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SLOPELAND AGRICULTURAL DEVELOPMENT:
CANDIDATE PROJECTS FOR IMPACT EVALUATION

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Research Summary

The development of hill lands and mountainous regions has recently surfaced as an important issue at A.I.D. The development of these marginal lands is a part of a larger concern that the Agency has had in the past for natural resource management. These hilly and mountainous regions are referred to in the literature as highlands, upland, steplands, hill land and mountain slope to name just a few. There are subtle differences between each of the terms based on sectoral, regional, and technical context.

The term "hill lands" has gained popular acceptance at A.I.D.; however, slopelands is a more accurate and comprehensive term because it encompasses both the hill lands and mountainous regions. Hills and mountains differ only in terms of scale; the former are commonly defined as having a local relief to a maximum of 300-600 meters; the latter as anything above those figures. Considered from the standpoint of slopelands, hills and mountains are indistinguishable and, therefore, the processes and problems associated with their agricultural use are the same. (Johnson, D.V., 1983)

A review of the Agency's portfolio has identified approximately forty projects which directly or indirectly address the problems of the slopelands and the rural people who inhabit them. Because the slopelands are such a recent concern of the Agency, most of the projects that deal with the problems of the slopelands at the goal and purpose level are in the design stage or in early stages of implementation and, therefore, inappropriate for impact evaluation. Examples of such projects are:

Thailand - Mae Cham Watershed (80/87)
 Guatemala - Highlands Agricultural Development (83/88)
 Jamaica - Hillside Agricultural Restructuring (PID)
 Jordan - Highland Agricultural Development (PP)

Twelve completed or nearly completed projects have been identified as candidate projects for impact evaluation. Because of the broad scope of the slopeland "sector", these candidate projects have been divided into four sub-categories: Area Development, Agriculture, Natural Resource Management, and Agriculture/Resource Management.

Area Development

Thailand	4930289	Land Settlements
Nepal	3670129	Rural Area Development - Rapti Zone
Jamaica	5320046	Integrated Rural Regional Development
Guatemala	5200233	Small Farmer Development

Agriculture

Nepal	3670114	Integrated Cereals
Nepal	3670118	Seed Production and Storage
Peru	5270149	Soy and Corn Production on Small Farms

Natural Resource Management

Peru	5270156	Sierra Water and Land Use Management
Panama	5250191	Watershed Management I

Agriculture/Resource Management

Haiti	5210078	Integrated Agricultural Development
Nepal	3670132	Resource Conservation and Utilization
Lesotho	6320031	Thaba Bosiu Rural Development

Recommendations

1. Slopeland agriculture as a "sector" or "topic" needs to be precisely conceptualized.

Because of the diversity between the candidate projects as well as the complex multi-sectoral approach of Area Development, slopeland agriculture needs to be narrowly defined. Does CDIE want to learn about slopeland farming systems? Natural resource management? Area Development in the slopelands?

Much of the Agency's experience in the slopelands is in the form of Area Development projects. Besides the candidate projects, other Area Development projects in the slopelands include BICOL in the Philippines, Citanduy and Luwu in Indonesia, and Mahaweli Ganga in Sri Lanka. Due to the nature and the complexity of the problems in the slopelands, is Area Development a viable means for affecting development in the slopelands?

2. Should CDIE decide to proceed with slopeland agriculture, or a variation thereof, a concept paper dealing with the issues on a global scale should be considered.

A thorough literature search has identified much in the way of slopeland agriculture; however, most of the literature is of a technical or regional nature. No effort has been made to study slopeland agriculture on a global scale. While some issues and problems are indigenous to a particular

resettlement, shifting cultivation), there are many issues which cut across regional boundaries. Major crosscutting slopeland issues include markets for farm products; availability of input supplies; production incentives; technological innovation; management institutions; land tenure; water use and management; and land degradation.

3. Slopeland Agriculture could be examined through a country study/sector approach.

Rather than a project impact evaluation series, possibly a Special Study series could be undertaken as has been done in the past (i.e. Private Sector Special Studies, Nos. 9-16).

Some countries have made the problems of the slopelands a development priority. In Nepal, for example, four projects in particular deal directly with the unique problems of the slopelands: Rapti Zone Area Development, Integrated Cereals Project, Seed Production and Storage, and Resource Conservation and Utilization. Similar cases can be made for such an evaluation series in Thailand, Peru, Guatemala, and Indonesia.

4. A more dynamic approach to slopeland agriculture could be adopted.

Slopeland agriculture is just a part of a much larger issue - land mismanagement and degradation. Furthermore, the problems of the slopelands cannot be disaggregated from the surrounding lowlands. The deforestation and land

mismanagement that originates in the mountains spreads its destruction to the plains, rivers, and harbors. "For without a massive effort to preserve and restore the ecological integrity of the mountains, within a few decades, idyllic panoramas will become barren eyesores that perennially overwhelm the lowlands with devastating torrents and suffocating loads of silt."

(Eckholm, 1976)

Sloped Agriculture as a topic could be expanded to include other marginal lands such as the humid tropics. This would be a logical alternative because of the interrelationships between the two environments. It is estimated that 60% to 75% of the world's humid tropics are hill lands. (Plunknett, 1976)

The Bureau of Science and Technology has been working together with the Bureau for Latin America and the Caribbean on just such a project called the Fragile Lands Initiative. Their approach includes the problems of both the steep slopes and the humid tropical lowlands in the Latin American region.

Eric Chetwynd and Bob Walter of S&T/RD have recently completed a series of visits to eight LAC countries to discuss the Fragile Lands Initiative with Mission representatives. Based on the results of fieldwork and mission feedback, the Fragile Lands Working Group (reps. from LAC/DR, S&T/RD, AGR, and FNR) concluded that the fragile lands strategy should be built around five priority areas: (a) national and donor awareness and policy support; (b) a strategic approach to fragile lands within developing countries; (c) appropriate institutional arrangements for tackling fragile lands problems, emphasizing strong private sector role; (d) understanding and using farmer

incentive systems; and (e) technology needs, and the identification and spread of workable technologies.

An additional approach, inclusive of slopeland agriculture yet addressing a more dynamic problem, is reflected in a concept paper proposal submitted by Guy Gran (American University) entitled, "Facing Frontier Limits: Rural Systems Change Strategy for the Future". His hypothesis is that "land limits in multiple countries Kenya and Thailand challenge the imperfect political and cultural modus vivendi underlying the current scale-inappropriate global response to mass rural development needs".

Slopeland agriculture concerns are apparent in the concept of "frontier limits". Overpopulation and demand for increased food production has forced farmers, usually the poorest, into the hill lands and eventually the steeper slopes. This migration results in an increased use of easily degradable lands such as hillsides and humid lowlands without regard for appropriate protective measures. The misuse of these frontier lands for cultivation, grazing, and fuelwood leads to deforestation, soil erosion, and soil infertility.

Guy Gran's paper would look at how aid agencies, governments, and local people are responding to frontier limits; the implications over 10-30 years; and additions or alternatives that are needed for scale-effective results.

Outline of Major Issues in Hill Land Agricultural Development

- I. Market for Farm Products
The distance of hill land areas from key market centers and the economically marginal position of their inhabitants have combined to hinder the advance of economic support systems into these areas.
- II. Availability of Input Supplies
Remote hill areas need access to input supplies such as seed, fertilizer, pesticide, insecticide, livestock feed, medicine, and tools.
- III. Production Incentives
Farmers need to be encouraged to use their resources for increasing food production. Production incentives include price incentives, availability of agricultural credit, irrigation, and an equitable share of the harvest.
- IV. Technological Innovation
Technologies must be identified which are economically attractive, economically sustainable, and feasible to the small farmer such as agronomic practices vs. terracing.
- V. Management Institutions
Sustainable management institutions for fragile [hill] lands have special needs in addition to the general requirements for sustainable institutions under any conditions.
- VI. Land Tenure
Provision of clear and secure title to smallholders is a prerequisite to successful hill land development. Without tenure security, a land user may be unwilling to make the long term investments in the land that is needed for sound land management practices.
- VII. Water Use and Management
Irrigation Development
- VIII. Land Degradation
Deforestation and mismanagement of agricultural lands due to small farmer poverty contributes to the degradation of the hill lands.

Thailand 4930289 Land Settlements

Dates: 79/84 Status: Active Amount Obl: 4,200 Amount Exp: 3,268

Documents: PP

Goal: To improve the quality of life and income of the rural poor.

Purpose: To enable small farmers in eight land settlements in N.E. Thailand make maximum effective use of their land through techniques readily replicated in the Northeast.

Outputs:

- 1) Farmer groups organized and functioning.
- 2) Roads constructed and improved.
- 3) Water resources sub-projects.
- 4) Agricultural Demonstrations
- 5) Research linkages established with extension effort.

Comments:

A major issue in this project concerns land tenure. "If farmers are to be induced to make long-term investments in the maintenance and improvement of their farming operations (including construction of irrigation systems, fencing, plantation of permanent tree crops, terracing, and the maintenance of soil fertility) they must be secure in the occupation and operation of their land holdings. The accelerated land registration program is already underway and will address this need."

Nepal 3670129 Rural Area Development - Rapti Zone

Dates: 80/85 Status: Active Amount Obl: 17,050 Amount Exp: 9,271

Documents: Spec. Eval.

Goal: To assist the Government to promote development in such a way as to meet the basic needs of Nepal's poor majority, with special attention to the large, previously bypassed population in the "middle hills".

Purpose: To increase measurable aspects of the quality of life, including income and production levels of families in the Rapti Zone. To improve local demand for, and control of, national level delivery systems for improved agricultural, health, education, resource management, and family planning.

Outputs:

- 1) Field crop, livestock, and horticulture production increased.
- 2) Food available for consumption per capita increased.
- 3) Hectares of land under new or improved irrigation.
- 4) Hectares of land under protected forest.
- 5) Multipurpose nurseries established.
- 6) Hectares of critically eroded land treated.
- 7) People trained in improved rural industry and manufacture and marketing.
- 8) Energy efficient technology/industries operational.
- 9) Adult education/functional literacy programs operational.
- 10) Teachers trained, long or short term, increased.
- 11) Disadvantaged students attending local schools increased.
- 12) Panchayat roads upgraded.
- 13) Rural works undertaken by local communities.
- 14) District level planning improved.

Comments:

A 1983 Special Evaluation Report identified critical areas which must show "substantial progress in commitment, planning and action" by the government for the project to make a long term contribution to development in the region. Among these areas are:

- Ecological Situation: A major change in strategy, priority and commitment is required to reverse the profound negative impact of the household production system, and development activity in general, on the environment. The basic life support structure of the Hill economy is deteriorating rapidly. An approach is required that will harmonize household production interests with the preservation and development of the environment. Similarly, the protection of the land with trees and ground cover should be an integral part of all development activity in the districts.

- Household Production System: This is the key to rural development. An increase in household income is the key objective. Rural development strategy needs to be oriented and carefully coordinated, to strengthen the multiple income opportunities of the household in food crops, livestock, fodder, tree crops, off-farm wages and local industry development.

- Population: Population growth rates are having an adverse effect on the social and economic situation in the Hills. Family planning programs in close association with maternal child health care require urgent attention.

The evaluation calls for an intervention in several sectors. The complex problems of the Hills calls for sequential or simultaneous response in areas of agriculture, animal husbandry, forestry, erosion control, rural off-farm employment, market development, and delivery of basic services such as agricultural inputs and extension.

Jamaica 5320046 Integrated Regional Rural Development

Dates: 77/84 Status: Active Amount Obl: 12,690 Amount Exp: 10,097

Documents: PP, Spec. Eval., PES (2), Audit Rpt.

Goal: To improve the standard of living of farmers in Jamaica by increasing income and providing improved roads, housing, electricity, water. Subgoal: To establish an agricultural production model that can be replicated on small hillside farms.

Purpose: A) Increase agricultural production on small hillside farms in the Pindars/Two Meetings Watersheds. B) Control soil erosion in the watersheds. C) Strengthen the human resource capability of the Ministry of Agriculture.

Outputs:

- 1) Development of the soil conservation measures in the project area.
- 2) Reforestation of land in the project area not suitable for agricultural use.
- 3) Construction and rehabilitation of access roads.
- 4) Employment generation.
- 5) Intensified land use.
- 6) Advanced training of technicians.
- 7) Development of training and demonstration centers.
- 8) Development of small farmer organizations.
- 9) Credit systems for small farmers.
- 10) Improved potable water supply system.
- 11) Rural electrification.
- 12) Rural Housing.

Comments:

As of 1981, progress, as reported by the Ministry of Agriculture, was being made towards achieving planned goals and objectives in all components. However; actual accomplishments were behind schedule due to design weakness, implementation complications, and administrative problems. According to a 1982 Audit Report, the design of the project was very ambitious, unusually complex and having many implementation problems. The Audit Report recommends that realistic, revised goals be established.

Soil conservation land treatments were conceived as the central activity in the PP. According to a 1981 evaluation report 17,700 were to be treated. This is said to be a very unrealistic number with 10,000 acres being a much more workable figure. The evaluation states several reasons: A) Bench terraces were costing three times as much as the PP had estimated. B) More costly hand construction of bench terraces had to be used in most cases because of the slope of the land, the size of areas terraced, and inaccessibility by machine. C) A number of farmers were not willing to participate, whereas the PP assumed 100% participation. D) A much greater amount of staff time was required for each farm than had been anticipated in the PP.

A 1980 evaluation report sited trends in the project area towards less abusive forms of soil treatment including more reliance on vegetation and establishing permanent crops. This labor saving measure which costs less has been the subject of much discussion (Wang, 1976 and Liao, 1976, Hill Land Symposium).

Guatemala 5200233 Small Farmer Development

Dates: 76/85 Status: Active Amount Obl: 17,775 Amount Exp: 16,953

Documentation: PP

Goal: To improve the quality of life and increase the incomes of rural Guatemalans.

Purpose: To increase agricultural productivity and create alternative employment opportunities in rural areas by: 1) Increasing the productive capacity of small farmer land resources; 2) Opening new lands for settlement by small farmers and landless poor; 3) Expanding the farm-to-market transportation infrastructure; and 4) Strengthening the capacity of the public agricultural sector organizations to carry out planning, programming and delivery of improved services and technical assistance to small farmers.

Outputs:and Comments:

The project is divided into four subprojects:

- 1) New Lands Settlement
- 2) Labor Intensive Roads Construction
- 3) Land Resources Improvement
- 4) Human Resources Development

Sub-project 03, Land Resources Improvement

The increasing population pressure on land resources has forced the exploitation of ever steeper slopes, contributing to erosion which is progressively reducing the productivity of an extremely scarce resource. Denudation of natural forest growth began many years ago and this led to a serious erosion problem. Additionally, while the use of improved seed, fertilizer, and cultural practices will contribute to increase productivity, maximum benefit from these inputs cannot be realized unless measures are taken to increase water availability and retention and provide protection against soil erosion.

Two pilot programs have been developed to construct small irrigation projects and soil conservation/water retention improvements on small highland farms. Each program will be carried out on approximately 5,000 hectares. Emphasis will be placed on developing government competence to replicate the programs throughout the country.

1) Small Scale Irrigation: These sub-projects include the construction of simple infrastructure works using local labor and materials to irrigate primarily agriculture lands under rainy season cultivation.

2) Soil Conservation and Water Retention: Structures will consist primarily of contours of several types (furrows and ditches) depending on slope and depth of soil. Strip cropping will be incorporated on the contours. Brush and rock dams will be erected to reduce the rapidity of water movement in the gullies and appropriate waterways will be constructed. In certain mountainous areas, slopes are so severe that only terracing can provide protection from erosion where the land is cultivated. Contour farming can be practiced on steep lands with or without irrigation. Contour furrows will help hold available moisture and decrease erosion. They also help to get rid of excessive water with less erosion damage during periods of heavy rainfall. Different kinds of contour farming are used depending on the steepness of the fields, types of crops grown, and methods used to work the land.

Nepal 3670114 Integrated Cereals

Dates: 75/85 Status: Active Amount Obl: 7,970 Amount Exp: 7,425

Documents: PP, PES, Spec. Eval. (2), Audit Rpt. (2)
(2)

Goal: To increase the average productivity of Nepal's foodgrain cropping systems, particularly on small hill farms, in order to address the national objectives of increasing foodgrain production, improving income distribution and raising the nutritional status.

Purpose: To assist in strengthening the Ministry of Food, Agriculture, and Irrigation's capacity to 1) generate improved production technology and inputs for the major foodgrain crops and related cropping systems, and 2) transfer that technology to farmers in such a way that it is readily accepted.

Outputs:

- 1) A system to combine research and extension functions at the regional level designed and operational.
- 2) Diagnostic team studies and reports on farming systems pressure points and research priorities.
- 3) Catalogue of hill farming system models.
- 4) Regional directorate training programs for Crop Production Specialists.
- 5) Department of Agriculture and Regional Directorate in-country training program.
- 6) On-farm trials of newly adapted varieties and technologies conducted and successful innovations demonstrated.
- 7) Economic and technical analyses and evaluations of on-farm trials.
- 8) Collection and testing program for existing varieties of minor crops.
- 9) Development of technology package for irrigated and dry land conditions to complement new varieties.
- 10) Small quantities of seed of newly developed, selected and tested varieties of rice, maize and wheat that outperform traditional varieties in the hills as well as Tarai and for small farmers as well as large farmers.
- 11) Interim system designed for development of quality seed production, processing, and distribution of newly released seed varieties.
- 12) Temporary, experimental seed production and processing plant set up in Far Western Development Region with permanent storage near by.
- 13) Trained personnel.
- 14) Upgraded Crop Coordinator's Stations.
- 15) Upgraded outreach stations in hills.
- 16) Research on environmental, economic, and social aspects of project.

Comments:

This project is attempting to carry out a new approach (developed largely by a Rockefeller Foundation team) to the challenge of making research results more relevant and more readily available to small farmers by conducting research directly in the farmer's fields.

"This project has worked directly with farmers in 6 sites of the Kingdom, 4 of which are located in the hills... All trials are conducted on farmers fields and involve a comparison of productivity and income between plots utilizing existing and improved technology." (Proceedings of the Seminar on Nepal's experience in Hill Agricultural Development, 1981)

Nepal 3670118 Seed Production and Storage

Dates: 78/84 Status: Active Amount Obl: 4,031 Amount Exp. 3,067

Documents: PP, Mid-Term Eval. Rpt.

Goal: To increase the productivity of Nepal's cropping systems, particularly those used on small hill farms.

Purpose: To assist the Ministry of Food, agriculture, and Irrigation in establishing a labor intensive system ultimately based on private growers for producing, testing, processing, storing, and distributing seed of the major food crops cheaply and effectively for the small farmers.

Outputs:

- 1) Trained farmer groups capable of producing seed.
- 2) Seed processing plants set up in the Terai and Hills.
- 3) Seed cleaning and treating machines moved to the remote hills.
- 4) Model seed contracts developed.
- 5) Trained production and processing staff.
- 6) Storage buildings - some humidity controlled.
- 7) Distribution system and staff.
- 8) Seed laboratories established to assist seed producers and warehouse operators manage their operations and to control quality.
- 9) Seed packaging system developed.
- 10) Seed research conducted to improve keeping quality.
- 11) Workable and fair system developed for paying seed premiums.
- 12) Seed preservation unit for genetic stock preservation.

Comments:

The cost of delivering seed to the farmers in the hills and mountains of Nepal is very high. The Government of Nepal has decided that the only viable solution to the problem of supplying seed to isolated farmers is to have the seed produced and processed near where it is to be used.

Peru 5270149 Soy and Corn production on Small Farms

Dates: 79/81 Status: Complete Amount Obl: 2,245 Amount Exp: 2,245

Documents: PP, Audit Rpt.

Goal: Increase productivity, employment and income and improve nutrition among the poor.

Purpose: Achieve increased consumption of corn and soy fortified food products by the poor. Establish soybean production on 34,000 hectares of high jungle land, and raise planting of improved highland corn seed to 36,000 hectares by 1980.

Outputs:

- 1) Expanded corn research and extension network.
- 2) Expanded soy research and extension network.
- 3) Improved corn seed and soybean seed.
- 4) Adapted soy varieties.
- 5) Trained technicians.
- 6) Annual corn and soy production plans.
- 7) Consumer-tested soy products.

Comments:

The most critical constraint in both soybean and corn production is the absence of outreach capacity. Therefore the output most emphasized is the formation of extension and research networks specialized for each project.

Peru 5270156 Sierra Water and Land Use Improvement

Date: 76/84 Status: Active Amount Obl: 11,000 Amount Exp: 8,072

Documents: PES (2), Audit Rpt.

Goal: Increase food production in the Sierra.

Purpose: Improved water and land use in project areas of Cajamarca and Montaro.

Outputs:

- 1) New irrigation structures and canal networks.
- 2) Improved irrigation systems.
- 3) Drainage systems.
- 4) Dams to increase storage capacity.
- 5) Afforestation program.
- 6) Fully staffed regional project offices.
- 7) On-farm land development investments.
- 8) Watershed planning studies.
- 9) Sub-project feasibility studies.
- 10) Terms of reference for watershed planning studies.

Comments:

The project is designed to improve water and land use in the Sierra through the construction and improvement of small irrigation systems on 27 sub-project sites in two Sierra regions. This project fits the "Slopland Agriculture" sector because following sub-project construction, according to a 1979 PES, agricultural development assistance is to be provided to the small farmers in each sub-project area. This will be done to ensure improved crop yields, better cropping alternatives, and a reduction in soil loss from erosion.

Specific objectives as stated in the Logical Framework are:

- 1) 14,900 hectares under new irrigation.
- 2) 13,000 hectares under improved irrigation.
- 3) Increase in total agricultural production.
- 4) Average increase in crop yields.
- 5) Average increase in length of growing season.
- 6) More optimal cropping patterns.
- 7) Reduction in soil loss from erosion.
- 8) Increase in efficiency of water use.

Panama 5250191 Watershed Management I

Dates: 79/85 Status: Active Amount Obl: 10,000 Amount Exp: 8,164

Documents: PP, Final Rpt., PES, Audit Rpt.

Goal: Rational, productive, economic, and equitable use of Panama's renewable natural resources obtained.

Purpose: 1) Technical, managerial, and administrative capabilities of the government institution responsible for the management of renewable natural resources strengthened
2) Awareness of the importance of natural resource conservation increased.
3) Implementation of on-going watershed management initiated in the canal and two other priority watersheds that incorporate the watersheds' populations into the resource management/conservation process.

Outputs:

- 1) Capacity of the Directorate of Renewable Natural Resources (RENARE) to undertake watershed management projects increased.
- 2) Resource conservation information program established.
- 3) Watershed management program initiated in Canal Watershed, La Villa Watershed, and Caldera Watershed.

Comments:

Canal Watershed: Approximately 10,500 hectares will be reforested, providing employment for a large segment of the Canal Watershed's rural population while helping to reduce the current trend toward the establishment of pastures on steeply sloped hillsides. Included will be forest plantations, agro-forestry, and permanent crops. Specific erosion control measures will be implemented to control or prevent gully erosion, particularly along roadways, in pastures and in urbanized areas.

Rio Caldera Watershed: Critical areas will be located in the watershed area and a soil and water district will be established on a pilot basis in a 150 hectare area. A tree nursery will be established, stream bed clearing initiated, and check dams constructed.

Upper Rio La Villa Watershed: A similar plan to that of Rio Caldero will be implemented with reforestation and simple soil conservation activities.

Haiti 5210078 Integrated Agricultural Development

Dates: 76/85 Status: Active Amount Obl: 11,015 Amount Exp: 8,213

Documents: PP

Goal: To increase the production and incomes of Haitian small farmers.

Purpose: 1) To develop an institutional capacity for delivering the necessary resources and services to the target group; and 2) To implement such a system on a pilot basis in selected regions.

Outputs:

The focus of the project is on the improvement of the operational and administrative capacity of the Department of Agriculture, Natural Resources and Rural Development (DARNDR). The project aims at strengthening the four primary services of DARNDR: administration, irrigation, soil conservation, and research and extension.

Project Administration Component: This component focuses on assistance to the administrative group of DARNDR, which is responsible for the administration and coordination of the inputs of the various sub-projects.

Irrigation Systems Sub-Projects: The objective of the irrigation sub-project is to strengthen the Irrigation Service of DARNDR. The target is to rehabilitate approximately 2,100 hectares in two phases over the next four years, involving a maximum of four irrigation systems. It is anticipated that by the end of the project period, the Irrigation Service would have improved its capacity to develop and manage the water resource systems of Haiti.

Soil Conservation Sub-Project: The objective of this component is to strengthen the capacity of the Soil Conservation Service of DARNDR to provide services to hillside small farmers through the design, implementation and maintenance of soil conservation and watershed management programs.

Research and Development, Agricultural Extension: The objective of this activity is to strengthen the linkages between the research and extension departments in DARNDR. This will be achieved through the development of technological packages for traditional Haitian food crops by the research unit and the creation in the extension section of the capacity to disseminate these production improvement techniques to the target farmers.

Nepal 3670132 Resource Conservation and Utilization

Dates: 80/85 Status: Active Amount Obl: 18,388 Amount Exp: 12,984

Documents: PP

Goal: To improve the standard of living of the rural poor through increased agricultural production, raise the nutritional level of the rural population and to develop employment opportunities in rural areas.

Purpose: To assist Nepal in the protection and restoration of the soil, water, and plant resource base upon which the rural population is totally dependent.

Outputs:

- 1) Increase number of trained persons in natural resource management.
- 2) Watershed and forest management programs established.
- 3) Fodder and fuelwood tree plantations established.
- 4) Increased crop yields.
- 5) Increased livestock productivity.

Comments:

The project paper states that the overall strategy of the project is integrative and multi-objective, based upon the fact that any given ecosystem is composed of a number of variables which interact and have feed-back on one another. Several strategies must be followed and several objectives met simultaneously. The overall strategy includes: 1) Institutional Development, 2) Energy Alternatives, 3) Forest Management, 4) Range Management, 5) Agricultural Improvements, and 6) Watershed Management.

Lesotho 6320031 Thaba Bosiu Rural Development

Dates: 73/80 Status: Complete Amount Obl: 3,225 Amount Exp: 3,225

Documentation: PES, Spec. Eval.

Goal: To improve the quality of life of the rural poor.

Purpose: To increase the agricultural productivity and farmer income while reducing soil erosion through A) provision of credit market, agricultural inputs and technology, and B) modifications of traditional farming systems within the culture which result in cropping and husbandry management consistent with sound conservation practices.

Outputs:

- 1) Conservation-oriented land use plans published
- 2) Soil conservation measures of terraces, drop structures, grassed waterways, access roads, dams, and fences constructed.
- 3) Soil conservation personnel trained for posts in the Ministry of Agriculture.
- 4) Farming Systems Research Unit established.
- 5) Research/data base for conservation-oriented farming systems developed.
- 6) Farming systems plans employed.
- 7) Small-scale farmer tests of the acceptability of modified conservation related farming practices completed.
- 8) A reasonable and effective system of reaching the farmers developed.

Comments:

The project was originally a joint World Bank/AID venture. In 1977 the World Bank withdrew its support from the project, thus changing the purpose of the project from general rural development to a more focused soil conservation scope. Major World Bank programs in the project included livestock, roads, and project administration.

Soil conservation measures implemented in the project are directed toward the two broad areas of rangeland and cropland. Rangeland consists of the sloping land in the lowlands and foothills and the land in the high mountains. Cropland is only for the production of food crops, not crops for feeding livestock. The principal food crops are corn, sorghum, and wheat. The major soil erosion problems occur in the overlap of the rangeland and the cropland. Overpopulation creating cropping of the sloping rangeland and grazing of cropland after harvest contribute greatly to severe soil erosion.

PROJECT IDENTIFICATION

The following descriptors (key words) were used in a MINISIS search to identify possible slopeland projects:

agricultural production	conservation
tropical agriculture	erosion
shifting upland cultivation	soil conservation
coffee	soil management
watershed	natural resource management
watershed management	grading
afforestation	water conservation
deforestation	degradation
ecology	water management
check dams	

With the assistance CDIE/DIU a free text search was completed. All project abstracts on the MINISIS system were searched for the following terms:

highland
upland
hill land
terracing

A review of Country Development Strategy Statements (CDSS) from the late 1970's identified the following countries that have placed a priority on agricultural development of the slopelands:

Nepal	Ecuador
Thailand	Peru
Cameroon	Haiti
Tanzania	Guatemala

The searches described above yielded over 400 projects. A review of the abstracts of these projects narrowed the list to 42 possible candidate projects for the slopeland "sector". Of these 42 projects, 12 were selected as candidate projects for impact evaluation.

From a preliminary list of projects, the following were rejected as candidate projects for impact evaluation. A review of project documentation indicated that these projects were inappropriate for impact evaluation in this sector based primarily on the following criteria:

- 1) Appropriateness - Does the project fit a broad definition of the sector?
- 2) Project Cost - Can financial justification be made for sending an evaluation team?
- 3) Completion Date - Is the project complete or has it progressed sufficiently so that impact can be judged?

Niger	6830230	Forestry and Land-Use Planning	1
Swaziland	6450068	RDA Infrastructure Support	1
Jordan	2780228	Community Development	2
Jordan	2780264	Highland Agricultural Development	3
Yemen	2790031	Rural Development	1
Yemen	2790052	Agricultural Development Support	1
Peru	5270192	Agricultural Research, Extension, and Education	3
Sri Lanka	3830042	Mahaweli Ganga Irrigation-Water Management Research	
Pakistan	3910403	Dry Land Agricultural Development I	1
Philippines	4920303	BICOL Integrated Area Development	
Philippines	4920289	BICOL Integrated Area Development III	3
Philippines	4920366	Rainfed Resources Development	3
Indonesia	4970240	Rural Works	
Indonesia	4970281	Citanduy II	3
Indonesia	4970330	East Timor Agricultural Development	3
Dominican Rep.	5170116	Agricultural Sector II	1
Dominican Rep.	5170029	Agricultural Sector II	1
Dominican Rep.	5170126	Natural Resource Management	3
Guatemala	5200249	Integrated Area Development	studies
Guatemala	5200255	Small Farm Diversification Systems	3
Guatemala	5200274	Highlands Agricultural Development	3
Haiti	5210080	Soil/Water Resource Development	
Honduras	5220150	Agricultural Sector II Program	
Peru	5270179	IPFE Campesino Skills Training	2
Peru	5270188	Water Management in Small Communities	
Peru	5270220	Soil Conservation	no doc.
Peru	5270240	Central Selva Resource Management	3
Panama	5250200	Guaymi Area Development	1
Thailand	4930294	Mae Cham Watershed Development	3
Sri Lanka	3830055	Reforestation/Watershed Management	3
Thailand	4930241	Highland Development	2
Burundi	6950105	Bururi Forest	1

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SLOPELAND AGRICULTURE
ADDITIONAL BIBLIOGRAPHY

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Contents

1. Hills and Uplands in Britain—The Limitations and the Development of Potential/Roy Hughes	1
2. Situation and Trends of Hill Land Management in Central Europe/G. Voigtländer and G. Spatz	8
3. Hill Land Use in the United States/R. M. Davis	15
4. Hill Country Farming in New Zealand: An Overview/R. W. Broughman and D. A. Grant	18
5. Land and Life in the Nepal Himalayas/S. B. Nepali	24
6. Hill Land Agriculture in the Humid Tropics/D. J. Plucknett	29
7. Development and Use of Hill Lands for Intensive Agriculture in Sri Lanka/R. R. Appadurai	39
8. Intensive Crop and Animal Production Systems in the Tropical Hill Lands of Puerto Rico/José Vicente-Chandler	47
10A. The Appalachian Mountains/Earl L. Core	56
11. Breeding Grasses and Legumes for Hill Environments in Britain/E. L. Breese	59
12. Techniques for Hill Land Improvement Used in the United Kingdom/Peter Newbould	66
13. Hill Land Improvement in Eastern United States/R. W. Van Keuren	77
14. Factors Affecting Pasture Establishment in Non-cultivated Seedbeds on Hill Country in Temperate and Sub-tropical Australia/F. G. Swain	90
15. Legume Based Pastures on Tropical Hill Lands/C. R. Roberts	101
17. Andean Culture and Agriculture: Perspectives on Development/Stephen B. Brush	109
18. Social Organization of Peasant Farming in Mountain Areas of Mexico/Marielle Martinez	115
19. Sociocultural and Agricultural Organization in Hill Lands in Kenya/Susan W. Almy	119
20. Changes in Rural Social Organizations as They Relate to Hill Farming: A Comparison Between Rural Mountainous Appalachian and Greek Communities/John Photiadis	126
21. Pasture Establishment on Unplowed Hill Land in New South Wales, Australia/M. H. Campbell	135
22. Minimum Tillage Establishment of Five Forage Species Using Five Sod-Seeding Units and Two Herbicides/A. M. Decker and R. F. Dudley	140
23. Pasture Renovation with Alternate Row Sod-seeding of Different Legume Species/A. M. Decker, J. H. Vandersall, and N. A. Clark	146
24. Herbage Variety Evaluation Under Hill and Upland Conditions in Wales/James M. M. Munro	150

26

CONTENTS

25. Hill Pasture Improvement in Galicia/F. X. Sineiro	157
26. Development and Productivity of Overseeded Pastures on Hill Country in Northern New South Wales, Australia/P. M. Dowling . . .	163
27. Aerial Application of Herbicides, Seed, and Fertilizer Improves Forage on Ozark Hill Lands/E. J. Peters	167
28. Production and Species Composition of Hill Pastures as Influenced By Lime and Fertilizer/Barton S. Baker	171
29. Effect of Phosphorus, Sulfur and Molybdenum on Subclover-Grass Hill Pasture Yields in Southwestern Oregon, USA/Lynn Cannon	175
30. Lime and Phosphorus Response of <i>Medicago sativa</i> Seedlings on Low pH Hill Land Soils/D. Webel, P. R. Henderlong, and F. L. Himes . . .	177
31. The Challenge and Threat of Tourism Among the Eastern Cherokees/Laurence French	180
32. Development Control in Hill Lands/R. L. Keber	184
33. Social Adaptation to the Mountain Environment of an Andean Village/William P. Mitchell	187
34. Socio-Ecological Evolution in the Hill Country of Southwestern West Virginia/Robert L. Smith	198
35. Past and Present in the Swiss Alps/Ellen Wiegandt	203
36. The Tragedy of the Commons Revisited: Land Use and Environmental Quality in High-Altitude Andean Grasslands/ Benjamin S. Orlove	208
37. Combatting Forage Abuses and Social Problems for Atlas Mountain Berbers/J. M. Teitelbaum	214
38. The Evolution of Country Planning As an Alternative to Urban Planning for Rural Areas/W. P. Dinsmoor White	219
39. Nute Ridge—Half a Century Later/Silas B. Weeks	223
40. Hill Farming in Relation to Future Food Policies/H. F. Breimyer . . .	228
42. Economics of Hill and Mountain Farming in the United Kingdom/J. Pearce	232
43. Economic Evaluation of Food Crop Production on Hillsides— The Caribbean Experience/L. B. Rankine	242
44. Hill Land Farming: An International Dimension/W. C. Thiesenhusen . . .	254
45. Crop Production on Hill Lands: Has the Small Farmer Been Bypassed?/L. V. Crowder	264
48. Crop Production Complexes in Hill Lands of the Philippines/ R. L. Tinsley	277
49. New Systems of Hill Farming in Scotland/J. B. McCreath	285
50. Economics of Hill Land Utilization in Thailand/S. Vastuvat	291
51. A Method for Analyzing the Contributions of Forest-Based Activity to a Region/G. W. Zinn	293
52. Land Use Patterns in Appalachia/D. K. Colyer	297

CONTENTS

53. Rapid Adjustment Farms: A Method to Demonstrate New Crop-Livestock Technology and Farm Management in Ohio's Appalachian Counties/J. F. Underwood, W. P. Smith, and D. P. Miller	301
54. The Economic Implication in the Application of New Techniques to Hill Sheep Farming in Scotland/T. J. Maxwell, J. Eadie, and A. R. Sibbald	306
55. The Allegheny Highlands Project: An Experiment in Packaged, Team-Approach Technology for Hill Land Livestock Production/L. Balliet	312
56. Forage Improvement in Appalachian Ohio Through Sod Seeding/J. F. Underwood and J. C. Clay	316
56A. Interdisciplinary Research-and-Action in the Uttar Pradesh Hills/C. R. Bailey	320
57. Crop Production of Arable and Meadow Plants in High and Low Altitudes in Norway/P. Solberg	325
58. Crop Diversification in Lowland Bolivian Hills/J. A. Duke	331
59. Appraising Land Potentials for Commercial Apple Production/R. F. Gorman	336
60. Tree Fruit Production in the Mountains of the Central Atlantic States/M. Ingle and S. H. Blizzard	341
62. No-Till Corn Production in Tall Fescue/J. E. Box, Jr., S. R. Wilkinsoa, and L. A. Harper	344
63. Tillage Options for Corn Production on Sloping Topography/S. W. Bone, D. M. Van Doren, Jr., and G. B. Triplett, Jr.	350
64. Factors Influencing Hazelnut Production in the Giresun and Ordu Provinces of Turkey: An Analysis of Relative Efficiency Based on the Profit Function/H. Kasnakoglu and K. Somel	353
65. Cropping of <i>Lupinus</i> Species on Hill Lands in Sub-Tropical Areas on the East Coast of Australia/R. M. Hughes	358
66. Ironbark Ridges—Problems of Utilization/W. H. Johnston	362
67. A 20-Year Study of Pasture Development Through Phosphate and Legume Oversowing on North Island Hill Country of New Zealand/F. E. T. Suckling	367
68. Stabilization of Hill Areas Under Adverse Grazing and Climatic Conditions at Wagga Wagga, New South Wales, Australia/C. M. Adamson	381
69. Upland Soils of County Leitrim, Ireland/M. Walsh	385
70. The Development of Lowland Hill Tussock Grasslands in South East New Zealand/A. W. Pantall	390
71. The Contouring of Hill Land Into Linked Narrow Terraces for Tree Cultivation/L. Lisa	394
72. Cover Crops, Mulching, Grass Barriers and Grass Waterways on Hill Land Orchards/Hsiao-tsai Wang	399
73. Effects of Bench Terrace and Improved Hillside Ditch/Mien-chun L ao	404

CONTENTS

74. Farmability Evaluation of Broadbase and Grassed Backslope Terrace Systems / H. D. Wattmuss	409
75. Traditional Slope Management: An Analytical Approach / G. C. Wilken	416
75A. Use of Aerial Techniques for Pasture Improvement in the Hill Lands of Iran / M. H. Campbell and A. Eshghi	422
75B. Fertilization As a System of Improvement of Eroded Pastures / D. Filipovic and D. Stevanovic	427
76. The Selection and Breeding of Plants Adapted to Low Fertility and Toxic Soils / A. D. Bradshaw	435
77. Reclamation of Surface-Mined Areas in the United States / H. L. Barrows	445
79. Some General Problems of Soil Erosion of Disturbed Lands in the Caribbean / L. A. Wulsen	457
80. The Influence of Soil and Climate on the Productivity of Grassland in Hill Areas / M. B. Alcock	465
81. Responses of Perennial Grasses and Legumes to Slope and Microclimate / O. L. Bennett, E. L. Mathias, and G. A. Jung	476
82. Soil-Plant Ecosystems in Tropical Hill Country (The late) D. F. Nicholls and D. L. Plunknett	491
83. Understanding Hill Land Ecology in New Zealand As a Basis for Management / K. F. O'Conner	499
84. Energetic Efficiency of Animal Production in Hill Environments / J. T. Reid and O. D. White	507
85. Land Rehabilitation in the Upper Solo River Area / M. H. Sordarma and S. Wiradinata	518
86. Rehabilitation of the Lynx Creek Watershed Degraded by Past Mining Activities / T. R. Verma, I. L. Thomas, and D. B. Thorud	523
87. Revegetation of Steep Outer Slopes for Erosion Control in Strip-Mined Areas / W. H. Armiger, J. N. Jones, Jr., O. L. Bennett, F. L. Bagley, and G. E. Griebel	529
88. Planning Criteria and Use of Highly Disturbed Soils / A. A. Sobek, R. M. Smith, and T. Arkle, Jr.	535
89. Reclamation of Mined Hill Land—Management Factor Interactions / W. E. Grube, Jr.	540
90. Response of Four Grass Species to Rock Phosphate on an Acid Strip Mine Spoil / J. W. Schwartz and C. D. Foy	544
91. Tailoring Plants for Greater Tolerance to Mineral Toxicities and Deficiencies on Hill Land Soils / C. D. Foy	548
92. Specialty Crops—An Alternate Land Use on Surface Mine Spoil / J. N. Jones, Jr., W. H. Armiger, and O. L. Bennett	560
94. Reclamation Technology Training in the United States / P. N. Angel	565
95. Dwindling Wildlife in the Changing Ecosystem of the Northwest Himalaya with Special Reference to Rare Birds and Mammals / H. R. Kalia and B. K. Kaul	568
96. Ecology of Borrow Pits / R. W. Enser and W. P. Gould	574
97. Reclamation and Management of Surface Mines for Game and Non-Game Birds / D. E. Samuel and R. C. Whitmore	578

CONTENTS

98. Extending the Seasonality of Growth of Hill Land Pastures/ J. H. Ollerenshaw, W. S. Stewart, J. F. Gallimore, and R. H. Baker . . .	583
99. Ecological and Production Aspects of a North- and South-Facing Slope Pasture System/L. P. Stevens, G. C. Anderson, and P. R. Henderlong	587
100. Seasonal Yield Distribution, N Fertilizer Response and Utilization of <i>Poa pratensis</i> on North- and South-Facing Slopes/ P. R. Henderlong, O. L. Bennett, and E. L. Mathias	592
101. The Utilization of Radiation Energy in Differently Managed Alpine Pastures/G. Spatz and G. Voiglander	597
103. Carbohydrate Content and Quality in Plants Depending on Climate Conditions in the Northern Alpine Area/W. Kuhbauch	601
104. Intensive Rearing Systems for Sheep Production/L. Ainsworth, A. J. Hackett, D. P. Heaney, G. A. Langford, H. F. Peters, and J. N. B. Shrestha	610
105. Grazing Systems for Hill Lands/T. B. Trew	618
106. Utilization of Pennsylvania Hill Land Pastures for Beef Production, J. B. Washko and L. L. Wilson	620
107. Sheep and Cattle Pastoral Grazing Systems on New Zealand Hill Country/A. W. Pantall	624
108. Comparison of Hay Package Types for Beef Cow Wintering Programs/L. L. Wilson, W. L. Kjelgaard, P. M. Anderson, J. B. Washko, H. Nahir, L. D. Hoffman, and T. A. Long	627
109. Synchronized Estrus and Use of Artificial Insemination in Small Herds of Beef Cattle/J. B. Peters, J. A. Welch, A. L. Barr, and E. K. Inskip	631
110. Incidence and Methods of Preventing Grass Tetany/W. H. Smith, J. R. Hodges, and V. L. Lechtenberg	635
111. Grass Tetany as a Metabolic Problem in the Eastern United States/R. L. Reid, G. A. Jung, and C. F. Gross	640
112. Dynamism and Conflicts in the Multiple Use of Hill Lands/ W. E. S. Mutch	649
113. Integration of Horticultural Crops with Cattle and Tobacco Enterprises in the Appalachian Area of Western North Carolina/ D. D. Robinson	656
115. Livestock Production and Forestry on Western Hill Country/W. Mosher	661
116. Some Aspects of Sheep and Beef Cattle Production on New Zealand Hill Country/G. K. Hight	666
117. Forage-Animal Production Systems on Hill Land in the Eastern United States/R. E. Blaser, R. C. Hammes, Jr., J. P. Fontenot, C. E. Polan, H. T. Bryant, and D. D. Wolf	674
118. Animal Production Systems from Hill Country in the United Kingdom/J. Eadie	686
119. Technically Feasible, Economically Marginal and a Social Exercise: Beef Production from Hill Land in Fiji/I. J. Partridge	692
120. Role of the Soil Conservation Service Plant Materials Work in Developing Plants for Hill Lands/W. C. Sharp	697

CONTENTS

121. Clipping Effect on Stand, Yield, and Quality of Three Warm Season Grasses D. S. Henry, H. W. Everett, and J. K. Evans	701
123. Tropical Forest Land-Use Evolution in Northern Thailand S. Wacharakitti	705
124. Honey Production on Reclaimed Strip Mine Spoil P. N. Angel and C. M. Christensen	708
125. Use of a Mathematical Model to Evaluate the Hydrological Effects of Land-Use Change K. J. Langford and J. L. McGuinness	711
126. Federal-State Cooperation Encourages Multiple-Use Management of Private Forestland in Northeastern United States R. F. Watt	716
127. Multiple Use Management of West Virginia Hill Land E. C. Bammel	721
129. Dairy Beef Production in the Guatemalan Highlands M. F. Cabezas and R. Bressani	723
130. Beef Production on Sloping Land in Southwestern Wisconsin J. M. Scholl and W. H. Paulson	728
131. Pasture Management and Beef Production in the Southern Piedmont S. R. Wilkinson and J. A. Stuedemann	732
133. Pasture Performance of Beef Cows and Calves Grazing Orchardgrass, Tall Fescue, and Tall Fescue-Legume Herbage V. L. Lechtenberg, W. H. Smith, and D. C. Petritz	738
134. Management Systems for Sheep and Lamb Production on Hill Land J. M. Lewis, F. C. Hinds, H. A. Cate, M. E. Mansfield, and G. E. McKibben	743
135. Present Use and Development Potential of Hill Land in Ireland M. A. O'Toole	747
136. Responses in Output Achieved from Improved Systems of Hill Sheep Production	
Part I. In the Eastern Cheviots J. Eadie, R. H. Armstrong, and T. J. Maxwell	752
Part II. On Blanket Peat in the West of Scotland J. Eadie, T. J. Maxwell, and D. C. Currie	754
137. Grazing and Pasture Management Trial of Coos County, Oregon, USA L. Cannon	757
Strategies for the Management and Development of Hill Land—Summary of Discussion Workshop E. DeVries	760

FRAGILE LANDS

**A Theme Paper on
Problems, Issues, and
Approaches for
Development of
Humid Tropical Lowlands
and Steep Slopes in the
Latin American Region**

Prepared under contract for U.S. Agency for International Development (IQC Contract Number PDC-1406-I-14-1135-00), Bureaus of Science and Technology and Latin America and the Caribbean

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137

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ANNEX C

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Volume 1, No. 1

May, 1981

CONTENTS

Foreword: Soedjatmoko, Rector, The United Nations University	1
Editorial	3-4
High-altitude Tibetan Populations in the Remote Himalaya: Social Transformation and its Demographic, Economic, and Ecological Consequences MELVYN C. GOLDSTEIN	5-18
Agrarian Ecology and Peasant Production in the Central Andes DAVID GUILLET	19-28
The Vegetation Zonation of the Tibetan Plateau D. H. S. CHANG	29-48
Mountain Research for Conservation and Development in Simen-Ethiopia (with fold-in map) HANS HURNI AND BRUNO MESSERLI	49-54
Mountain Hazards Mapping: The Development of a Prototype Combined Hazards Map, Monarch Lake Quadrangle, Colorado, U.S.A. (with fold-in map) VICKI DOW, HANS KIENHOLZ, MISHA PLAM, AND JACK D. IVES	55-64
Environmental Conflict Management: One Organization's Efforts to Create New Ways to Solve Problems SUSAN L. CARPENTER AND W. J. D. KENNEDY	65-70
Highland-Lowland Interactions in Enga Province, Papua New Guinea COLIN F. PAIN AND G. A. J. SCOTT	71-78
MOUNTAIN CHRONICLES	
High Mountains and Plateaus: An Excursion to the Roof of the World	79-83
Nepal Studies Association/Himalaya Research Bulletin	83
Commission on Mountain Geocology: Symposium in Japan Alps, August 24 to 31, 1980	83-84
REVIEWS Review Editor: Michael Tobias	85-88
CORRESPONDENCE	89-90

MOUNTAIN RESEARCH AND DEVELOPMENT

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Arbeitsgemeinschaft für Vergleichende Hochgebirgsforschung, Munich

Volume 1, No. 2

August, 1981

CONTENTS

Foreword	95-96
Abstracts in English, French, German, and Spanish	97-102
Planning and Development of Man and the Biosphere (MAB) Research in the Andes MICHAEL A. LITTLE, PAUL T. BAKER, AND JACK D. IVES.	103-114
Geocology of the Andes: The Natural Science Basis for Research Planning EDUARDO GOMEZ MOLINA AND ADRIENNE V. LITTLE.	115-144
Human Populations of the Andes: The Human Science Basis for Research Planning MICHAEL A. LITTLE	145-170
Guidelines for Integrated Ecological Research in the Andean Region GISEBERT GLASER AND JOHN CELECIA	171-186

CONTENTS

Editorial.....	187
International Mountain Society.....	188-191
Microenvironmental Studies in the Laurel Forests of the Canary Islands PETER HÖLLERMANN.....	193-207
Ecoclimatological Conditions of the Paramo Belt in the Tropical High Mountains WILHELM LAUER.....	209-221
Mountain Hazards Mapping in Nepal: Introduction to an Applied Mountain Research Project JACK D. IVES AND BRUNO MESSERLI.....	223-230
Channel Geometry and Flow Estimates for Two Small Mountain Streams in the Middle Hills, Nepal NEL CAINE AND PRADEEP K. MOOL.....	231-243
Reafforestation in the French Southern Alps ANNICK DOUGUEDROIT.....	245-252
What Does the Term "Krummholz" Really Mean? Observations with Special Reference to the Alps and the Colorado Front Range FRIEDRICH-KARL HOLTMEIER.....	253-260
The Vegetation of Mount Iide, as Representative of Mountains with Heavy Snowfall in Japan TAKAO KIKUCHI.....	261-265
Potential Evapotranspiration in Mountain Geoeosystems of Different Altitudes and Latitudes INGRID HENNING AND DIETER HENNING.....	267-274
Temperature Inversion and Vegetation Inversion in Xishuangbanna, Southwestern Yunnan, People's Republic of China JIANG AI-LIANG.....	275-280
Colonization of Disturbed Alpine Sites by <i>Arenaria groenlandica</i> , White Mountains, New Hampshire, U.S.A.: A Stochastic Model PETER J. MARCHAND AND GLENN D. SPROUL.....	281-286
Growth of Dominant Chilean Shrubs in the Andean Cordillera M. E. ALJARO AND G. MONTENEGRO.....	287-291

MOUNTAIN CHRONICLES

The Heavenly Mountains: An Excursion to the Tien Shan, People's Republic of China.....	293-298
Agricultural, Livestock, and Forestry Production in the Hill Lands of Tropical America.....	298-301
Séminaire C.N.R.S./N.S.F.-Paris. L'homme et son environnement à haute altitude (Environmental and Human Population Problems at High Altitude).....	301-302
The First New Zealand Conference on Wilderness Preservation.....	302-303
Workshop on Stability and Instability of Mountain Ecosystems, Berne, Switzerland.....	303
International Conference: Ecology and Biogeography of Mountains and High Altitude, Laruns, France.....	303-304
REVIEWS.....	305-312
CORRESPONDENCE.....	313
INDEX, VOLUME 1.....	315-317

MOUNTAIN RESEARCH AND DEVELOPMENT

Publishers: International Mountain Society and The United Nations University

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Arbeitsgemeinschaft für Vergleichende Hochgebirgsforschung, Munich

Volume 2, No. 1

February 1982

CONTENTS

STATE OF KNOWLEDGE REPORT ON ANDEAN ECOSYSTEMS

VOLUME TWO: CENTRAL ANDES

Editor: PAUL T. BAKER

Preface	6
Abstracts in English, French, German, and Spanish.....	7-17
The Natural and Human Environment of the Central Andes STEPHEN B. BRUSH	19-38
Development of Land-Use Patterns in the Central Andes OLIVIER DOLLFUS.....	39-48
Patterns of Land Use and Associated Environmental Problems of the Central Andes: An Integrated Summary JOSE MILLONES O.....	49-61
Contemporary Patterns of Migration in the Central Andes GABRIEL ESCOBAR M. AND CYNTHIA M. BEALL.....	63-80
The Biology and Health of Andean Migrants: A Case Study in South Coastal Peru PAUL T. BAKER AND CYNTHIA M. BEALL.....	81-95
Human Ecological Modelling for the Central Andes STEPHEN D. McRAE.....	97-110
Environment, Human Settlement, and Agriculture in the Puna de Jujuy, Argentina: A Case Study of Land-Use Change MARTA OTTONELLO DE G. REINOSO AND BARBARA RUTHSATZ.....	111-126
The Central Andes: Environment, Biology, and Economic Development: A Perspective PAUL T. BAKER.....	127-140

MOUNTAIN RESEARCH AND DEVELOPMENT

Publishers: International Mountain Society and The United Nations University

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University of Berne, Berne, Switzerland
University of Colorado, Boulder, U.S.A.

Volume 2, No. 2

May 1982

CONTENTS

Editorial	-
Soil Erosion in Huai Thung Choa-Northern Thailand: Concerns and Constraints HANS HURNI	-
Landslides in the Kolpu Khola Drainage, Middle Mountains, Nepal NEIL CAINE AND PRADEEP K. MOOL	-
Environmental Knowledge and Response to Natural Hazards in Mountainous Nepal KIRSTEN JOHNSON, ELIZABETH ANN OLSON, AND SUMITRA MANANDHAR	-
Impact of Trampling upon the Vegetation of Andean Areas in Central Chile A.J. HOFFMANN AND C. ALLENDE	-
Landscape Change and Geomedical Consequences in the Highlands of Sri Lanka (Ceylon) ULRICH SCHWEINFURTH	-
Soils of the Mount Kenya Area: Their Formation, Ecological, and Agricultural Significance (with Soil Map, Scale 1:125,000) HEINRICH SPECK	-
MOUNTAIN CHRONICLES	
Preliminary Notes and Observations on Development of the Bumthang Area of Bhutan	-
The First New Zealand Conference on Wilderness Preservation	-
Recent News from China	-
New Regulations for Foreign Mountaineering Expeditions to China	-
REVIEWS	-
CORRESPONDENCE	-

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Volume 2, No. 3

August 1982

CONTENTS

STATE OF KNOWLEDGE REPORT ON ANDEAN ECOSYSTEMS

VOLUME THREE: THE NORTHERN ANDES: ENVIRONMENTAL AND CULTURAL CHANGE

Editor: DENNIS V. JOHNSON

Foreword	viii
Abstracts in English, French, German, and Spanish	245-252
The Northern Andean Environment	
JAMES J. PARSONS	253-262
Evolution of Land-Use Patterns and Agricultural Systems	
DAVID L. CLAWSON AND RAYMOND E. CRIST	265-272
A Classification of the Steeplands in the Northern Andes	
JOSHUA L. POSNER, GUSTAVO A. ANTONINI, GUSTAVO MONTANEZ, ROBERT CECIL, AND MONA GRIGSBY	273-280
The Interaction Between Environment and Nutrition	
WILLIAM A. STINI	281-288
Cultural Change and Environmental Awareness: A Case Study of the Sierra Nevada de Santa Marta, Colombia	
G. REICHEL-DOLMATOFF	289-298
Recent Trends in Human Migrations: The Case of the Venezuelan Andes	
MARÍA MATILDE SUÁREZ AND RICARDO TORREALBA	299-306
Selecting and Evaluating New Technology for Small Farmers in the Colombian Andes	
JOHN H. SANDERS AND DENNIS V. JOHNSON	307-316
Development Planning at the Interface of Mountain and Plain: A Venezuelan Case Study	
JOSHUA C. DICKINSON	317-326
Biophysical Constraints to Development: Dream and Reality	
DENNIS V. JOHNSON	327-332
Annex: Biotic Resources for Potential Development	
VICTOR MANUEL PATIÑO	333-336

MOUNTAIN RESEARCH AND DEVELOPMENT

Publishers: International Mountain Society and The United Nations University

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Volume 2, No. 4

November 1982

CONTENTS

A Mountain Environmental Atlas: The Indian Peaks Area, Colorado Front Range, U.S.A. A Prospectus (with Shaded Relief Map) JACK D. IVES AND VICKI DOW	337-348
The Use of Air Photographs for Mapping Natural Hazards in Mountainous Areas: A Study Based on the Colorado Rocky Mountains, U.S.A. HANS KIENHOLZ AND MARKUS BICHSEL	349-358
Climatic Characteristics of Pike's Peak, Colorado (1874-1880) and Comparisons with Other Colorado Stations HENRY F. DIAZ, ROGER G. BARRY, AND GEORGE KILADIS	359-371
Climatic Factors and Radial Growth in Conifers Near Timberline and their Application to Reforestation Problems HANS-NIKLAUS MÜLLER	373-384
Air Pollution in the Mountains UWE RADOK	385-389
Mountain Geography—A New Approach ARNON SOFFER	391-398
The Climate of Namche Bazar: A Bioclimatic Analysis D. P. JOSHI	399-403
MOUNTAIN CHRONICLES	
A Buried Podzol Near Namche Bazar, Nepal	405-406
SAIPAL 82: A Biological Survey of Nepal's Far Western Hills	406-409
Anthropologists at Work in Development: Issues, Methods, and Theory	409
Information on Activities of Other Organizations	409-410
REVIEWS	411-421
INDEX, Volume 2	423-425

MOUNTAIN RESEARCH AND DEVELOPMENT

Publishers: International Mountain Society and The United Nations University

With support from:

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Universität Bern, Berne, Switzerland
University of Colorado, Boulder, U.S.A.

Volume 3, No. 1

February 1983

CONTENTS

The Palace of Leh in Ladakh: An Example of Himalayan Architecture in Need of Preservation CORNEILLE JEST AND JOHN SANDAY	1-11
The Visual Landscape of the Indian Peaks Area, Colorado Front Range, U.S.A. (with Coloured Map, Scale 1:50,000) ROLAND BAUMGARTNER	13-25
Seismic Risk and Mountain Environments: The Role of Surface Conditions in Earthquake Disaster KENNETH HEWITT	27-44
<i>Laretia acaulis</i> , a Cushion Plant of the Andes: Ethnobotanical Aspects and the Impact of its Harvesting M.C. ALLIENDE AND A. J. HOFFMANN	45-51
Soils of the White Mountains of New Hampshire and their Suitability for Recreational Development GEORGE D. BAILEY AND S.A.L. PILGRIM	53-60
From a Mountain-Rural to a Plains-Urban Society: Implications of the 1981 Nepal Census MELVYN C. GOLDSTEIN, JAMES L. ROSS, AND SIDNEY SCHULER	61-64
MOUNTAIN CHRONICLES	
Traditional and New Technology Development in the Himalaya ANDREAS BACHMANN	65-70
International Seminar on Tibetan Studies	71
Llamas in North America	71
Ferdinand von Richthofen Symposium, Berlin 1983	72
REVIEWS	73-75

MOUNTAIN RESEARCH AND DEVELOPMENT

Volume 3, No. 2

May 1983

CONTENTS

Preface	77-78
Official Opening of the Workshop on Stability and Instability of Mountain Ecosystems, Berne, Switzerland, September 1981. Address of Welcome. ERNST SCHUMACHER	79
Stability and Instability of Mountain Ecosystems: Introduction to the Workshop BRUNO MESSERLI	81-94
Typology and Principles of Ecological Stability and Instability ANDREAS GICON	95-102
Stability and Instability of Mountain Ecosystems: Definitions for Evaluation of Human Systems MATTHIAS WINIGER	103-111
Key Processes for Stability and Instability of Mountain Ecosystems: Is the Bottleneck Really a Data Problem? SAMUEL P. MAUCH	113-119
Unstable and Vulnerable Ecosystems: a Comment Based on MAB Research in Island Ecosystems GISBERT GLASER	121-123
Rural Development in Mountain Areas: Why Progress is so Difficult KLAUS J. LAMPE	125-129
Soil Erosion and Soil Formation in Agricultural Ecosystems: Ethiopia and Northern Thailand HANS HURNI	131-142
Land Resources and Agricultural Utilization in Xizang Autonomous Region, China HONGLEI SUN	143-148
Stability and Instability of Natural and Modified Upper Timberline Landscapes in the Colorado Rocky Mountains, U.S.A. JACK D. IVES AND KATHERINE J. HANSEN-BRISTOW	149-155
The Impact of Hydroelectric Power Plants on a Mountainous Environment: a Technique for Assessing Environmental Impacts SIMON AEGERTER AND PAUL MESSERLI	157-175
MOUNTAIN CHRONICLES	
Renewable Resource Development in the Mountain Areas of the World: Mohonk Mountain Seminar, 5-10 December 1982: an Interim Report	177-181
Photographs and Notes on Tourism and Deforestation in the Solu Khumbu, Nepal CLINTON ANDREWS	182-185
ICIMOD: A New Centre for South-Central Asian Mountain Development	186
MAZINGIRA: <i>International Journal for Environment and Development</i>	186
REVIEWS	187-190
CORRESPONDENCE	191-193

47

MOUNTAIN RESEARCH AND DEVELOPMENT

Publishers: International Mountain Society and The United Nations University

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University of Colorado, Boulder, U.S.A.

Volume 3, No. 3

August 1983

CONTENTS

Mountain Hazards Mapping in Nepal's Middle Mountains with Maps of Land Use and Geomorphic Damages (Kathmandu-Kakani Area) HANS KIENHOLZ, HEINRICH HAFNER, GUY SCHNEIDER, AND RABINDRA TAMRAKAR	193-220
Geological and Petrographic Base Studies for the Mountain Hazards Mapping Project in the Kathmandu-Kakani Area, Nepal T.J. PETERS AND P. K. MOOL	221-226
Deforestation in the Food/Fuel Context: Historical and Political Perspectives from Nepal DEEPAK BAJRA HARYA	227-240
Andean Arid Land Pastoralism and Development DAVID L. BROWMAN	241-252
Predicting Landslides Related to Clearcut Logging, Northwestern California, U.S.A. DAVID J. FURBISH AND RAYMOND M. RICE	253-259
PAPERS PRESENTED AT THE BERNE-RIEDERALP WORKSHOP:	
External Economic Dependency and Changing Human Adjustment to Marginal Environment in the High Himalaya, Nepal INGER-MARIE BJØNNES	263-272
Land Use and Equilibrium of Mountain Ecosystems in the High Atlas of Western Morocco ABDELLATIF BENCHERIFA	273-279
The Concept of Stability and Instability of Mountain Ecosystems Derived from the Swiss MAB-6 Studies of the Aletsch Area PAUL MESSERLI	281-290
Changes in Stability and Carrying Capacity of Lowland and Highland Agro-systems in Switzerland in the Historical Past CHRISTIAN PFISTER	291-297
MOUNTAIN CHRONICLES	
Why Climb Everest? A Critique of Risk Assessment MICHAEL THOMPSON	299-302
Project IbeX: IbeX Habitat Inventory and Mapping in the European Alps GERBRANDT WIERSEMA	303-305
International Centre for Soil Conservation Information	306
REVIEWS	307

CONTENTS

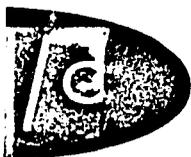
Preface	309-311
Introductory Essay: A Highlander's Geography of the Highlands: Mythology, Process, and Fact JOHN MCKINNON	313-317
The Huai Thung Choa Project: Its Role, Environmental Setting, and Objectives E.C. CHAPMAN	318-325
Karen Agro-forestry: Processes, Functions, and Implications for Socio-economic, Demographic, and Environmental Change in Northern Thailand PETER KUNSTADTER	326-337
Agro-forestry Improvements for Shifting Cultivation Systems: Soil Conservation Research in Northern Thailand HANS HURNI AND SOMPOTE NUNTAPONG	338-345
Recent Changes in Land Use and Land Cover at Huai Thung Choa PRAYAD PANDEE AND E.C. CHAPMAN	346-352
Implications of Traditional Karen Land-use Systems for the Introduction of New Cropping Systems: Some Observations from Ban Hua Lao, Huai Thung Choa, Northern Thailand ANANDA RAJAH	353-356
Ethnic and Spatial Differences in Wage-Labour Employment and in the Introduction of Coffee at Huai Thung Choa, Thailand, 1979-80 WIELAND KÜNZEL	357-362
Hmong (Mco) Highlander Merchants in Lowland Thai Markets: Spontaneous Development of Highland-Lowland Interactions PETER KUNSTADTER AND SALLY L. KUNSTADTER	363-371
The Natural Control of <i>Imperata cylindrica</i> : Nigeria and Northern Thailand G.W. IVENS	372-377
Toward a Stable Low-input Highland Agricultural System: Ley Farming in <i>Imperata cylindrica</i> Grasslands of Northern Thailand T. GIBSON	378-385
<i>Imperata cylindrica</i> in the Highlands of Northern Thailand: Its Productivity and Status as a Weed A.C. ANDREWS	386-388
Tropical Highland Agricultural Development in a Monsoonal Climate: The Utilization of <i>Imperata</i> Grassland in Northern Thailand J.L. CHARLEY	389-396
<i>Imperata</i> Research and Management in Indonesia M. SOERJANI, J.H.H. EUSSEN, AND S. TJITROSUDIRDO	397-404
Examples of Agro-forestry in the Warm-temperate Zone of Japan TSUNAHIDE SHIDEI	405-408
The Interplanting of Trees and Crops: Agro-forestry Systems Practised in South China WU CHUAN-CHUN	409-413
Prospects for Agro-forestry and the Rehabilitation of Degraded Forest Land in Indonesia KUSWATA KARTAWINATA AND OMBO SATJAPRADJA	414-417
<i>Sesbania</i> spp. in Two Agro-forestry Systems in Vietnam TRAN VAN NOA	418-421
Firewood Cropping, Food Cultivation, and Conservation Planting: A Three-Dimensional Strategy for Displaced Rural Communities—The Case of the Atzera Hills, Lae, Papua New Guinea V.N. DUBE	422-428
Index, Volume 3, 1983	430-440

CONTENTS

PAPERS PRESENTED AT THE WORKSHOP ON STABILITY AND INSTABILITY OF MOUNTAIN ECOSYSTEMS, BERNE-RIEDERALP, 14-19 SEPTEMBER 1983. PART THREE

Food Security and Ecology in Conflict? Minimum Data Needs for Pragmatic Problem Solving JOSEF VON AH	1-4
Animal Response to Land-use Changes in Grindelwald, Switzerland BERNHARD NIEVERGELT AND HEINRICH SCHIESS	5-14
Stability and Instability of Ecological Systems in New Zealand Mountains KEVIN F. O'CONNOR	15-29
Ecotonal Settlement and Natural Hazards in Mountain Regions: The Case of Earthquake Risk KENNETH HEWITT	31-37
Stability and Instability of Mountain Ecosystems in Ethiopia AMARE GETAHUN	39-44
Human Impacts and Ecosystem Resilience in the Southern Andes EDUARDO R. FUENTES	45-49
Factors Affecting the Stability of Mountain Ecosystems in Northern Mongolia KAZIMIERZ KLIMEK	51-54
Stability, Instability, and Conditional Instability: Mountain Ecosystem Concepts based on a Field Study of the Kakani Area in the Middle Hills of Nepal HANS KIENHOLZ, HEINRICH HAFNER, AND GUY SCHNEIDER	55-62
Stability and Instability of Mountain Ecosystems: Lessons Learned and Recommendations for the Future JACK D. IVES AND BRUNO MESSERLI	63-71
Effects of Modernization on the Khumbu Region of Nepal: Changes in Population Structure, 1970-1982 IVAN G. PAWSON, DENNYSE D. STANFORD, AND VINCANNE A. ADAMS	73-81
MOUNTAIN CHRONICLES	
Inauguration of the International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, 1-5 December 1983	83
Mountain Development 2000: Challenges and Opportunities. Keynote address by Maurice Strong	83-86
International Symposium on <i>Problems of Comparative Cultural Geography of High Mountains</i> CHRISTOPH STADEL	87-89
Seminar on Environmental Regeneration in the Himalaya: Concepts and Strategies	89
International Working Meeting on Classification and Management of Soils in Mountainous Regions	89-90
The Zurich Conference on Mountain Forest History	90
REVIEWS	91-93

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51

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