

A.I.D. EVALUATION SUMMARY PART I

PD-AA2-536

01987

(BEFORE FILLING OUT THIS FORM, READ THE ATTACHED INSTRUCTIONS)

A. REPORTING A.I.D. UNIT
(Mission or AID/W Office)

ES # 608-87-05

B. WAS EVALUATION SCHEDULED IN
CURRENT FY ANNUAL EVALUATION PLAN?

yes slipped ad hoc

C. EVALUATION TIMING

interim final ex post other

D. ACTIVITY OR ACTIVITIES EVALUATED (List the following information for project(s) or program(s) evaluated; if not applicable, list title and date of the evaluation report)

Project #	Project/Program Title (or title & date of evaluation report)	First PROAG or equivalent (FY)	Most recent PACD (mo/yr)	Planned LOP Cost ('000)	Amount Obligated to Date ('000)
608-0145	Range Management Improvement Project	80	8/86	5,075	5,075

E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

Action(s) Required

None

Name of officer
responsible for
Action

N/A

Date Action
to be
Completed

N/A

F. DATE OF MISSION OR AID/W OFFICE REVIEW OF EVALUATION:

no ___ day ___ year ___

Report Date:
mo 3 DAY 17 YR 88

G. APPROVALS OF EVALUATION SUMMARY AND ACTION DECISIONS:

Signature
Typed Name
Date

Rollo Ehrlich
Agr. Dev. Officer

Project/Program
Officer Representative of
Borrower/Grantee

Paul R. Crawford
Paul R. Crawford N/A
Kenneth Schofield,
Program Officer *KES*

Evaluation
Officer

Randal Thompson
Randal Thompson

Mission or AID/W Office
Director

Charles W. Johnson
Charles W. Johnson

Janet Ballantyne
Deputy Director *JB*

H. EVALUATION ABSTRACT (do not exceed the space provided)

This is a Project Activity Completion Report summarizing the experience and impact of USAID/Morocco's Range Management Improvement Project (608-0145). This project was a five year effort (1981-86) which sought to strengthen the Range Management Service (DE/SP) in the Ministry of Agriculture and Agrarian Reform (MARA), and to address the range management problems of Morocco. It focused in particular on extensive sheep and goat production. The Project Purpose was to strengthen the capacity of DE/SP to plan and implement its applied research, extension and range management programs. USAID's LOP contribution was \$5,075,000 and that of the GOM was \$6,770,000. Technical assistance was provided by Utah State University (USU).

Implementation of the project during its first three years was plagued by interpersonal conflicts among the USU technical assistance staff. These conflicts were not resolved until the third year of the project, with the replacement of key USU staff. In early 1984 the project was redesigned in response to the recommendations of a mid-term evaluation. As a result of the personnel changes and redesign, project implementation improved markedly in the final two years of the project.

A final evaluation was carried out in October 1985. Although it recommended that USAID continue its efforts in the area of range management, USAID decided against implementing a follow-on project. This was for the following reasons: (1) the failure of the GOM, during the final months of the project, to articulate a long-term strategy for the development of the extensive livestock sector; (2) an apparent lack of GOM commitment to range improvement; and (3) the absence of local-level institutional mechanisms to control the use of collective range lands to avoid overgrazing, destructive cultivation, and degradation. USAID felt that the GOM had to take the lead in addressing these problems and, until it did so, further USAID efforts in range management and the extensive livestock sector were not warranted.

Despite this decision, it is clear that the Range Management Project did significantly strengthen the institutional capability of DE/SP to address the problems facing Morocco's rangelands. In 1981, when the project began, DE/SP was both administratively and technically weak. It had a limited program, marginal funding-levels, and virtually no role in determining national and local rangelands policies. In contrast, DE/SP now has a sizeable trained staff, a much larger budget, an active program, and a role in determining MARA policy in the extensive livestock sector. In addition, there now appears to be a much greater awareness on the part of the national government, local officials, and livestock owners of the need for action to halt the degradation of Morocco's rangelands. Critical problems remain, but at least MARA now has a core of qualified staff that can begin addressing them.

I. EVALUATION COSTS

1. Evaluation Team Name	Affiliation	Contract Number OR TDY Person Days	Contract Cost OR TDY Cost (US\$)	Source of Funds
Paul R. Crawford, (Project Officer)	USAID/Rabat	N/A	N/A	N/A

2. Mission/Office Professional
Staff Person-Days (estimate) 10

3. Borrower/Grantee Professional
Staff Person-Days (estimate) _____

A.I.D. EVALUATION SUMMARY PART II

J. SUMMARY OF EVALUATION FINDINGS, CONCLUSIONS AND RECOMMENDATIONS (Try not to exceed the 3 pages provided)

Address the following items:

- Purpose of activity(ies) evaluated
- Purpose of evaluation and Methodology used
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office: USAID/Rabat

Date this summary prepared: March 4, 1988

Title and Date of Full Evaluation Report: Project Activity Completion Report: Range Management Improvement Project

The full Project Activity Completion Report (PACR) (attached ⁶⁰⁸⁻⁰¹⁴⁵ was written by the Project Officer in August 1987, one year after the termination of the project. A final version, incorporating comments received by the Host Country Agency and members of the Utah State University technical assistance team, was completed in January 1988. The Evaluation Summary was completed in March 1988.

The Range Management Improvement Project (RMIP) was a five year effort (1981-86) aimed at strengthening DE/SP and addressing the range management problem of Morocco. The specific purpose of this project was to strengthen the institutional capability of DE/SP to plan and implement its applied research, extension and range management programs. The Project Goal was to improve livestock productivity and the incomes of Moroccan livestock producers. The principal focus of the project was on extensive sheep and goat production. USAID's LOP contribution to the project was \$5,075,000. That of the GOM was \$6,770,000. Technical assistance was provided to DE/SP by Utah State University (USU), under a host country contract.

In August, 1981, USU fielded a four-person team consisting of three range management specialists and a social anthropologist. These individuals were assigned to various range management perimeters throughout Morocco. A fifth technician, a seed production specialist, was added a year later to develop a Plant Materials Center (PMC) located near El Jadida.

Implementation of the project during its first three years was plagued by inter-personal conflicts among the USU staff which were not resolved until the third year of the project, at which time USU replaced several of its Project staff, including its chief of party and campus coordinator. A mid-term evaluation, conducted early in 1984, closely examined USU's management of the project. The evaluation acknowledged an improvement in the USU team's morale and performance since the arrival of a new Chief of Party.

The mid-term evaluation remained critical of the original project design and made several recommendations aimed at redirecting the project. As a result of the evaluation, the project paper was amended on July 3, 1984 and the ProAg amended on October 15, 1984. Unfortunately, by the time the Project Paper Amendment was signed, the project had only two years to go. Given the long-term nature of both institution building and rangelands development, this two-year time frame represented an important constraint. Furthermore, remaining funding levels limited both the scope of the redesign effort and the subsequent implementation of the project. There was, nevertheless, an explosion of activity during the project's final two years, as the USU and DE/SP teams attempted to make up for lost time and achieve the project's objectives.

Eleven DE/SP staff received MS degrees in range science, extension, forage seed production, and sociology under the project. All of these participants returned and took up positions within DE/SP. Over 80 person-months of short-term training was provided. In particular, six-month, hands-on range management and extension training in the U.S. that was given to 23 DE/SP staff was considered very successful.

Substantial agronomic and livestock research was carried out under the auspices of the project. Since such research is very long-term in nature, the degree of its success will ultimately depend on follow-through by DE/SP staff now that the project has ended. Sociological research was also carried out. However, the project was less successful at strengthening DE/SP's capacity to do sociological research. The project was never fully able to integrate sociological and technical research into a comprehensive package.

A Plant Materials Center (PMC) was created to produce forage seeds for reseeding operations. By the end of the project the Moroccan PMC staff were fully able to operate and manage this facility.

A final evaluation of the Project was carried out in October 1985. While identifying a number of areas for improvement, this evaluation concluded that the project had contributed significantly to the GOM's institutional capacity to address Morocco's range management problems. The evaluation team recommended that USAID continue its efforts in the area of range management. Nevertheless, USAID decided against implementing a follow-on project for the following reasons:

- During the final months of the project, the GOM was not able to articulate a long-term strategy for the development of the extensive livestock sector and the protection of the country's grazing resources.
- USAID felt that the GOM had not evidenced the commitment or provided resources necessary for an adequate range improvement and control effort; and
- The absence of institutional mechanisms at the local level to control the use of collective range lands to avoid overgrazing, destructive cultivation, and degradation, made further efforts by USAID futile.

USAID felt that these were problems that the GOM had to take the lead in addressing and, until it did so, further USAID efforts in range management and the extensive livestock sector were not warranted.

As noted above, the purpose of the Range Management Improvement Project was to strengthen the institutional capability of DE/SP to address the problems facing Morocco's rangelands. It is clear that the project did make a major contribution towards this objective. This is evident when one contrasts the situation that existed before the project, with the current one.

In 1981, at the start of the project, DE/SP had only 7 technicians trained in range management and related fields. Their efforts were restricted to a handful of areas such as Plaine de l'Aarid and Ain Beni Mathar. By 1987, DE/SP had 35 staff members trained at the MS or BS level. These individuals are stationed in field offices throughout the country, as well as at the national headquarters of MARA.

In 1981, DE/SP was weak, both administratively and technically. It had a limited program, marginal funding-levels, and virtually no role in determining national and local rangelands policies. As a result of the project, DE/SP's credibility has increased substantially. The ability of its staff to plan its program, and to design and implement investment projects, has helped them in competing for resources within MARA. Partly as a result, DE/SP's budget increased by 300 percent between 1986 and 1988. Further, DE/SP has continued to prepare annual workplans, first introduced by the project, as a planning tool. As a result, its program is much more active and coordinated than ever before.

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Finally, there now appears to be a much greater awareness on the part of the national government, local officials, and livestock owners of the need for action to halt the degradation of Morocco's rangelands. Undoubtedly, the visible impact on the ranges of the overgrazing that took place during the recent drought, together with the large drop in the size of the national herd, has brought about much of this increased awareness. However, the improved range management capacity within MARA has undoubtedly helped focus and articulate these concerns.

Lessons Learned from the Project include:

1. The Need for Local Mechanisms to Control Grazing on Collective Lands. Grazing control on collective lands is perhaps the most difficult problem in agricultural development. It is clear that a smaller number of well-fed animals would fare better than a larger number of poorly nourished animals. Nevertheless, herders resist reducing the size of their herds. This is because, on collective pasture, smaller herds are no better fed than larger ones, and thus provide no economic advantage to the individual producer. Herder resistance to grazing control makes sense in the short term, but in the long term the pasture will vanish without it.

The project's experience demonstrates that stock numbers can be controlled on collective pastures, but that it takes time and requires the creation of popularly sanctioned decision-making mechanisms at the local level. Without locally-supported methods of reducing grazing pressure on collective lands, efforts aimed at improving animal health and genetic quality, or of pasture establishment and regeneration, will be futile.

2. The Difficulty of Incorporating Sociological Concerns into Development Projects. The most frequently cited reason for the failure of extensive livestock projects, especially in Africa, has been an inability to adequately understand the beneficiaries. This is not necessarily due to an absence of concern for the sociological aspects of livestock development, or to a failure to include sociological components in such projects. Rather, a major constraint is the lack of accumulated knowledge as to how to implement a multidisciplinary research effort within the context of a development project such as the Range Management Project. Of principal concern is the difficulty of generating relevant sociological data rapidly enough to guide the research of animal and plant scientists.

3. Need for an Administrative Chief of Party on Complex Projects. In a large project such as this, the chief of party (COP) will normally become so burdened with project administration and management that he will be unable to effectively carry out significant technical responsibilities.

4. Advantages of First Focusing on Animal Husbandry in Range Management Projects. The benefits of range improvement are not seen in the near term. Consequently, it is often hard to enlist local cooperation (especially when producers have little confidence in government extension agents and representatives). To counter these problems, a range management project should provide short-term benefits to producers, by for example, focusing on improved animal husbandry techniques. Once a trust is developed, then more intractable problems, such as grazing control and range improvement can be addressed.

5. The Need to Focus on Broad Policy Issues. A range management project should explicitly address broad policy issues affecting livestock production. Without fundamental changes in global policies and institutional relationships, the benefits of technically-oriented efforts will be limited. However, when an excessively restrictive, technical role is accorded to technical advisors, they may be excluded from discussions of broad policy issues.

K. ATTACHMENTS (List attachments submitted with this Evaluation Summary; always attach copy of full evaluation report, even if one was submitted earlier)

ATTACHMENTS

Attachment 1: Project Activity Completion Report - Range Management Improvement Project (608-0145)

L. COMMENTS BY MISSION, AID/W OFFICE AND BORROWER/GRANTEE

MISSION COMMENTS ON FULL REPORT

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XD-AAZ-556-A;
61990

USAID/MOROCCO

PROJECT ASSISTANCE COMPLETION REPORT
RANGE MANAGEMENT IMPROVEMENT PROJECT (608-0145)

Date: January 19, 1988

Doc. No. 1596M

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ACRONYMS

AID	Agency for International Development
CID	Consortium for International Development
CRSP	Collaborative Research Support Program
CT	Centre des Travaux
DE	Direction de l'Elevage (Livestock Directorate)
DE/SP	Service de l'Aménagement et de la Mise en Valeur des Terrains de Parcours (Range Management Service)
Dh	Dirhams
DPA	Direction Provincial de l'Agriculture
DPAE	Direction de la Planification et des Affaires Econoimques
DPV	Direction de la Production Végétale
DVARA	Direction de la Vulgarization et de la Réforme Agraire
ENFI	Ecole Nationale Forestière d'Ingénieurs (ENFI)
ENA	Ecole Nationale d'Agriculture
FAO	Food and Agriculture Organization of the United Nations
GOM	Government of Morocco
IAV	Institut Agronomique et Vétérinaire, Hassan II
INRA	Institute National de la Recherche Agronomique
IVS	International Voluntary Services
LOP	Life of Project
MARA	Ministere de l'Agriculture et de la Reforme Agraire
ORMVA	Office Régional de Mise en Valeur Agricole
PACD	Project Assistance Completion Date
PID	Project Identification Document
PMC	Plant Materials Center
RMIP	Range Management Improvement Project
SOGETA	Société de Gestion des Terres Agricoles
TA	technical assistance
USAID	United States Agency for International Development Mission in Morocco
USU	Utah State University

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PROJECT ASSISTANCE COMPLETION REPORT

RANGE MANAGEMENT IMPROVEMENT PROJECT (608-0145)

I. Introduction

The Moroccan livestock population depends upon some 23.5 million hectares of extensive rangelands and 5.2 million hectares of forests for a significant portion of its forage. Unfortunately, sustainable forage production is no longer meeting the nutritional needs of Morocco's livestock population. About 20 percent of forage needs are being met by overgrazing, resulting in serious degradation of the land and deforestation. The long term impact of this deteriorating resource base will be serious for the estimated 600,000 rural Moroccan families which depend upon livestock for much of their subsistence and income generation.

Responsibility for protecting and developing Morocco's rangelands lies with the Range Management Service (Service de l'Amenagement et de la Mise en Valeur des Terrains de Parcours - DE/SP) which is part of the Livestock Directorate (Direction de l'Elevage - DE) within the Ministere de l'Agriculture et de la Reforme Agraire (MARA). DE/SP is a relatively young organization, created in 1981. Though its staff is generally highly motivated and enthusiastic, DE/SP has not been adequately staffed to cover all of the regions where assistance in range management is needed. Over the years, US Agency for International Development (USAID) assistance has been instrumental in creating a capacity within the Government of Morocco (GOM) to deal with the problems of overgrazing and range deterioration.

The Range Management Improvement Project (RMIP) was a five year effort (1981-86) aimed at strengthening DE/SP and addressing the range management problem of Morocco. The specific purpose of this project was to strengthen the institutional capability of DE/SP to plan and implement its applied research, extension and range management programs. USAID's Life of Project (LOP) contribution to the project was \$5,075,000 and that of the GOM was \$6,770,000. Technical assistance was provided to DE/SP by Utah State University (USU), under a host country contract.

II. History of the Project

A. Early USAID Involvement in Range Management in Morocco

The Range Management Improvement Project built upon a number of earlier AID efforts to create a range management capability within the GOM. While these earlier efforts were sporadic and somewhat ineffectual, valuable lessons were learned from these experiences. In 1968, at the request of the GOM, AID financed a range management project with technical assistance provided by International Voluntary Services (IVS), a private voluntary organization. The original goal of the project was to develop range management perimeters in three areas of the country (the Plaine de Tafрата at Guercif, Plaine de l'Aarid at Midelt, and Ait Rbaa at Kasba Tadla), covering a total of 500,000 hectares). After 1970, the target areas were reduced to around 70,000 hectares. Further, the focus of the project moved away from large-scale

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perimeter development to that of limited research on relatively small areas. By the completion of the project, in 1974, one half million dollars had been expended.

A fundamental problem with this earlier effort was the failure to obtain the understanding, consensus, and participation of local livestock producers and their leaders. Not surprisingly, the local population effectively resisted attempts by the Moroccan government, and therefore the project, to control part of its communal resources. The problem was exacerbated by the GOM's unwillingness to meet its commitments to the project. Four of the five IVS volunteers resigned before their contracts were completed.

Nevertheless, some important preliminary steps were taken within the context of the project towards addressing some of the problems of managing communal rangelands. First, six Moroccans were sent to the US for short-term training and one was sent for an MS degree. With project assistance, a Royal Proclamation (Dahir No. 1-69-171) was drafted and passed in 1969 which provided the legal basis for the creation of range improvement perimeters on communal lands, thereby ceding control over the management and development of these perimeters to the GOM. In addition, the research efforts conducted under the project demonstrated the feasibility of reseeding and deferred grazing. Finally, the project helped broaden the GOM awareness of the need for, and complexity of, range management. As a result, the Service des Parcours et l'Alimentation (the forerunner of DE/SP) was created within the Direction de l'Elevage.

In October, 1975, the GOM again requested USAID assistance in implementing a range management project. USAID fielded a contract team from Washington State University which completed a feasibility study for a forage seed production project in August, 1977. The proposal was subsequently modified by both USAID and the GOM and approved in Project Identification Document (PID) form by AID/Washington in August 1979. In October 1979 a project design team from the Consortium for International Development (CID) outlined a project focusing on range extension and long- and short-term training. This second study served as the basis for the authorized Project Paper, which was produced in July 1980.

B. The Range Management Improvement Project (608-0145)

The original Project Agreement for the Range Management Improvement Project was signed on August 30, 1980. Implementation of the project did not really begin until early 1981, however. The Project Assistance Completion Date (PACD) was August 30, 1986. USAID's LOP contribution to the project was \$5,075,000. The GOM contribution was approximately \$6,770,000. The project was implemented by USU under a host country contract with DE, the livestock directorate of MARA.

The purpose of the project was to strengthen the institutional capability of the DE/SP to plan and implement its applied research, extension and range management programs. The Project Goal was to improve livestock productivity and the incomes of Moroccan livestock producers.

In August, 1981, USU fielded a four-person team consisting of three range management specialists and a social anthropologist. The range management specialists were assigned to work in Oujda (Ain Beni Mathar perimeter), Beni Mellal (Ait Rbaa perimeter) and Meknes (Timahdite perimeter). The sociologist was also assigned to Meknes. The range management specialist in Meknes also served as in-country team leader. A fifth technician, a seed production specialist, was added a year later with primary responsibility for developing the Plant Materials Center (PMC) located near El Jadida. In addition, seven Peace Corps volunteers, of which four were range management specialists and three were sociologists, were assigned to the project in late 1982. In all, there were a total of 12 Americans actively involved in the project at that time.

As stated in the original project paper, the project was to focus on: (1) developing a program of extension and demonstration of improved range practices, working through grazing associations and encouraging their formation; (2) creating a seed multiplication center to develop and produce forage seeds of adapted species; (3) sensitizing the staff of DE/SP to the social and cultural needs of the extension audience; and (4) providing increased training in range management and extension.

C. Implementation of the RMIP during the First 3 Years

Implementation of the project during its first three years was plagued by interpersonal conflicts among the USU staff. Part of the problem was the failure of USU administration to provide the in-country Project Coordinator at Meknes with authority to serve as the project's Chief of Party. In particular, serious conflict arose between the in-country Project Coordinator and the Campus Coordinator for the project, an individual who had been instrumental in its design. These internal conflicts were not rectified until the third year of the project. At that time, USU replaced its in country Project Coordinator and one range management specialist (this latter for medical reasons). In making these changes, USU greatly strengthened the experience and technical expertise of its in-country team. Subsequently, at the request of USAID, USU also replaced the project's Campus Coordinator.

A mid-term evaluation, conducted early in 1984, closely examined the management problems of the USU team. The team acknowledged the fundamental changes made by USU to correct the problem, and the improvement in the American technical assistance (TA) team's morale since the arrival of a new Chief of Party. Nevertheless, the evaluation made several additional recommendations aimed at further improving USU project management.

The evaluation team felt that the Project Outputs had not been adequately specified in the Project Paper's logframe. Among the problems was the failure to specify outputs from the sociological component of the project. This problem was exacerbated by inconsistencies between the Project Paper, the Project Agreement, and the Host Country Contract between USU and DE. This contributed to confusion among the various parties as to just what the objectives of the project were. Moreover, actual on-the-ground implementation of the project was at variance with that envisioned in the design documents. This was particularly true with respect to the relative emphasis placed on research as opposed to extension. Though the project design was oriented towards extension, the project field staff had found that

there was not enough adequate technical information on which to base an extension program. Consequently, they were conducting more research than was originally envisaged in the project design.

The mid-term evaluation also concluded that the project was taking an excessively narrow approach in addressing the range management problems of Morocco. The evaluation team pointed to the conversion of rangelands into cereal production and the resulting increased burden on the remaining rangelands. In addition, the evaluation pointed out that range management perimeters form but one potential source of animal feed. Therefore, the evaluation argued that the project should shift away from its focus from grazing perimeters carved out of common land to a broader concept of managing livestock/agricultural zones.

At the same time, the evaluation recognized the excellent performance of the project in several areas. In particular, both long and short-term training in the U.S. were ahead of schedule and proving to be very effective. In addition, commodity procurement for both the Plant Materials Center and the perimeters was well underway.

D. Project Redesign

As a result of the evaluation, an amendment to the project paper was prepared aimed at overcoming design and implementation problems facing the project. This Project Paper Amendment was completed on July 3, 1984. It specifically addressed three design-related weaknesses of the project:

- The need to reorient the project towards livestock/crop production systems and not just common rangelands.
- The failure to ensure adequate coordination of project activities. This included not only the coordination of the program at each of the five widely dispersed perimeters, but also the integration of the socio-economic component of the project and the Plant Materials Center with the project's range management activities.
- The absence of an explicit project strategy to ensure that the project's institutional development objectives would be met.

The project, as redesigned, had four major components:

- An Applied Research Component which sought to answer biological, sociological, and economic questions important for identifying feasible and appropriate range management and livestock production practices;
- Extension Activities aimed at introducing improved technologies and practices to livestock producers;
- MS degree and short-term training in the U.S. aimed at increasing the technical skills of DE/SP staff in the areas of range management, extension, sociology, and seed production; and

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time and requires the creation of popularly sanctioned decision-making mechanisms at the local level. Without locally-supported methods of reducing grazing pressure on collective lands, efforts aimed at improving animal health and genetic quality, or of pasture establishment and regeneration, will be futile.

B. The Difficulty of Incorporating Sociological Concerns into Development Projects.

The most frequently cited reason for the failure of extensive livestock projects, especially in Africa, has been their inability to adequately understand the beneficiaries. This is not necessarily due to an absence of concern for the sociological aspects of livestock development, or to the failure to include sociological components in such projects. Nor is it simply a problem of interdisciplinary conflict (though there was some of that in the early years of the RMIP Project). Rather, it appears that there is simply not enough accumulated knowledge as to how to implement a multidisciplinary research effort within the context of a development project such as the Range Management Improvement Project. Of principal concern is the lack of experience, on the part of development experts, with the benefits/limitations of "rapid reconnaissance" data collection and approaches to collecting, analyzing, and integrating such information.

C. Need for an Administrative Chief of Party on Complex Projects.

The lack of progress in the economic research area emphasized the importance of having a chief of party (COP) who is concerned full time with the administration and management of the project, with no technical responsibilities whatsoever. This is particularly true for the RMIP where there is a relatively large TA team working in five distinct parts of the country. The COP was also a range economist and had hoped to be actively involved in economic research, but his managerial responsibilities precluded this. (A similar dilemma also befell the first COP, who was also responsible for managing one of the perimeters with his Moroccan counterpart). Given the importance of economic research for the project, this was unfortunate.

D. Advantages of First Focusing on Animal Husbandry in Range Management Projects

The benefits of range improvement are not seen in the near term. Much research needs to be undertaken before range improvements, such as reseedling, can be recommended to producers with confidence. Moreover, successful range improvement actions generally require a level of local cooperation that is not easily obtained. Finally, success in this area is harder when producers distrust or have little confidence in government extension agents and representatives.

To counter these problems, a livestock project should provide short-term benefits to producers. In Morocco, the most promising avenue for accomplishing this is in the area of improved animal husbandry, rather than range improvement. The project sponsored Sheep Classification and Selection program demonstrated the potential in this area. The producers involved in these activities easily understood the short-term benefits of culling defective animals. The classification techniques are fairly easy to learn and to teach to producers. This builds producer confidence in, and the

self-confidence of, technicians. It also lays the basis for cooperation in areas where the benefits are longer-term, such as range and pasture improvement programs.

E. The Need to Focus on Broad Policy Issues in the Livestock Sector

The experience of the RMIP Project has demonstrated the importance of explicitly addressing broad policy issues affecting livestock production. Without fundamental changes in global policies and institutional relationships, the benefits of technically-oriented efforts will be limited. The importance of a global livestock sector strategy, including an analysis of the policy environment, became evident to USAID as the RMIP Project neared completion. However, USAID's ability to encourage a comprehensive livestock policy review by MARA was limited by the relatively restricted role accorded the technical assistance team fielded by USU. In large part, the involvement of senior USU advisors was limited to the USAID-financed activities in selected range perimeters. DE/SP did not view these advisors as having a role in policy analysis. USAID, on the other hand, had always envisioned a broader role for the technical assistance team, especially given that the overall objective of the project was to strengthen DE/SP as an institution. In the end, DE/SP failed to draw upon the expertise of USU senior advisors in order to examine the policy environment affecting the livestock sector. Thus, the USU advisors were not in a position to actively support the development of the sector strategy, as desired by USAID.

IX. Recommendations Regarding a Follow-on Project

USAID's decision against implementing follow-on project in the range management area was controversial. It was certainly disappointing for the USU staff and for the DE/SP. Nevertheless, it is generally agreed that a hiatus in USAID assistance will provide DE/SP the chance to develop on its own and to assimilate what has already been done.

If USAID consider involvement in the extensive livestock sector in the future, several recommendations are pertinent:

A. Develop a Sector Strategy as a First Step

There remains a need for a comprehensive strategy for the development of the extensive livestock sector and maintenance of Morocco's rangelands. Unless such a strategy is prepared in the interim, one should be developed either during the design stage, or during the first months of project implementation. Such a strategy should include:

- The identification of institutional, organizational, and legal mechanisms that could be employed to reduce overgrazing and permit the regeneration and/or reseedling of communal lands, and the elaboration of a program to introduce these mechanisms.
- An institutional assessment (e.g. mandate, strengths, weaknesses, needs, interrelationships) of the Direction de l'Élevage and other GOM agencies dealing with extensive livestock production. What organizational changes within DE would be necessary, for example, to ensure that greater attention were given to the animal husbandry aspects of extensive livestock production?

- The identification of realistic resource commitments (personnel and budgetary) and output targets for the coming decade.
- An assessment of current resource use (particularly land use), production levels, and returns to livestock production, and future trends.
- The identification and evaluation (including cost/benefit analysis) of technological and management packages that could be introduced to increase productivity and returns to producers.

B. Encourage Local Participation

A major thrust of any new project effort must be on the creation of effective local organizations as vehicles for rangeland improvement. Historically, DE/SP's strategy has been focused on the creation of range management perimeters, with DE/SP playing the role of both manager and policeman. However, given its limited personnel and budgetary resources, DE/SP staff cannot possibly manage more than a fraction of the steadily degrading rangelands of Morocco. As an alternative, DE must begin to actively encourage and support efforts by local communities, themselves, to better manage their common land. In particular, by marshalling local resources and mobilizing beneficiaries, strengthened local-level beneficiary organizations can promote sustainable and replicable development.

C. Address Broad Policy Issues

The initial focus of any new project should be on identifying policy changes that could be implemented at the national level to improve livestock productivity and protect the fragile resource base. Given the decentralized nature of livestock production in Morocco, the most effective means of increasing overall productivity is to ensure more effective and economically rational production incentives consistent with the sustainable use of rangelands.

A number of public sector policies affect Moroccan livestock production. These include subsidy policies (e.g. the subsidized distribution of sugarbeet pulp and concentrates), credit policies, tax policies (including the abattoir tax), overall investment policies, and policies affecting the control of local resources. Any new project should develop the capacity of MARA to analyze and monitor the effects of these policies on livestock production and productivity. In particular, more information needs to be collected and analyzed with respect to livestock marketing (prices and volume), meat consumption (demand), characteristics of the national herd (reproductive efficiency, health problems, etc. Such information is particularly lacking for livestock raised under traditional conditions. Adequate and accurate information is needed, however, if one is to evaluate, and monitor the impact of, public sector policies which affect extensive livestock production.

D. Employ a Comprehensive Approach

The focus of any new project should not be limited to range management. Rather, an integrated approach is necessary, particularly one in which improved animal husbandry plays a central role. Similarly, the focus of such a project should not be DE/SP, but rather on the Direction de l'Elevage as a whole (though keeping the focus on extensive livestock production). Greater attention needs to be given to developing the livestock extension capacity of MARA's extension service. Moreover, the focus should not be restricted to activities within a given geographic location (e.g. the area encompassed by the High Plateau project). Rather, the assistance should be given at a national level. Only then could U.S. resident advisors hope to address livestock policy issues.

The creation of a Plant Materials Center to multiply the seeds of forage species and to produce fuel and fodder shrubs of value in revegetating Moroccan range and pasture lands.

The Project Paper Amendment was approved by USAID on July 3, 1984. The Amendment to the Project Agreement was subsequently signed on October 15, 1984 and the Amendment to the Host Country Contract was approved by USAID on February 7, 1985.

The mid-term evaluation team had recommended that the project redesign allow for a five-year time frame and that additional funds be obligated to the project. This was unacceptable to AID, since USU's performance for the first three years of the project had been poor. AID consequently felt that it could not, in good conscience, award USU with an extension and an increase in funding. While USU had made some significant changes in the makeup of their TA team, it was too soon to tell how effective the newcomers would be. Although a three-month extension of the LOP was granted, no additional funds were obligated to the project. As a result, by the time the Project Paper Amendment was signed, the project had only two years to go. Given the long-term nature of both institution building and rangelands development, this two-year time frame represented an important constraint. Furthermore, the funding limitation restricted both the scope of the redesign effort and the subsequent implementation of the project. There was, nevertheless, an explosion of activity during the remaining two years of the project, as the USU and DE/SP teams attempted to make up for lost time and achieve the project's objectives.

III. Project Accomplishments

A. Institution Building

As noted above, the purpose of the Range Management Improvement Project was to strengthen the institutional capability of DE/SP to address the problems facing Morocco's rangelands. It is clear that the project did make a significant contribution towards this objective. This is evident when one contrasts the situation that existed before the project, with the current one.

In 1981, at the start of the project, DE/SP had only 7 technicians trained in range management and related fields. Their efforts were restricted to a handful of areas such as Plaine de l'Aarid and Ain Beni Mathar. Now, DE/SP has 35 staff members trained at the MS or BS level. These individuals are stationed in field offices throughout the country, as well as at the national headquarters of MARA.

In 1981, DE/SP was weak, both administratively as well as technically. It had a limited program, marginal funding-levels, and virtually no role in determining national and local rangelands policies. As a result of the project, DE/SP's credibility has increased substantially. The ability of its staff to plan its program, and to design and implement investment projects, has helped them in competing for resources within MARA. Partly as a result, DE/SP's budget has increased by 300 percent over the past three years. Further, DE/SP has continued to prepare annual workplans, first introduced by the project, as a planning tool. As a result, its program is much more active and coordinated than ever before. For example, before the project, there were

no rangeland cooperatives in the country. Today, nearly two dozen rangeland cooperatives have been created with the support and assistance of DE/SP.

Finally, there now appears to be a much greater awareness on the part of the national government, local officials, and livestock owners of the need for action to halt the degradation of Morocco's rangelands. Undoubtedly, the visible impact on the ranges of the overgrazing that took place during the recent drought, together with the large drop in the size of the national herd, has brought about much of this increased awareness. However, the improved range management capacity within MARA has undoubtedly helped focus and articulate these concerns.

B. Applied Research

The objective of the Applied Research component was to answer biological, sociological, and economic questions important for identifying feasible and appropriate range management and livestock production practices. It was composed of four parts: Forage Research, Animal Production Research, Sociological Research, and Applied Economic Research.

1. Forage Research

Forage Research included forage adaptation trials; grass and legume seeding; shrub plantings; the collection of production data; contouring and water catchments to increase water infiltration on rangelands; fertilization to increase forage production.

The objective of the species adaptability trials was to introduce and test, under Moroccan range conditions, forage species proved to be successful on rangelands in countries with similar range environments. The results of these adaptability trials were somewhat disappointing. The germination, establishment and survival rates of most of the species tested were low, due in large part to the unusually severe drought-conditions experienced at the various project sites. In addition, problems were encountered in carrying out these trials. These included delays in planting (often due to budgetary constraints and limited seed availability) and uncertainties as to the most appropriate seeding methods. Nevertheless, some trials, particularly those in the Midelt region, demonstrated that there were substantial differences in the adaptability and productivity of forage varieties.

The establishment of perennial introduced species was generally found to be difficult and expensive. Warm season grasses, even when of native origin, have proven to be difficult to establish. Their seeds are generally small and expensive. Successful establishment requires good precipitation during and after germination and careful control of planting depth by technicians. It was concluded that, unless techniques are improved, the possibility of failure is too great to make the planting of warm season grasses economically viable.

The potential displayed by perennial and annual plants native to Morocco has been promising. For example, leguminous annuals, especially from the genus Medicago, exhibit many vegetative types (sprawling forms, plants with subterranean fruits) which may make it capable of persistence under heavy grazing pressure. These species characteristically produce large amounts of seed and forage of high quality. Their use may be one key to reducing the risk of failure of range revegetation efforts in some areas.

Several basic range planting techniques were tested in the project. The rangeland drill, which scarifies the soil surfaces and seeds in areas of rough topography, did not prove effective during drought years. Rather, it was found that conventional seedbed preparation methods (using a plow, a disc, and a roller) were the most successful under such environmental conditions. The soil surfaces needed to be disturbed and competition from existing vegetation had to be reduced.

Experiments indicated that using chemical fertilizers provided little benefit in terms of improving range productivity. For example, adding nitrogen and phosphorous to rangelands near Midelt did not bring about any marked differences in plant density or production in drought years. Similarly, adding elemental sulphur to rangelands did not lead to production increases the first year in experiments undertaken at Beni Mellal.

Because rangeland soils in Morocco are heavily eroded and compacted, rainfall generally runs off without significantly penetrating the soil crust. Range improvement methods which increase penetration of water through the soil surface and prevent runoff are potentially worthwhile investments. Research in this area was conducted in the Oujda and Midelt area, where contour terraces were constructed with hand labor and Atriplex shrubs planted along them. At the Beni Mellal site, experiments were conducted on soil ripping (mechanical chiseling of the soil to permit water infiltration). Subsequent measurements of soil moisture indicated that, at the chiseled sites, there was better water retention. This may only be a short-term benefit, however, especially if grazing practices are not changed to reduce trampling and compaction of the soil. More research needs to be done on the economic returns of terrace construction and soil chiseling.

2. Animal Production Research

Animal Production Research included research into livestock production; livestock health activities; and ram sterilization.

The project's animal production research program consisted of two components: (a) a Producer Study to survey local livestock producers' management systems, and (b) cooperative demonstration and applied research programs with producers.

a. The Producer Study

The Producer Study consisted of interviews with, and observations of, selected livestock producers. The objective of the study was to gain an understanding of current management systems, production levels, and available resources; to identify present and potential problems faced by livestock producers; and to provide an entree to permit the introduction of improved methods to producers. Visits to producers farms were made at least every four weeks to weigh animals and talk to producers about their management practices. In general, the cooperation received from producers was good.

The ultimate effectiveness of the Producer Study was constrained by a number of factors. First, the tight work schedules of the GOM technicians limited their participation in the surveys (except at Beni Mellal, where the GOM counterparts actually carried out the study). In most sites, the burden of carrying out the study fell upon the Peace Corps volunteer technicians. In

addition, the length of time available did not permit the collection of data with seasonal overlaps. Estimates had to be made to project production cycles over an entire calendar year. In spite of these problems, the Producer Study did provide a large amount of information on the Moroccan livestock production systems.

The Producer Study identified several areas in animal production where improvement which promised quick results could be made. These included animal nutrition, culling and selection to improve herd performance, health care, control of indiscriminate breeding, and the regulation of lambing periods.

b. Cooperative Demonstration and Applied Research Program

The Comparative Demonstration and Applied Research Program included three sets of activities:

- The introduction of the short scrotum technique for ram sterilization, as a means of improving breeding management; and
- A sheep classification and selection program to eliminate defective animals from sheep flocks, thereby increasing overall productivity; and
- An investigation into the relative efficiency of sheep and goat production given the limited resources available to low income producers.

(1) The Short Scrotum Technique

The Short Scrotum Technique was studied as a means of addressing the problem of indiscriminate breeding in Moroccan sheep flocks. Indiscriminate breeding makes selection for genetic improvement impossible and hinders flock management, since lambs are born throughout the year. The establishment of a breeding program would enable lambs to be sired by high quality rams, and to be born at times when forage was readily available. Religious and cultural preferences preclude castration as a sterilization technique in Morocco. (There is a cultural preference for the meat from rams. Thus, the majority of meat is sold from carcasses with the testicles intact). The traditional alternative, separate herding of rams and ewes, is prohibitively expensive for small producers.

The short-scrotum technique is a non-surgical, "bloodless" method for sterilizing sheep. It involves forcing the testicles up along the abdominal wall and affixing an elastic band around the scrotum to hold them in position. Eventually the animal's body heat destroys its ability to produce viable sperm. Prior to recommending this method to sheep producers in Morocco, project technicians wanted to make sure that it would not adversely affect meat production or the marketability of the animal or its carcass. It was determined that the short-scrotum technique did not adversely affect animal weight gains. Moreover, though the testicles of short-scrotum rams were smaller than the control group, the difference was not large enough to hamper marketability. Thus, this technique does appear to show promise as a means of regulating breeding in Moroccan sheep herds.

(2) Sheep Classification and Herd Quality

Unproductive and poor quality sheep are common in Moroccan sheep herds. According to the results of the Sheep Classification and Selection Program (see section on Extension, below) roughly 15 percent of the breeding animals were incapable of reproduction. Assuming that this figure is representative of Morocco as a whole, the national cost of feeding unproductive animals barley (or its forage equivalent) would exceed a billion dirhams annually. The identification and removal of these unproductive animals would contribute to the improvement of the flock by increasing the annual lamb crop percentage and decreasing costs (e.g. of supplementation). By improving the nutritional base of those animals remaining, the culling of unproductive animals should also improve weaning weights and the ewe's capacity to breed.

In the Sheep Classification and Selection demonstrations carried out by project staff in Oujda and Safi Provinces, nearly 4000 sheep were classified, using criteria based on animal health, ability to reproduce, ability to forage, body size, wool quality and fleece characteristics, and breed phenotype. In determining foraging ability, ewes were checked for udder development, damaged udder, vaginitis, and deformities of the genitalia. Rams were checked for testicular development, epididymitis and deformities of the genitalia. In determining forage ability, animals were examined for deformities such as overbite or underbite, broken mouths or missing teeth, and soundness of legs and feet.

The animals were then grouped into three categories: (1) a breeding flock made up of the highest quality animals from which the majority of future replacements would be selected; (2) a flock formed from animals meeting all of the selection criteria, but having low quality wool; and (3) a flock formed of animals that should be culled or sold.

Of the animals examined, 20 percent of the ewes and 16 percent of the rams were classified into category 1. Some 56 percent of the ewes and 33 percent of the rams were placed in category 2. Another 24 percent of the ewes and 51 percent of the rams did not meet the selection criteria and it was recommended that they be culled. (See Section II-B-3, below, for a discussion of the extension aspects of this program).

(3) The Sheep and Goat Production Study

The purpose of the Sheep and Goat Production Study was to determine if goats, though of lower value and status, had an advantage over sheep in terms of survival and production potential given the limited forage available in many areas of Morocco and the low resource levels of many Moroccan producers. When given a choice in forage selection, goats prefer browse, while sheep select grass and forbs. In addition, goats achieve higher reproductive rates and digestive and biological efficiency than sheep. Thus, they may have a comparative advantage on range dominated by woody vegetation with a sparse dispersion of grass and forbs. In this study, the growth of the sheep and goat herds of a single producer were closely followed over the course of a year. Unfortunately, due to the small size of the sample and the limited time frame, the results of the study were inconclusive. It remains for DE/SP to expand the scale of this study to obtain a more conclusive answer to this question.

c. Sociological Research

The Sociological Research Program sought to identify producers' perceptions of their needs, constraints, and the potential for improvement of livestock production. In addition, this sociological research sought to identify social and cultural influences affecting the livestock/crop production system and the producers' acceptance of new technology.

The project's sociological program encountered several constraints. Project-wide systematic studies were only undertaken during the final 18 months of the project. Further, the level of skills of the research staff was limited. Few of the Moroccan counterparts had any formal training in the social sciences.

A Ph.D. sociologist supervised the socio-economic component of the project during its first 3 1/2 years, working primarily from the Meknes office. During the final 1 1/2 years of the project, the sociological research was conducted by a staff of about 10 people, only one of whom had graduate-level training.

The research teams undertook two major studies: (1) an ongoing study of the souk or weekly market, and (2) case studies of a group of producers who were thought to represent the range of production systems found at each site. These case studies, collectively referred to as the Agro-Pastoral Systems Study, employed ethnographic and participant observation techniques in order to describe the family system of production at three of the four project sites. Data collection under the Agro-Pastoral Systems study took place between April 1985 and March 1986.

The results of the Agro-Pastoral Systems study were presented in the Final Project Report (dated August 1986). No comprehensive analysis appears to have been done of the souk and market data, although these data were used to estimate input and product prices in the economic analyses of the production systems.

One problem that has become apparent from the experience of this project is the difficulty of effectively integrating sociological and biological research efforts under a range management project. The objective of the sociological component of the RMIP project was to provide the Project's range scientists with a better understanding of Moroccan livestock producers. This was, of course, considered necessary for ensuring that the technology being developed would be appropriate and accepted. Unfortunately, the sociological research component was not able to provide concise and timely issues-oriented information to the range scientists, and the latter were therefore left to their own devices. While some sociological information undoubtedly was passed to the range scientists on an informal basis, there was never any formal or well defined mechanism to accomplish this.

To carry out this task, there is a need for the more timely collection of sociological data through rapid reconnaissance techniques which focus on answering discrete questions for which the range scientists require answers. Unfortunately, too much emphasis was placed by the sociological researchers on the traditional academic approach to sociological research - collecting a large amount of data on a wide range of topics and producing a comprehensive report (coming at the end of the project). Moreover, there was a reluctance

to forsake larger, more complex, computer-analyzed questionnaires, in favor of "rapid rural appraisal" techniques, or to draw tentative conclusions based on tentative results. While the final report does provide a large amount of valuable and detailed information that will benefit future range management research, it was relatively less valuable in assisting project decision makers in carrying out concurrent activities. This problem occurred in spite of the acknowledged sensitivity of all members of the technical assistance team to the need for integrating sociological research into the project.

There appear to be several reasons for this lack of integration: (1) the personal inclinations and/or academic limitations of the individuals involved; (2) the inability of either the sociological staff or the range scientists (Moroccan or American) to adequately articulate the sociological questions/issues that needed to be explored; (3) bias within the disciplines, themselves, towards the need for quantitative, statistically significant, results prior to drawing conclusions; and (4) the absence of any concrete examples of the successful use of rapid rural appraisal techniques for data collection within the context of an extensive livestock development project.

d. Economic Research

The Applied Economic Research component of the project sought to evaluate the economic feasibility and appropriateness of alternative technologies and strategies, as well as to estimate their impact on production, production efficiency, and net income.

Much of the economic research undertaken was carried out in the final months of the project. This was primarily because the project's livestock economist also served as Chief of Party. This latter role consumed most of his time. In addition, the lack of quantitative information on livestock production hindered economic analysis. Much of the quantitative data on which the economic analyses were ultimately based was only collected in the final year of the project.

The consequent absence of basic data on the economic feasibility of production alternatives severely hindered the project's extension efforts. Without solid quantitative information on the costs and benefits of recommended practices and technologies, the project staff was not able to demonstrate clearly visible short-term results. Rather, the benefits offered were broad, nebulous, and long-term in nature (such as erosion control) and of limited immediate importance to livestock owners.

Data pertaining to the components and productivity of existing livestock/crop production systems were collected in each of the four project areas. The findings of the economic research component, which covered such factors as herd structure and productivity, the costs of feed and forage sources, forage use efficiency, and estimated costs and revenues from livestock and crop production, were discussed in detail in the Final Project Report submitted by USU and the DPAE.

C. Extension

The RMIP was originally conceived as an extension project, under the assumption that the technology developed in other parts of the world could be introduced into Moroccan livestock production systems without further

testing. Initial project experience demonstrated that this assumption was incorrect. Therefore, the technicians and their Moroccan counterparts began a series of small research/demonstration trials in order to measure current production, condition and trend of the rangeland, and to measure the effect of known practices in the range environments found in Morocco. Several extension activities were initiated to complement and build upon the applied research program. These included efforts at seeding perennial forages, cooperative formation, and field days to demonstrate research results.

The Final Project Evaluation observed that DE/SP staff, especially those who have had US training, were very eager to apply their knowledge and to extend it to the range users. The evaluation team concluded, however, that the extension program was not adequately coordinated and consisted mostly of bits and pieces conducted at the various perimeters. Part of this was seen as resulting from the fact that extension was not specifically within DE/SP's mandate.

1. Seedings on Private and Communal Land

Population and economic pressures have led to the conversion of rangeland to cereals production. Given that the resulting cereals output is often marginal, the crops are primarily used to graze livestock. This is an inefficient way of producing forage. Therefore, an extension program aimed at seeding perennial grasses onto privately-owned lands was carried out in the Midelt and Timahdite areas.

In the Midelt area, approximately 145 hectares were seeded in the fall and winter of 1984-85 on privately-owned land in 6 Midelt area communities. Unfortunately, due to a lack of precipitation in the spring months, less than a third of the area planted produced significant stands of perennial grass. The producers were not, however, generally discouraged by the poor results. In the following year (1985-86), 425 hectares of privately owned land was seeded. Preliminary results available at the end of the project were positive, with germination rates being good to excellent.

In the Timahdite area, 18.5 hectares of land, representing 17 producers were seeded to perennial grasses in the fall of 1984/85. However, poor germination, weed competition, insects and frost damage limited the density and vigor of these stands. In general, these grass stands produced less forage in the first year than did comparable plots of cereal crops. Consequently, the majority of the private landholders involved subsequently replowed the land for cereal production. The following year, emphasis was switched to planting alfalfa, with much better results. The improved varieties of alfalfa established faster than perennial grasses, with less difficulty, and provided adequate amounts of high quality forage, even under drier conditions in the area. The participating producers suggested that future technical assistance programs reduce the emphasis on wheatgrass plantations in favor of an increase in alfalfa.

In general, the private seeding efforts suffered from DE/SP's lack of experience in this area. In particular, the demonstration sites selected were poorly chosen and the land preparation techniques inappropriate given the type of seed and the generally arid conditions of the area.

2. Soil Treatments and Shrub Plantations on Communal Land

It is evident that considerable precipitation is lost during each rain as a result of rapid runoff. This lowered the effective soil moisture below that which would be implied by annual precipitation records.

Demonstration trials of soil treatments were carried out at Ain Beni Mathar (Oujda), Goutitier Station (Oujda), and El Faija (Midelt). These demonstrations involved (1) the construction of contour terraces to trap runoff moisture and reduce erosion and (2) the plantation of fodder shrubs along the terraces. The survival and growth of planted fodder shrubs at Ain Beni Mathar and Goutitier was excellent and the native vegetation responded extraordinarily well to the additional moisture on the treatment sites. The DE range staff at Oujda immediately saw the potential and began to conduct field days and tours with local producer groups and tribal leaders in the area. These demonstrations subsequently led to a request by the leadership of the Ouled Sidi Abdelhakim tribe to the Minister of Agriculture for a major range management efforts in that area. This ultimately laid the basis for the GOM's proposed High Plateau Project, a sizeable investment of GOM resources aimed at improving livestock production and rangelands in the eastern region of the country. Efforts at El Faija were designed to quantify production increases from various combinations of these practices. Researchers from IAV are cooperating with DE/SP staff to closely follow these trials to assess plant establishment and production.

3. Sheep Classification and Selection

As indicated above, a sheep classification and selection program was introduced in the final six months of the project (after the Final Project Evaluation). An initial demonstration effort was conducted at the Ain Beni Mathar perimeter, near Oujda, in January 1986. The nearly 1000 sheep, which belonged to the Ain Beni Mathar cooperative, were examined by teams composed of DE, USU, and technicians of the Small Ruminant Collaborative Research Support Project (CRSP) technicians. As the selection proceeded, the producers, themselves, began participating in the classification process.

The Ain Beni Mathar sheep were classified and marked (with paint) based on animal health, ability to reproduce and forage, body size, wool quality and fleece characteristics, and breed phenotype. The animals were grouped into three categories: (1) a breeding flock made up of the highest quality animals; (2) a flock formed from animals meeting all of the selection criteria, but having low quality wool; and (3) a flock formed of animals that should be culled or sold. A large percentages of the herd was found to be unproductive and in need of culling (see the section on Research, above).

The success of the Oujda selection effort was evident. Consequently, in May 1986, a one-week training/demonstration activity was organized by the head of the local DE/SP office in Safi Province (who had participated in the Oujda demonstration). In the Safi exercise, eleven technicians from various provinces participated and received training in sheep classification and selection. During that week, around 3000 sheep were classified. These came from herds of various sizes ranging from 15 to 300 ewes.

Producer response to the Safi sheep selection demonstration was again very positive. It was clear that the producers saw the immediate benefits of

such assistance. In addition, USU senior staff felt that the producers' respect for the DE/SP technicians increased substantially as a result of these demonstrations. At the end of the first day, it was learned that many of the producers had expected pharmaceuticals for their animals, and there was concern that this might have been their only reason for participating. However, when the team returned the next day, they found as many producers waiting, and this time the producers knew exactly the nature of the service being rendered. Many of the producers waited around until after the work to discuss sheep management-related problems and sought explanations as to how to avoid such problems.

The value of this type of extension activity is obvious. In addition to fulfilling the goals of the project to increase the productive efficiency of sheep flocks in Morocco, technical staff receive additional training and are allowed to utilize their training in the field. Producers are trained to see the wide range of differences in quality that are found in essentially every flock. Producers can easily understand the short-term impact of such an activity on the quality of their animals and, hence, income. This creates confidence and trust in technicians which, in turn, opens the way for cooperation in areas where the benefits are in the long-term, such as range and pasture improvement programs.

Since the termination of the project, DE/SP has continued its program of sheep selection. For example, some 10,000 animals in the Oujda region have now been graded. To encourage livestock owners to replace poor quality animals with higher quality ones, the government is subsidizing 30 percent of the purchase price of improved animals through its "investment code".

4. DE/SP's Role in Extension

Extension is not specifically within the mandate of DE/SP. Rather, it is the Direction de la Vulgarisation Agricole et de la Reforme Agraire - DVARA) which is responsible for livestock extension. Historically, however, DVARA has concentrated almost exclusively on crop production, even in more arid areas where crop production contributes only marginally to the total value of the agricultural production in a region. Following upon the experience and conclusions of the project, a shift has begun to correct this imbalance. As part of the High Plateau Project, a livestock development project in the Oujda region, several Centres des Travaux (CT) have been reoriented towards an exclusive focus on livestock production. Additional work will be necessary, however, to train extension agents in range/livestock production and management.

D. Long- and Short-Term Training

The project provided both advanced degree and short-term non-degree training to DE/SP staff. Eleven participants received MS degrees at various universities in the U.S. Of these, eight received training in range management and extension, two were trained in rural sociology, and one individual was trained in seed production.

Fourteen Moroccans were sent to the U.S. for 4 to 6 months of short-term technical/practical training in range management and livestock production principals and practices. This training involved (1) an orientation to range management principals given at USU, (2) training in range/livestock management and production, including extension techniques, at New Mexico State University, and (3) hands-on work experience on sheep ranches and field experiment stations in the Western United States. In addition, two technicians from the PMC were sent to the U.S. for special 4 to 5 month training programs in farm management. In addition, 5 administrative heads in DE were sent to the U.S. to attend the USU short-course in order to broaden their understanding of range management needs. Another four DE/SP staff attended professional meetings outside Morocco under the project.

In all, a total of nearly 100 person months of short-term training, including time at professional meetings, was provided by the project. This short-term training has been very effective. Returned short-term participants have been enthusiastic and have demonstrated great interest in applying their newfound skills to the range and livestock situation in Morocco.

This overseas training was supplemented by two in-country training seminars, one held in 1985 and the other in 1986. These week-long seminars included Moroccan and American personnel working in range management in Morocco, and personnel from other agencies, such as Eaux et Forets and Promotion Nationale. Information was presented as lectures, utilizing expertise from various agencies working on range livestock problems in Morocco. Classroom sessions were supplemented by field days and tours. The first seminar, which was attended by approximately 50 people, was organized primarily by USU staff, and was used to present basic information on range management in Morocco and to discuss project planning and organization. The second seminar, on the other hand, was developed by the Moroccan team. It was devoted to the presentation of research data from studies performed in Morocco on range or range livestock management and pastoral sociology.

In April 1987, DE/SP and the Agronomic Institute sponsored and put together a third annual workshop on range management. This week-long workshop was attended by individuals from throughout North Africa (a regional project funded by the Food and Agriculture Office of the United Nations, FAO, project provided financial assistance for this international travel). DE/SP hopes to continue the annual seminar program, as a means of improving the technical expertise of its staff and of informing Moroccan decision makers on issues related to range management and extensive livestock.

Finally, the RMIP Project supported a significant amount of on-the-job and informal training. The project assisted in creating a micro-computer center for DE, with four computer work stations, and trained a number of DE/SP staff in their use. In addition, discrete in-country training exercises were also carried out in improved herd management and sheep selection.

In conclusion, the total training program of the project has been an outstanding success. Virtually no attrition has occurred and all participants are in place in various MARA organization in Morocco. There continues, of course, to be a serious need for additional people trained in range management and livestock development.

E. The Plant Materials Center (PMC)

The need for quality range forage species seed on a large scale has long been recognized as important for successful rangeland rehabilitation programs in Morocco. The objective of the PMC was to multiply the seeds of forage species and to produce fuel and fodder shrubs for revegetating Moroccan range and pasture lands. The PID, which was prepared in July 1979, recommended a seed production component for the project, to be developed in two phases. Phase I (the first five years) would concentrate on cool-season species. Phase II (the second five years) would specialize in warm-season species.

Under the project, a plant materials center was created at Khemis M'touh, outside of El Jadida. The PMC includes administrative offices, a seed laboratory, seed cleaning and storage facilities, a shop/equipment hangar, and residences for DE personnel. All of the facilities and equipment were financed by the project. Approximately 168 hectares (nearly 85 percent of the total area of the PMC) is planted for forage multiplication and research. At the end of the project, approximately 51 hectares was in seed production for grassland species and another 100 hectares was planted in legume species. In addition, the PMC produced approximately 300,000 shrub plants annually.

The original PMC design emphasized the use of cool season forage grasses, since it was expected that initial demand would be greatest for this type of forage. At the Project Paper stage, it was recommended that the PMC be located in the higher elevation Midelt area. While two alternative sites were identified, both of which were in milder climatic zone. One of these was Khemis M'touh. There was concern, however, that these warmer locations would not be appropriate for research and the economical production of cool season forage varieties. This was because cool season varieties often require periods of cool weather in order to vernalize. Khemis M'touh was selected, since it was the only one of the farm sites that was irrigated. Ultimately, however, it proved true that cool season grasses would not vernalize there. Consequently, after the mid-term evaluation, seed production was directed toward legume species.

In particular, the PMC has increasingly emphasized the production of annual medicago species, nitrogen-fixing forage species, in support of a major GOM effort to promote a medicago-cereals rotation (the Ley Farming System). The medicago seed produced at the PMC, approximately 60 MT per year, answers only a portion of the country's demand for these species. In 1985 around 764 metric tons of annual legume seed was imported from Australia to support the Ley farming Program.

In the initial design, the objective of the PMC was primarily to produce foundation seed (basic seed). This long range goal proved to be too narrow, however, to meet the project's immediate needs, which were for noncertified seed to be planted on open ranges. Therefore, under the redesign, the PMC shifted its focus towards seed multiplication and the development of other plant materials needed for the project's research and extension activities. With the shift away from grasses and towards legume seed production, however, the original PMC goals of producing foundation (basic) seed and developing seed certification standards are once again applicable.

It remains true that at least two locations are necessary to provide the range of environmental conditions necessary to achieve the seed production

potential for most range species. The Khemis M'touh location could remain the center for coordination, processing storage, some testing and quality control for cool season species.

Adaptability trials at various project sites demonstrated that most introduced species are only marginally adapted to the conditions existing in Morocco, even when protected from grazing. As a result of this finding, the project placed increased emphasis, in the last two years, on the research and development of native Moroccan forage plant species. This activity was considered to be of significant value, in light of the historic importance of Morocco as a source of germplasm and evidence that the native plant resources of the region are rapidly disappearing. In particular, a number of plant species found during a 1970 seed collection trip could not be located during a comparable 1985 seed collection effort supported by the project. The native species evaluation and development program has only just begun. Limited initial collections have been made, geographic areas for additional collections have been identified, and multiplication of seed has been initiated. Preliminary results are positive. For example, one medic variety from the Beni Mellal region out produced all of the other annual medics evaluated, including improved varieties from outside Morocco. At the end of the project, over 500 plots (covering 5 ha) of native Moroccan range species had been planted as part of the research program on the potential of native forage producing species.

Establishing the PMC as a viable institution has been one of the major achievements of the RMIP. This has been due to a combination of resource availability, quality training, high caliber Moroccan staff, and intensive, experienced TA on a one-to-one basis. The process of developing the PMC reflects a very coordinated effort between the GOM and the RMIP. Planning, design and construction have been well organized and were completed in a timely manner. Thus, the primary goals of seed and plant materials production have been accomplished. The Project has provided DE with the capacity to produce range forage species seed locally.

IV. The Final Evaluation and USAID's Decision Against Implementing a Follow-on Project

A final evaluation of the Range Management Improvement Project was carried out in October 1985. The evaluation team was given two tasks by USAID: (1) evaluate the project, i.e. assess the progress towards, and achievement of, the project's goal, purpose, input delivery and output; and (2) examine the extensive livestock sector in Morocco as a whole, in order to provide guidance to USAID in identifying the need for, and nature of, any follow-on effort. This second report was entitled "Opportunities for AID in the Extensive Livestock Sector of Morocco".

In retrospect, it is clear that the final evaluation team spent too much time on the first task, the evaluation of past efforts, and not enough time on the second. They did an excellent job of identifying implementation problems and developing recommendations to fine tune the operation of the project. Nevertheless, the project was scheduled to end within nine months. At the same time, the evaluation team paid too little attention to the more critical task of examining the extensive livestock sector as a whole. Consequently, the team's sector assessment was unable to convincingly articulate just how

USAID could effectively assist the sector and why it should do so. Ultimately, though the evaluation team recommended that USAID continue working in the extensive livestock sector, Mission management decided against a follow-on effort.

Three factors led to this imbalanced focus by the evaluation team. First, USAID budgeted only four weeks to carry out both tasks (the assignment of two of the team members was subsequently extended to complete the sector assessment). With a project as complex as the Range Management Improvement Project (e.g. with five geographically dispersed project sites and a wide range of discrete project activities), this timetable was clearly unrealistic. Second, the scope of work prepared by USAID did not accurately reflect the changes in USAID's priorities (towards greater emphasis on the sector assessment) that took place between the time the scope of work was prepared and the arrival of the team. Third, the technical expertise of the evaluation team was not strong in key areas.

While the final evaluation team identified and made recommendations to correct a number of implementation problems with the RMIP, they concluded that the project had contributed significantly to the GOM's institutional capacity to address Morocco's range management problems. The evaluation team recommended that USAID continue its efforts in the area of range management. The sector assessment that the team prepared, also argued for continued USAID involvement in the sector. Nevertheless, USAID decided against implementing a follow-on project in range management. The reasons were:

- The GOM had not (and still has not) articulated a long-term strategy for the development of the extensive livestock sector and the protection of the country's grazing resources.
- USAID felt that the GOM had not evidenced the commitment or provided resources necessary for an adequate range improvement and control effort; and
- USAID concluded that, in the continued absence of institutional mechanisms at the local level for controlling the use of collective range lands to avoid overgrazing, destructive cultivation, and degradation, further efforts by USAID would be futile.

USAID felt that these were problems that the GOM had to take the lead in addressing and, until it did so, further USAID efforts in range management and the extensive livestock sector were not warranted.

V. External factors limiting performance

Two factors which were beyond the project's control adversely affected its performance. One major factor was a prolonged drought, beginning in 1980 and continuing through 1984, which reduced agricultural production throughout Morocco. The loss of forage and crop stubble as alternative feed sources increased the pressure on already overused collective rangelands. At the same time, the numbers of sheep on the range decreased as livestock owners sold animals they could no longer feed, and as inadequate nutrition led to increased livestock deaths. Between 1980 and 1984 the sheep and goat population of Morocco fell by 30 percent, while the cattle population fell by

25 percent. Consequently, while the drought probably increased the awareness among livestock owners that something must be done to conserve the rangelands, the resources available to the individual and his ability to modify traditional practices most likely decreased.

A second constraint has been the major financial crisis that Morocco has faced in recent years. The GOM's budgetary difficulties have made it that much more difficult for government agencies, including DE, to hire and support additional staff and to cover operating expenses. In particular, this meant that the level of GOM support remained relatively constant during the life of the project, even though project activities expanded rapidly, particularly in the last two years.

VI. Post-Project Activities

There are no specific post-project activities incumbent upon AID. There are no outstanding conditions or covenants. Nor are there additional B/G reporting requirements. There are no evaluations or additional data collection activities programmed as part of this project.

Since the completion of the RMIP Project, three DE/SP staff members have been sent to study for MS degrees under USAID's Sector Support Training Project (608-0178). Two of these individuals are studying sheep production and range management. One member of the Plant Materials Center staff is studying Farm Management.

VII. Activities in Range Management Area Since Project Termination

Since the termination of the RMIP Project, a number of activities have taken place. These activities bode well for the future of range management in Morocco and support the conclusion that the project has increased the capacity of DE/SP to implement range management programs. However, the actions taken fall short of what USAID had hoped would come out of the final evaluation and USAID's subsequent recommendations.

A. Development of A Livestock Sector Strategy

After the evaluation of the project, the USU advisors and DE/SP staff held a number of meetings to discuss the need for a strategy for the development of the extensive livestock sector and how to go about preparing one. Unfortunately, progress to this end was limited for a number of reasons, including a lack of DE/SP staff resources at the national level and conceptual differences as to the content requirements of a long-term strategy. Though a draft document was prepared by DE/SP staff, it did not address many of the key issues. In particular, that document dealt solely with range management, rather than with the extensive livestock sector as a whole. In addition, the strategy document did not identify, and establish a linkage between, resources (inputs), outputs, and objectives. As of yet, no revised version of this strategy has been shared with USAID.

While DE/SP has not prepared and obtained approval of a formal strategy, it does appear that greater attention is being given to the problem of range degradation. Reflecting this increased GOM concern, an interministerial committee has been formed to coordinate activities affecting rangelands. This

committee is made up of representatives of the various Directions within MARA that deal with rangeland, such as DE, DVARA, INRA, the Direction de Production Vegetale (DPV), and the Direction de la Planification et des Affaires Economiques (DPAE); IAV and the Ecole Nationale Forestiere d'Ingénieurs (ENFI); and the Ministries of Interior, Finance, and Plan.

B. DE/SP Status and Financial Resources

The final evaluation also recommended that MARA examine the appropriateness of upgrading DE/SP from the status of a Service to that of a Division. They suggested that this would provide DE/SP with a more appropriate place in policy matters and help DE/SP to become more effective at the Direction Provincial D'Agriculture (DPA) level. While MARA decision makers expressed support for this action, it has not yet occurred.

Based on the evaluation and the sector assessment, USAID recommended to MARA that the budget of the DE/SP be increased. In 1987, the Budget d'Equipment of DE/SP was increased from 10 million dh. to 15 million dh. In 1988, the budget was doubled to 30 million Dh. (This amount does not include staff salaries, which are paid for by the general operational budget of the GOM). An additional 1 million dirhams was provided to DE/SP, under a separate line item entitled "general studies".

The project evaluation team (together with USU and DE/SP staff) questioned the use of the "Fond de Sauvegard de Cheptel", which is funded at about 15 million dhs. per year. This fund is based on a slaughtering tax and had been used to subsidize the distribution of barley and other forages to livestock in drought-stricken areas. It was argued that, from the point of view of rangeland sustainability, it would be better for livestock owners to liquidate their herds during a drought, rather than artificially sustaining them through the distribution of subsidized forage. Partially as a result of this criticism, MARA redirected the Sauvegard de Cheptel funds to directly supporting range revegetation, and thus the sustainability of the rangelands.

C. Development of the High Plateau Project

One indication of the strengthened institutional capacity of DE/SP is the initiation of the High Plateau Project, centered in the Provinces of Oujda, Figuig, Boulemene, and Taza. Some 37.7 million dirhams have been programmed for this project. Part of these funds will come from DE and part from DVARA (extension). In coming years, around one third of the DE budget will go to the High Plateau Project.

This project resulted from a field trip by leaders of one of the major tribes in the area to view RMIP Project activities at Ain Beni Mathar. The proposed program will involve the formation of "groupements" (which will include all members of the tribe), range improvements and the deferral of collective land from grazing. The tribe has offered to contribute financially to the range improvements undertaken and to prohibit all plowing of collective rangelands by its members. Donor funding will be sought for the High Plateau Project. The GOM has indicated that it will present AID with a proposal to fund part of the project. (As of January 1988, the GOM had not approached USAID for assistance in this effort).

D. Defining DE/SP's Role

The evaluation team recommended that, as a new and relatively small division within DE, DE/SP limit its principal role to land use and management. It recommended that the responsibility for carrying out research and extension activities per se be placed upon the specialized institutions and agencies equipped to do so. With respect to research, DE/SP could focus on the development of research hypotheses and scopes of work for contracts, while the actual research was carried out by Moroccan research organizations such as the Institute National de la Recherche Agronomique (INRA), the Ecole National d'Agriculture (ENA), and the Institute Agronomique et Veterinaire, Hassan II (IAV). With respect to extension, the DE/SP role would be to work with the DVARA, the extension agency, the DPAs and Offices Régionales de Mise en Valeur Agricoles (ORMVAs) to develop training curricula and programs for existing extension agents.

DE/SP is contracting with other Moroccan institutions to carry out research on range management and forage production, using the 1 million Dh. in "general studies" funding in the 1987 budget. For example, DE/SP has contracted with IAV and ENFI to carry out a baseline study for the preparation of a management plan for Gouttetir station, near Guercif. Similar steps are being taken in the area of extension. Under the proposed High Plateau project, DE/SP will be working directly with selected CTs. These CTs, which are in rangeland areas, will, under DE/SP guidance, shift their focus towards livestock extension and range management and away from an exclusively crop production orientation.

E. Proposed New Legislation

Legislation addressing the problems of communal rangelands and range management have been in the mill for quite a while. This legislation represents an effort to establish a legal foundation for DE/SP assistance in the management of communal rangelands. Senior DE/SP staff have been directly involved in its development. The proposal would require beneficiaries to contribute 40 percent of the financial cost of range improvements (e.g. fencing, water points, terracing) undertaken on collective lands by DE/SP. Such a measure would help ensure that DE/SP efforts go to areas where it has the necessary local support. This legislation was approved by the Minister of Agriculture. The Ministry of the Interior and the Ministry of Finance received it in early January 1987 for their review. If and when they approve it, this proposed legislation would go to the Conseil de Ministère, and eventually to the King for approval.

F. Transfer of the Plant Materials Center to SOGETA

At the end of the project, USAID recommended that the GOM consider "privatizing" the PMC in order to overcome the managerial rigidities inherent in any government institution. This recommendation was elaborated in a PL 480 Self-help Measure. The PMC must have the flexibility needed to procure equipment, supplies, and personnel on a timely and cost-effective basis (i.e. without long delays due to bureaucratic approval processes). Similarly, the PMC must be run on an "agronomic" schedule, not on a bureaucratic one. Finally, for the PMC to be self-sustaining, its activities must be "demand led", and therefore based on a willingness on the part of the PMC's clients

(be they public institutions, parastatals, or private producers) to pay for PMC services. USAID argued that, unless the PMC was so structured, it would be impossible to ensure that the functions it carried out were optimal for the development of the Moroccan economy.

In response to USAID's concerns, the GOM transferred the PMC to the Société de Gestion des Terres Agricoles (SOGETA), a parastatal heavily involved in cereal seed multiplication. DE/SP maintained responsibility for preparing the seeding plan (e.g. what kinds of seed to plant). The management aspects of PMC operation, however, were turned over to SOGETA. SOGETA will pay for salaries, fuel, equipment maintenance, and so forth, and will sell the output (both seeds and fodder).

G. The Ley Farming Program

In the months following the final evaluation of the project, DE/SP staff were intensively occupied in implementing Morocco's major "ley farming" initiative. DE/SP was given principal implementation responsibility for this effort, which involved the seeding of some 20,000 hectares in Medicago. DE/SP was responsible for importing and distributing the seed, obtaining technical assistance from Australia, organizing and monitoring the planting of the seed, and following up on the utilization of the forage produced. The ley farming system involves a three year production cycle. In the second year, cereals are planted and herbicides applied to kill the volunteer medic. In the third and most crucial year, the volunteer cereals are destroyed and the medic allowed to grow. DE/SP's ability to manage this campaign during the first year is one indication of the greater institutional capacity brought about by the project. Nevertheless, the ley farming system is a very complex process that may yet strain Moroccan administrative and technical capabilities.

VIII. Lessons Learned.

Implications for development projects in general (particularly range management/livestock projects) and for additional projects in range management/livestock projects in Morocco.

A. The Need for Local Mechanisms to Control Grazing on Collective Lands

Grazing control on collective lands is perhaps the most difficult problem in agricultural development. The pastoral commons suited the agricultural system when population was low and pasture was plentiful. As human and animal populations grow, pasture becomes increasingly scarce. It is clear that a smaller number of well-fed animals would fare better than a larger number of poorly nourished animals. Nevertheless, herders resist reducing the size of their herds. This is because, on collective pasture, smaller herds are no better fed than larger ones, and thus provide no economic advantage to the individual producer. Herder resistance to grazing control makes sense in the short term, but in the long term the pasture will vanish without it.

The experience of the RMIP Project demonstrates that stock numbers can be controlled on collective pastures and, as a result, pasture productivity can be increased. The project's experience also demonstrates that this takes

time and requires the creation of popularly sanctioned decision-making mechanisms at the local level. Without locally-supported methods of reducing grazing pressure on collective lands, efforts aimed at improving animal health and genetic quality, or of pasture establishment and regeneration, will be futile.

B. The Difficulty of Incorporating Sociological Concerns into Development Projects.

The most frequently cited reason for the failure of extensive livestock projects, especially in Africa, has been their inability to adequately understand the beneficiaries. This is not necessarily due to an absence of concern for the sociological aspects of livestock development, or to the failure to include sociological components in such projects. Nor is it simply a problem of interdisciplinary conflict (though there was some of that in the early years of the RMIP Project). Rather, it appears that there is simply not enough accumulated knowledge as to how to implement a multidisciplinary research effort within the context of a development project such as the Range Management Improvement Project. Of principal concern is the lack of experience, on the part of development experts, with the benefits/limitations of "rapid reconnaissance" data collection and approaches to collecting, analyzing, and integrating such information.

C. Need for an Administrative Chief of Party on Complex Projects.

The lack of progress in the economic research area emphasized the importance of having a chief of party (COP) who is concerned full time with the administration and management of the project, with no technical responsibilities whatsoever. This is particularly true for the RMIP where there is a relatively large TA team working in five distinct parts of the country. The COP was also a range economist and had hoped to be actively involved in economic research, but his managerial responsibilities precluded this. (A similar dilemma also befell the first COP, who was also responsible for managing one of the perimeters with his Moroccan counterpart). Given the importance of economic research for the project, this was unfortunate.

D. Advantages of First Focusing on Animal Husbandry in Range Management Projects

The benefits of range improvement are not seen in the near term. Much research needs to be undertaken before range improvements, such as reseedling, can be recommended to producers with confidence. Moreover, successful range improvement actions generally require a level of local cooperation that is not easily obtained. Finally, success in this area is harder when producers distrust or have little confidence in government extension agents and representatives.

To counter these problems, a livestock project should provide short-term benefits to producers. In Morocco, the most promising avenue for accomplishing this is in the area of improved animal husbandry, rather than range improvement. The project sponsored Sheep Classification and Selection program demonstrated the potential in this area. The producers involved in these activities easily understood the short-term benefits of culling defective animals. The classification techniques are fairly easy to learn and to teach to producers. This builds producer confidence in, and the

self-confidence of, technicians. It also lays the basis for cooperation in areas where the benefits are longer-term, such as range and pasture improvement programs.

E. The Need to Focus on Broad Policy Issues in the Livestock Sector

The experience of the RMIP Project has demonstrated the importance of explicitly addressing broad policy issues affecting livestock production. Without fundamental changes in global policies and institutional relationships, the benefits of technically-oriented efforts will be limited. The importance of a global livestock sector strategy, including an analysis of the policy environment, became evident to USAID as the RMIP Project neared completion. However, USAID's ability to encourage a comprehensive livestock policy review by MARA was limited by the relatively restricted role accorded the technical assistance team fielded by USU. In large part, the involvement of senior USU advisors was limited to the USAID-financed activities in selected range perimeters. DE/SP did not view these advisors as having a role in policy analysis. USAID, on the other hand, had always envisioned a broader role for the technical assistance team, especially given that the overall objective of the project was to strengthen DE/SP as an institution. In the end, DE/SP failed to draw upon the expertise of USU senior advisors in order to examine the policy environment affecting the livestock sector. Thus, the USU advisors were not in a position to actively support the development of the sector strategy, as desired by USAID.

IX. Recommendations Regarding a Follow-on Project

USAID's decision against implementing follow-on project in the range management area was controversial. It was certainly disappointing for the USU staff and for the DE/SP. Nevertheless, it is generally agreed that a hiatus in USAID assistance will provide DE/SP the chance to develop on its own and to assimilate what has already been done.

If USAID considers involvement in the extensive livestock sector in the future, several recommendations are pertinent:

A. Develop a Sector Strategy as a First Step

There remains a need for a comprehensive strategy for the development of the extensive livestock sector and maintenance of Morocco's rangelands. Unless such a strategy is prepared in the interim, one should be developed either during the design stage, or during the first months of project implementation. Such a strategy should include:

- The identification of institutional, organizational, and legal mechanisms that could be employed to reduce overgrazing and permit the regeneration and/or reseedling of communal lands, and the elaboration of a program to introduce these mechanisms.
- An institutional assessment (e.g. mandate, strengths, weaknesses, needs, interrelationships) of the Direction de l'Elevage and other GOM agencies dealing with extensive livestock production. What organizational changes within DE would be necessary, for example, to ensure that greater attention were given to the animal husbandry aspects of extensive livestock production?

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- The identification of realistic resource commitments (personnel and budgetary) and output targets for the coming decade.
 - An assessment of current resource use (particularly land use), production levels, and returns to livestock production, and future trends.
 - The identification and evaluation (including cost/benefit analysis) of technological and management packages that could be introduced to increase productivity and returns to producers.

B. Encourage Local Participation

A major thrust of any new project effort must be on the creation of effective local organizations as vehicles for rangeland improvement. Historically, DE/SP's strategy has been focused on the creation of range management perimeters, with DE/SP playing the role of both manager and policeman. However, given its limited personnel and budgetary resources, DE/SP staff cannot possibly manage more than a fraction of the steadily degrading rangelands of Morocco. As an alternative, DE must begin to actively encourage and support efforts by local communities, themselves, to better manage their common land. In particular, by marshalling local resources and mobilizing beneficiaries, strengthened local-level beneficiary organizations can promote sustainable and replicable development.

C. Address Broad Policy Issues

The initial focus of any new project should be on identifying policy changes that could be implemented at the national level to improve livestock productivity and protect the fragile resource base. Given the decentralized nature of livestock production in Morocco, the most effective means of increasing overall productivity is to ensure more effective and economically rational production incentives consistent with the sustainable use of rangelands.

A number of public sector policies affect Moroccan livestock production. These include subsidy policies (e.g. the subsidized distribution of sugarbeet pulp and concentrates), credit policies, tax policies (including the abbatoir tax), overall investment policies, and policies affecting the control of local resources. Any new project should develop the capacity of MARA to analyze and monitor the effects of these policies on livestock production and productivity. In particular, more information needs to be collected and analyzed with respect to livestock marketing (prices and volume), meat consumption (demand), characteristics of the national herd (reproductive efficiency, health problems, etc. Such information is particularly lacking for livestock raised under traditional conditions. Adequate and accurate information is needed, however, if one is to evaluate, and monitor the impact of, public sector policies which affect extensive livestock production.

D. Employ a Comprehensive Approach

The focus of any new project should not be limited to range management. Rather, an integrated approach is necessary, particularly one in which improved animal husbandry plays a central role. Similarly, the focus of such a project should not be DE/SP, but rather on the Direction de l'Elevage as a whole (though keeping the focus on extensive livestock production). Greater attention needs to be given to developing the livestock extension capacity of MARA's extension service. Moreover, the focus should not be restricted to activities within a given geographic location (e.g. the area encompassed by the High Plateau project). Rather, the assistance should be given at a national level. Only then could U.S. resident advisors hope to address livestock policy issues.