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630.711
P895

PD-AAA-525-A1

Orig. 6080088
Prd- (1)

54p.

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EVALUATION OF
AID/MOROCCO ASSISTANCE TO
HASSAN II INSTITUTE OF AGRONOMY
AND VETERINARY SCIENCE
FINAL REPORT

Submitted in Response to:

Contract No.: AID/CM/otr-C-73-200 Work Order #15
Agency for International Development
NESA/NENA/Morocco Desk
Washington, D.C.

By:

May, 1975

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Evaluation of AID/Morocco Assistance to Hassan II Institute of Agronomy and Veterinary Science; Final Report

May 1975

45 pages

3 appendices

AID Contract Number: AID/CM/otr-C-73-200, W.O. #15

AID Project Number: 608-11-110-088

Source: ARC MO 630.711 P895

The objective of the Hassan II project is to assist Hassan II in planning curriculum, and in developing advanced teaching and research capabilities. There has been little activity in curriculum planning. The objective of developing advanced teaching capabilities has been only marginally realized. As far as developing advanced research capabilities is concerned, most project resources have been consumed in performing research per se. After an average of well over three years on the job per man, none of the four team members has succeeded in training a replacement who might carry on research programs begun during the project. Positive accomplishments include high quality research and development of a comprehensive soils capability map. The evaluators conclude that: (1) continuation of the project in its present form, without further articulation of objectives, is not warranted; (2) it has not proven plausible for U.S. investment to seriously effect Hassan II capability to meet Morocco's need for high expertise agricultural manpower; (3) Hassan II Institute is a viable institution without any USAID intervention and would perservere without U.S. assistance; and (4) if U.S. investment is to matter, it will matter in terms of the research capability added to Morocco.

EXECUTIVE SUMMARY

The Hassan II Institute of Agronomy and Veterinary Science

The Institute Hassan II of Agronomy and Veterinary Science provides Master's level certification for agriculturalists who will subsequently become part of the civil service in Morocco. The curriculum is divided into three "cycles" of two years each. The first two cycles consist of classroom work in Morocco, where general science and general agriculture are studied. The third cycle has two parts: a fifth year of specialized training obtained abroad (France, Belgium, U.S.), and a sixth year of supervised research and "memoire" (thesis) writing back in Morocco.

USAID Support of Hassan II Institute

AID's support of the Hassan II began in 1970 and currently consists of six faculty members (two newly arrived) contracted by the University of Minnesota; and travel, tuition, and living expenses for some fifth year students at universities in the U.S.

Total costs of the project as of April, 1975 were \$1,015,000. Project documentation calls for continuation until 1980, and expenditure of \$3,282,000 additional funds.

Project Objectives

The ostensible objective of the AID/Morocco support to Hassan II is to:

"Assist Hassan II in planning curriculum, and in developing advanced teaching and research capabilities."

The objective has three components:

- 1) Curriculum Planning;
- 2) Develop Advanced Teaching Capabilities;
- 3) Develop Advanced Research Capabilities.

Progress Toward Project Objectives

The curriculum planning component contradicts reality to some extent since:

- 1) Students spend the first year of the third cycle abroad, not on campus at Hassan II Institute;
- 2) Students spend the second year of the third cycle doing supervised research, and there is no real "curriculum";
- 3) During the first three years of the project, there were essentially no sixth-year students for AID-supported to teach;
- 4) Since sixth-year students have become available, each team member has averaged less than two sixth-year students a year;
- 5) The second cycle, where there is curriculum, has involved the heavy participation of only one team member, and the light participation of another.

The develop advanced teaching capabilities component has not been realized except very marginally since:

- Only two Hassan II teachers have done their sixth year research under AID-supported faculty supervision.

With regard to the develop advanced research capabilities component, most project resources have been consumed in performing research per se. The objective of institutionalizing a Moroccan capability has not in practice provided an orientation to the project efforts.

After an average of well over three years on the job per man, none of the four team members has succeeded in training a replacement who might carry on research programs begun during the project. Each of the four has identified a current fifth year student as a potential replacement, however

- 1) There is no assurance that the students will want to work at Hassan II as researchers;
- 2) The students are all at least three to four years away from being able to run research programs on their own.

The on-site team's direct impact on meeting Moroccan needs for agricultural experts has been only marginal for the following reasons:

- 1) The training objectives Hassan II Institute has set for itself are enormous, and imply commitments over a long term. Hassan II administration projects a long term need of 1,200 graduates, which they will fill at a rate of about 50 per year;
- 2) Hassan II Institute is well on its way to reaching its "cruising rate" of 50 agriculturalists per year, and they are doing so essentially without U.S. help, since each U.S. team member presently has less than two sixth-year students per year assigned to him.

Positive accomplishments of the project which must be considered in any replanning are:

- 1) High quality research oriented to the disciplines and interests of American agricultural research, but also generally addressing important Moroccan problems;
- 2) Development of a comprehensive soils capability map, which is near completion and will be used throughout Morocco, especially in agricultural schools;
- 3) Hassan II administration interest in U.S. approaches to agriculture has been aroused. Specifically, interest has been expressed in the following ways:
 - a) Applied research has become accepted, and even preferred, as a "memoire";
 - b) Applications for fifth-year study in the U.S. have increased dramatically;
 - c) Hassan II administration is considering making second cycle less general and theoretical, and more specialized and practical.

Questionable Assumptions on Which the Project is Based

There are two assumptions in the project design that now seem unrealistic:

- 1) That Moroccanization of Hassan II teaching and research faculty are a real priority of the Institute, and of the Moroccan government;
- 2) That highly qualified and motivated students are available to the project team as students and researchers.

There are few incentives suggesting that the assumptions will become realities unless placed within the manageable interest of USAID and the project team.

Conclusions

- ✓ 1. Continuation of the project in its present form, without further articulation of objectives, is not warranted.
- ✓ 2. It has not proven plausible for U.S. investment to seriously effect the essential character of the core curriculum of Hassan II.
- ✓ 3. It has not proven plausible for U.S. investment to seriously effect Hassan II capability to meet Morocco's need for high expertise agricultural manpower.
4. Hassan II Institute is a viable institution without any USAID intervention. Other donors, particularly France, have been willing so far to bear considerable portions of Hassan II's operating costs, and there is no indication that this trend will discontinue.
5. The Hassan Institute would persevere without U.S. assistance.
6. The relation of the Hassan II project to AID/Morocco's current goal of "improving the quality of life of Morocco's poor and deprived" is uncertain. It depends on the assumption that: "a high influx of agricultural expertise into the government will benefit the poor and deprived"

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7. There is one possibly achievable, possibly important purpose to which project activities may be directed: development of a viable U.S.-oriented research capability within Morocco.

Recommendations

If the U.S. investment is to matter, then it will matter in terms of the research capability added to Morocco. Alternatives to be considered in this regard include:

- 1) Concentrate the project objectives on development of a Moroccan research capability. Members of the contractor team must agree to and accept the objectives (See the Logical Framework following these recommendations.)
- 2) USAID must either:
 - a) Accept within its manageable interest the assumptions regarding Moroccanization of research positions, and availability of students for AID supported staff; or,
 - b) Discontinue the project; or,
 - c) Attempt to institutionalize the research capability somewhere other than within Hassan II Institute.
- 3) Contracting and bi-lateral agreements with Hassan II must include go/no-go criteria that reflect the following USAID objectives:
 - a) Replacement of U.S. researchers by Moroccans;
 - b) Availability of students to team members.
- 4) USAID should consider offering research funding and support to Moroccan replacements for project team members.
- 5) Implementation of the above must be made with recognition that Moroccanization is not necessarily perceived by Hassan II to be to its own interest.

DATE OF THIS SUMMARY 5/18/75

PARTIAL LOGICAL FRAMEWORK FOR USE IN REPLANNING AID/MOROCCO ASSISTANCE TO HASSAN II INSTITUTE

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS			ASSUMPTIONS WHICH MUST BE BROUGHT WITHIN AID'S MANAGEABLE INTEREST
	MEASURE	TARGET	PROGRESS	
<p><u>GOAL</u></p> <p>Improve the quality of life of Morocco's poor and deprived (AID/Morocco DAP, 1975-79.)</p>	<p>[Specify nutrition & agricultural production problems which current AID-supported research might solve]</p>	[]	[]	
<p><u>PURPOSE</u></p> <p>A Moroccan research capability which detects & solves important Moroccan agricultural problems without outside help.</p>	<p>• Moroccan-run research labs which turn out professional level publications.</p> <p>[Solution to important agricultural problems derived from Goal Objectively Verifiable Indicators</p>	4	0	
<p><u>OUTPUTS</u></p> <p>1. Agricultural research labs. 2. Agricultural research programs. 3. Moroccan researchers trained. 4. Labs & Programs turned over to Moroccans.</p>	<p>1. Fully equipped labs. 2. American-supervised program turning out professional level publications. 3. Trained to Master's level pursuing career in research 4. Team members replaced by Moroccans.</p>	4 4 4 4	4 4 0 (some on way) 0	Hassan II gives priority to Moroccanizing a research capability
<p><u>INPUTS</u></p> <p>1. Participation in 2nd cycle, 5th year, 6th year. 2. Equipment & Lab Space. 3. Problems selected, research carried out. 4. Phase-out of team members Periodic visits by team members AID support of research by Moroccan replacement.</p>	Expenditures	[Planned]	\$1,015,000 (5/75)	Qualified motivated students are available to the project team.

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NOTE: [] = Statements in parenthesis are vague and require specification by AID/Morocco and the project team during

SECTION I
INTRODUCTION

A. HASSAN II INSTITUTE OF AGRONOMY AND VETERINARY SCIENCE

The Institute Hassan II (of Agronomy and Veterinary Science) had its initial impetus from a recognition by Moroccan leadership that dependence upon foreign agricultural specialists, engineers and technicians was both expensive and a denial of Moroccan sense of national identity and self realization. To the degree that non-Moroccans exercised roles in technical and administrative matters affecting priority areas of national self interest it was felt imperative to develop a capacity to replace them by Moroccans aware of and trained to handle Moroccan problems.

In 1965 the King expressed a concern in an official statement from the throne for priority emphasis in agriculture. By 1969 a Royal Decree gave approval for the creation of a National Institute of Agronomy (later to include veterinary science) to prepare Moroccans to assume responsibilities in agricultural administration principally within the Ministry of Agriculture. Since agricultural training responsibilities lay within the Ministry of Agriculture rather than in the Ministry of Education it was appropriate for the plans and curriculum of the Institute to reflect the current needs of that ministry and the projected national requirements.

At the time the Institute was opened (in impressive buildings constructed under a grant from the French Government) there were few Moroccans at the professional level who could staff the broad spectrum of disciplines called for in the university and graduate level curriculum of the Institute. Even at the instructor, laboratory assistant and technician level Morocco lacked experienced personnel. The very nature of agriculture as an area of activity partakes of almost every natural scientific discipline (zoology, botany, mathematics, physics and chemistry with their many specific scientific subdivisions, applied engineering, market economics and not least of all management principles as applied to large scale agribusiness and even

to the smallest production unit). Most schools of agriculture depend upon specialized courses in other scientific disciplines for basic training and tend to emphasize agricultural specializations appropriate to their particular clientel and area of the country.

The Institute Hassan II of Agronomy and Veterinary Science was established to provide college level training and graduate preparation (at approximately the masters degree level) for government administrators and agricultural engineers. It operates as a service academy of the Ministry of Agriculture.

Its resources of buildings and laboratory equipment were donated by foreign governments (principally France) with necessary land and utilities provided by Morocco. The students are selected from the science baccalaureate graduates of the Moroccan secondary school system and receive full scholarship and living allowances while at the Institute in return for an eight year commitment to government service upon graduation.

The teaching and research staff of the Institute are predominantly foreign and on short (two year) assignments and are preoccupied with teaching the agricultural science courses of the Institute.

The curriculum is divided into three "cycles" of two years each. The first cycle is devoted to general science and mathematics. The students attend classes during this cycle at Mohamed V University but are housed at the Institute. The second cycle classes are conducted at the Institute and cover the whole range of agricultural subjects. The second cycle courses consist of lectures almost exclusively, so that the students have very little time for independent reading or individual exploration. During the first two cycles there are organized field study expeditions involving the entire student body and most of the resident staff. The objective of these expeditions is to familiarize the student with specific aspects of Moroccan agricultural problems. The reports of the field trips represent a formal analysis of the student's experiences.

The third cycle (fifth and sixth years) is the period of specialization. During a year of specialized study abroad (France, Belgium, U.S.A.) the students are exposed to scientific and professional points of view of greater scope than is possible in the Institute.

The sixth and last year at the Institute is spent in preparation of a "memoir" or thesis and focuses on some particular topic under the guidance of a member of the staff. The students are also involved in field trips during this last year with topics appropriate to their specialization.

Hassan II Institute has several functions:

1. The training of Government officials in agricultural science. There are two final levels of graduation possible for the students -- Ingénieur d'Etat (State Engineers in agriculture) about the equivalent of MS and Doctorate de Science (Doctor of Science) at about the level of a Ph.D.* The students in the Institute are full-time government supported (salary, family allowances; travel expenses and all costs). Their fields of study reflect to some small degree their personal preferences but to a large extent depend upon their achievements and the priorities of personnel needs of the Government. Their assignment upon graduation reflects current priorities in the Ministry of Agriculture and other Government Offices. The diplomas of the Institute constitute certification for specifically ranked positions in the civil service structure. The graduates automatically enter an elite corps of scientific personnel for planning, directing and organizing programs of development of all phases of Moroccan agriculture affected by Government policy.
2. Initiating of fundamental research programs of relevance to agricultural problems in Morocco. The active conduct of research in the laboratories at the Institute constitutes a national resource complementing the capabilities in the applied research of the division of agricultural research in the Ministry of Agriculture.
3. The training of teachers for the lower level schools of agriculture leading to degrees of Ingénieur d'Application, and for the training of Ajoins Techniques and Agents

* While the King has accorded the Institute the authority to grant a Doctorate, this has not yet been used.

Techniques. (For an understanding of how the different levels relate to each other see Appendix B.)

4. The replacement of foreign teachers, researchers, and administrators in the agricultural sector.

B. A NARRATIVE ANALYSIS OF DIVERGENT UNDERSTANDINGS OF THE HASSAN II PROJECT'S PURPOSE

The role, objectives and official context of the Hassan II Institute narrated in the foregoing section do not appear to have been recognized in the documentation of the AID project. As a consequence, the evolution of the Moroccan view of the Institute, in the context of the Ministry of Agriculture's Division of Agricultural Training, has led to a confusion of aims among:

1. Mr. Bekkali of the Institute;
2. The University of Minnesota at St. Paul;
3. The Minnesota Team members at Hassan II Institute;
4. USAID/Morocco and AID/Washington.

1. The Moroccan point of view is expressed by Mr. Bekkali in the succession of Annual Reports of the Institute. The priority objective is that of ensuring that the status of the Institute is confirmed by the acceptance of its graduates at a rank equivalent to that accorded by graduates of European schools conferring similar degrees. Various real measures, as well as intangibles, contribute to the status of the Institute.

Internationally recognized scholars give courses at the Institute. Publications are a measure of scholarly activity whether they be bibliographic analyses, essays, or reports of laboratory and field research. Participation in international conferences are also an index of recognition which reinforces the Institute's position as an institution of higher learning corresponding to French, Belgian, Swiss, and German schools.

It should be noted at this point that in Europe the faculty of a university or specialized institute are almost never full-time professors or researchers, but teach a set of lectures on a fee basis, and participate in oral examinations of degree candidates as activities adjunct to their principal professional occupation. Resident faculty devoted exclusively to teaching is analogous in institutional terms to the role of a "resident physician" in a hospital. He is usually undergoing an apprenticeship under the guidance of a senior professional who has many other responsibilities in the community.

2. The University of Minnesota's point-of-view is expressed in a series of project program reports. The University of Minnesota understood the role of the Institute as a setting for students to acquire knowledge in the field of agriculture, experience and deeper understanding of some specialization, and skills and attitudes as foundations for their research, educational, or administrative careers.

Specialized knowledge and research productivity are paramount measures of a valued graduate professor in an American university. The function of University of Minnesota faculty at the Institute was therefore seen by the University as participation in policy discussions about course and research planning, student guidance and supervision, and graduate seminar leadership.

Their own personal research in Moroccan agricultural problems was understood for its twofold value: research findings and a training facility for advanced students.

Unfortunately, in view of the remarks about the status of faculty in European institutions, the American Ph.D. staff provided by the University of Minnesota were not recognized either for their knowledge of agriculture, nor for their specialty. This may be because, in European universities, American achievement in agriculture is not as well known as American achievement in business and industry. Moreover, the Ph.D. degree does not seem to be understood at the Institute. The emphasis in American universities on doctoral research, especially in the sciences, is considered too akin to the training of advanced technicians. The European doctorate is an acknowledgement of theoretical maturity and fluency. Field research, and to a lesser degree laboratory research, are technical pursuits inappropriate to intellectuals and scholars.

3. The Minnesota "team" members, in one way or another frustrated by the system at the Institute (some had no research students to supervise for the first two years) found ways to occupy their time productively, but basically out of synchrony with the Institute, and with original project objectives.

4. USAID/Morocco and AID/Washington received reports from the contractor who was intermittently in contact with leadership at the Institute and who received reports from the Minnesota team members on their activities. The reports in effect constituted a screening of the realities of the situation in which the contractor's services were in fact being performed. By focusing attention in the reports on the specifics of the contract and the scope of work embodied therein, instead of on the evolution of the institute program in a proper perspective, the understanding by AID in Morocco and in Washington was misdirected and incomplete.

From the point of view of established evaluation practice, the analysis of the project has shown that the inputs of resources, money, and man/years were taken at face value to measure achievement of the objectives of the project.

On the other hand it is quite apparent that there have been several separate purposes at different levels of abstraction which motivated the participants in the evolution and establishment of the Institute Hassan II as a source of a cadre for the development of Moroccan capabilities in the agriculture sector.

The present evaluation examines some of the consequences of this situation.

SECTION II

DATA COLLECTION SCHEME AND PROJECT DESIGN CLARIFICATION

A first step in any evaluation is a data collection scheme. A side-benefit of the scheme presented here is that it also clarifies the project design for AID/Morocco's assistance to Hassan II Institute.

A. Features of a Good Project Design

A good project design is basically a concise description of what is being done and why it is being done.

What is being done can be thought of as having two key elements:

- 1) The activities undertaken by the project;
- 2) Those activities' immediate results, which are under the direct control of the project.

And the why of a project can also be thought of as having two key elements:

- 1) The important effects participants hope and expect the project will have;
- 2) The important effects participants hope and expect the project to have when combined with other events or projects.

("Participants" here would mean Hassan II Institute, the University of Minnesota team, AID/Morocco, AID/Washington, and the Government of Morocco.)

Readers who are familiar with AID's Logical Framework system for project design and evaluation will recognize the above described elements under the following names:

WHY

- [GOAL: The important effects participants hope and expect the project to have when combined with other events or projects.
- [PURPOSE: The important effects participants hope and expect their single project will have.

WHAT

- [OUTPUTS: The immediate results of the project's activities, which are under the direct control of the project.
- [INPUTS: The activities undertaken by a project and the resources they require.

B. Purpose Clarification: Theory

The most difficult step in many design clarifications is clarification of a project's Purpose, its reason for being undertaken.

Purpose clarification is crucial to both an evaluation, and to the operations of a project. It is crucial to evaluation because it defines the basic criteria for success against which a project is measured. In later sections we will discuss the value and implications of Purpose clarification for the Hassan II projects operations. (See a chapter entitled "Contract Clarification".)

C. Purpose Clarification in Practice

To clarify the Hassan II project's Purpose, for use in our data collection scheme, we asked two basic questions of:

- 1) The project accomplishments described in documents;
- 2) The project accomplishments described in preliminary interviews with participants and interested parties;
- 3) Our ideas about what else the project might be accomplishing, or might accomplish in the future.

The two basic questions we asked are:

- 1) Is the project accomplishment an immediate result of project activities, which is under the project's direct control? (Output question); or,
- 2) Is the project accomplishment an important effect, which all all participant parties, given their capacities and interests, might hope for and expect? (Purpose question).

For the Hassan II project, a sample immediate result might be:

"Number of students who obtain Ingenieur d'Etat under project supervision".

And a sample important effect might be:

"Number of graduates working in agriculture-relevant jobs who obtained Ingenieur d'Etat under project supervision".

To make a long story short, we ended up, for data collection purposes, with a tentative Purpose statement and Basic Success Criterion which reads as follows:

"On its own, Hassan II meets Moroccan needs for high level agricultural expertise and knowledge."

As a working criterion, we decided that AID support to Hassan II should be judged a success to the extent that it contributes to progress toward the above Purpose.

A unique feature of the "Purpose Statement" we arrived at is that it was neither copied from documentation, nor does it represent a consensus of participant thinking about the project.

We tried arriving at Purpose via interviewing and consensus, but this quickly proved to be too large a task which belongs more appropriately to planning than to evaluation.

The Hassan II project has not been characterized by much of what we might call "Purpose Level thinking", so our attempts at defining purpose may be a contribution to a continuing dialogue. This purpose represents what our PCI team perceived as the only objective that would be both acceptable to all parties in that dialogue and compatible with AID's stated objectives and policies.

Our entire Logical Framework and Data Collection Scheme for AID/Morocco's assistance to Hassan II Institute appears in the following table.

D. Comments on the Framework

The Goal statement comes directly from page 72 of AID/Morocco's Development Assistance Program (DAP). It is the topic sentence of a paragraph entitled "Proposed Development Assistance Program: Program Objectives". It is a Goal which, if our reading is correct, is meant to encompass AID's assistance to Hassan II Institute.

The Purpose Statement looks simple but really encompasses all the components listed as its "Objectively Verifiable Indicators". "Viability" refers to the "on its own" part of the Purpose statement, and "effectiveness" refers to the rest of it.

A working, minimum definition of a "project" might be a group of activities whose important, expected effects can be summarized in one, declarative Purpose Statement.

LOGICAL FRAMEWORK FOR SUMMARIZING PROJECT DESIGN

DATA COLLECTION SCHEME FOR EVALUATION OF AID/

Project Title: MOROCCO ASSISTANCE TO HASSAN II INSTITUTE (4/1975)

DEVELOPMENT HYPOTHESES
 If Purpose, Then Goal
 If Outputs, Then Purpose
 If Outputs, Then Outcomes
 If Inputs, Then Outcomes
 MANAGEABLE INTEREST

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS
<p>Program Goal: The broader objective to which this project contributes:</p> <p>Improve the quality of life of Morocco's poor and deprived (DAP, 1975-1979)</p>	<p>Measures of Goal Achievement:</p>
<p>Project Purpose:</p> <p>Without outside help, Hassan II Institute meets Morocco's needs for high level agricultural expertise and knowledge.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <p><u>EFFECTIVENESS</u></p> <ol style="list-style-type: none"> 1. Project trained graduates in agriculture jobs. 2. Supervisor assessments of their work. 3. Increase of productivity due to agriculture graduates. 4. Increased agricultural productivity due to project's research.
<p>Outputs:</p> <ol style="list-style-type: none"> 1. In Morocco: <ol style="list-style-type: none"> a) Curriculum developed b) Students complete 6th year c) Research results, publications d) Students selected & prepared for 5th year 2. In U.S.: <ol style="list-style-type: none"> a) Students complete 5th year in U.S. 	<p>Magnitude of Outputs necessary and sufficient to achieve purpose.</p> <ol style="list-style-type: none"> a) Narrative list b) Number obtaining Ingenieur d'Etat c) Narrative list d) Number accepted <p>a) Number that complete year with "B" average</p>
<p>Inputs: Activities and Types of Resources</p> <ol style="list-style-type: none"> 1. In Morocco: <ol style="list-style-type: none"> a) Adapt research, teach 2nd cycle b) Supervise student research c) Set up labs, select problems, do research. d) English lab equipment, student selection, counseling 2. In U.S.: <ol style="list-style-type: none"> a) Students' travel, tuition, living expenses 	<p>Level of Effort/Expenditure for each activity.</p> <p>Dollars and man/years</p> <p>a) Dollars</p>

SECTION III
PROGRESS ASSESSMENT

A: **SUMMARY**

Table III-1 contains a summary of our progress assessment for AID/Morocco's assistance to Hassan II Institute.

A weakness of the project, and therefore of our evaluation, is a set of non-arbitrary targets against which to measure progress. However, it is patently clear that the areas where there may be good progress all have to do with research:

- Research results and publications;
- Possible spread of research orientation within Morocco;
- Potential for increased agricultural productivity and an AID-supported faculty research.

The above are discussed in Section IIIB.

Progress is patently unsatisfactory in the following areas which have, from the project outset, at least officially been considered central by all parties concerned:

- Project-trained graduates in agricultural jobs;
- Project-trained Hassan II personnel;
- Project personnel replaced by Moroccans;
- Project-trained Ingenieur d'Etat.

The above unsatisfactory progress is not due to low performance by AID-supported faculty, but rather to serious flaws in the project's design. The project's design, and in particular the assumptions on which it is based, are evaluated in Section IV.

TABLE III-1

PROGRESS ASSESSMENT: AID/MOROCCO ASSISTANCE TO HASSAN II INSTITUTE (4/1975)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	
	MEASURE	PROGRESS: 4/1975
<p>GOAL: Improve the quality of life of Morocco's poor and deprived (DAP, 1975-1979, p. 72)</p> <p>PURPOSE: Without outside help, Hassan II Institute meets Morocco's needs for high level agricultural experts and knowledge</p>	<p>Effectiveness</p> <ul style="list-style-type: none"> Project trained graduates in ag jobs. Supervisor assessment of their work. Increase ag productivity due to grads. Increased ag productivity due to project's research. <p>Viability</p> <ul style="list-style-type: none"> Project trained Hassan II personnel Project personnel replaced by Moroccans Curriculum accepted Spread of research orientation 	<p>2</p> <p>Not a big enough sample & too early Not a big enough sample & too early. Some promising developments (Section IIIB)</p> <p>1</p> <p>0 (4 students, tentatively identified) A soils text (Section IIIC) Some promising development (Section IIIB)</p>
<p>OUTPUTS:</p> <p>1. <u>In Morocco</u></p> <ul style="list-style-type: none"> a) Curriculum developed b) Students complete 6th year. c) Research results, publications d) Students selected & prepared for 5th yr. <p>2. <u>In U.S.</u></p> <ul style="list-style-type: none"> a) Students complete 5th yr. in U.S. 	<ul style="list-style-type: none"> a) Narrative list b) Project trained Ingenieur d'Etat c) Narrative list d) Number accepted <ul style="list-style-type: none"> a) Number who completed year with "B" average. 	<p>A major soils text, and some virology materials 3 (2 expected this year) Substantia; (Section IIIB) 11 (about 10 more this year)</p> <p>5 (6 expected this year).</p>
<p>INPUTS:</p> <p>1. <u>In Morocco</u></p> <ul style="list-style-type: none"> a) Adapt research, teach 2nd cycle b) Supervise student research c) Set up labs, select problems, do research. d) English lab equipment, student selection & counseling <p>2. <u>In U.S.</u></p> <ul style="list-style-type: none"> a) Students' travel, tuition, living expenses 	<p>Dollars and man/years</p> <p>Dollars</p>	<p>\$930,000 15.8 man/years spread over 5 years.</p> <p>\$85,000</p>

Progress in the areas of: (1) curricula developed, and (2) curricula accepted, cannot be characterized simply, in part because the concept of "curriculum" is vague. Progress in the curriculum areas is discussed in Section IIIC.

B. RESEARCH PROGRESS

The approach used in the Minnesota project was to build a solid scientific agricultural foundation upon which to build an institution geared to assist in the agricultural development of Morocco. In a country where 75% of the total population is dependent upon agriculture and yet is a net importer of food products, the Hassan II assistance project appears to focus on the major area of concern. No single institution could be more effective than an agricultural institute like Hassan II Institute of Agronomy and Veterinary Medicine to tackle such a problem.

A comparison to the Morrill Act of 1862 which created the land-grant institutions in the United States may be appropriate. It is frequently suggested that this single act revolutionized American agriculture, and changed the country from a food deficit nation to one of long term. The results of this act did not become apparent in a single year or even in the first decade. An idea was initiated, funds were appropriated, and institutions established which were to focus on solving the problems which were limiting agricultural production and extending those answers to the individual farmers - large and small - in every village and community of the country. An effective circular flow of information resulted: the research was based upon the country's needs, the teaching was based upon the country's research, the extension service extended the research findings to the farmer and also transmitted new problems found in the country back to the researcher. Such can also be the role of the Hassan

.II Institute of Agronomy and Veterinary Medicine in Morocco.

The specific plan for the Minnesota team to focus attention on the areas of soils and plants appears valid. They are two basic and strategic areas for improving agricultural production in any food deficient country. The above statements are not intended to minimize the importance of other areas of agriculture, but merely to affirm the judgement of the original program planners that a sound decision was made to commence the activities in the areas of soils and plants.

The major agricultural problems facing Morocco as listed in the D.A.P. (pages 21-25) are: water deficiency, unequal distribution of growth benefits, unequal land distribution, insufficient food crop production, and inefficient livestock production. From personal observation by the evaluation team, and from a brief review of the literature, these appear to be the major problems. To solve any of these problems it is necessary for an institution like the Hassan II Institute of Agronomy and Veterinary Medicine to have an adequate basis in soils and crops.

When considering water deficiency, an understanding of the physiological aspects on plant growth becomes very crucial. In the unequal distribution of growth benefits, the major problems confronting the traditional farmer relate to poor yield, poor quality seed and outmoded agronomic practices. The land distribution problem is extremely complex, but here too, the need for relevant information in the soils and plants areas is paramount. Insufficient food crop production is directly related to an understanding of soil fertility, seed, and appropriate cultural practices of production. Likewise the problems of inefficient livestock production are directly proportional to the problems of an inadequate food supply.

Dr. John Caddel has focused his research program on barley. The objectives of his program in plant breeding were to identify the factors which limit barley yields in Morocco and to develop barley breeding programs which are suitable for student research projects and related to increasing barley production. Presently 30% of all cultivated land in Morocco is in barley with an average yield of only 10 qx/ha.

He found that barley yields are low in Morocco because farmers generally use inferior quality seeds and follow poor agricultural practices such as: poor seed bed preparation, no weed control, no fertilizer, ineffective irrigation and poor crop rotation. He also found that when local varieties are grown under good conditions, their yields are severely limited by diseases and lodging. Diseases of major importance to barley in Morocco are: net blotch, powdery mildew, stripe rust, loose smut, scald and stripe.

In his initial work he screened in test plots over 10,000 varieties of the world barley collection for powdery mildew, net blotch and stripe rust. Many varieties were found resistant to those specific diseases and were judged as being generally well adapted to Morocco. Presently, the varieties that exhibited the most disease and lodging resistance as well as showing a potential for yielding well are now in trials to determine which will produce superior yields to the local varieties. The trials are being conducted in both irrigated and dry conditions. It is expected that in 1975 Dr. Caddel will give to the D.R.A. plans to conduct the final trials and distribute the new varieties to farmers. Through this research, he has also determined that the varieties having larger seeds are better able to germinate, emerge and grow in the poor conditions present on traditional Moroccan farms.

Sixth year students in plant breeding have been involved to some extent in the general research project by helping screen the world barley

collection for resistance to the important diseases. There are or have been five students with projects related to the important cereal diseases in Morocco. Their projects involve both field and laboratory studies on various aspects of plant breeding. Three students are studying the importance of seed size in cereals. Eventually techniques will be developed to screen segregating populations for seed size using the results of the students' projects.

When considering that cereals constitute the staple diet - and almost the total diet of the poor - and that Morocco has now become a net importer of cereals, the research program of Dr. Caddel seems to focus directly on one of the country's major problems. There presently seems to be no other effective applied plant breeding project in Morocco. It is thus hoped that the Hassan II students are receiving the necessary plant breeding training so as to prepare them for effective roles as teachers, researchers and extension workers assisting Morocco increase its food production.

The major research activities of Dr. Lockhart have been to work on an inventory of crop viruses - the epidemiology of viruses. There have been no studies on crop viruses with the exception of citrus, and virtually nothing is recorded. To merely identify the disease so that proper practices can be recommended has much practical importance.

A fully equipped laboratory has now been established to serve the needs of Morocco. An adequate virology laboratory needs to be more sophisticated than a related laboratory where work is conducted on bacteria or fungus. AID has invested approximately \$10,000 in equipment but the entire laboratory has an inventory of over \$100,000. The electron microscope is worth between \$50-75,000 and the two ultra centrifuges about \$20,000. The item sorely needed of course, is a greenhouse.

The case can be correctly made that Dr. Lockhart's work has been basic and essential to tackle some of Morocco's problems. A laboratory has now been established where two or three permanent personnel can adequately serve the country.

Courses can be taught to 2nd cycle students with information collected in Morocco. Third cycle students have virus problems on which to begin their research. This laboratory can also serve as a focal point for an annual check on the Moroccan virus situations. Finally, the laboratory can function as a dispository for all virus information and can follow through and investigate problems as reported by other agricultural scientists.

All of the research efforts of Dr. Jean Molina have centered around the various forms of the nitrogen cycle and its role in Moroccan agriculture. This has been a cooperative research effort with Morocco, Minnesota and Belgium. Bacteria of two genera Nitrosomonas and Nitrobacter have been studied. Dr. Molina has been successful in developing a methodology whereby these bacteria can be grown on culture plots so that isolates from various Moroccan soils can be more easily compared and identified. An unidentified bacterium was isolated from a Moroccan soil and is of unique interest in that when it is placed on a culture plot together with Nitrosomonas the latter will grow, whereas Nitrosomonas by itself will not.

Strains of Nitrosomonas and Nitrobacter isolated from soils in Germany and Minnesota are being compared with Moroccan strains with respect to detailed morphology. He has also devised a way to grow bacteria on a solid surface so observations can be made on the Institute's electron microscope.

In his work on symbiotic nitrogen fixation, he has grown six leguminous species (garden pea, horse pea, vetch, chick pea, medicago and soybean) in 34 soil samples collected from representative agricultural areas in Morocco. The objective here has been to determine the nitrogen increment introduced by a leguminous crop and the resultant effect on a subsequent grain crops.

In conjunction with the work on legumes, he has done some additional testing on soybeans and horse beans. Horse bean is a widely used crop in Morocco and additional soil microbiological work should provide answers as to how best to manage this legume in the various agricultural regions of Morocco. The work on soybeans needs further field testing before any positive recommendations can be made.

Dr. Pierre Antoine has divided his major research activities between soil survey (mapping) and soil chemistry. Since 80-90% of all soils personnel within Morocco are working on soil classification problems, his research seems well focused. He initiated the mapping work shortly after his arrival in Morocco and is now working on three scales of maps, a larger scale 1 to 20,000 for high density work, a 1 to 100,000 scale (1200 sq. kilometer) reconnaissance map, and a 1 to 1,000,000 scale to provide some generalizations. Although we are categorizing this as a research input, it should be clearly indicated that it is also meant to provide opportunities for student training during the 3rd cycle. An area for mapping is selected only if it will provide students an educational experience appropriate for their level of training. A product of this entire soil mapping program will be a textbook which Dr. Antoine hopes to complete by June 1976.

The need for a good soil survey is essential for any agricultural development activity. The U.S. classification system, which is included on these

maps as well as the French system, is based primarily upon land capability classes and thus has immediate practical value to the user. For the Moroccan Government, and particularly the agricultural worker, a land capability map is indispensable. It basically provides a guide as to how best to utilize any piece of land so as to maximize its use and yet protect it from erosion or other means of deterioration. As the Government divides the irrigation perimeters and tries to solve the problems of the land tenure system, a soils map can be very valuable.

Special attention should rightly be given to the study of soils in the irrigation perimeters. One need only refer to the problem now so evident in the Helmund Valley project in Afghanistan as well as some Iranian irrigation schemes to realize how essential are land capability inventories.

In the soil chemistry work, Dr. Antoine has been primarily concerned with potassium - one of the three major elements in inorganic fertilizer. Findings thus far clearly indicate that levels of total and exchangeable potassium contained in many of the Moroccan calcareous soils are adequate. Likewise, many alluvial soils placed under intensive production have a high capacity in potassium. The potassium accumulates in the clay minerals to such an extent that no response is achieved from the addition of potassium. Dr. Antoine intends to continue this research, but even this year indicates that some farmers will be reducing the applications of potassium fertilizer and thus realizing a considerable savings.

The horticulturalists are just getting underway. Given the horticultural potential of the country, good location for export, suitable soil, ideal weather for capitalizing on an early market in Europe, and in view of what Mediterranean neighbours have been accomplishing, it seems a good area in which to concentrate attention for export trade. The rural areas

are faced with large unemployment, so there is available manpower for more intensive agriculture, and newly developing irrigation areas could profit from some diversification.

Dr. Young is assigning his students to research projects on production problems. With potatoes he is working on proper planting, size of seed and variety selections. On tomatoes he is working on variety selection. With squash the students have been assigned to work on the virus diseases and giving special reference to production figures. On citrus they hope to find from farmers an evaluation of their management practices and problems, harvesting costs, yield and profit figures.

He has also worked with his students in developing a survey form to collect data on all varieties of fruit.

Next year he will finalize further plans but he first wants to survey the field, determine which crops warrant additional breeding programs and then select one or two crops.

C. CURRICULUM DEVELOPMENT PROGRESS

A stated focus of AID/Morocco's Hassan II Institute project is on planning curriculum, in particular for the 3rd cycle, or 5th and 6th years.

Actually, the project's curriculum development accomplishments should be considered in all of the following areas:

- 6th year: Spent in Morocco, devoted primarily to a research project, or "memoire"
- 5th year: Spent in Europe or the U.S., devoted primarily to university graduate level course work in a specialized area.
- 2nd cycle: two years spent in Morocco, devoted primarily to general agriculture.
- Other

Before we go further, we had better present a dictionary definition of "curriculum":

"The whole body of courses offered in an educational institution or by a department thereof".

Webster International Dictionary

As will be seen, the phrase "curriculum development" is a poor descriptor of AID/Morocco's emphasis in assisting Hassan II Institute, and does the AID-supported faculty members a disservice.

It does them a disservice because their emphasis has been, not on "curriculum development", but on establishing research programs directed at solving Moroccan agricultural problems. (There is, as we shall see when 2nd cycle curriculum is discussed, a noteworthy exception of the preceding generalization.)

6th Year: Spent in Morocco Devoted Primarily to a Research Project, or "Memoire"

From our vantage point as evaluators coming in after the fact, emphasis on curriculum for the 6th year looks misguided because:

- ° For the first 2 years of the project there were no 6th year students;
- ° The word "curriculum" normally refers to structured course work, not supervision of independent, graduate level research.

The following table shows that the first 6th year students came under supervision of AID-supported faculty in 1974. Since 1974, the average number of 6th year students per American faculty member has risen from 1.0 to 1.6, primarily because horticulture is becoming a popular area. With the arrival this month of a new team member in horticulture, the average goes back down to 1.3.

NUMBER OF 6TH YEAR STUDENTS PER U.S. FACULTY MEMBER

FACULTY MEMBERS	'71	'72	'73	'74	'75	'76 (PROJECTED)
a						1
b				1	2	
c				3	1+2(1/2)	1
d						2
e					4	4
TOTAL				4	8	8

The above certainly underestimates the number of 6th year students receiving research help from AID-supported faculty, since faculty often give advice to students not officially assigned to them.

However, consensus is that it has not been easy to attract 6th year students. Possible reasons are:

- 1) Soil Microbiology and Plant Pathology, the areas of two of the team members, are highly specialized, and there is not room in the areas for more than a few specialists.
- 2) Plant Breeding of dry land crops, the research area of one of the team members, is not a glamorous area because most development attention is being paid to irrigated areas.

5th Year: Spent in Europe or the U.S., Devoted Primarily to Graduate Level Course Work in a Specialized Area

The 5th year gives even less justification for an emphasis on curriculum development than does the 6th year.

Since students spend the 5th year outside Morocco, AID-supported faculty members do little curriculum development for them. They do, however, choose students for U.S. study, pick universities and courses for them, and generally act as the students' advisors.

Requests to study in the U.S. have increased over the years, as is shown in the table below, in spite of fear of problems with the English language. (In France or Belgium, the major alternatives, there are no such problems.)

<u>YEAR</u>	<u>NUMBER OF REQUESTS</u>
1971	0
1972	1
1973	4
1974	6
1975	17

The 11 students who have so far spent their 5th year doing graduate work at U.S. universities have achieved about a "B" average in a wide variety of graduate-level courses, in spite of initial language difficulties.

To alleviate language difficulties for students going to the U.S., and to help give all Hassan II students a reading facility for English technical journals, the contractor sent 20 cassette tap recorders to Hassan II Institute. In the 6 months prior to departure for the U.S. the students attended an intensive English course in USIS.

That was more than four years ago. No one has ever taken it upon himself to put the machines to productive use. Partially, cycle problems were to blame, but primarily it is a case of poor planning and no focus of responsibility or follow-up. At present:

- 5 of the tape recorders are broken;
- 15 are in a closet;
- 4 are being experimented with by current English teachers.

The teachers say that what they really need are some good books for teaching English. (AID/Morocco has directly participated in preparing students for their 5th year in the U.S. by giving several months of intensive English classes to the students at the USIS facility in Rabat.)

2nd Cycle: Two Years Spent in Morocco Devoted Primarily to General Agriculture Course Work

Curriculum development and teaching at the 2nd cycle level was not officially part of AID/Morocco's Hassan II project work plan until 1973.

Near the outset of the project, however, one of the AID-supported staff decided that assistance to the 2nd cycle was high-leverage use of his time.

During the project, his involvement in 2nd cycle has steadily increased, and last year he taught about 40 hours of lecture and several field courses in Soil Science to 2nd cycle students.

He is nearing completion of a general textbook on Moroccan soils, their classification and capabilities, which is meant for use in agriculture schools of all levels all over Morocco. Steps for implementing wide use of the book have already been taken, with the support of Hassan II administrators.

Involvement of other team members at the 2nd cycle level has been light, and includes:

- Several hours of lectures;
- Advice on 2nd cycle courses to be taught;
- Discussions of general 2nd cycle policy. In particular, they have recommended more specialization and a lighter class load during the 4th year.

Hassan II administrators are in favor of 2nd cycle involvement of AID-supported faculty (See Appendices.)

SECTION IV
EVALUATION OF THE PROJECT DESIGN

A project design is a set of hypotheses. The design for the Hassan II project, as we perceive it (See Table IV-1) hypothesizes basically that:

- 1) AID's contract with the University of Minnesota will result in qualified graduates, and some research findings.
- 2) Those graduates and research findings will meet Morocco's needs for high level agricultural expertise and knowledge.
- 3) The meeting of Morocco's needs for high level agricultural expertise and knowledge will improve the quality of life in Morocco's poor and deprived.

Readers acquainted with AID's Logical Framework project design system will recognize that #1 is an Input-Output hypothesis, #2 is an Output-Purpose hypothesis, and #3 is a Purpose-Goal hypothesis.

As is shown in Table IV-1, each hypothesis makes some assumptions about events and situations which are not under the direct control of AID/Morocco or the contractor (University of Minnesota). It is these assumptions which determine whether a project design is sound or not, and worth an investment by AID, and by the American taxpayer.

In the following paragraphs we discuss the important, questionable assumptions made by AID/Morocco's Hassan II project, and we assess, where we can, whether the assumptions are true or not.

Our overall objective in this exercise is to test the project design's soundness, and then to suggest ways to shore up spots where the design is shaky. (For the remedies, see the Recommendation Section.)

TABLE IV-1

SIMPLIFIED LOGICAL FRAMEWORK INCLUDING ASSUMPTIONS FOR AID/MOROCCO
ASSISTANCE TO HASSAN II INSTITUTE

NARRATIVE SUMMARY	ASSUMPTIONS REQUIRING ATTENTION
<p><u>GOAL</u></p> <p>Improve the quality of life of Morocco's poor and deprived</p>	
<p><u>PURPOSE</u></p> <p>Without outside help, Hassan II Institute meets Morocco's needs for high level agricultural expertise and knowledge.</p>	<p>A heavy influx of agricultural expertise into the government will help Morocco's poor and deprived (Questionable)</p>
<p><u>OUTPUTS</u></p> <ul style="list-style-type: none"> ◦ Highly qualified graduates ◦ Research results 	<p>The Hassan II administration places a high priority on Moroccanizing its teaching and research personnel (Not true so far)</p>
<p><u>INPUTS</u></p> <p>AID contract with the University of Minnesota</p>	<p>Highly qualified, motivated students are available to the University of Minnesota team. (We are more concerned here about replacements for the team than we are about absolute numbers of students.) (Not true so far)</p>

There is hard evidence that at the Input-Output, and Output-Purpose levels there is at least one important assumption which has proven false. And at the Purpose-Goal level there is at least one assumption that must be seriously scrutinized and questioned.

The Input-Output assumption which has proven false is that:

"Several qualified, highly motivated 6th year students are available to each of the Minnesota team members each year."

The table on Page III-2 shows that very few students have been attracted or directed toward working under the Minnesota team during their 6th year.

The Output-Purpose assumption which has proven false is that:

"The Hassan II administration places a high priority on Moroccanizing its teaching and research personnel."

Table IV2 shows that only 9 out of 65 graduates have been assigned to teaching jobs, and of those only 2 or 3 have been assigned to Hassan II.

A Purpose-Goal assumption which must be scrutinized and questioned is:

"A heavy influx of agricultural expertise into the government will help Morocco's poor and deprived."

We can find no evidence for judging the above assumption; however AID/Morocco assistance to Hassan II Institute is at present based on hope that the assumption is true.

SUPPLY AND DEMAND OF HASSAN II GRADUATES

DEMAND* AS OF 1971	DEMAND SATISFIED FOR THE YEARS 1972 - 1974				REMAINING DEMAND IN 1975
	1972	1973	1974	TOTAL	
264	Office of Development				244
	5	5	10	20	
99	Office of Water, Forests & Soil Conservation				87
	2	3	7	12	
209	Office of Agricultural Research				197
	2	3	7	12	
318	Office of Animal Husbandry				311
	1	2	4	7	
16	Office of Economic & Professional Affairs				12
	1	1	2	4	
48	Office of Basic Conservation & Topography				48
227	Office of Agricultural Education & Professional Training				218
		4	5	9	
19	Other				19
TOTALS 1,200	11	18	35	64	1,136

* Demand figures come from analysis by Hassan II administrators.

SECTION V
RECOMMENDATIONS

A. GENERAL

So far we have concluded that:

- (1) The Hassan II project is strong in research programs directed at solving Moroccan agricultural problems.
- (2) The Hassan II project is weak in producing graduates, and particularly in training Moroccans who will continue the research programs begun during the project.
- (3) The above weakness is not due to low performance by the contractor, but rather to serious flaws in the project design.
- (4) Two flaws in the project design are:
 - a) AID-supported faculty have not succeeded in attracting qualified, motivated researchers to train under them and replace them.
 - b) Moroccanization of Hassan II research and teaching staff is not currently a priority of the institute's administrators.

Facts which provide a context for the above conclusions are:

- (1) AID has invested approximately \$930,000 and 15 man/years at the Hassan II campus, primarily in research programs.
- (2) During the next one or two years most of the AID-supported faculty carrying out the research programs will leave Morocco to carry on their careers elsewhere.

Implications are:

- (1) If replacements for the four men are not found and trained, then Morocco will lose the research programs, and AID's investment will have been a failure.
- (2) If the project fails, then AID cannot responsibly fund new Hassan II teaching and research faculty.
- (3) However, if the project succeeds, and the AID-supported faculty are replaced by competent Moroccans, then AID should consider funding new faculty positions in new areas. A possibility is Range Management, which seems to interest Hassan II administrators, and to have definite significance for Morocco's poor and deprived.

A wide range of optional strategies for replanning the Hassan II project is presented in the following list:

- (1) Phase out the Hassan II assistance project since it has not met the original objectives;
- (2) Eliminate the technician aspect of the program and focus entirely on participant training at U.S. graduate levels;
- (3) Reduce U.S. technicians to a minimum (1 or 2) and place emphasis on participant training in the U.S.;
- (4) Reduce the U.S. technicians to only those academic disciplines where Moroccan counterparts are provided and a replacement is likely within 1 or 2 years;
- (5) Continue the speciality areas as now provided with concurrence from the Institute that counterparts and participants in those areas will be provided;
- (6) Expand the program to include technicians at Hassan II in areas in addition to those already represented, regardless of the availability of counterparts.

The project is presently being managed approximately according to option #5. This option is clearly unsatisfactory, since it has not moved the project in the direction of Moroccanization of expensive research programs which are of potential value to Moroccan agriculture, and to Morocco's poor and deprived.

Option #6 would only increase U.S. investment without increasing the probability of turning the research programs over to Moroccans. And Option #3 definitely puts USAID in the position of trying to cut its losses, a strategy we do not recommend at present.

The PCI evaluation team recommends that the appropriate strategy for replanning the Hassan II project over the short term is Option #4:

Reduce the U.S. technicians to only those academic disciplines where Moroccan counterparts are provided, and a replacement is likely within 1 or 2 years.

The problem becomes: How do you redesign the project so that:

- 1) AID-supported faculty attract qualified, motivated researchers to train under them and replace them;
- 2) Hassan II administrators place a high priority on Moroccanization of research and teaching staff, at least with regard to positions held by AID-supported faculty.

A possible partial solution to #1 may be for AID to offer research funds and support to Moroccan replacements of University of Minnesota team members. Hopefully the effect would be to start the replacements on their research and teaching careers, and to make positions as faculty at Hassan II more attractive to Moroccans.

Possible, partial solutions to #2 are:

- 1) Make the number of participants accepted for the 5th year in the U.S. contingent on the number of potential replacements among them. (This does not mean that only potential replacements are accepted.)
- 2) Make the funding of new AID-supported faculty positions in new specialty areas (Range Management for example) contingent on proven success in replacing old AID-supported faculty members.

B. SPECIFIC RECOMMENDATIONS AND OPTIONS

- (1) The size of the U.S. team should be reduced from six to four in the next year and a half (phase out virologist and soil microbiologist).
- (2) Provide continued support to fields of virology and soil microbiology where replacement of phased out U.S. team members exists by (a) 1-2 man-months of consultantships and (b) research funds for continuity of on-going research (\$5,000).
- (3) Restructure team so that administrative and policy duties in fact reside in a team member.
- (4) Provide team with Moroccan administrative assistant to relieve highly trained agriculturalists of logistical support chores.

C. CLARIFICATION OF THE CONTRACTUAL RELATIONSHIP

We did not address project administration in direct fashion in this evaluation because we feel that administrative problems are most often merely symptomatic, and are caused by unsound project design and the accompanying misperceptions.

Two Symptoms

We did not list or document administrative problems, however, it is clear that the Hassan II project has endured more than its share of:

- Haggling over what activities are and are not within the project's scope;
- Reservations on the part of AID about whether the project's objectives are consonant with AID's mission and mandate in developing countries.

The Cause

It is our opinion that both types of problems have their basis in the same cause, which is a lack of what we will call Purpose Level Thinking about the project, and a lack of Purpose Statements in the documentation.

Someone trying to learn about the Hassan II project can find out what is being done, but he has trouble finding out why it is done. An example is the project's Logical Framework, last updated in September, 1973, where the important, hoped for effects, its raison d'etre, are the following:

GOAL: To improve the quality of Moroccan higher agricultural education.

PURPOSE: Assist Hassan II planning curriculum, and develop advanced teaching and research capabilities.

Only an extremely "academic" frame of reference would accept the above proposition that higher education justifies itself.

Relationship of Purpose Level Thinking to AID Support of a Project

Two possible explanations for the lack of attention to the "why" of the Hassan II project are:

- 1) Trivial reason: The intended use of the Logical Framework is misunderstood.
- 2) Serious reason: The conditions under which AID can responsibly support projects is misunderstood.

There is no obvious evidence in the documentation that the cited Logical Framework seriously misrepresents contractor perceptions. Nowhere is AID told why it should support, defend, or be proud of Hassan II project's academic sounding activities. So we conclude that the "serious" reason is at least partially correct.

To the extent that the contractor "misunderstands the conditions" under which AID can responsibly support projects, AID shares the blame.

The Condition under Which AID/Morocco Can Now Support Projects

As stated in the AID/Morocco Development Assistance Program for 1975-1979, AID/Morocco support must be restricted to projects intended to:

"Improve the quality of life of Morocco's poor and deprived."

Prominent attention must now be paid to how the Hassan II project relates to problems of Morocco's "poor and deprived". It is our opinion that the activities undertaken by the project team do, by and large, have sufficient direct relation to AID/Morocco's Goal so that changes will largely be on paper. However "paper changes" should not be scoffed at since they in part determine how projects are perceived and supported by AID.

The Relationship of Purpose Level Thinking to Haggling

Our working hypothesis here is that whenever there is overmuch dispute among competent, well-intentioned people, they are not disagreeing about how to accomplish the same thing, but they are disagreeing on what to accomplish.

In Logical Framework terms, the trick is to decide at the Purpose and Goal level on objectives that all interested parties (GOM, Minnesota Team, AID/Morocco, AID/Washington) have in common.

Then all differences of opinion can be resolved in rational discussions of the following type: (In Logical Framework terms)

"What Inputs and Outputs are most likely to get us to our shared, commonly cared about Purpose and Goal?"

When, as in the Hassan II project, only Outputs are explicitly specified, then there is no rational, agreed upon criterion for deciding among alternative approaches, and what we have referred to as "haggling" is likely to result.

Basic Criteria for Contract Management Decisions

In Section II it is suggested that Goal and Purpose statements all parties might be proud to work together toward are:

GOAL: Improved quality of life for Morocco's poor and deprived.

PURPOSE: Without outside help, Hassan II Institute meets Morocco's needs for high level agricultural expertise and knowledge.

The criterion for making cases for discussing deciding among, and justifying alternative:

- Faculty appointments;
- Research areas and topics;
- Areas of study for 5th year Hassan II students in the U.S.;
- etc.

becomes whether they move Hassan II and Morocco toward self-sufficiency in improving the lot of Morocco's poor and deprived via agricultural expertise and knowledge.

The Remaining Question

A question becomes:

"What agricultural expertises and knowledges benefit Morocco's poor and deprived most?"

In other sections the question is addressed but of course not resolved. It would be surprising and disappointing if the question did not remain a topic of continual, intense debate within the Hassan II Institute project.

There are a wide range of ways to interpret AID/Morocco's stated goal of "improving the quality of life of Morocco's poor and derived farmers. (DAP/Morocco 1975-1979, p. 72).

One extreme would be to maintain that only agricultural expertise and knowledge directly addressing problems of poor, dry-land farmers fits within AID/Morocco's mandate.

And another extreme would maintain that help even to already productive areas of Morocco's agriculture would fit because it "raises all the boats" or "trickles down", or whatever.

So far, AID/Morocco has not spelled out how it interprets the Goal, nor have they, as far as we can gather, informed the Minnesota team that "poor and deprived farmers" are the focus.

Good management does not require that AID/Morocco settle on a narrow interpretation. But it does require that all decisions, big and small, are made with the goal in mind. And it requires that everyone concerned know that that is how decisions among alternatives are made.

Arbitrariness, apparent or real, is the enemy, and the antidotes are:

- Decisions based on Purpose and Goal criteria;
- Public explanation of decisions in Purpose and Goal terms.

NOTE

FOR THE MINISTER OF STATE IN CHARGE OF COOPERATION
AND TRAINING OF CADRES

Morocco's needs for University level training in horticulture has been presented in the report of Doctor Duncan which has received favorable approval in Morocco.

The proposed formula consists of developing at the Institute Hassan II of Agronomy and Veterinary Medicine a third cycle in horticulture. Like all specializations of the third cycle the students would begin horticulture at the end of the fourth year by a year abroad (France, Belgium or U.S.A.) and complete their training during a sixth year at the Institute.

Two teachers of horticulture (truck gardening and fruit trees) will be in charge of that field at the institute.

The Mission of these professors will consist of:

1. to teach at the 2nd and 3rd cycle level of the Institute;
2. to undertake applied research projects in cooperation with national and international organizations concerned with these topics;
3. to conduct seminars for continuing education at the level of general agricultural education (State Engineers, application engineers, technical assistants and technical agents).

The Second Cycle at the Institute

The second cycle includes training in horticulture which should be taken over by these professors. They should participate as well in the educational direction of the students during the periods of field trips; field trips on rural problems (1st year); project studies in the field (2nd year); field trips on management (3rd year) and of development.

The Third Cycle of the Institute

First of all, it should be mentioned that at the higher levels of teaching it is the information passed on by the teacher to the few students during impromptu discussions in the field which is a necessary even fundamental part of the teaching process.

The development of rapport between student and teacher will be found at the level of 1 to 3 students per professor, a normal rapport which is frequently found at the level of graduate schools in American universities. Nevertheless, horticulture should never be considered as an exclusive science which should be exercised only by future State Engineers specialized in horticulture. It is obvious that discussions, field trips, even courses in horticulture will be established for students of the Institute who will be specializing in fields such as agronomy, plant improvement, plant pathology or entomology.

Through graduation two to six students will be specialized in horticulture either in truck gardening or fruit trees. Their "memoires" at the end of thier studies will be directed by the two professors. The work necessary for the composition of the "memoire" should require the students to be aware of the realities of Morocco in the realm of horticulture at all levels: technical, scientific, economic social and of management.

It goes without saying that these two professors should between them be fully aware of these realities, which evolve further each year; a training program which is made up of purely technical projects or abstract scientific ones about the Moroccan environment will not be satisfactory for a final year of agronomic studies.

It is suitable therefore that these two professors spend a large part of their time not only in teaching but also in permanent contact with all the lecturers of horticultural activity in Morocco. The third cycle cannot be well conducted unless the professor is free from the domination of pedagogical problems. At the level of the third cycle the Institute should have professionals, practitioners who share their experience with a few students, from one to three per professor and not pedagogues overloaded with students unable to pay attention to horticultural problems except secondarily.

The two professors will fulfill the role of principals in an intellectual exercise in activating the chair of horticulture and guiding the students of the sixth year, but for individual theses it is obvious that they could and should call upon the support of other teachers. Likewise other teaching departments and organizations outside the Institute will draw upon the special competence of the department of horticulture. Such a symbiotic relationship already exists with all the sections of the Ministry of Agriculture (see reports of activity of the Institute). We expect that these professors will take the initiative in the field of horticulture and will participate with others in the third cycle training especially in general agronomy, plant improvement, and plant pathology.

Relations Outside the Institute

The horticultural section of the Institute will have moreover a training mission to perform outside the Institute. Through lecture series disseminating

recent information on the subject and through upgrading the level of training in schools of applied agriculture and in the training of technical associates, the professors of horticulture will participate in teaching in the general framework of agriculture.

Research projects will be established in cooperation with organizations outside the Institute which are involved in extensive agricultural resources (DRA, COMAGRI) or which have access to productive units (DMV, CCE). We consider it extremely important that training activities develop from exchanges between personnel from external organizations and the professors of horticulture of the Institute.

In the immediate future, the Institute awaits the return to Rabat in September 1974 of four students now spending a fifth year specializing in truck gardening and in horticulture at Montpellier (fruit trees), at Versailles in truck gardening, and at Gembloway (horticulture). The Institute Hassan II absolutely counts on the presence of two horticulturalists from the University of Minnesota for the fashioning of students.

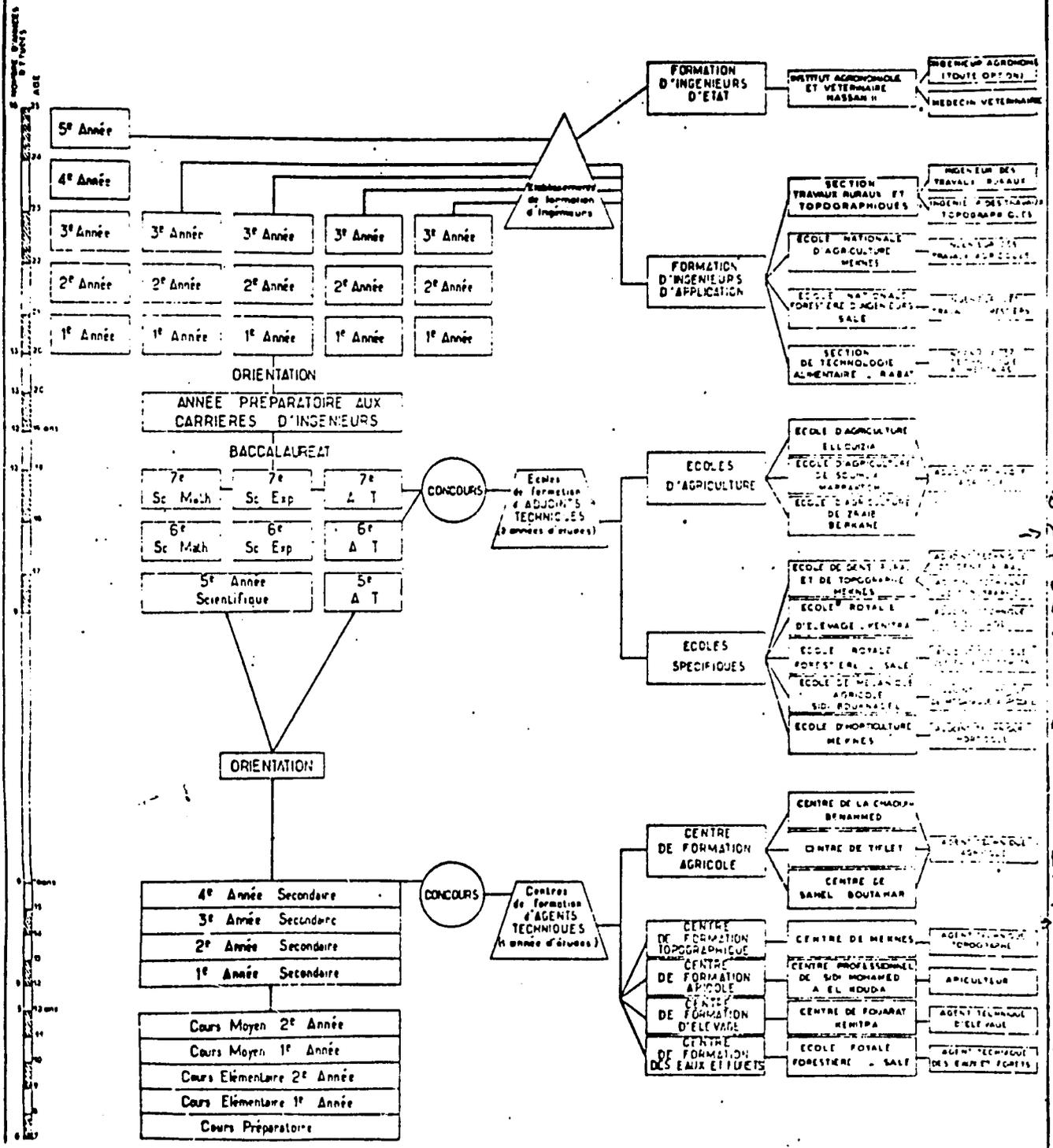
Rabat, April 12, 1974

from A. Bekkali

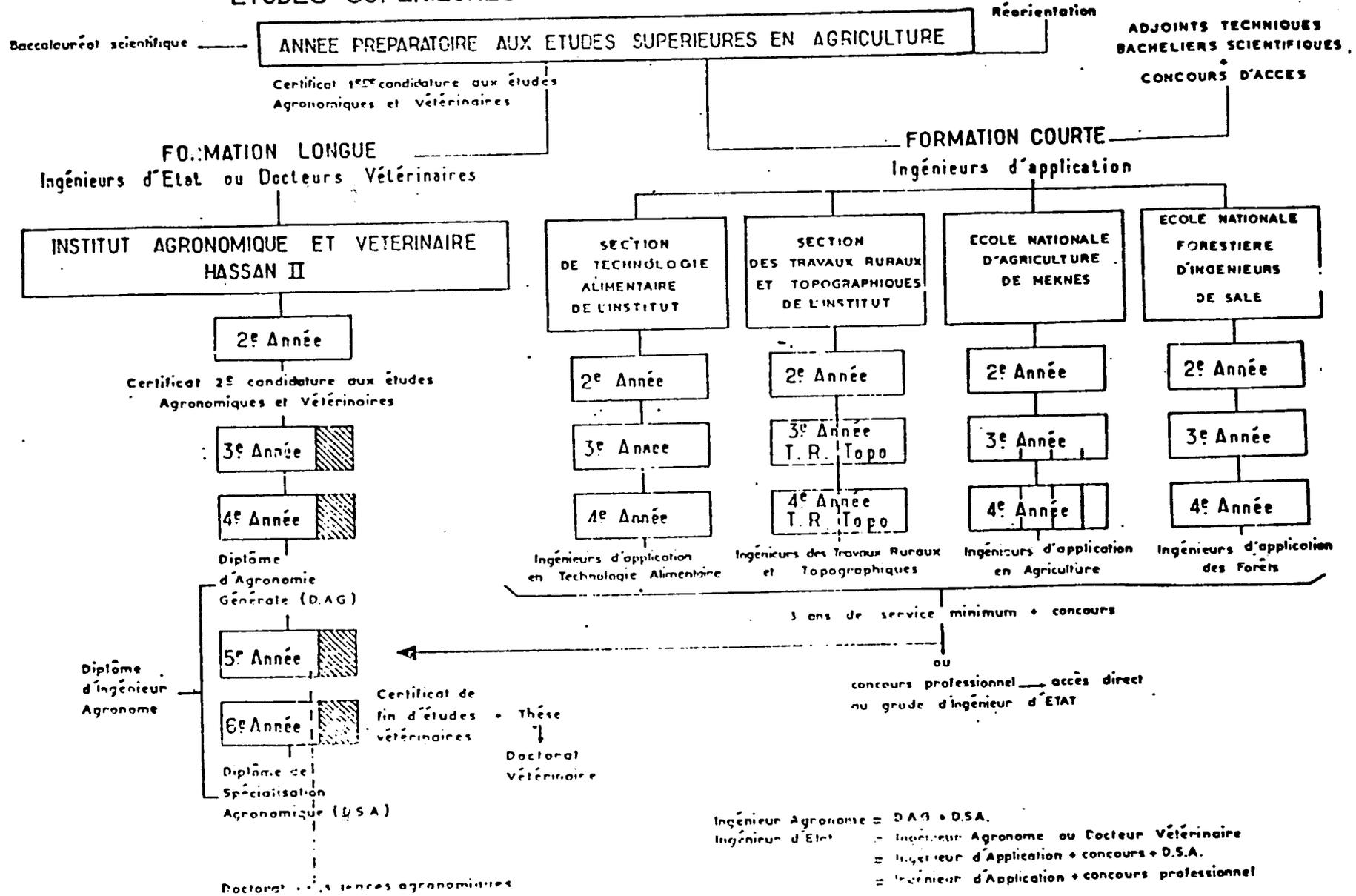
Translator: D. Potter, April 1975

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ORGANIGRAMME
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ETUDES SUPERIEURES A CARACTERE AGRONOMIQUE



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