PARDYP) was conceived as a long-term project. In view of its many successes and unrealized potential, it should proceed to a Phase II after December 1999. Much has been accomplished since the project's inception. Following the success of the IDRC funded Jhikhu Khola Watershed Project; PARDYP has set up a complex network of hydrological and meteorological stations in four more watersheds in Pakistan, India, Nepal and China. Soil erosion plots were established within each watershed and local scientists were trained in station maintenance, data collection and archiving. All networks are now capable of generating high quality erosion/sedimentation data. Agronomic trials have started on demonstration plots and farmer's fields. Numerous training programs involving PARDYP staff and farmers on subjects ranging from compost making to participatory rural appraisal have also been carried out. Socio-economic surveys, using various techniques, have been carried out in all five watersheds.

Progress with some of the other project objectives is evolving more slowly. Foremost among these is the project's need to focus on the farmer as the client. The farmer's decisions direct most land use in the watershed (whether positive or negative); thus understanding why the farmer makes the decisions that he/she does is the first task in initiating positive change. Collection of socioeconomic information, carrying out participatory rural appraisals, working with community groups and carrying out on-farm or farmer-led research are activities to be further promoted by the project. All these activities need strengthening, through training of existing staff and some new recruitment. Assistance in the areas of social science, agronomy, livestock/pasture management and community based participatory development are deemed essential for the next phase of the project.

Some changes in the relationship between PARDYP and ICIMOD were recommended to improve flow of finances, streamline administration and optimize the synergies between PARDYP and its parent institution.

For Phase II budget levels are expected to be similar to those in the first phase of the project. Requirements are estimated to be US \$ 500,000 per year over three years.

INTRODUCTION

People and Resource Dynamics in the Hindu Kush-Himalayas (PARDYP) is a collaborative project between institutions in China, Nepal, India and Pakistan, executed by International Centre for Integrated Mountain Development (ICIMOD). SDC (68%), IDRC (20%) and ICIMOD itself (12 %) jointly fund the project. The Project was initiated in 1996 to “improve the understanding of the environmental and socioeconomic processes associated with degradation and rehabilitation of mountain ecosystems and to generate wider adoption and adaptation of proposed solutions by stakeholders in the HKH.” A team was selected to review PARDYP as it enters its third year of operation. The terms of reference of this team are provided in Annex 1. This report is written to partially fulfill those terms of reference. The team wishes to express its gratitude to all those who provided assistance, information and suggestions over the course of the mission.

METHODOLOGY

The Swiss Agency for Development and Cooperation (SDC), International Centre for Integrated Mountain Development (ICIMOD) and International Development and Research Centre (IDRC) respectively contracted Mrs. Christine Grieder of SDC, Dr. Narpat S Jodha of ICIMOD and Mr. Brian Carson (independent consultant) to review and assess progress of the PARDYP program in January 1999. Christine Grieder visited Pakistan on her own while Dr. Jodha was the only reviewer to visit India. Two of the reviewers have visited the Yarsha Khola in Nepal, while all three reviewers had the opportunity to observe project activities in the Jhikhu Khola in Nepal and in China. Total time commitments of reviewers was Grieder, 19 days, Jodha, 20 days and Carson, 16 days.

Relevant documents, including the original Project Document produced in 1996, monthly reports, annual reports and a range of technical and research papers coming out of the program were reviewed. Persons associated directly and indirectly with the project were interviewed to determine their relationship with the PARDYP program, their assessment of how the program was progressing and to solicit suggestions for improvement. A list of persons contacted is provided in the Annex 2. On site observations made at the experimental watershed sites was necessarily brief reviewing only a small portion of project activities that had been carried out. The whole review team participated in the PARDYP workshop that was held in Baoshan, China between March 1 and March 5, 1999. During the workshop, country reports were provided by each of the research teams and a summary of their research results was presented. The last two days were devoted to extensive discussions between PARDYP members, donors and the review team about project strengths, weaknesses and opportunities for improvement. IDRC assisted by providing a Social Scientist to help facilitate the project teams better understand their own mandates. During this same period, the review team met with PARDYP technical

and management staff, as well IDRC, SDC and ICIMOD representatives.

The results of this review reflect careful consideration of ideas and concerns of the participants of the workshop. The recommendations reflect the consensus of the review team. A draft final of this report was submitted to the PARDYP management on March 9, 1999.

III.

-PROJECT PERFORMANCE

An impressive amount of work has been carried out by the PARDY project in a relatively short period of time. A network of technologically complex hydrological and meteorological stations has been established in all five watersheds. At least one season's data has been collected and archived in four of the watersheds. Analysis of hydro-meteorological data is presently being carried out on two watersheds. Soil erosion plots have been established in all five of the watersheds. A number of workshops have been held to allow individual country team members to meet and exchange information and ideas related to a wide range of subjects related to watershed management. Training programs have been held in the respective countries' watersheds, to upgrade specific skills of both local project workers and, in some cases, farmers themselves. The subject matter of training ranged from Participatory Rural Appraisal, to hydrometeorological station management to vegetable production. User groups have been identified with the intent to mobilize the community resources to address local resource concerns. Agronomic trials have been established for a wide variety of research and extension activities ranging from use of special legume rhizobium, agroforestry species introduction to integrated pest management. In brief, the accomplishments of the project are substantial.

The stated objectives of PARDYP are ambitious. They cover a wide range of subject matter focussing on five small watersheds located in Nepal, China, India and Pakistan. Research and development activities were meant to be explored on a watershed level, using a farming systems approach, exploring policies and socioeconomic impacts of any potential management options and relying heavily on participatory learning to assist in making community based solutions. Implementation of such a program was and will continue to be difficult. However the donors have expressed a long-term interest in this project with the recognition that meeting such an array of diverse objectives will take time.

The original program was not only ambitious but of necessity some of the methods by which the many goals were to be accomplished were not explicitly stated. Some of the problems and uncertainties that were faced by project staff within the program arose because priorities were not clearly established in the original project design. Although the

original heavy focuses on establishment of hydrological and meteorological (hydromet) stations and erosion plots were necessary, once basic data began to flow, the teams began to address other project objectives. Because objectives were not explicitly prioritized, there was always some uncertainty about what project activities were to be stressed. Levels of achievement varied considerably between teams within a single discipline, partially as a result of strengths and weaknesses of the participating institutions and individual country teams. Again the review team recognizes that the unbalanced nature of the country activities is inherent in any such program as it strives to develop a portfolio of appropriate methodologies to meet its multiple objectives. The first four objectives of the PARDY project are considered in relation to specific country programs.

A. Review of the Seven Project Objectives

A review of the seven project objectives as defined in the Project Document is provided below. This has been distilled from several hundred pages of project documents including papers, annual reports, monthly reports and hypertext presentations. Nepal's previous experience with the UBC

¹ research gave that program considerable advantage in the start up phase, which is still felt at present. At the other end of the spectrum, Pakistan had only recently been brought on board the PARDYP program and has accomplished little. Consequently the amount of progress made by each country varies widely.

1. Carrying Out Hydrology/Sedimentation Research

Hydrological /sedimentation research forms a core component of all member country's work programs. Lack of reliable long-term data on meteorological, hydrological and sedimentation has made long term watershed management planning difficult. Assessments of regional denudation in large river basins of the Himalayas are difficult to relate to results found in smaller stream basins, which in turn are difficult to correlate with erosion on land surfaces with a particular land use. Watershed managers complain that it is impossible to predict with any certainty what levels of sedimentation can be expected in small streams or larger rivers. Further, there is uncertainty about how changes in land use actually affect sedimentation. These are extremely important concerns in the Himalayan Region where hydroelectric power potential is high but sediment loading can also be very high. A special case exists in the China watershed where the water from the river is used to supply a municipal drinking water system, as well as irrigation in Baoshan and water quality is of particular concern. One of the pillars of the PARDYP program is to ensure that reliable, long term data on erosion and sedimentation is available for use by future watershed planners. Below the progress of hydrological/ sedimentation research is provided on a country basis.

The Chinese team has been successful in setting up the network of hydrometeorology stations in the watershed as required. The data is now flowing and being archived in a

¹ University of British Columbia

satisfactory manner. Early on in the establishment of the network it was realized that developing water balances would be impossible because of the karstic nature of the terrain which allowed rivers to flow in underground caves. Exactly what happens to surface water is not always known.

The Indian team has installed hydrologic and meteorological stations with the assistance of UoB and data flow has begun with the assistance of a young scientist.

The Nepal team has established a sophisticated network of hydrometeorology stations and erosion plots in both the Jhikhu and Yarsha Khola. With the strong support of the UoB and UBC, these networks form a central pillar for any future watershed research to be carried out. Training programs have been carried out and there has been an ongoing effort to work with the Department of Hydrology and Meteorology. More recently there has become an increasing focus on water shortage problems faced by farmers as researchers move to more concerns of immediate interest to local farmers.

A network of hydromet stations has been established in the Pakistan watershed and a young scientist has received some training in the collection of the hydrological and meteorological data. UoB² provided assistance.

2. Carrying Out Soil Fertility Management Research

The whole PARDY project stems from the original work that had been carried out in the Jhikhu Khola with the collaboration of UBC and the Topographic Survey Branch of Nepal over the past 10 years. As a result some very sophisticated soil fertility research activities have been undertaken in the Jhikhu Khola watershed. Some of the long-term research on acidification and phosphorous fixation is unparalleled in scope and vision. The work with legumes that has been carried out largely in demonstration plots is encouraging. Some of the agronomic trials are showing promise. Throughout this work, the close collaboration of UBC has clearly been essential. In essence it was the results of this soil fertility research that gave birth to the PARDY project. It was thought that using the Jhikhu Khola as a model, similar research programs could be started up in other countries to gain a regional assessment of soil fertility management.

In all PARDYP watersheds, a basic network of soil erosion plots has been established. Basic soil maps have been completed for the Yarsha Khola and basic bedrock geology maps have been completed for the Yarsha, Jhikhu (under previous project) and the Baoshan watershed. Some instruction has been given for the implementation of a soil survey in the Indian watershed whereas there has been no survey work yet begun in Pakistan. Baseline soil information has been collected which will be used to make comparisons of soil fertility over time.

3. Generating Socioeconomic Information

² University of Bern

All countries have carried out surveys to investigate basic socioeconomic information from their respective watersheds. Some have carried out general PRAs,³ some topical PRAs, interviewing techniques have been explored, but in only one case to date has there been an attempt to integrate socioeconomic information with biophysical data. While the generation of socioeconomic information is the first step, all teams are in an early stage in terms of obtaining information that can be used to assist in selection of appropriate interventions and innovations on lands within the watershed areas.

4. Applying Community Based Participatory Resource Decision Making

Community Based Participatory Resource Decision-Making, while a central platform of the project, has only just begun in PARDYP. An initial training in PRA has been provided to all PARDYP staff, but it is apparent that this objective requires considerably more input. Where attempts to understand Community Forest management as in Nepal and India have been made, PRA techniques have been applied to understand the dynamics of community forest management.

5. Institution Strengthening

Government, non-government agencies and universities have been brought together to assist in the implement this project. Each organization has its strengths and weaknesses and it was anticipated that there would be the opportunity for considerable exchange of technologies and ideas between agencies, universities and country projects themselves. Although such cooperation is sometimes difficult to nurture, the review team noted many examples of such productive interagency exchange.

Staffing arrangements in the participating countries differ – in China, field staff is employed by KIB⁴ (on field allowances), in India they are project employed (on monthly salaries), in Nepal it is mixed. Where the field staff are project employed, there is a risk of losing key individuals due to the perceived short-term nature of the job – this is particularly the case in India, to a lesser extent in Nepal, and may become an issue in Pakistan. The salaries offered to the project field staff cannot compete with INGOs and other projects. Six staff (Nepal 2, India 2, Pakistan 2) have already left the project – four of them were important players, two left for permanent government positions, and two left for better paid jobs.

The following provides a summary of the major collaborating institutions involved in PARDYP.

a. Pakistan Forestry Institute (PFI)

Project links with PFI has only entered the initial stages of project development and to date there has been little progress in institution strengthening.

³ Participatory rural appraisal

⁴ Kunming Institute of Botany

b. Kunming Institute of Botany (KIB)

The KIB has acted as a sort of clearinghouse for the activities undertaken by the Chinese PARDYP team. They have performed extremely well over the course of the project to coordinate the diverse activities dictated by the project. The Country Leader is dynamic and his support from line agencies is strong. Clearly, some of the strongest and most workable links between lead and line agencies occur here, and ability to perform activities required by multidisciplinary teams is readily apparent.

c. G.B Pant Institute

Project links with the Institute have progressed satisfactorily. A full time researcher has been assigned as team leader and team members have been contracted to assist in the program. ICIMOD through the UoB provided training in a number of subject areas and there have been working exchanges between team scientists. Some progress were noted towards more on-the-ground collaboration with Government of India departments, NGOs and other local groups.

d. Nepal HMG⁵ Departments

The linkages and cooperation between PARDYP and MoF⁶ and DSWM⁷ have been good with adequate exchange of people and ideas. Fieldwork has been of good quality and reports have been written to support the fieldwork. However neither DHM⁸ nor NARC⁹ have proved to be totally satisfactory partners. There are many reasons for this of, which most are endemic to most Nepal Government Offices. Lack of motivation, low pay scale of staff and institutional inertia are central to these problems.

e. University of British Columbia (UBC)

UBC has been involved in the Jhikhu Khola for over 10 years and has assisted in the development of what is recognized as a world class watershed research program. There are many examples of personal dedication by the senior advisor that extends well beyond the original terms of the agreement between IDRC and UBC. Considering the present data base that has been amassed, the large number of long term studies that have been initiated and a number of peer-reviewed research papers which have been published out of the work, the collaboration has been fruitful. Of special note is the high regard with which the Nepalese Country team holds the UBC team. Interest was expressed on the part of PARDYP members for opportunities to achieve more professional training. While in most regards this collaboration has been very successful, their focus has been on Nepal. The Indian Team, in particular, has felt neglected, as they have not yet received any visit from UBC. Pakistan has also not been visited but their program was clearly not ready for

⁵ His Majesty's Government

⁶ Ministry of Forestry

⁷ Department of Soil Conservation and Watershed Management

⁸ Department of Hydrology and Meteorology

⁹ Nepal Agricultural Research Council

any assistance. China, with some minor assistance, has shown their ability to catch on quickly to relatively complex technologies offered by UBC such as the Hypertext media for report writing and information presentation.

f. University of Berne (UoB)

The University of Berne has been active since the beginning of the project working in the area of hydrological and meteorological research. The initial establishment of field stations, the training of field people to collect the data and maintain the stations and more recently to properly archive information and analyze it have all been a central part of UoB's role. They have been active in all four countries and have done a commendable job under difficult conditions.

6. Promoting Information Flow

A major objective of PARDYP is to promote the flow of research information coming out of their work and on a more basic level to encourage a better flow of all technical information. On the local scale there have been many opportunities for project officers to talk with local people. In most cases, these discussions have been about what the project is doing and to a lesser extent about what farmers are thinking or doing. Innovations and more often small additions to the existing farming systems have only just begun to be considered covering a wide range of subjects from alternative energy sources in Nepal to social fencing in India, to no- till relay cropping of wheat after rice in the Jhikhu Khola. However, these activities in themselves have little relevance to the objectives of the project unless they are documented and analyzed to determine how development works. The methodologies, with which information is effectively transferred, adopted and how that process is monitored can become the focus of research.

The introduction of any innovation must be backed by a monitoring program that ultimately will provide valuable feedback information on what innovations have been successful and, of equal importance, why. With the implementation of socioeconomic surveys and PRA in most of the watersheds, there has been a large flow of information about households and basic social and economic conditions from the farmers to the project. This information needs using to address some of the key issues.

With the involvement of the line agencies, there has been considerable information flow within countries about the work that is being carried out and to a lesser extent, serious discussions on use of proven technologies that might be acceptable in any of the watershed areas. At present this does not appear to extend into the local community at large. Based on what was seen during the field visits, there appeared to be too much reliance on local discovery of appropriate technologies without making serious attempts to find out what other researchers and lead farmers are already doing in the area or at least in similar agroecological zones of the country, let alone region. This is a big but very important task, and the coordinators should be made well aware of the value of time spent on such "search and sort" missions.

Communications between countries is a central mandate of ICIMOD and PARDYP. The

Annual workshops and ICIMOD newsletters are a start in developing more lasting links between researchers that work throughout the HKH¹⁰ mountain environments. With the increasing use of e-mail and to a less extent the Internet, this promises to revolutionize information transfer in the area as it has elsewhere.

7. Managing the Project as a Regional Collaborative Undertaking

A Project Coordinator was assigned full time to the project. At the time of hiring, his terms of reference did not include a reference to project management although this was to be his primary responsibility. In spite of this, the Coordinator has played a crucial role in the initial start up of the project. The start up of individual country programs required a tremendous amount of energy – setting up suitable accounting controls in four countries, procuring and distributing of specialized equipment, particularly that required for hydrological research, and assisting in the technical development of country programs. Reporting responsibilities were also heavy because of the complex nature of the project, its multiple objectives and involvement of five watersheds in four countries. Eighty percent of the regional coordinator's workload was divided equally between administration and inter-country travel. It appears that this level of travel was essential during the starting up phase when personal contact between the Project Coordinator and country teams was required to get things up and running.

Throughout the review mission, it was readily apparent that the Project Coordinator had an excellent personal and professional manner. He was well liked and respected by the country project leaders. This excellent rapport should not be underestimated. The project owes many of its successes to the efforts of the Project Coordinator.

However the position is not without its problems. The Project Coordinator is presently required to spend a large part of his time in dealing with administrative details that are rarely seen in other projects. Numerous examples were provided to the review team that direct administrative intervention by the project coordinator was essential to set right otherwise trivial matters to ensure reasonable project progress. The problem can be traced directly to the tight administrative arrangements developed by ICIMOD. While the present administrative and financial procedures of ICIMOD may have been acceptable, for their normal program mode, they have hindered the execution of PARDYP. This is because the necessary field based research involves a wide variety of activities, an interdisciplinary team, and each component needs a diverse range of inputs – considerable logistical, training and financial support is required in all the countries. Some of the missed opportunities of the project appear to have been exacerbated by diverting of the Project Coordinator's time to what appear to be trivial matters.

IV. DISCUSSIONS AND RECOMMENDATIONS

¹⁰ Hindu Kush-Himalayan

The Review Team attended the Technical Advisory Board meeting in Baoshan, China on March 5, 1999 and supports their recommendations. In the following section recommendations are made to assist PARDYP during the upcoming Phase 2 Planning Workshop at which time the future direction of PARDYP will be considered.

A. Review Project Objectives

The review mission recommends that the Regional Coordination office and individual country teams seriously review the strategic direction to be taken by the project. The lack of a clear vision of exactly what the individual teams and the overall project are trying to accomplish has affected project performance. This effect will become much more crucial in the next phase of the project. It is critical that the project begins to ask questions such as “*what are we doing this research for?*”, or “*what kind of decisions in resource management are we trying to influence?*”, or “*how are the different planning and administrative levels - local, district, country and region - being served by such a project?*” Failure to come to terms with basic questions such as these will severely constrain the project progress. An innovative planning exercise was introduced to the Nepalese PARDYP team in Kathmandu with the assistance of the IDRC Social Scientist. Along the same line, in Baoshan the whole PARDYP team carried out some planning exercises, again to bring focus to the project, (see Annex 3). In both cases, these exercises were meant to assist PARDYP in developing their own strategic plans. Once the answers to these questions become clear, it will be much easier to develop a framework and specific methodologies to implement activities that focus on research for development.

B. Specific Technical Recommendations

Because PARDYP is involved in long term research, not all of the results can be of immediate use. In some cases, such as in the hydrological and sedimentation research, one should not expect that the data could immediately be made “relevant” to the needs of the local farmer. Instant gratification rarely occurs in these research activities – indeed, it is undesirable. Project members and donors alike must be patient. However, in many cases, such as introducing agronomic and other technical innovations, if the farmers needs and constraints are clearly understood, the type of research that is planned and undertaken, should also be directly relevant.

In the following section, recommendations are provided for the major disciplines.

1. Hydrology

Tremendous efforts have been undertaken in all the watersheds to get the hydro-meteorological network in place. To a large degree, local training has ensured that this aspect of the project will run smoothly in the future. While Pakistan and India need more assistance to ensure that the data collected is reliable, both Nepal and China should begin to start training in data archiving and analysis of the huge volumes of data that they have

already generated. In terms of immediate integration possibilities, some joint investigations of major storm events by the hydrologists, concurrent with assessments of soil erosion plots, should be attempted as a routine matter.

The review team is concerned that some of the information that has been collected is already being misunderstood. For instance, the frequently referred to work by Carver, carried out in the Jhikhu Khola, that most soil erosion occurs in the pre-monsoon must be tempered by an understanding of the effect of the more devastating rainstorms that occur only infrequently. While it is acknowledged that, all things being equal, there will be more soil erosion on bare soil than vegetated soil, the occurrence of cells of high precipitation can cause devastating erosion regardless of agronomic crop cover. It must also be remembered that surface erosion may or may not have much effect on sediment loading during certain flood events, particularly of the large rivers during major regional storm events.

2. Agronomy/Soils

There are many options open to improve sustainable soil management through improved agronomic practices. As a general comment, all country teams should make better use of existing technical information and the knowledge of local expertise when screening potential innovations in their watersheds. There is a tendency for researchers to plunge into detailed research at a local level before taking the time to find out what is going on in the adjacent watershed, within the district, within the country and even in the region. There is no need to re-invent the wheel. Searching out appropriate innovations and adapting them can do much more interesting and fruitful research, if required, to meet local conditions. There are exciting opportunities to enhance the farmer's economic condition while at the same time reversing long-term watershed degradation with the introduction of appropriate legume species. At present, there are many niches in the watersheds – for example, overgrazed lands, terrace risers, fallow fields, community forests, bunds, new landslide areas, side-cast road materials - where at least some species of legume will not only survive but thrive.

The choosing of the species, and even variety, should be done with care. Of utmost importance it must make highly palatable fodder - merely surviving and being green is not enough. It has been noted that certain species are reported to have been unsuccessful on certain landscapes. However, there are many varieties of each species - some may be acid tolerant, some resistant to drought, some resistant to disease. As an example, Stylo performed very poorly in the Jhikhu Khola, but it is understood that the variety was one that was not resistant to Anthracnose, a particularly virulent blight on Stylo. This does not mean that another variety might not perform spectacularly. The review mission strongly recommends that all country teams find out what legume species are already being used by farmers in similar agroecological zones and what species show promise based on existing forage research. A major gap in all the country teams is the lack of a livestock/range specialist (see section D.1b). Livestock provide the functional link between degradation of public lands and fertility of agricultural lands and potential income generation. Preliminary data coming out of the Yarsha Khola indicates that

women perform over 80 % time allotted to livestock management. Obviously, as women are an important target group there are compelling reasons to substantially increase the attention paid to livestock.

3. Forestry

The potential of forestry activities to alleviate poverty and reduce environmental degradation has been under-exploited by the country programs. Throughout the Himalayan region from China to Pakistan, there is tremendous potential to take advantage of forestlands to produce native and exotic timbers as well as a large number of non-timber products. Obviously in all watersheds, conservative management is essential for assuring good environmental health. When a forest is initially released from heavy grazing or other uses, it takes some time to recover. Usually this recovery is more rapid than anticipated and increased fodder and firewood resources become more plentiful. Once this recovery is underway, there is an ever-increasing opportunity to extract valuable products out of that forest on a sustained basis. While Nepal is the recognized regional leader in community forest management, the most important (and possibly most difficult) management systems have yet to be designed for optimum sustainable usage.

Once a forest is established and growing, forest productivity ranges from 5 to 25 m³ per hectare per year. Depending on the species grown, this can translate into a major economic boost for the small farmer and healthy forests if managed properly. In all countries, attempts should be made to develop some management systems that enable the farmer to share in the harvesting of forest products, including timbers. The present ban on cutting and movement of timbers as well as the restrictions on use of native trees is hampering more profitable and enlightened management of these forests. At present a major constraint facing all forest users from China to Pakistan is that both the state and the local users of the forest are undecided about how to share this valuable resource. Investigations and involvement of participatory forest planners and the users of the forest for the development of more profitable, equitable and sustainable production should be central to the activities of all country groups.

There is a serious need to develop methodologies and strategies for community based participatory decision making related to natural resource management. It is recommended that PARDYP develop more formal ties to a centre of excellence in the field of social/participatory planning at the community level to facilitate such activities.

4. Socioeconomic Surveys

Socioeconomic surveys are sometimes essential as baseline surveys in order to understand how households change over time. This is particularly important if the research is attempting to capture change that has been initiated by an activity of the project itself. The design of any socioeconomic survey is critical but, until one is sure what the purpose of the survey, it is probably better not to carry one out. The need to integrate biophysical and socioeconomic databases is essential if socioeconomic data are to assist in enhancing resource management. The recent work of UBC whereby socioeconomic information of individual households was collected according to the

soil/landscape parameters, is a promising start in this direction. From the point of view of PARDYP, the ultimate purpose of any socioeconomic survey is to better understand what farmers are thinking, what is their motivation and what are their constraints towards adapting technologies that are deemed environmentally friendly.

5. Farmer /Community Centered Resource Management

As mentioned under the forestry section there is potential to improve forest management throughout the HKH region and because the forests are often de facto or de jure community managed, the only way to facilitate better management is through the community. The same is true for irrigation water user groups. Country teams should continue to work closely with forest officers and community groups to at first understand the problems and potentials, and then ultimately to be in the position to facilitate change in forest use policy.

Integration of Project Activities

The lack of integration, whether during field work, data analysis or even during report writing needs to be considered by all the country teams and Project Coordinator. It can be an exceedingly difficult process, particularly when line agencies and professionals themselves rarely work outside their narrow field of expertise. In the early stages of improving the integration of project components, it is recommended that a team made up of a range of disciplines (for example, soil scientist, agronomist, and livestock specialist, economist and community facilitator) work together on a common problem. The team physically works together, they see degraded land together, see fodder options together, observe livestock together, discuss production costs and profitability together, and most importantly discuss with the farmer about all aspects of the area or possible innovation of interest. With the farmer, they come up with solutions together, and after the innovation is implemented, then they monitor the innovation together. This will result in integration. If they ever do attempt to do so, it is easy to understand why projects integrate their findings back at the office after having collected data on their own and analysed the data from their narrow perspective - it is much less time consuming. The only problem is that the collective inputs of all specialists cannot be integrated at such a late date.

It is recommended that all country teams initially attack a common resource utilization problem, such as use of common forestlands, with the intent of developing an improved management plan. Done correctly it will involve all disciplines in the integrated research, and pave the way for documentation that explains the process. Given the present make-up of the PARDYP teams, the core teams clearly require some extra manpower, (e.g. community facilitator, and local livestock specialist).

C. The Length of Recommended Second Phase

It is recommended that PARDYP be extended for another three-year period to begin on January 1, 2000. The project should be subject to review at the annual workshops

attended by donors and PARDYP members themselves. MoUs for country members should also be prepared for the three-year period with clear release clauses for non-performance.

D. Recommended Changes in Project Management

Pakistan Forestry Institute

For the present, the hydro meteorological network should be maintained. Based on the past performance of PFI, in conjunction with the loss of the PFI country coordinator, it is recommended that a more interested agency be found in Pakistan to support a PARDYP Team in Pakistan. Should a suitable home for PARDYP be found, the Project Coordinator needs to work with that team to prepare a suitable M.O.U. Given the efforts that have been spent on Pakistan and the lack of serious progress or a credible program to date, the review team recommends that the Project seriously evaluate the potential of any new Pakistan Team before including it in the next phase of the project.

2. G. B. Pant Institute

The Indian PARDYP staff should be provided with more training and substantial guidance to ensure improved hydromet/sedimentation research, and more focused work on socioeconomic and on-farm issues. Administration and financial arrangements between ICIMOD and the country program need to be improved to avoid the frustrating delays in payment of project staff. Setting up of a reliable e-mail connection for the country coordinator is essential and should be carried out as soon as possible.

3. Kunming Institute of Botany

The China team is very strong because of its profitable links to local and national collaborators and the NGO run by Prof. Xu. The line agencies within the government service appear to respond to work requests efficiently and with a high degree of professionalism. The team should be given every opportunity to improve themselves individually. A request for English lessons should be supported as it would open a whole new world to some of the researchers.

4. ICIMOD

To best serve the PARDYP program, changes in the administrative and financial relationships between ICIMOD and PARDYP are recommended. The rigid central control of the project from the ICIMOD directorate has not been in the best interests of the project. The present ICIMOD system of finance for their various programs makes it singularly unsuited to manage the PARDYP project effectively. Complex and strict adherence to accounting rules has caused considerable delays in project implementation. For instance, the Project Coordinator cannot approve expenditures in excess of US \$22 without directorate approval. All hiring, theoretically at least, must be done through the directorate.

Decision making powers relative to budget expenditures and normal executive project activities should come from the Project Coordinator, not the Directorate. Technical decisions relative to the project should be left to a technical advisory committee (including the appropriate ICIMOD technical experts) that will advise and oversee the general project direction. The unyielding management style of the directorate within ICIMOD itself appeared to be a major concern of most PARDYP staff including Nepal, India and China, overseas collaborators and donor members and it certainly influenced the morale of project staff.

The full potential of ICIMOD support for PARDYP has not been fully harnessed. There has been insufficient input of ICIMOD specialists into PARDYP design and implementation. Part of the problem stems from the fact that not all ICIMOD scientists are of equal abilities, and sometimes the products produced by ICIMOD staff are inferior to what can be found on the open market. The review team has heard that some ICIMOD scientists are reluctant to spend more than a few days in the field and some not at all. This is clearly unacceptable when the need for high quality research requires the close supervision of senior scientists. Some researchers are professionally highly capable but too busy to take more than a passing interest in the PARDYP project. In view of the lack of alternatives, the Project Coordinator should be given considerable discretionary powers to invite inputs from those experts within ICIMOD who will have a beneficial effect on the project - otherwise, consultants should be sought from the outside market.

The above problems had a strong negative influence on all country programs. The inability to adequately address socio-economic activities related to PARDYP left a major gap in the project design and implementation of all country programs. On a bureaucratic level, project progress was seriously influenced by late arrival of funds, lack of sufficient autonomy in terms of the Nepal team, and an institutional management style that discouraged efficiency, and therefore indirectly, innovation.

It is recommended that the financial and budgetary systems be streamlined so that they fit more with the needs of a project such as PARDYP. Failing that, a competent liaison officer should be employed to deal with these matters without involving the Project Coordinator.

It is also recommended that some form of Joint Planning Team be developed at ICIMOD to assist in project design and, in certain cases, implementation. Duties of members should be clearly defined and time allotted to ICIMOD staff so that they are indeed a part of PARDYP.

5. HMG Departments

Given the low level of funding involved for the Nepal line agencies, PARDYP has virtually no leverage to encourage government staff to work if they are not willing to work. Where department-based collaboration is proving effective and efficient as it appears to be doing so for the Department of Forestry, PARDYP is encouraged to strengthen the relationships by close collaboration. When this is not working so well as with NARC and DHM it is suggested to try to shift collaborative arrangements from

department to the individual officials.

6. University of British Columbia

UBC plays a pivotal role in the development of the overall soil fertility/management programme for the Himalayan region. Because the work is at the cutting edge in terms of global natural resource management, every effort should be made to secure the ongoing support of UBC.

In the future, the UBC team should attempt to provide direct or at least indirect assistance to the India Program.

7. University of Berne

UoB also lays a pivotal role in the development and running of the hydrometeorological stations and in archiving and analyzing the huge quantities of data. They would be crucial collaborators in any new phase of the project.

D. Required Resources

1. Human Resources

There is an ongoing need for training programs for project staff so that they can upgrade themselves and maintain their enthusiasm for the project work. These programs should include local training, use of workshops and seminars and also educational opportunities regionally and even internationally that might not otherwise be available to the involved staff.

Although it is clear that job satisfaction does not only depend on salary or field allowance, it is important that funds are allocated in future to pay a reasonably competitive salary to the really key individuals. It is a complex project, and repetitive training of new staff in both the philosophy behind the objectives and within the different disciplines is an inefficient use of skilled manpower, time and money – especially when it can only be accomplished by cross-boundary travel of PARDYP staff.

In addition to the present complement of professional and non-professional staff now involved with the project, the following positions should be considered.

Social Scientist/ Participatory Appraisal Expert

All the teams need the assistance of a highly qualified and experienced social scientist/participatory development expert. This person would be crucial in the development of the integrated research as mentioned above. He or she would also be required to carry out training programs to PARDYP staff that would work exclusively on this topic.

Forage/livestock Specialist

All of the country teams need the assistance of a forage/ livestock specialist to assist in the understanding of land resource management.

Village Level Facilitators/ Development Officers

All teams also need the full time assistance of a community facilitator. This person might be a member of an NGO, or a schoolteacher or a young high school graduate, and would work full time in the watershed. His or her task would become aware of the situation in the village but at the same time understand the possible developmental linkages from the outside, whether from government agency, NGO or other project staff. He or she would work at the interface of the project and the community.

2. Financial Resources

Although much of the hardware has already been installed in the watersheds, risks associated with flooding streams are high and failure rate of stations should be expected to be around 20% per annum. Vehicles used by the Indian and Nepalese teams are near the end of their useful life and need to be replaced. Recurrent costs are high given the regional and multidisciplinary nature of the project. It is estimated that an amount equivalent to the Phase 1 level of funding would be required to implement the envisioned Phase 2 of PARDYP. This would amount to around US \$500,000 per year for the three years.

Terms of Reference for the *PARDYP* Review Mission

Introduction

The *PARDYP* project (*People and Resource Dynamics in Mountain Watersheds of the Hindu Kush-Himalayas*) begun on October 1st 1996, and has a duration of three years (ie. Phase 1 finishes on 30.09.99). In March 1998, a three month extension period was granted by the Donors (SDC, IDRC and ICIMOD) at discussions held at the mid-term *PARDYP* Workshop held in Almora, India. The first Phase of *PARDYP* plus the extension period therefore now run until 31.12.99.

PARDYP is a three year “research for development” project operating in 5 watersheds of between 3000 and 10,000 ha in four countries – Pakistan, India, Nepal, and China. The activities described in the project document involve the study of human and biophysical dynamics and the interactions between man and the environment, both past and present.

The activities focus on hydrological and meteorological research, soil erosion and fertility studies, on-farm conservation and community forestry activities, socio-economic investigations, and agronomic and horticultural initiatives under the umbrella of cooperative rural participation.

The goal and objectives of the project are listed in the project document. Accompanying these Terms of Reference, please find both the 1996 Phase 1 Project Document and the 1997 *PARDYP* brochure, together with the ICIMOD document “*Mountains 2000 and Beyond*” which describes the Centre’s second regional collaborative programme for sustainable development of the HKH region (RCP-II, 1999-2002)

Abbreviation Used in the ToR

PFI	the Pakistan Forest Institute
KIB	the Kunming Institute of Botany
GBPIHED	the GB Pant Institute of Himalayan Environment and Development
ICIMOD	the International Centre for Integrated Mountain Development
HMG Nepal	His Majesty’s Government of Nepal: four departments are collaborating on the <i>PARDYP</i> project in Nepal, the Departments of Forestry (DoF), Soil Conservation (DoSC), Hydrology and Meteorology (DHM), and NARC (Nepal Agricultural Research Council). Links with some departments in Tribhuvan University are also strong
UoB	the University of Bern, collaborating on the project in the fields of hydrology and meteorology
UBC	the University of British Columbia, collaborating on the project in the fields of land resources and social sciences.

Tasks

Review and assess project progress in view of the 7 main objectives and related activities outlined in the project document in terms of achievements within the different components, the effectiveness of the approach, the integration of findings, and the strategies employed. The verifiable indicators as outlined in the project document can provide a guide to assessment.

Specific attention should be given to:

- project achievements in the field in view of the skills, abilities and experience of the collaborating institutions and communities;
- the quantity and quality of human resource development and institutional strengthening activities; this will include farmer training, technical training, study tours, workshops etc., as well as provision of capital items;
- the extent and quality of collaboration and coordination between the participating organisations, and the support from both the national collaborating institutions and partners from outside the HKH;
- the extent of active farmer participation and involvement in the different project activities – from implementation, through monitoring, design of trials, technology development, to capacity enhancement and evaluation;
- the present interdisciplinary approach, especially in the fields of socioeconomics, and community development.

According to their roles and responsibilities, and with reference to the current MoUs, review and assess performance, strengths and weaknesses of the collaborating institutions in the implementation of the project – PFI, KIB, GBPIHED, ICIMOD, the HMG Nepal Departments, UoB and UBC.

Review and assess the contribution that the work in the four countries has made to the goals and objectives of IDRC's community based natural resource management initiative. For this purpose and in advance of their watershed visits, the Mission members will be provided with completed self-assessment evaluation forms by the Country Coordinators.

Review and assess the continuing relevance of the project document to the research and development needs of the watersheds (environmental/biophysical) and the main actors/stakeholders (human/socioeconomic).

5. Review the project's approach and activities in terms of the interface between research and development, and the mechanisms in place to date for extending the research findings to local groups, NGOs, and other extension agencies.
6. Provide recommendations for the remaining period of the present phase with particular emphasis on priorities for research, training, documentation and publication.

Taking into account the thrust of ICIMOD's RCP-II programme, as described in *Mountains 2000 and Beyond*, review and assess the need for, and raison d'être behind, a new phase of *PARDYP*. Attention should be paid to:

- a) Any change in scope or focus, and the related activities,
- b) The length of any recommended second phase,
- c) Any changes foreseen in collaborating partners,

d) The required resources – human, technical and financial approx.).

Provide recommendations to further improve the management, implementation and strategic direction of the project with special attention on gaps, weaknesses, approaches, modus operandi, new components, monitoring and evaluation, training needs, and community and participatory aspects.

Produce a draft report for review with members of ICIMOD management prior to departure from Kunming, China, and for subsequent submission to SDC and IDRC.

Mission Members:

From SDC	Mrs Christine Grieder, Agronomist
From IDRC	Dr Brian Carson, Mission Leader, Land Resources Specialist
From ICIMOD	Dr NS Jodha, Policy Analyst/Economist

Financial Arrangements

SDC, IDRC, and ICIMOD will be responsible for all costs of their respective mission team member.

Draft Schedule for Review Mission – 16 days

Prior to the main period of the review as described below, the following mission visits to the watersheds will occur.

	Mrs Christine Grieder:	to Yarsha Khola, Nepal	Nov.26 th – 28 th , 1998
	Dr Jodha	to Indian watersheds	December 1998
	Dr Jodha	to Nepal watersheds	January 1999
	Mrs Christine Grieder	to Pakistan	Feb. 14 th – 18 th , 1999
Feb.	22	Dr Carson to Nepal to review ICIMOD, HMG collaborators + the Nepal watersheds	
	26	Dr Carson, Dr Jodha leave Kathmandu for Bangkok, o/night in Bangkok	
	27	Mrs Grieder to Bangkok, joins other mission members and participants for <i>PARDYP</i> Final Workshop; group travels onto Kunming; o/night stay in Kunming	
	28	am: onward travel to Baoshan, Yunnan Province + review mission meeting pm: meetings with Donors, collaborators and project staff as required	
March	1 – 5	attend Final Workshop in Baoshan, China; includes one day in the watershed	
March	6	leave Baoshan, and complete write-up in Kunming	
March	7	draft report ready for discussion with ICIMOD staff	
March	8	final draft report completed and ready for submission to SDC and IDRC	
March	9	review mission leaves Kunming - end of mission.	

ANNEX 2

Persons Interviewed during Course of Mission

in Nepal

Arens, Tom. Regional Representative for World Neighbours, Kathmandu, Nepal
Robertson, Alan. Forage Specialist with 3rd Asian Livestock Program, Pokhara, Nepal
Ghimire, Jagdish. Director of Tamakoshi Sewa Samiti

Karl Schuler Project Leader, Community Forestry Project
Georg Weber Project Leader, Sustainable Soil Management Project
Dr. Felix von Sury Resident Coordinator of SDC

@ Yarsa Khola Watershed

Representatives of a formal and of an informal Farmers' cooperative
Jürg Merz, UoB

@ ICIMOD

The PARDYP - Nepal Team

@ Pakistan

The PARDYP – Pakistan Team
The Director General of Pakistan Forestry Institute (PFI)

@ India

The PARDYP – India Team

@ Baoshan

The PARDYP - China Team
Dr. Thomas Hofer, FAO
Dr. John Graham, IDRC
Dr. Sandra Brown, UBC
Dr. Hans Schreier, UBC

@ UoB

Dr. Rolf Weingartner

ANNEX 3

SWOT Exercise with Nepal PARDYP Team

SWOT exercise with Nepal PARDYP team February 25, 1999 (2) Information transfer	Strengths	Weaknesses	Opportunities	Threats
		<ul style="list-style-type: none"> - integration between subjects and disciplines - project communication - publicity of work - not enough people-related/ applied - relation with farmers - inadequate use of knowledge about geological material available 	<ul style="list-style-type: none"> - assist DDC with data - cross-fertilisation among disciplines - dissemination of integrated PARDYP approach - collaboration 	<ul style="list-style-type: none"> - poor project communication
Institutional strengthening	<ul style="list-style-type: none"> - capacity building - strong external support - government collaborators - team work 	<ul style="list-style-type: none"> - lack of training for the team - lack of autonomy for project team - staff motivation and incentives 	<ul style="list-style-type: none"> - collaboration 	<ul style="list-style-type: none"> - lack of support from collaborators
Regional collaboration	<ul style="list-style-type: none"> - regional approach 		<ul style="list-style-type: none"> - collaboration - regional synthesis - cross-border information flow 	
General/cross-cutting	<ul style="list-style-type: none"> - multi-disciplinary team - previous project experience 	<ul style="list-style-type: none"> - lack of development work - broadness of project 	<ul style="list-style-type: none"> - broadness of project - application of research results - more meaningful research fir development 	<ul style="list-style-type: none"> - lack of funding - political instability - high expectations from people - negative attitude from people towards

the project

Results of SWOT - PARDYP Nepal

Strength, Weaknesses, Opportunities, Threats exercise with PARDYP Team Nepal, Feb. 25, 1999

	STRENGTHS	WEAKNESSES	
Hydrology/Sedimentation	Resource Mapping Climatic Study Technical Expertise Meaningful Research Linkages of Socio-economic to GIS On-going Research Water Harvesting	Lack of software Difficult to handle data Orthophoto mapping Water Chemistry Study	
Soil Fertility/ Agronomy	Resource Mapping Geological Mapping Erosion Study Technical Expertise Meaningful Research On-going Research GIS Capability Water Harvesting Potential for Intervention	Orthophoto Mapping	
Forestry	Resource Mapping Technical Expertise Meaningful Research GIS Capability On-going Research Potential for Intervention	Orthophoto Mapping GPS Survey (lack of)	Detail GPS Income (FU)
Socio-economics	Meaningful Research GIS Capability Linking of Socio-economics to GIS On going Research	GPS Survey (lack of) Lack of Soft Science Subject Matter Specialist Lacking	
Participatory (Earning)	Start with Meaningful Research	Lack of Soft Science Farmers involvement in Water Harvesting Subject Matter Specialist Lacking	Dev Add To b
Policies and Socio-economics Impact		Lack of Soft Science Subject Matter Specialist Lacking	To b
Farming Systems Approach	Technical Expertise (+/-) GIS Capability On going Research Water Harvesting Potential for intervention	Farmers involvement for water harvesting	Inco Add To b
Cross-Cutting		Relation with farmers Not enough people related/applied	

ANNEX 4

Chart of Decisions and Responsibilities within PARDYP / ICIMOD

(See .bmp files)