

**FEASIBILITY STUDY FOR A NATIONAL UNIVERSITY
REPUBLIC OF MALI**

PHASE I-A PRELIMINARY REPORT

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FOR
INTERNATIONAL ACTIVITIES (MUCIA)**

for

**THE MINISTRY OF NATIONAL EDUCATION
THE GOVERNMENT OF MALI**

and

THE AFRICAN DEVELOPMENT BANK

October 1990

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Selected References

I. Introduction

This report presents a feasibility study for a national university in the Republic of Mali. The study was undertaken by a team of American university researchers following the Terms of Reference agreed upon by the Government of Mali, the African Development Bank and the Midwest Universities Consortium for International Activities (MUCIA).

Ten MUCIA team members conducted field studies in Mali for this report during June and July, 1990. A draft version of the report was discussed with the Ministry of National Education in July. This preliminary report was completed at the University of Wisconsin during September and October. The analyses presented in this report benefit from: the team's collective experience and knowledge of Malian education and development; the productive results of a comprehensive review of relevant documentation (see Selected References); discussions with national and regional Malian officials and teachers and donor agency representatives; and, the analyses of primary data collected during the period of field research.

The results and conclusions presented in this report should help the Government of Mali move directly and expeditiously to the preparation of a realistic overall plan and the preparation of detailed project documentation, as identified by the African Development Bank, required to launch the National University of Mali.

This report, while part of a rich history of studies, discussions and detailed plans for a national university in Mali, represents the first contribution by a group of American scholars to the long debate on Malian higher education. It brings the history and tremendous diversity of the "American university experience" for the first time to the review of Malian higher education. Many public universities in the United States were established to fulfill the same developmental role as that envisaged for the University of Mali. The record of this historical experience offers some useful insights and should enrich the analysis and evaluation of the government's proposed plans for the national university in Mali.

The analyses and discussions in this report are strongly influenced by our conception of the American public university as an institution of higher education designed to serve a broadly defined community. From this perspective, the public university is organized to play a significantly different role from that played by universities designed from either the British or European continental tradition. The model of a university which influences this report is an institution that in part responds to public needs and demands but also includes a diverse range of educational opportunities from strictly academic and theoretical programs to more applied courses and activities.

Following this introduction, Section II provides an overview of the Malian education system with particular attention to the implications for the establishment of a national university. Section III reviews the relation between high-level manpower needs and availability and the Malian higher education system. Section IV offers the team's observations and evaluation of the Government of Mali's conception and proposed plan for the university. Several special issues and alternatives to the government's proposed plans are presented in Section V. This is followed in Section VI with a discussion of financial considerations surrounding the establishment of a national university. Suggestions for the next step (Phase IB) are made in the last section.

The MUCIA team wishes to extend its sincere thanks to all the personnel of the Ministry of National Education who took time from their busy schedules to help with any concerns and/or information needed.

The team would especially like to recognize the assistance of the following people who not only worked directly with the team, but were always willing to go above and beyond the call of duty.

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II. Overview: Higher Education in Mali Since Independence

1. Historical Background

Educational policy in Mali has been remarkable for the clarity of its articulation of objectives and approaches. Mali is one of the few, if not the only, country in Francophone West Africa that has deliberately and consistently sought to establish policy lines that define major program orientations for education from primary through higher education levels. In 1962 landmark legislation (*loi no. 62-74/AN-RM du 17 septembre 1962*) established a comprehensive educational reform program designed to support and define Mali's political independence. The 1962 law, the first of its kind in Francophone West Africa, broke sharply from colonial precedents, providing for a pyramidal educational structure commencing from an expanded base of fundamental education (first and second cycle), reaching upward through the secondary level to a level of higher education (the summit of the pyramid) which, in 1962, had yet to be created.

From the 1962 reform came a common set of balancing principles running through the educational system as a whole. Thus, mass access to educational opportunity (the broadest horizontal dimension) is balanced by the commitment to high quality and increasing specialization through higher levels (vertical dimension); commitment to *valeurs humanistes* is balanced by commitment to *valeurs fonctionnels* and preparation of students for useful roles in society (professionalization); and commitment to incorporation and development of the indigenous cultural heritage is balanced by commitment to participating fully in the universal dimension of human science, knowledge and progress. The basic principles of the 1962 reform have endured and remain those which will underlie and guide educational development in Mali. With respect to higher education the 1962 law defined both specific and more general missions:

- Urgent and specific: to ensure the training of the nation's high-level manpower in order to make national independence a reality.
- General and permanent: to ensure and promote Mali's scientific and technical progress, the diffusion of culture, and the transformation of social life.

The 1962 act provided for two distinct types of institutions for higher education:

- *Grandes Ecoles* and specialized institutes
- a national university

In contrast to a number of other African countries, Mali chose to give priority to development of the specialized *Grandes Ecoles* rather than the national university which had also been provided for in the law. Thus, during the 1960s and 1970s, Mali's *Grandes Ecoles* were created, expanded, and consolidated, and now represent the core of the country's system of higher education.¹

These *Grandes Ecoles* were and are oriented toward training cadres for public service. All are post-baccalaureate programs; access originally was *sur titre ou sur concours direct ou professionnel* and is primarily *sur concours direct* since 1977. All students hold state scholarships.

Meanwhile, the national university provided for in the 1962 law was not created. Over the period since 1962, however, the question of the university was never entirely lost from view by educational planners and policy makers and, since 1979-80, has been the subject of intense study and discussion. Studies of higher education and the need for a university have included those by Malian authorities and commissions, and also external groups (including UNESCO, AUPELF, The World Bank and the government of France.)²

A major step was taken with the passage, on 8 March 1986, of *Loi 86-12/AN-RM portant création de l'Université du Mali* and the associated *Décret no. 91/PG-RM* dated 29 March 1986 *portant organisation et modalités de fonctionnement de l'Université*. With this step the intention to create the national university provided for in 1962 was confirmed.

The 1986 decree provided the broad outlines of an original and innovative university institution: a decentralized university that would, eventually, include three faculties and five institutes located as follows among the nation's principal regional cities:

Sikasso:	Faculté des Sciences Institut de Techniques Rurales et de l'Alimentation
Kayes:	Faculté des Sciences Juridiques et Economiques Institut des Techniques Industrielles et de l'Amenagement

¹In the order of their creation the Malian *Grandes Ecoles* are Ecole Normale Supérieure (1962); Ecole Nationale d'Administration (1963; succeeded l'Ecole d'Administration du Soudan); Ecole Nationale de Médecine (1968; originally l'Ecole de Médecine, de Pharmacie, et de Dentisterie); Ecole Nationale des Postes et Télécommunications (1969); Institut Polytechnique Rural de Katibougou (1969); Ecole Nationale de l'Ingénierie (1973; formerly Ecole Technique Supérieure du Bamako); and Ecole des Hautes Etudes Pratiques (1979).

²For a summary of studies and examinations relevant to the creation of the University from the 1960s through early 1990, see *Université du Mali*, Ministère de l'Education Nationale, 1990, Tome I, pp.33-37.

Mopti:	Institut Supérieur de Medecine Vétérinaire
Ségou:	Institut Supérieur d'Enseignement Technique
Gao:	Institut Supérieur d'Architecture et d'Urbanisme
Tombouctou:	Faculté des Lettres et Sciences Humaines

The text of the decree provides for flexibility in implementation, authorizing ameliorative alternatives not contrary to the spirit of the law itself.

Inevitably, the 1986 law and decree have established the shape of current and future consideration of the subject of the structure, objectives and functions of the University of Mali. Review and study of this bold and challenging vision of the future university constitutes the major focus of our study. But it is important to acknowledge that our study has already been preceded by two important studies of the 1986 plan. The first was by the UNESCO (Dakar) team of J. Herman, H. Aguessy and J.M. de Bosch Kemper resulting in the report entitled *Pour la Restructuration de l'enseignement supérieur au Mali: la création d'une Université* (UNESCO, Dakar, 1989). Second is the major review, study and position paper by the *Ministère de l'Education Nationale* itself entitled *Université du Mali* (Bamako, 1989).

These studies examine in detail the implications of the 1986 law and decree and modifications that have been suggested. They also -- partially in the case of the UNESCO study and more comprehensively in *Université du Mali* -- include designs for each of the institutions (faculty or institute) proposed in the 1986 law.

2. Critical Issues in Malian Higher Education

Consideration of the creation of the university, and of its structure and missions, takes place within the context of a much broader educational debate. Malian authorities and international partners are joined in recognizing the need to give primary and secondary education in Mali a new developmental impetus and renewed vigor. The *Etats généraux de l'éducation*, sponsored by the national political party, met in March, 1989 and expressed eloquently the country's recognition of continued problems -- in some cases approaching crisis -- of education at all levels. Likewise reaffirmed was the country's commitment to continued reform and expansion of education at all levels. At lower educational levels these commitments include examining better approaches to expanding basic education opportunities, largely static over the past decade, introduction of national languages into the classroom and the curriculum, improving ruralization of education programs, and expanding and improving nonformal education. It must be recognized that the crisis at primary and secondary levels severely strains the government's ability to attract and sustain public, private, national and foreign attention to, and financial support for, the need for restructuration and development of Malian higher education.

Within this broader educational context, our study indicates a widespread sense that there is a compelling need for change at the level of higher education. Our own interviews and formal surveys suggest that this sense of crisis, lending urgency to consideration of the question of the national university, is equally shared by government officials, educational administrators, teachers and students.

Our study focusses on the proposed university. However, our analysis convinces us that it is neither possible nor desirable to divorce the question of the new university, and the shape it should take, from consideration of the broader questions of the Malian higher education system -- present and potential -- taken as a whole.

Particularly relevant and urgent are the problems of the *Grandes Ecoles*, which constitute at present the principal structure of higher education. There is no question that these institutions collectively rank among the great achievements of Malian independence. Their crucial contribution to the establishment of Malian independence is widely acknowledged, and the logical focus and economy of this approach to higher education has attracted admiration and interest from abroad. The high quality of a number of the individual programs within the *Grandes Ecoles* has been widely affirmed.

At present, however, major problems are apparent. Although their missions, individually and even collectively, are narrower than and theoretically quite distinct from the missions of a university, it is generally true that circumstances have forced the *Grandes Ecoles* to play the role of the missing university. Attempting to cater to the increasing numbers of qualified baccalaureate holders produced during the 1970s, the *Grandes Ecoles* became badly over-enrolled. Enrollments in the *Grandes Ecoles* peaked with a total of some 7,600 students in 1984/85, but have since declined from that peak. Yet the *Grandes Ecoles* remain very badly over-enrolled in relation to capacity. The World Bank study completed in late 1987 found that at the time the *Grandes Ecoles* "accueillent des effectifs de près de 55% supérieur à sa capacité, soit plus de 5,700 étudiants pour les 3,700 places."³

Inevitably, significant problems have resulted from overcrowding, including an insufficiency of professors, inadequacies of space, supplies and equipment, inadequate financial support, and inadequate or unsatisfactory library, laboratory and other supporting facilities (*Université du Mali*, Tome I, p. 30 and *passim*). Research programs have atrophied as the institutions and their teaching personnel have struggled to cope with expanded teaching loads and inadequate facilities.

All these problems are amply (and often eloquently) identified in the responses to our survey of teaching staff in the *Grandes Ecoles* (summarized in Annex H of this study).

³P.M. Rummer, "Analyse de l'Emploi 1987/2010: Pour la Restructuration de l'enseignement supérieur au Mali" (Bamako, Janvier, 1988, p.31).

More profoundly still, the educational missions assigned to the *Grandes Ecoles* have undergone distortion. In effect, under the circumstances, the *Grandes Ecoles* "fonctionnent comme des facultés [universitaires], sans les structures adéquates, sans les programmes appropriés à ce type d'institution, sans les ressources matérielles et humaines suffisantes" Université du Mali, Tome I, (p. 36.). Meanwhile, the quality of the specialized programs of training which represent the original missions for which the schools were created has suffered. Clearly, a danger exists that these important institutions could be seriously weakened while still not satisfactorily fulfilling the country's larger needs in the higher education sector.

Meanwhile, there is much evidence that overproduction of graduates from the *Grandes Ecoles* has led to a consequent problem of un- or underemployment of graduates from the schools.⁴

It is clear that the problems of the *Grandes Ecoles* are both real and serious and themselves provide sufficient reason for reorganization of Malian higher education.

It is likewise clear that as the university is planned and created, the roles and missions of the *Grandes Ecoles* must be carefully examined at the same time; the new university and the *Grandes Ecoles* must together form a single national system of higher education capable of meeting the country's needs with maximum efficiency, effectiveness and economy. These questions are pursued in Section VI, below, where the question of the existing *Grandes Ecoles* and their possible relation to the university is fully considered.

If concern for the contemporary situation of the *Grandes Ecoles* represents an important impetus behind renewed interest in creation of the university, our study made us aware as well of a number of broader concerns and challenges giving additional impetus to the movement to reorganize higher education and create the university. These broader concerns reflect an appreciation of challenges to Malian higher education deriving from the major changes in Malian society over the past two decades and those that lie ahead in the 1990s and beyond. All of these broader concerns will be touched upon through the course of our report. At this point they may be summarized briefly under the following headings:

a: **Development.** At the outset, in 1962, higher education was assigned two categories of tasks. The first, and most urgent, was to provide the trained higher-level cadres necessary to make independence a reality and to permit the Malian government to take on and fulfill the expanded responsibilities associated with political independence. To this task the system of *Grandes Ecoles* was well adapted, and there is a justifiable sense of pride in the way that the new higher education system in Mali rose to the challenge of independence.

⁴See, for example, Herman, Aguessy and J.M. de Bosch Kemper (UNESCO, Dakar, 1989), pp.16-17.

The second category of tasks set for the higher education system includes assuring Mali's scientific and technical progress and assisting and forwarding the nation's economic development. Here, the success of the existing system of higher education has been less complete. While much has been accomplished, the orientation of the teaching and research programs of the *Grandes Ecoles* toward the tasks of national economic development -- in the agricultural sector and elsewhere -- is incomplete. In Mali as in many other countries a profound transition is in progress at present toward a greatly expanded role for the private sector in the economic development of the 1990s. But, established specifically to serve public sector manpower needs, the *Grandes Ecoles* have been able to respond only in limited ways to emerging private sector manpower needs. Inevitably, especially under present conditions, their role in assisting small scale agriculture and other small scale private sector enterprise is a limited one.

Thus there is a widespread sense, which we share, that higher education could and should relate more directly and provide more impetus to Malian economic development.

b. Educational opportunity. In terms of the Malian commitment to educational opportunity for its qualified youth, the present higher educational system is inadequate. Over-enrollment in the *Grandes Ecoles* makes expansion of opportunity at the post-baccalaureate level impossible; in fact, enrollments in the higher education system have actually declined from the highs registered in the early 1980s. Our own manpower analysis (see Section III) indicates that even counting Malians enrolled abroad only about 0.5% of the relevant age group of Malians are enrolled in higher education. Meanwhile, expansions presently planned at the primary and secondary levels can be expected to produce significantly increased numbers of gifted students prepared for higher education.

Inadequacies of opportunity are likewise apparent in regard to categories within the total population. Most obviously, women students are very badly underrepresented in all the existing institutions of higher education, even including the non-technical programs such as those in the *Ecole Normale Supérieure*. Our data indicate that as few as 0.1% of the relevant age group of women may presently be enrolled in higher education. Mali's goals for economic development and social transformation will clearly require educating a greatly expanded proportion of its gifted girls and young women.

c. Budgetary. Overall budgetary support to the existing institutions of higher education over recent years has been inadequate, producing weaknesses and inefficiencies in the instructional and research programs of the *Grandes Ecoles*. Yet the system is also expensive, not only providing free higher education, but also providing *bourses* for all participating students within the *Grandes Ecoles*. Meanwhile, significant Malian public funding, together with Malian private funding which cannot be counted but is certainly significant, is consumed by study by some 2,000 Malian students in institutions of higher education abroad.

d. Culture and Integration. A well-defined goal of education at all levels in Mali is to build on and strengthen the indigenous cultural heritage. Higher education has a particularly important role to play in this. Few of our respondents consider that this potential role has been fully realized. There is certainly scope, especially within the humanities and social sciences, for significantly greater incorporation of Malian materials and issues both within instructional and research programs. Above all, as numerous respondents remarked to our team, the location of all but one of the present institutions of higher education within the Bamako urban area limits sharply the contribution that the schools can make to national cultural development and integration of Mali's rich and varied linguistic and cultural heritage.

Taken together, these four broad categories of concern clearly establish a powerful argument for a thorough reexamination of higher education in Mali including the problems of the *Grandes Ecoles* and the question of the creation of new university institutions.

3. Guidelines for Design

The history and the present situation of Malian higher education, seen within the broader context of the educational system as a whole and the still broader context of Malian social and economic development, identify values, constraints and goals which operate as parameters and provide guidelines as the country approaches a major restructuring of its higher education system. It will be helpful to summarize these.

First, as we have noted above, the broad lines of the 1962 reform retain their validity three decades later, providing a framework of basic values and their interrelationships. Second, and still very much within the framework of the missions assigned by the 1962 reform, the higher education system must actively support and help drive the process of economic development. We noted above that our study made us aware of a widespread sense on the part of respondents that the nature of this challenge to higher education has changed and expanded. If the first task of higher education in Mali was to help build the independent state, the challenge of the 1990s and into the next century will be to stimulate and support development of the private sector. Here we think not only of large-scale highly capitalized private industry, but also a growing range of intermediate and small enterprises. At the economic base, higher education must find ways to effectively assist transformation and commercialization of the small-scale or family farm throughout the nation. Finding ways to effectively relate and contribute to basic level agricultural development and small- and medium scale enterprise perhaps represents the most crucial and most difficult challenge to higher education reform. To this end it will be important to reflect deeply both on the structure and content of the new higher education institutions.

Accurate anticipation of the economy's manpower needs in the year 2000 and beyond represents an essential part of planning higher education development (and has

been an important focus of our study). But numbers are not enough; the kind and quality of graduates are equally important. We must assure that higher education programs are relevant to economic needs and that they produce graduates who not only are academically qualified, but who have also learned the practical skills and attitudes required by the work environment. If the private sector is to develop rapidly, the higher education system must develop private sector ambitions and an entrepreneurial spirit among a larger proportion of its graduates.

Third, as part of the overall development effort and process, the higher education system must relate effectively and efficiently to the revised and expanded primary and secondary levels of education that will result from present efforts. Intake and output at the various educational levels must be rationalized in terms of numerical balances and in terms of the needs of the economy. Education at all levels must be more effectively directed to the development of professional qualifications. Wastage of talents (and public resources) can be reduced by improving the flexibility of educational programs, and improving articulation among levels, disciplinary areas, and institutions. And, through its research, instructional, and service roles, higher education should make a direct contribution to improving education at the lower levels.

Finally, a number of considerations of an essentially practical nature emerge from this review. Among the most important are the budgetary constraints which must be taken into account in planning a restructuration of higher education in Mali. We have noted that existing institutions of higher education have been undersupported in terms of both capital and recurrent expenditure. Inevitably, and for the foreseeable future, higher education must compete for budgetary resources with the lower educational levels, and more broadly with all other governmental efforts and initiatives, all within a context of overall shortage of resources. Four consequences may be suggested:

1. External partners will be essential to make possible the capital investment required by restructuration of higher education. A plan for restructuration and development of Mali's higher education system, including the university, must be capable of attracting the necessary support.
2. Planning should be based on the assumption that the recurrent costs of support for higher education must be provided for primarily from domestic resources. Clearly such support must be planned along with the new institutions themselves. Probable continuing constraints within the context of government financing suggest careful examination of alternative sources of financing to supplement support from the governmental budget.
3. Financial constraints suggest a careful examination and rationalization of student support, presently a substantial element of the cost of the country's higher education system.

4. **Mali's financial constraints make the more imperative the need to rationalize the relation of the higher education system to the manpower needs of government and the economy. Aside from other undesirable aspects of overproduction, Mali simply cannot afford to produce graduates who do not quickly find a place and a productive role in the national economy. It is essential that the higher education system of the future be the most efficient one possible measured in terms of total overall cost and productivity and in terms of clearly defined values and goals, above all economic development.**

The goals, challenges and constraints that emerge from review of the history of higher education in Mali will serve as guidelines and criteria as we review the forms that the new University of Mali might take and the priorities that should guide its development.

III. High-Level Manpower Availability and Needs for Malian Development

1. The availability of students for post-secondary education

The supply of students to post-secondary education is determined first by the number of graduates of secondary schools, and second by the willingness of these graduates to continue their education. In Mali, there has been a dramatic change in the supply situation in the past five years. Until quite recently, the secondary education system has generated an excess supply of students to the *Grandes Ecoles*. The UNESCO report (1989, p. 16) indicates that *Grandes Ecoles* enrollments exceeded the schools' theoretical capacity by 1975; by the mid-1980s there were over 7000 students in 3500 places (IBRD, 1989). By the late 1980s enrollments had declined to below 5000, but were still substantially above the *Grandes Ecoles*' capacity. New entrants to the *Grandes Ecoles* declined from an average of 2,300 in the period 1982-83 - 1984-85 to below 1,000 in 1986-87. Meanwhile, the number of Malians studying abroad has increased, but not by enough to compensate declines in the *Grandes Ecoles*. As Table III-1 shows, the number of graduates had not yet begun to reflect declines in enrollments by 1987, but surely have begun to do so by now.

Some of the recent decline in higher education enrollments can be attributed to problems at the lower levels: stagnant primary school enrollment rates, high attrition, and substantial numbers of students repeating years and dropping out of secondary school have produced a very low flow of baccalauréat diplomas (bacs). Cuenin and Orivel (1989) project a flow of bacs of about 1,400 per year on average for the next few years, down from well over 2,000 in the early 1980's; we have no reason to contest this estimate, but expect that the number will rise again before the year 2000.

Another part of the enrollment decline may be due to the rapid rise in unemployment of higher-education graduates following the government's elimination of employment guarantees in 1984. The ILO (cited in World Bank 1989, Annex VII, p. 79) estimated that in July 1988 *Grandes Ecoles* graduates were experiencing an average of 1½ years of unemployment upon entry into the labor market, and non-graduates more than three years. These lengths of time, especially that for graduates, are not particularly long in comparison to other, similar countries. In all likelihood, they reflect the slow, methodical, economically efficient phenomenon of job-search and voluntary unemployment which has been observed in most developing countries (and many developed countries as well). New graduates are searching for a career position for which a short-term "job" that might get them counted as "employed" is of little value; it is rational for them to wait until the best possible opportunity arises. Still, the supply of students is likely to be influenced by economic incentives, and unemployment has a powerful negative effect on perceived returns to education. The World Bank education project appraisal mission found that returns to higher education were the lowest of any

level, and were strongly influenced by the probability of unemployment after graduation (World Bank 1989, Annex VII).

If some sort of university is created, some of the bac-holders who would otherwise enter the *Grandes Ecoles* or seek overseas higher education would presumably prefer to enter the university instead. Under several of the scenarios discussed later in this report, one role of the university would be to prepare students for entry into the *Grandes Ecoles*; this would imply a substantial diversion of bac-holders towards the university. Thus the supply of potential university students is subject to great uncertainties: the flow of bacs; the relative attractiveness of university, *Grandes Ecoles*, and study abroad; the perceived rate of return to university education; and the future structure of higher education. With all these uncertainties, it is impossible to say anything more about the supply side.

2. Growth and level of demand for graduates

The demand for graduates of higher-education institutions in Mali until 1984 was almost exclusively from the public sector. Since then, under the influence of structural adjustment programs which have engendered budgetary restrictions and devolution of some activities to the private sector, new graduates cannot be assured of public-sector employment and therefore must conduct broader searches for jobs.

In such a situation, it is difficult to estimate the demand for graduates without detailed analysis of the economy; in the absence of such information, manpower planners typically rely on indirect methods based on assumptions about sectoral labor requirements for different types of skills. Projections of the growth of demand are even more difficult, because they require knowledge about the likely future path and composition of economic growth. In the absence of more direct data, this study must rely on a commonly-used indirect method: estimates of a country's demand for workers in broad professional categories by a comparison of other countries at similar stages of development.

Table III-1 Graduates from the *Grandes Ecoles* by School and Discipline

<u>GRANDE ECOLE</u>	<u>DISCIPLINE</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
ENSUP	Biology	82	88	72	81	105
	Chemistry	22	21	11	6	14
	Physics	16	9	11	8	15
	Mathematics	15	18	14	27	18
	Russian	1	9	13	13	15
	German	22	17	15	17	20
	English	45	43	52	60	84
	History/Geo.	40	35	60	53	89
	Psych./Ped.	17	20	40	63	67
	Philosophy	23	12	30	31	49
	Literature	103	33	23	33	46
TOTAL	386	305	341	392	522	
ENMP	Medicine	36		41	17	
	Pharmacy	14		14	5	
	TOTAL	50	0	55	22	0
ENA	Public Admin	61	137	72	64	73
	Economics	92	46	11	31	45
	Management		57	34	64	57
	Econometrics		26	18	33	25
	Law	48	93	82	79	102
	TOTAL	201	359	217	271	302
ENI	Civil Eng.	4	29	4	9	34
	Elec. Mech. Eng.		4	4	6	7
	Geology		2	4	5	5
	Topography	2	2	3		
	Formation	1	7	1	2	7
	TOTAL	7	42	15	25	53
EHEP	Accounting	32	44	49	63	
	Management	21	33	36	37	
	Secretarial	21	41	61	43	
	TOTAL	74	118	146	143	0
IPR	Agriculture	96	28	4	97	
	Water/Forest	18	6	7	37	
	Livestock	62	22	7	35	
	TOTAL	176	56	18	169	0
ENPT	Service Tech.			43	14	32
	General Serv.		27	103	46	45
	TOTAL	0	27	146	60	77
GRAND TOTAL		894	907	938	1082	954

SOURCE: UNDP, *Etude exploratoire sur l'insertion des Diplômés dans l'économie nationale*, Document du Travail, May 1988.

A. Occupations requiring higher education

The occupations for which post-secondary education is commonly required are concentrated in International Standard Classification of Occupations (ISCO) groups 0/1 and 2. The two major groups with their principal subdivisions are:

ISCO 0/1. Professional, Technical and Related Workers

- 0-1 Physical scientists and technicians**
- 0-2/0-3 Architects, Engineers**
- 0-4 Aircraft and ships' officers**
- 0-5 Life Scientists and technicians**
- 0-6/0-7 Medical, Dental, and veterinary workers**
- 0-8 Statisticians, mathematicians**
- 0-9 Economists**
- 1-1 Accountants**
- 1-2 Jurists**
- 1-3 Teachers**
- 1-4 Workers in Religion**
- 1-5 Authors, journalists**
- 1-6 Sculptors, Painters, Photographers**
- 1-7 Composers and Performing Artists**
- 1-8 Athletes, sportsmen**
- 1-9 Professional, Technical, & Related workers, n.e.c.**

ISCO 2. Administrative and Managerial workers

- 2-0 Legislative officials and government administrators**
- 2-1 Managers**

According to the International Standard Classification of Education (ISCED), the educational channels for these professional and technical occupations are predominantly located in sections 5 (Education at the third level, first stage, of the type that leads to a diploma not equivalent to a first university degree) and 6 (Education at the third level, first stage, of the type that leads to a first university degree or equivalent) of the International Standard Classification of Education (ISCED).

Data on employment by ISCO groups are not available for Mali, but are for some other African countries: Botswana, 1984; Burundi, 1979; Central African Republic, 1975; Egypt, 1984; The Gambia, 1983; Ghana, 1984; Lesotho, 1976; Mauritius, 1983 and 1987; RSA, 1980; Sudan, 1973; Togo, 1981; Zambia, 1980; Zimbabwe, 1982 (Source: ILO Yearbook of Labour Statistics, 1987, Table 2). We can use these data to identify any regularities in the relationships between level of economic development and patterns of employment in African countries.

B. A model to forecast the demand for educated labor

There are sound theoretical reasons for expecting to find a relationship between the level of economic development, or per capita income, and patterns of employment. As is well known, the income elasticity of demand for food and other "necessities" is far less than one, so that as per capita income rises, the share of farmers and farm workers in total employment should fall. Similarly, demand for "luxuries" (in an economic sense: those goods whose income elasticity of demand is greater than one) such as health and educational services should rise faster than income, with a tendency to expand these services' share of employment.

Particularly with respect to ISCO 0/1 and 2, two additional variables might help to explain employment patterns. First, previous studies have found significance for variables measuring the rate of economic growth: it might be the case that more rapid growth required more professionals or managers to accomplish that growth. Second, it is possible that administrative structures, procedures and practices inherited in part from prior colonial regimes might have an effect on today's bureaucratic and administrative needs. Specifically, it is possible that the Francophone countries in Africa may have a different pattern of professional and technical employment than do Anglophone countries.

The procedure adopted here is to estimate, via the method of multiple linear regression, the influence of these three variables (the level of development or per capita income (Y), the rate of growth of income (G), and colonial past (PASSE) on the percentage of total employment of each of the two major groups: PCT(0/1) and PCT(2). PASSE takes the value of 1 if the country is Francophone and 0 if it is Anglophone. The income and growth-rate data are from the World Bank, and are represented in 1984 U.S. dollars.

For the two employment groups, the estimated regression equations are*:

$$\text{PCT}(0/1) = -.034 + .00003 Y + .00128 G - .02104 \text{PASSE}$$

(2.4) (2.0) (0.5) (1.2)

R-squared = .49

$$\text{PCT}(2) = .003 + .000007 Y + .00003 G - .00426 \text{PASSE}$$

(0.9) (2.2) (0.5) (0.9)

R-squared = .49

These equations can be used to estimate the responsiveness of employment of Professionals and Managers to increases in per capita income. These are measured in terms of elasticities, the percentage change in an occupation's share in response to a 1% change in per capita income. At Mali's present level of economic development, these elasticities are estimated at .003 for ISCO 0/1 workers and .04 for ISCO 2 workers: that is, very nearly zero in both cases. In other words, in the short term, economic growth will have little influence on the structure of employment.

Forecasting future demand requires assumptions about the future course of per capita income growth in Mali. We have used two basic forecasts: 1) a continuation of the 1.1% annual growth of per capita income estimated by the World Bank from 1965-1984; 2) a sharp acceleration to 3.0% annual growth from 1990 on. Under the two scenarios, per capita income in Mali in 1990, 2000 and 2010 would be as shown in Table III-2, below.

* Explanatory notes

1. Per capita income and the rate of growth are from World Bank data.
2. The regression coefficients can be interpreted as the partial influence of each of the explanatory variables on the share of employment; for example, an increase of US\$1.00 in per capita income would increase PCT(0/1) by .00003, or 0.003 percentage points.
3. Numbers in parentheses are t-statistics; a value of about 2.0 or more indicates statistical significance. R-squared is the proportion of the variation in the dependent variable which is explained by the dependent variables; in both cases, 49% of the inter-country variation in employment shares is explained by Y, G, and PASSE.
4. Similar regressions were estimated for the other five ISCO major groups (3, 4, 5, 6, 7/8/9) but are not presented here: their only use in this study was to check for consistency among the set of seven equations in predicting Mali's likely employment structure. When all the equations are applied to Mali, this consistency criterion is met, as employment shares totalling 99.9% are predicted.

Table III-2
PER CAPITA INCOME, 1990-2010:
1984 constant U.S. \$

<u>Year</u>	<u>Rate of Growth in per capita income</u>	
	<u>1.1%</u>	<u>3.0%</u>
1990	150	150
2000	167	202
2010	186	271

In other words, at the current long-term trend rate of growth, Malian per capita income will rise by about 24% by 2010, whereas at the accelerated rate of growth it would rise by over 80%. From these figures and the coefficients from the two regression equations, we can estimate the shares of ISCO 0/1 and 2 in Mali's employment in 1990, 2000 and 2010; these are shown in Table III-3.

Table III-3
SHARE OF PROFESSIONAL AND MANAGERIAL
WORKERS IN TOTAL EMPLOYMENT IN MALI

<u>Year</u>	<u>1.1%</u>	<u>3.0%</u>
ISCO 0/1		
1984	1.87%	1.87%
1990	1.96%	1.96%
2000	2.01%	2.12%
2010	2.06%	2.30%
 ISCO 2		
1984	0.02%	0.02%
1990	0.03%	0.03%
2000	0.04%	0.04%
2010	0.05%	0.06%

Under both growth-rate scenarios, ISCO 2's share of total employment rises much more quickly in relative terms than does that of ISCO 0/1, but remains a minuscule percentage of total employment even if economic growth accelerates. The two groups together remain below 3% of total employment for the entire period under both scenarios.

To verify the realism of these numbers, one can use data gathered in the early 1960s specifically to help developing countries forecast the human resource patterns implied by different patterns of industrialization and growth. The idea was quite straightforward: if a country thought it was ready to have a certain industry at a specific technical level, it could look at the patterns for countries which had or had historically had such a level of development in that industry. Results from this inquiry were published in Horowitz et al., (1966). The two least industrialized countries in the data set were Puerto Rico (data for 1960) and Yugoslavia (1961). Data for Professional and Administrative workers (ISCO 0/1 and 2) have been combined for a number of sectors, which are shown below.

Table III-4
TOTAL SHARE OF PROFESSIONAL AND ADMINISTRATIVE
EMPLOYMENT: PUERTO RICO (1960), YUGOSLAVIA (1961)

<u>Sectors</u>	<u>Puerto Rico</u>	<u>Yugoslavia</u>
Agriculture	1.4%*	4.7%*
Mining and Quarrying	5.2	3.0
Construction	n.a.	7.0
Manufacturing	5.8	5.8
Food & beverages	7.6	4.8
Textiles	3.2	2.9
Clothing	2.7	n.a.
Transportation	5.2	7.7

n.a. = not available

* excluding owner-operators of farms

The overall weighted averages are not available, but are likely to be about 3-4% for Puerto Rico and 4-5% for Yugoslavia. These data make the estimates made above for Mali seem very plausible in international perspective, as both Puerto Rico and Yugoslavia had higher per capita incomes at that time than Mali does now or is expected to have in the next twenty years.

To estimate the future course of employment in the two groups, we make use of labor force data presented by Grant and Hanel (1988). They estimate the labor force at 2,675,000 in 1987 and its growth rate at 1% per year. Accepting these two figures** means that the labor force in 1990 would equal 2,756,000; in 2010, it would equal 3,363,000. We apply the percentage shares calculated in Table III-3 to these labor force estimates and arrive at the following estimates of the number of professional and managerial employees.

** The growth rate of the labor force appears to be low, given the much more rapid rate of growth of population (close to 3% per year). The World Bank (1989b) reports a labor-force growth rate of 2.5% per year in the 1980's. In accepting the lower figure, our analysis is deliberately conservative because of the uncertainties of the methodology we have been constrained to adopt.

Table III-5
PROJECTIONS OF EMPLOYMENT
OF PROFESSIONAL AND MANAGERIAL WORKERS, 1990-2010

	<u>1990</u>	<u>2010</u>	annual net increase		
			<u>1990</u>	<u>2000</u>	<u>2010</u>
<u>Low growth variant:</u>					
ISCO 0/1	52,360	67,260	660	750	850
ISCO 2	<u>825</u>	<u>1,680</u>	<u>30</u>	<u>40</u>	<u>60</u>
Total	53,185	68,940	690	790	910
<u>High growth variant:</u>					
ISCO 0/1	52,360	74,975	950	1,135	1,350
ISCO 2	<u>825</u>	<u>2,012</u>	<u>40</u>	<u>60</u>	<u>90</u>
Total	53,185	76,987	990	1,195	1,440

According to these two scenarios, the net demand for professional and managerial workers will thus grow by about 700-1,000 per year over the next few years, rising to 900-1450 by the end of the two decades. The smaller of these figures is about half the recent "flow of *diplomés*" from the *Grandes Ecoles*; the largest is about equal to that flow (Cuenin and Orivel, Table 24); in addition there have been about 200 Malians returning from study abroad each year.

There are no reliable data on retirements of professional and managerial workers. The number is likely to be small given the relative youth of the labor force; in a steady state and given a 40-year career 2.5% of the workers would retire every year, but in a growing, young labor force the percentage would be much lower. If we conservatively adopt a figure of 1% for annual retirements, there would be a need for replacements of about 500-600 per year in 1990 and 700-900 per year by 2010; these should be added to the figures in Table III-5 to yield the gross demand. To summarize: total gross annual labor-market demand for graduates of higher education can be estimated at 1,400 to 1,900 per year on average from 1990 to 2010; the numbers for 1990 would be more like 1,200 to 1,500, and for 2010, 1,600-2,300.

An additional important consideration is that some of the ISCO 0/1 and ISCO 2 jobs can be filled by people with less education (as they surely are now, especially by those who fail the *baccalauréat* or drop out before the end of higher education), or by those already in the labor force but unemployed. This implies that these figures are over-estimates by some unknown amount. In summary, this analysis suggests that for at least the next ten years, Mali's total demand for graduate manpower could be supplied by university and *Grandes Ecoles* institutions with not much greater combined capacity than have today's *Grandes Ecoles*.

3. The higher-education labor market, 1990-2010

Previous analyses of the Malian experiences of the 1960s and 70s have been reminiscent of old "multiplier-accelerator models" of business cycles -- for a while the market grows very rapidly, but when things slow down, there is a depression which leads to substantial unemployment. That seems very much to have been the picture for Malian post-secondary education, including the gloomy mechanical ILO forecasts of 27,000 graduates unemployed by 1995. Let us see what the various conclusions reached above appear to suggest.

Table III-6 shows the current situation. Column A shows the annual flow of bacs; Column C, the ultimate demand for post-secondary educated labor. Column B shows the three parts of the intermediate processing stage: line 1 shows "intake (year 1)---->output (year 4)" for the *Grandes Ecoles*; line 2, the corresponding "intake-->output" process for overseas education; line 3 would show the analogous process for the university if it existed.

Table III-6
"POST-BAC" EDUCATIONAL PROCESSES, 1990

<u>A: Supply of bacs</u>	<u>B: Intakes----->Outputs</u>	<u>C: Demand for graduates</u> (gross)
	1. 1000----->700	
	2. 400----->200	
	3. 0 0	
1400	All: 1400----->900	
	Dropouts 500	
	Total with some higher education 1400	1200-1500

There are several important assumptions in this table. The graduation rate of 70% from the *Grandes Ecoles* is taken from Cuenin and Orivel, p. 29, and assumed to stay fixed. That failure rate and an intake of 1000 students will get the *Grandes Ecoles* back to their capacity enrollment level, and hence should raise the quality of instruction. Foreign student flows are roughly those of the late 1980s. At this point, under the low rate of growth scenario the market is not in balance: unemployment of graduates (or non-graduates) will increase and student stock overseas is 12 times the rate of repatriation. The high rate of growth scenario predicts a gross demand sufficient to reduce unemployment somewhat, but presumes that the acceleration to 3.0% per year growth has already taken place.

Table III-7 presents the analysis for 2000. Consistent with the assessments of the World Bank and others, we show an increase in bac flow from the current level which is below historical highs. The *Grandes Ecoles* have remained in steady state, while the foreign study sector has moved to steady state (where new students equal repatriation) but no effort has been made to cut it back. If the rest of the bacs are taken in to the university, which in turn has a failure rate of 50% (a great deal higher than the average for the *Grandes Ecoles*), we see the flow of graduates aggregating 1400 from all institutions. By contrast, demand might range from 1400 to 1900 under the same assumptions as were made for 1990. Even under the very best case (sustained 3% annual economic growth until 2000), the market for manpower with some higher education is still out of balance. Only if higher-education dropouts are ignored or if alternative, non-professional employment can be found for them, can demand be sufficient to cover the new annual supply of graduates.

Table III-7
"POST-BAC EDUCATIONAL PROCESSES, 2000

<u>A: Supply of bacs</u>	<u>B: Intakes----->Outputs</u>	<u>C: Demand for graduates</u> (gross)
	1. 1000-----> 700	
	2. 400-----> 400	
	3. 600-----> 300	
2000	All 2000-----> 1400	
	Dropouts 600	
	Total with some higher education 2000	1400-1900

Table III-8 repeats the exercise for 2010, although the uncertainties of the analysis are very great with such a long time horizon. Bac supply continues to grow at the same rate as the previous decade. The *Grandes Ecoles* stay in steady state, as does overseas education. The university absorbs the balance of the new bacs and continues to have a 50% dropout rate.

Table III-8
"POST-BAC EDUCATIONAL PROCESSES, 2010

<u>A: Supply of bacs</u>	<u>B: Intakes----->Outputs</u>	<u>C: Demand for graduates</u> (gross)
	1. 1000-----> 700	
	2. 400-----> 400	
	3. 1400-----> 700	
2800	All 2800-----> 1800	
	Dropouts 1000	
	Total with some higher education 2800	1600-2300

The projected situation in 2010 is even worse, primarily because of the rapidly increasing number of dropouts generated by the system. The forecasts do suggest no shortage of potential students for the university, but the demand side is problematic (although it should be remembered that we adopted a very conservative estimate of the rate of labor-force growth, and hence of the demand for professional and managerial employees).

On the other hand, there are some promising signs amidst the gloomy numbers. For the year 2000 (see Table III-7), we foresee a flow of 1100 graduates without a university (lines 1. and 2.), with new gross demand that year expected to fall between 1400 and 1900. Dropouts other than those from the university are 300, so the market for people with some higher education would balance even in the low growth scenario: the unemployment problem would, however, be shifted backwards because the *Grandes Ecoles* and overseas scholarships would not be sufficient to absorb all bac holders. By 2010, the current higher-education system, maintained at the same enrollment rates, would be insufficient to meet demand even if all dropouts were employed in graduate-level positions (supply of 1100 graduates and 300 dropouts compared to demand of 1600-2300). Therefore within the next twenty years, Mali will need either to expand the production of its current higher-education system (without threatening quality) or create new structures to begin to fill the probable gap.

4. Education as a creator of employment

The analysis above is very static in nature, because it ignores the possibility that the creation of new educational institutions can induce the creation of employment by changing the structure of the economy. Let us consider several variants on this theme, without, however, being able to quantify their potential.

- a) It is possible that placement of an educational institution in a certain locality will lead to economic development in that area, with consequent increases in employment, both directly to staff the university and indirectly through "multiplier effects." It is necessary to consider three sub-variants of this idea:
- (1) if the University is installed in a major urban area such as Bamako, it will contribute to the further congestion of that area. Secondary employment generated will absorb some existing unemployment, but may worsen the situation by adding greater incentives for in-migration.
 - (2) at the other extreme, the University may be viewed as a possible development pole in an unfavored area, one where economic and employment development are not taking place. Such might be the case with proposals to put one or more faculties in places like Tombouctou: the facility would create jobs directly, and faculty and students would create more employment through their consumer spending. The result is not likely to be so pleasing. Primary employment creation would be extremely expensive, due to lack of infrastructure, extremely high transport costs, and need to develop or import amenities. Secondary employment creation of benefit to the local area is likely to be minimal, since there exists little local capacity to supply the needs of the faculty and students for amenities (such as electricity) or necessities (such as food, fibre and housing).
 - (3) in between the two extremes, there is more possibility of induced employment effects which are unreservedly positive. In cities such as Mopti and Sikasso, basic infrastructure and services exist, and there is likely to be a sufficiently diverse labor pool which could benefit from the direct and indirect demand created by a university. For the foreseeable future, therefore, it is likely that the most dynamic outcomes would come from decentralized university centers in such cities.
- b) A skeptical view can also be taken of education as a source of employment creation for Mali as a whole in the short run. In terms of expenditures, salary payments in the educational sector are little different from any other governmental payroll expenses, while in terms of jobs created, the average cost per job (including needed infrastructure) may be quite a bit above the average.
- c) On the other hand, it is in the long run that the dynamic effects of education are expected to be of potential importance. The vision includes the creation of new and appropriate products, technologies, organizational and managerial techniques and perhaps much else. Since most of Mali's population will continue to depend on agriculture for the foreseeable future, it is to be presumed that the most important new technologies, etc. will relate to agriculture, and this conclusion largely determines the initial thrust we are suggesting for the University. This strategy must, however, be combined with active efforts to create productive

employment in the private sector for graduates in rural areas. As Azouvi and Delannoy (1988) have stated:

La dynamisation du monde rural, donc de la production sur la base d'activités promues par des initiatives privées, offre plusieurs possibilités d'insertion aux jeunes diplômés. Cette insertion ... semble aujourd'hui ne pas devoir poser de difficultés majeures étant donné l'évolution des modes de vie.

They go on to say, however, that studies, and subsequently actions, must be conducted in at least the following areas:

- *les supports technico-économiques (filières d'activités) d'insertion des diplômés;*
- *l'articulation optimale des activités des jeunes promoteurs et des "opérateurs traditionnels;"*
- *le processus de désengagement des structures étatiques, et la définition des conditions de prise en charge de leurs activités d'assistance à la production et aux populations par de jeunes promoteurs;*
- *l'adéquation des profils actuels des diplômés demandeurs d'emploi aux exigences techniques et humaines indispensables pour la mise en oeuvre et la réussite de toute entreprise ayant comme cible le milieu rural et ses problèmes de développement.*

It is precisely the last of these actions which a well-designed university can contribute to Mali. University education can, if properly designed, create a cadre of intellectually active but practically-trained people who can be a part of the process of economic development. The options presented later in this study must be considered in this light.

IV. Observations and Evaluation of the Conception and Proposed Plan of the Government of Mali for a National University

This Section reviews the official plan proposed by the Government of Mali for the creation of a national university, as it is presented in the two-volume report entitled Université du Mali (Ministry of Education 1990). We will discuss the government's priorities for establishing the university, including some revisions to the provisions of the 1986 enabling legislation. A preliminary technical description of the physical facilities planned for each of the regional locations of the university will also be discussed.

The Ministry of Higher Education places highest priority on the establishment of: the Faculty of Science (Sikasso); the Institute for Veterinary Medicine (Mopti) and the Institute for Technical Education (Ségou). Those of secondary priority include: the Technology Institute (Kayes); the Law and Economics Faculty (Kayes); the Social Science Faculty (Tombouctou); and the Urban Studies and Architecture Institute (Gao).

The order of these priorities reflects the government's concern that the establishment of the university responds to the country's development potential and needs.

1. Faculty of Science - Sikasso

The Ministry of Higher Education envisages two goals for the Faculty of Science at Sikasso: one, to prepare students after two years of study for entry into the national schools (especially, Medicine and Pharmacy, Teacher Training and Engineering); and two, to offer students either a terminal three-year certificate program or the possibility to continue graduate work in the sciences.

The planned first-year enrollment of 380 students (plus a 20% dropout rate) is based upon: estimates of the minimum student body required to operate economically; the projected number of openings in the *Grandes Ecoles*; and, the expected number of job opportunities. Sixty-two staff positions are budgeted. In order to limit operating costs, the initial construction and operating plans do not include faculty or student lodging. In addition, the preliminary plans for the Sikasso Faculty indicate that off-campus faculty and student lodging may be one way to facilitate closer relations between the town and the university.

The proposed major fields of study for the Faculty include biology, chemistry, physics and mathematics, with options to specialize in several theoretical or applied areas within each field.

The plans also call for the creation of a Rural Food and Technical Institute at a separate site in Sikasso. The institute would offer a 3-year post-secondary degree for approximately 1,000 students in at least four areas, including general agriculture, animal science, rural economy and food science.

Discussion

The priority given to a Faculty of Science at Sikasso as the flagship for the national university reflects the government's commitment to creating a national capacity for trained scientists. However, in order to assure that the Faculty substantively incorporates a more solid development orientation, without sacrificing the commitment to building a national scientific capacity, the current plans should be revised to emphasize the agricultural sciences. Thus, biology, chemistry and mathematics would be replaced with the agricultural sciences, especially Agronomy and Soil Science, as the premier Faculty departments. Meanwhile, the Rural Technical and Food Institute would be launched with some joint Faculty and Institute faculty appointments at the same time and on the same campus as the Faculty. The current plans call for separate sites for the Faculty and the Institute. Apparently, the site designated for the Faculty would be a more appropriate joint location since there is more space and a greater opportunity for expansion.

These decisions would represent a more direct, and potentially more successful approach to building a university with a solid development orientation. First, both start-up and operating cost savings through joint faculty appointments and the use of shared facilities should be possible. Second, foreign sources of capital and technical assistance that will still be required to launch the university should be more attracted to supporting a university capability in the agricultural sciences than in those sciences that are perceived as less directly oriented to the country's development needs. Finally, a university science program in agriculture should be able to take advantage of, and contribute to, the agricultural research and production activities in the surrounding area. It may even be useful to examine the feasibility of securing partial financial support through a direct allocation of taxes from agricultural producers, especially cotton growers.

The combination of the Rural Technical and Food Institute and the Faculty through its agricultural science departments is pivotal to this recommended approach. The Institute offers the institutional framework within which both Faculty and Institute faculty members can establish applied research, teaching and extension relationships with regional development and research units. It offers a basis for faculty members to seek funding for, and administer their research (and outreach) activities. As such, it complements the more academic orientation of the Faculty while serving as a hub for the development of a regional agricultural research and development program.

Design Questions

1. Type of degree or certificate programs

The proposed 3-year post-BAC program at the Rural Technology and Food Institute is not proposed as a substitute for the technician-level training at Katibougou. Pressure to transfer this training activity from Katibougou will need to be resisted if the Institute is to become an integral university institution in the agricultural sciences.

2. Curriculum

The Faculty's concentration on the natural sciences should not exclude a certain range of courses in the social sciences and arts and letters. This would permit the university to offer a complete degree program without sacrificing its development orientation through agricultural sciences or the preparation of some students for the *Grandes Ecoles*.

Meanwhile, the teaching program of the Institute could be designed around more specialized areas such as small ruminant production, horticultural production, crop production, food technology and agribusiness.

2. The Institute of Veterinary Medicine - Mopti

Given the importance of animal production in the country's economy, and specifically in the Mopti Region, the government places high priority on the establishment of a national capacity for training veterinary scientists through an Institute of Veterinary Medicine at Mopti.

Admission to the Institute's four-year program in the veterinary sciences would be open to those who had successfully completed the first two years at the Sikasso Faculty of Science. Courses and laboratory work for about 150 students would make use of facilities and programs available through several regional development activities, and the teaching would be heavily oriented toward Malian problems.

Discussion

Given the high costs associated with the establishment and operation of an Institute for Veterinary Medicine, many university administrators in this field argue the importance of combining agriculture and veterinary training in the same location. The Agronomic and Veterinary Institute (Hassan II) in Morocco is often used to illustrate this point (see Appendix G). There are two important areas in which significant cost savings can be achieved when agricultural and veterinary training institutions are at least in close proximity. First, many faculty can be shared, especially for introductory courses. Second, many laboratory and farm facilities can also be used cooperatively.

In many countries including the US, however, schools of veterinary medicine can be found separate from colleges of agriculture and are often not within a short distance of each other.

In the preliminary plans for the Veterinary Medicine Institute, the government clearly emphasizes the need for training adapted to the country's specific needs. At a very minimum, this means training students to deal primarily with the problems of populations of animals instead of individual animals such as household pets. As a result, the first two pre- and para-clinical periods of the Institute's training program will need to give appropriate attention to understanding the social and economic systems in which the animals are found, and thus to have access to instructors who can offer the required social science component of the Institute's program. Malian educators will need to examine their staffing requirements along with their priorities for teaching, research and extension, in the short-term and over the medium-term. That is, the faculty and staff required to launch and maintain a solid teaching program will need to be expanded in order to meet extension objectives. Similarly, if faculty will be expected to manage research programs, additional faculty will be needed to handle the Institute's teaching load.

Design Questions

1. Combined departments and facilities

Given the high costs of establishing an institute for veterinary medicine, educators must seriously examine the possibilities for combining traditionally separate departments and for building joint, multi-functional or multi-purpose laboratories. For example, the usually independent departments of physiology, anatomy, toxicology and biochemistry could be joined in a department of comparative biological sciences. A combined department of patho-biological sciences could also be created to bring together departments of pathology, immunology, bacteriology, mycology, virology and parasitology. A department for the surgical sciences could be delayed for several years.

The questions of laboratory space and facilities must be addressed before the plans are drawn. Adequate laboratory facilities will be needed in the first year of institute studies. Identifying and training qualified laboratory technicians will also be a critical, and often overlooked, first-stage step in establishing the veterinary institute. Good technicians keep the laboratories going.

2. Costs and fees

The faculty and administration of veterinary medicine schools throughout the US rely heavily upon political lobbying and finances from private industry groups to support most of their research programs. In the absence of comparable industry, or private sector financial support in Mali, educators will need to devise alternative plans to meet the institute's financial costs.

On-going operating or recurrent costs for the laboratories must also be calculated. While some schools in the U.S. charge a special laboratory fee for students enrolled in the program, in Mali, educators will need to find other sources of financing to maintain and operate the laboratories.

3. Curriculum design and faculty

The participation of an experienced educator in veterinary medicine is indispensable in the preparation of more detailed project documentation for the Veterinary Institute in Mopti. Equally important, this individual must lead a vigorous faculty recruitment and development program. Experiences with launching veterinary medicine institutes in other countries indicate the importance of building an educational institution with a solid core of national faculty. The short periods of time that high quality expatriates are available do not help to build a solid core of institute faculty.

Prior to preparing the most detailed project documentation, it would be useful for the institute's senior administrator and some of the most senior faculty to visit some of the more successful veterinary institutes in sub-Saharan Africa. These include: Khartoum, Nairobi, Ibadan and Ahmadu Bello, and Zimbabwe.

3. Technical Training Institutes - Ségou

The 1986 decree provided for the *Institut Supérieur d'Enseignement Technique* to be sited at Ségou, the *Institut des Techniques Industrielles et de l'Aménagement* to be sited at Kayes, and the *Institut Supérieur d'Architecture et d'Urbanisme* to be sited at Gao. The Ministry of National Education, in Université du Mali (Tome 1, pp. 56-7) points out that the first two institutes might better be brought together, probably at Ségou. In this way the complementarities of the two institutes could be exploited so that their work would be mutually reinforcing. At the same time, significant economies in capital and recurrent costs would be realized. As the report put it,

L'école des techniciens supérieurs pourra servir de champ d'application, d'expérimentation, de stage à celle de formation des formateurs. Cette dernière fera profiter la première des résultats de ses recherches et des compétences scientifiques dont elle disposera. (p. 56.)

The report goes on to suggest that one could also envisage the transfer of the *Institut d'Architecture et d'Urbanisme* from Gao to Ségou to benefit from the expanding economy of the region and its central location and access to the whole range of Malian architectural traditions. Clearly, the *Institut d'Architecture* also could benefit from a close relation to the two other technical institutes.

Discussion

We think the suggested combination in Ségou, preferably on contiguous sites, merits serious consideration. With the planned completion of ESITEX, an inter-state textile school (and equivalent to ECICA), there would be achieved a truly "critical mass" of technical training in Ségou. A number of the teaching programs of the institutes could be combined, as a common program of basic studies (*tronc commun*) providing students the necessary breadth and background for more specialized work.

A model of interest drawn from the American experience is the technical and vocational college, which in many states is an integral part of the public higher-education system. Such colleges provide a broad range of post-secondary, vocationally oriented courses. Most programs are two years in duration and lead either to a diploma or an associate degree. The main focus is to provide technical and professional training, serving both private and public sector needs for technical and lower-level professional manpower, primarily within the local labor market. Many, if not most, students, study at such institutions part-time, while continuing their employment. A description of a typical technical and vocational college, the Madison Area Technical College, is given in Section V.

Design Questions

1. Type of degree or certificate programs

It is important to design programs to be of a length that fits the nature of the subjects rather than to fit subjects into a standard number of years of study. Diplomas or certificates for some, simpler specialties might be awarded after one year; others might require three or even more years for adequate training. This implies the establishment of a standard set of guidelines for the value of diplomas and certificates, partly determined by the number of years required to receive them but also by the demands of the labor market.

2. Curriculum and faculty recruitment

A variety of technical and professional training programs (relating to business management, industrial technology, architecture, etc.) could usefully be combined in a single institution. This could result in significant economies as well as greater flexibility of training to meet the demands of the labor market.

Many of the training programs will not require full-time specialized faculty in all subjects. Since it is likely that most of the prospective instructors of technical subjects currently are employed in Bamako, they could teach part-time if the institute were located there. It would be possible to recruit full-time polyvalent teachers, but presumably these would have to be trained before being able to offer courses in several disciplines.

4. Faculties of Law and Economics and Letters and Social Sciences

The government fully recognizes the important contribution which these two Faculties could make to the development of a cultural and scientific community in Mali. The government is also aware of the tenuous contribution that these Faculties could make to dealing with many of the country's pressing development problems.

There are several additional reasons why a more detailed feasibility study of these Faculties should be postponed until a later date. The overwhelming logistic problems surrounding the establishment of Faculties in these two fairly remote areas mitigate what might be gained from the development impact of their creation. In principle, Faculties in Kayes and Tombouctou would attract some additional investment to these regions, but the high construction and operational costs of these facilities limit their viability as "motors of development." The financial burden of such costs on the other university Faculties and Institutes in its formative years could seriously weaken efforts by national university administrators to get other units started, to raise funds and to assure staff support.

Moreover, the immediate and regionally important multiplier effects of university Faculties in these two regional capitals would be marginal. In other words, the spin-off in terms of broader or longer-term economic benefits to the regional community would be minimal. Upon the completion of construction, these Faculties would generate very little local employment. Even if it were possible to attract and retain qualified faculty who would stay, the expected development contribution of faculty in law or letters is far below that of more development oriented Faculties. Such faculty would also have little or no opportunity for local consulting; and, there would be few in the immediate area who could serve as "*vacataires*."

Consequently, in the current planning horizon of 20-25 years, the investment required to create these Faculties could not be expected to realize a reasonable return. It might be more reasonable, if the government feels committed to educating people in law, the letters and economics to send students to Dakar, Niamey or Abidjan.

V. Selected Options

As stipulated in the interpreted Terms of Reference, this section discusses five different options or approaches to the government's proposed plan for a national university.

1. The *Grandes Ecoles* and a National University

The 1962 educational reform legislation called for the creation of a national university and several polytechnic and higher technical training institutes (*Grandes Ecoles*). This legislation provided that the university and the *Grandes Ecoles* would have different, but complementary educational missions. Consequently, the 1986 legislation to establish the university does not deal with the relationship between the university or the *Grandes Ecoles*, nor does it include any provision for reorganizing or restructuring the polytechnics or higher technical training institutes.

In the absence of specific legislative language, the continuing debate over the reorganization of higher education in Mali tends to revolve around very general concerns to contain the public budget for higher education or to protect various institutional interests within the educational system. Except for the report on the University of Mali prepared by the Ministry of National Education (1989), most discussions contain little or no analysis of the contribution of a university to Malian development.

UNESCO (1989), for example, examines the possibilities for establishing a decentralized national university primarily in terms of its relationship to the *Grandes Ecoles*. Among other recommendations, this report suggests creating some of the university departments from several of the *Grandes Ecoles*. The UNESCO study addresses several important structural issues raised by the Malian system of higher education, but it fails to examine the development role of regional university colleges and institutes.

The Union Nationale des Enseignants Retraités de l'Education et de la Culture (Etats Généraux, 1989) take a more dramatic approach. This group feels that the *Grandes Ecoles* could contribute, and at a lower cost, to the country's development without creating a new university structure. They propose several reforms, including a broadened recruitment policy, improved physical facilities, curriculum revisions and better libraries.

These and other discussions of the university offer a relatively rich background from which to develop a broader and more systematic examination of the relationship between the *Grandes Ecoles* and the decentralized university. The *Grandes Ecoles* have an educational mission quite different from that of a national university. In the tradition of polytechnical schools, Mali's *Grandes Ecoles* have always been driven by employment

demands. Shortly after independence, these schools were created to respond to the government's request for specific types and levels of trained personnel. As the opportunities for such public positions have declined, several *Grandes Ecoles* have tried to reorient their curriculum to respond more effectively to private sector demands.

A national university, on the other hand, plays a much broader scientific and educational role in the country's system of national education. In addition to promoting the development of scientific research, the university is seen as a principal source for assuring the continuing adaptation of public education and scientific progress to a changing society (Ministry of National Education, 1989).

These differences in the missions of the *Grandes Ecoles* and the university, help to clarify some of the policy options concerning the most effective and complementary relationships between these educational institutions over both the short- and long-term.

The transformation of the *Grandes Ecoles* into university departments or colleges is one option that has been widely discussed, largely on the grounds of the assumed cost-savings that would arise from the use of some existing facilities and faculty (National Education, 1989). Independent of any arguments based on economic analysis, however, this conversion approach overlooks at least two important considerations that seriously weaken its feasibility as a strategy for creating a national university.

First, the use of any of the existing facilities of the *Grandes Ecoles*, which are located in Bamako, compromises the government's commitment to a decentralized university with colleges and institutes located in regional capitals. Such a compromise does not appear politically realistic. Second, the conversion proposal fails to assess the viability of reorganizing and reorienting the *Grandes Ecoles* into colleges. The schools are organized and staffed specifically to meet well-defined demands for trained personnel. Consequently, the conversion of these schools into university colleges or institutes would require a significant redefinition of their current teaching mission that combines both the narrow goals of the *Grandes Ecoles* and the broader educational objectives of a university.

Moreover, even if such a redefinition of the schools' mission were possible, it is not clear that they have a core teaching staff who could be transferred to a university. With few exceptions, most of these schools depend largely upon part-time faculty ("*vacataires*") to teach the advanced, or second and third year courses. The reliance on these part-time faculty offers several apparent advantages in the current system. These teachers bring their professional experience into the classroom and thereby provide students the opportunity to become familiar with "real world" issues. They can help, as well, to relieve the teaching load of full-time faculty and identify new courses.

The largest number of full-time faculty are responsible only for the first two years of general education courses. As such, these faculty do not necessarily bring the specialized subject matter expertise needed to build university departments or institutes.

Given these two structural constraints on the incorporation of the *Grandes Ecoles* into a university structure, it might be more productive to consider how the establishment of a university could catalyze the development of more viable, competitive opportunities in Malian higher education.

As the university colleges begin to offer the two-year preparatory studies for those interested in admission to the *Grandes Ecoles*, operating funds should become available to improve the quality of the programs and to resolve many of the widely reported operational and administrative problems in these schools. With the possibility of concentrating on the two-year advanced level programs, for example, the *Grandes Ecoles* should be able to employ more full-time faculty and to improve the allocation of classroom hours among faculty.

Such changes could bring an important measure of continuity and quality to the curriculum. Full-time faculty may be more committed to working with students, and with some in-service training, may become more skilled in classroom communication.

As the *Grandes Ecoles* improved their curriculum and teaching, and as the university colleges grow and develop, the two could eventually compete for the upper-level students. Such competition would be extremely healthy for the higher education system as a whole. It would be based on student choice, motivated both by perceptions of educational quality and subsequent employment and career opportunities. Note that such competition between types of higher education can only occur if the system of support for students (*bourses* or other support) is equalized, either by providing *bourses* to advanced university students and *Grandes Ecoles* students or (more appropriate, given budget constraints) to neither category of students. A reduced program of *bourses* on the basis of need would be an intermediate position. Discussion of the important question of scholarship support for students is continued in Section VI.

At the same time, as undergraduate university education develops over the long term, the *Grandes Ecoles* could emerge as graduate or post-university institutions. The feasibility of this option clearly depends upon the development of a solid and viable undergraduate university program.

Three additional issues confront Malian policy-makers as they consider the relationship between the *Grandes Ecoles* and the national university.

First, they must be prepared to re-evaluate the role of the *Grandes Ecoles* vis à vis the private sector. Historically the training of the schools was directed wholly toward

preparing their graduates for public sector employment. We were pleased to find that certain of the schools (especially ENA) already have introduced limited programs directed toward stimulation and support of private sector economic activity. Such initiatives should be carried forward with a thorough review of the ways that the programs of the *Grandes Ecoles* could be systematically reoriented toward private sector service. Our perspective in making this recommendation is that public sector growth is likely to be extremely limited for the foreseeable future. Therefore, if the *Grandes Ecoles* retain an exclusively, or even primarily, public sector focus, they risk becoming an expensive backwater in the Malian higher education system, rather than the driving force they have been heretofore.

Second, Malian policy-makers must decide what regional training role the *Grandes Ecoles* should play. The current contribution of some of the *Grandes Ecoles* to regional training is subsidized by an inter-governmental agreement that limits the annual tuition of non-Malian students to 250,000 CFA per year. With the estimated per student cost at 1 million CFA, policy-makers need to evaluate the advantages and disadvantages of increasing tuition to cover more, if not all, of the actual costs of foreign students.

Third, policy-makers must review the appropriateness of current regulations that restrict the opportunities for *Grandes Ecoles* to generate income through the rental of facilities and/or salary savings from faculty consulting time. Such activities do not necessarily interfere with the educational mission of the schools, but on the contrary represent ways to create additional institutional income and to attract and keep good faculty.

2. Higher Education for Agriculture and the Rural Polytechnical Institute at Katibougou

The establishment of an institution of higher education in the agricultural sciences can be examined in terms of creating an institute with a greater regional training orientation or as part of the national university.

From several perspectives, the idea of establishing a regional center of excellence in the agricultural sciences at Katibougou can be very appealing. It builds upon the institute's current regional training activities, while recalling its historical role as a regional agricultural training center. It would also respond to the growing interest, especially in the donor community, for a regionalization of investments in higher education.

Moreover, by strengthening Katibougou as a regional college of agriculture, Mali could still meet its commitment to a decentralized university system and continue to train Malian agricultural scientists. In other words, Mali would be able to benefit from an investment in creating a regional institution.

Such issues, however, are different from those that arise in a review of the establishment of a college of agriculture at Katibougou as part of the country's national university. Clearly, Katibougou has the infrastructure and faculty upon which the government could rely to start building a university oriented to the applied agricultural sciences.

There is some question, however, whether the additional investment that would be needed to establish a college of agriculture can be justified. It is not clear, for example, if the development of a major agricultural college within close proximity to Bamako (Koulikoro Region) would be consistent with the government's regionalization policy, especially when a strong agricultural sciences and rural economy college could be created as part of the Sikasso Faculty of Science.

In addition, the transformation of the Rural Polytechnic Institute into a college begs the issue (see above) of the different educational and training missions between a university college and a national polytechnical institute.

For these reasons, it may be more appropriate for Katibougou to develop its own program as a *Grande Ecole*. The faculty already recognize the need for curriculum revisions in response to changing expectations for post-graduation opportunities outside of the public sector. Thus, instead of transforming Katibougou into a university agricultural college, the best approach might be to strengthen its program for training higher-level cadres in agriculture.

3. A University Campus for the Sciences

The university campus is usually seen as the physical space within which are found the principal academic, research and many extracurricular activities that comprise much of what is generally known as the university. In fact, the campus and the university are so closely synonymous in the United States that those few American universities without an identifiable campus (e.g., those located in the center of major cities) are popularly regarded as missing an important component of university life.

Most major U.S. universities started with one or two buildings and after 100 years (or more) are still growing from very small facilities into almost town-like units. Thus, the advantages and disadvantages surrounding the development of university campuses over time merits serious consideration by Malian decision-makers. At a very minimum, the development of a campus should receive special consideration where the proposed university college or institute is unable to occupy existing offices or buildings, where new building is required and where students would be unable to find adequate housing. The establishment and management of a university campus raises several financial and organizational questions that will require additional in-depth attention as the detailed plans for each regional unit of the university are prepared. Some preliminary issues,

however, that Malian decision-makers need to address at this time include the following. A realistic assessment of recurrent costs for maintenance and repair must be included in the university's financial plan. Some of these costs can be kept down through the employment of students for selected custodial and light maintenance services.

A university campus facilitates access by both students and faculty to university facilities such as libraries, classrooms, laboratories and offices among others. In this way the campus can provide a locus of student life and activities outside the classroom. (This is clearly an important part of the undergraduate experience for most U.S. students.) In many countries, the concentration of students on university campuses has also been a matter of political concern.

At the same time, some of the significant initial development costs may be offset in the medium- to long-term through the use of shared facilities, equipment and maintenance. Moreover, the physical presence of faculty together on a small campus can encourage and reinforce scientific communication and exchange.

Additional opportunities to offset some of the initial investment and the continuing maintenance costs should occur as the public looks to the university campus as a facility for various types of meetings, conferences and other types of civic activities.

4. The Idea of a Regional University Center

Three essential elements characterize the development and orientation of a college as a regional university center. First, the programs of study can be designed either to lead to a terminal degree or to serve as a basis for transferring into a complete university or *Grande Ecole* program. The regional center offers an especially appropriate framework for offering a two-year degree in applied fields. Second, terminal degree programs from such a center would be designed essentially to offer defined technical education and skills. Third, continuing education for the community at large defines the mission of the center.

From this perspective, a regional university center is created and develops over time from its service to the broader regional community. In other words, a regional center captures a distinctive outward or community orientation in its activities. It typifies higher education directly in service to the community. It justifies the reliance on available community facilities, especially for evening or weekend courses.

In principle, a regional center could use available community facilities and could be launched with any number and mix of departments. Over the long term, it would be expected that a center's profile would expand toward a more balanced program dealing with several different subject-matter areas. Such a program would be fashioned from its outreach (i.e., its response to the broader community needs and demands), teaching, community activities and its applied or action research.

Other important outreach and teaching possibilities for a regional university center include, but are not limited to:

- serving some of the higher and technical education needs of students from an immediate regional area, thereby foregoing the need for student on-campus housing;
- using a minimum core or permanent faculty, but relying more heavily for teaching on professionals from other public services and from the private sector;
- serving as a facility for in-service training and continuing education opportunities for the regional population; evening courses, etc.;
- offering special refresher courses for local government cadres as well as other special courses that might help teachers meet and/or improve their qualifications for teaching.

5. Selected Features of the "American University"

This section presents some of the general or more universal features of education at, and the administration of, public universities and technical institutes in the United States. The presentation of such features might usefully inform discussions concerning the establishment of the national university in Mali. This presentation does not uncritically assume the applicability or seek to promote the wholesale acceptance and transfer of these features to Malian higher education. It is expected, however, that this presentation might stimulate further review among Malian policymakers concerning some of the current (and sometimes limiting) assumptions that define the debate over the national university.

A. The Diversity of U.S. Universities

An immense degree of diversity exists among colleges and universities in the United States. Some of the principal types of institutions include: publicly-funded universities established by the Federal government, the states and other lower levels of government; private, non-sectarian universities and colleges; private, sectarian institutions; more technically or vocationally oriented schools, programs and institutes; and, a wide variety of continuing and adult education programs offered by universities and colleges as well as by high schools, community colleges, and vocational and technical institutes.

These institutions may compete with each other to meet diverse goals and objectives and to serve the needs and interests of different student clientele. At the same

time, many of the institutions have established various working relationships from joint degree programs to consortial arrangements.

B. U.S. Universities and Organizational Autonomy

The need to accommodate for the ministerial form of government, in which higher education is part of a government bureaucracy, is an important lesson learned from earlier efforts to transfer the U.S. university model to Asia, Africa and Latin America.

Most U.S. public universities and colleges report directly to a publicly appointed or elected board of trustees. This board is independent of government and directly represents various interests concerned with the governance of the university affairs. Through such a board, the public university is accountable to the public. In other words, the U.S. public university is not part of a government department or other administrative structure.

State legislative bodies, however, annually review and approve the public university's request for public funds. In addition, the budget of the average state public university depends upon several other sources: student tuition and fees (that must be approved by the state government); private endowments and contributions; income from sports, cultural activities and facility rentals; and research and consultancy contracts and other services.

Within the limits of state and federal policies (such as equal employment opportunity and affirmative action laws and regulations), the public university is an autonomous management entity. University administration sets the employment terms and conditions for academic and non-academic personnel. The university operates as a corporate, not-for-profit entity to purchase services, goods and supplies as well as to provide services (through research contracts and the rental of facilities) and to sell products (such as publications, souvenirs).

The degree of decentralization and autonomy of various administrative and academic units within public universities varies widely. In some universities, academic departments may be free within university regulations to provide outside services and to implement contracts, while in others, each department may have to work through another administrative unit. Academic departments do, however, manage their own budget, as allocated through the university administration, and within university regulations and guidelines, are fully responsible for the employment of academic personnel. (Clerical, secretarial and administrative staff are also employed directly by academic departments, consistent with university and employee union regulations, but the employment of maintenance personnel is a centralized university function.)

In addition, other university units, such as international institutes, area study centers and other special centers usually are managerially autonomous.

Implications for the University of Mali.

The organizational autonomy that characterizes most U.S. public universities raises important questions concerning the establishment of Mali's national university.

There are managerial and financial advantages to creating a university that is independent of the ministerial structure of government:

- the ability to set employment conditions independent of civil service regulations;
- the ability to generate income independent of governmental allocations; and, the ability to operate as an autonomous management entity.

Other aspects of the theme of organizational autonomy in American higher education are explored under D. ("Academic Governance") below.

C. Teaching Philosophy/Approach

American university education assumes that students accept full responsibility for defining their educational program and successfully meeting the requirements for graduation. All undergraduate students must fulfill a minimum series of breadth requirements in specified fields of study, but the specific courses for meeting these requirements are selected by the students.

The successful pedagogical philosophy that is really the "secret" to American education emphasizes classroom openness and discussion, and the opportunities for students to learn from each other. The success of this approach, however, depends heavily on the availability and use of textbooks, open access libraries and other learning opportunities outside the classroom.

The practical skills that most American university students do acquire come from "learning by doing." For example, research skills, as well as typing or computer-use skills are commonly learned as a means to meet course requirements. In addition, most American students have some type of part-time employment to help pay (and sometimes completely finance) the cost of their education. Even if these jobs are not directly related to a student's future employment interests, they offer another type of educational opportunity.

American university students are (or at least should be) always writing. Weekly written exercises, periodic papers, and term papers for each class are an integral part of each student's expected assignments from the day they begin their university education.

Implications for the University of Mali

The development of a comparable (and appropriately adapted) pedagogical approach occurs over a long period of time and can be most effectively acquired by faculty through long-term relationship(s) and exchanges with U.S. university(ies) and professors. Special faculty training (something not even done any more in the U.S.) can also facilitate improved pedagogical practices.

The adoption of a new, and more open pedagogical approach will require fundamental changes in the way university courses are conceived, organized and presented. It may also require revisions to widely held assumptions about the contribution of a university education to training for future employment opportunities.

In the U.S. public university, professionalization or technical specialization most often begins at the graduate level. Most undergraduate degrees, with the exception of those in the engineering fields, are not professional degrees; nor do most employers look for specialization at this level. Thus, a manpower approach to evaluating a demand for university education or to assessing the contribution of a university education to development must be complemented by the assessment of other benefits that flow from such education.

D. Academic Governance

In keeping with the pattern of organizational autonomy and decentralization described above, American universities emphasize departmental autonomy and faculty governance. At most universities departments are organized in "Schools" or "Colleges" administered by Deans who, in turn, report to Vice Chancellors or Vice Presidents. However, a very wide and important range of decision-making remains at the departmental level. Thus, while there is considerable variation among universities, in the most general pattern the tenured (i.e., permanent) faculty members of the department elect their Chairman, decide on the department's course offerings from semester to semester and decide to institute new courses or to drop old ones, manage recruitment of new department faculty members, plan and manage the department's budget, plan and manage the department's programs of postgraduate study (if any), and recommend the distribution (on the basis of "merit") of annual salary increases among the faculty members of the department. Many of these matters must be ratified (and occasionally may be changed) at the level of the College or School Dean, and usually at higher levels as well. Yet the main theme of organization in most American public universities is departmental autonomy and a large measure of governance by the members of the faculty. Faculty governance also operates through bodies like the

Faculty Senate which at most universities plays an important role. But the most important basis of faculty governance is the large measure of control at the departmental level about decisions affecting the teaching program and the status of faculty members.

Departmental autonomy and faculty governance is not without its drawbacks. In U.S. universities top administrators (Deans, Vice Presidents, Presidents) have relatively little control over the directions departments take and, typically, do not give orders to any individual faculty member. International visitors to U.S. universities are often surprised by the inability of top leaders at even the largest and strongest institutions to directly dispose of the resources of the institution. Research tends to be individually determined and coordination of research programs tends to be much more difficult than in more centralized institutions.

However, American universities have found the benefits of departmental autonomy and faculty governance to be more important than the drawbacks. Above all, the system seems to Americans to have unleashed the creativity and individuality of departments and their faculty to the benefit of the institutions and their students. Within the overall mission of the institution, departments develop different traditions, emphases, and national reputations. Responsibility for the success or failure of their teaching and research programs rests with the department members themselves. It is thought, and experience seems to bear out, that it is the faculty members themselves that are in the best position to make informed judgements about their own management, both concerning their academic programs and their administration.

Departmental autonomy, and the participation of its members in the department's governance, ties in with the basic principle that individual faculty members are essentially responsible for their own careers, having before them throughout their careers the possibility of failure or success defined against criteria set at the departmental and the institutional level. A crucial test in the American system is the moment at which a faculty member is, or is not, granted "tenure" or permanent status. But even after tenure, and throughout a professorial career, faculty members' performance especially in teaching and research is reviewed annually and salary increases are allocated by the faculty member's peers and his or her administrators on the basis of merit. At research institutions, output, especially in terms of scholarly publications, is carefully monitored. Evaluation of teaching quality and effort is routinely carried out by evaluation by students in each course, usually via anonymous questionnaires. The students' evaluations are reported to department administrations, and sometimes are published and made available on a university-wide basis. Through such review and evaluation mechanisms the universities reinforce the principle of individual faculty responsibility for quality and output and provide what is intended to be a career-long system of achievement incentives.

E. The Land-Grant Model

The land-grant college is an important, widely-known and respected type of American university that for many years was thought to be a model for universities in Asia, Africa and Latin America. Experience over the last 40 to 50 years has shown the importance of adapting the land-grant model to specific country needs and situations. One of the most successful of such adaptations, the *Institut Agronomique et Vétérinaire Hassan II* in Morocco (IAV), is described in detail in Annex G.

Drawing from this experience, it is useful to identify some of the key features of the U.S. land-grant university that could be adapted by Malian decision-makers to the University of Mali. The U.S. land-grant university is most widely known for the incorporation of agricultural teaching, research and extension within one institution. It must be clearly recognized, however, that the growth of these activities took over 50 years.⁵ Responsibility for agricultural extension, in addition to teaching and research, is the activity which distinguishes a land-grant university from other institutions of higher education. (Without extension, land-grant schools would not be significantly different from other major public and private teaching and research colleges and universities in the U.S.) Finally, it should be noted that land-grant universities were limited to the agricultural sciences only during their early years. For many years since then their teaching and research programs have included most major disciplines and fields of study.

In many land-grant universities, teaching in the agricultural sciences, agricultural research and extension are managed by a Dean of the College of Agriculture. Many faculty members, whose appointments are through an academic department within the college, (and occasionally from other colleges), have their time apportioned among teaching, research and extension. The allocation of these responsibilities can vary throughout the year and not all faculty are equally involved in all three activities. In fact, some faculty may never be involved in extension, just as some of those involved in extension may never enter the classroom. The critical point for consideration in Mali is that the land-grant university is not simply the combination of the different services with their separate personnel. Responsibilities are shared, often reside in one faculty member and are under the direction of one academic administrator.

⁵The U.S. land-grant universities were created through the Morrill Land Grant Act of 1862 that provided for "the endowment, support, and maintenance of at least one college in each state where the main objective is .. to teach ... agriculture and the mechanic arts .. in order to promote [a] liberal and practical education." The Hatch Act added agricultural research in 1887 and agricultural extension was added through the Smith-Lever Act of 1914. The emphasis on applied agricultural research is the activity which distinguishes a land-grant university from other institutions of higher education.

F. Vocational and Technical Colleges

The American model of a technical and vocational college plays an important role in U.S. economic change and development and is worthy of consideration. The model is well represented by the Madison Area Technical College (MATC) within the State of Wisconsin's technical and vocational college system. This College provides a broad range of post-secondary, vocationally oriented courses. Most programs are two years in duration and lead either to a diploma or an associate degree. The main emphasis of the College is to provide technical and professional training, serving both private and public sector needs for technical and lower-level professional manpower, primarily within the local (Madison area) or state (Wisconsin) labor markets.

To illustrate with a few examples, the College's Agriculture-65 Agribusiness Division provides training programs leading to qualification as Biotechnology Laboratory Technician, Agricultural Mechanic, Dairy Herd Manager, or Farm Business and Production Manager. The Technical and Industrial Division trains Automotive Technicians, Architectural Technicians and Draftsmen, Public Works Technicians and Electronics Technicians. The Business Division produces Accountants, Business Middle Level Managers, Data Processing specialists, and Financial Management specialists. A variety of other professional and technical training programs are provided in the Health Occupations Division, the Marketing Division, the Public Safety Division, and the Home Economics and Culinary Trades Divisions.

The College also provides two-year programs of "general studies" preparing students for transfer to university programs. These programs permit students to enter directly into the final two years of four-year degree programs. These university preparation programs are able to draw on and utilize many of the same basic arts and science courses that are part of the technical and professional programs. In addition to serving as an introductory university program, MATC's technical and professional training programs also serve an increasing number of persons already possessing university degrees who desire to increase their employability or change their careers with specifically vocational or technical credentials.

Finally, the College manages a number of apprenticeship programs qualifying young people for trades professions, as carpenters, plumbers, masons, electricians, etc. The College provides the in-class education component of the apprenticeship program.

A point of interest is the strong regional connections of the College. Satellite campuses in four cities besides Madison bring the campus within reach of persons throughout its region. Special continuing education classes serve the already-employed

population with evening and weekend programs, often utilizing community facilities such as schools or other public buildings.

In all the College's programs, study on a part-time basis by already-employed persons is encouraged (the median age of students is 27), and the closest possible relationship between academic training and the work environment is maintained. Many programs include work experience. While the teaching staff includes some 450 full-time instructors, more than 1,000 other instructors offer courses on a part-time basis, and many of these are working professionals in their fields. The College is proud that more than 94% of its graduates find employment within six months of completing their MATC programs. Service to the local and regional economy is indicated by the fact that even in this country of great personal and occupational mobility, 84% of recent graduates were employed within the MATC region, another 10% within the state of Wisconsin, and only 3% outside the state.

The College's strong local and regional character is also emphasized by its system of financial support. Local governments (municipal and county), utilizing their tax revenues, provide nearly 50% of the budget. The Wisconsin government provides about one-quarter while another quarter is derived from student tuition fees. A minor proportion is derived from federal government support for vocational-technical education.

Implications for the University of Mali

Our intention in presenting this summary description of the Wisconsin technical college system is not to propose that it be transplanted to Mali. Rather, it is to illustrate with reference to a well-tested model certain features of technical higher education which we think could well make an important contribution to Malian development:

- Technical, vocationally-oriented training can successfully be combined with more academic programs aimed at a higher cycle of university education.

- A variety of technical and professional fields (relating to agriculture, business, industrial technology, architecture, etc.) can be successfully combined in a single institution resulting in significant economies and academic cross-fertilization between programs.

- Technical, vocationally-oriented training can be successful in providing the entry-level, middle-level technicians, professionals and managers needed to fuel economic expansion, and can simultaneously serve public and private sector manpower needs.

-- Such training programs, if carefully tailored to meet the real manpower needs of the economy and constantly in touch with the productive economic sector, can virtually eliminate the problem of the unemployed (and nearly unemployable) graduate of more abstract higher education programs, a problem as well-known in Mali as it is in the U.S.

-- Technical, vocationally-oriented higher education programs can serve a much broader spectrum of the population than the traditional school-aged population alone, thus upgrading the manpower resources already in existence.

-- Such an institution can make a strong contribution to local and regional development through its relation to the local economy, its relation to local and regional government and community organizations, and its service to the local and regional population.

-- Because of its demonstrable contribution to local and regional development, such an institution can be supported in part from local and regional finances; because of its demonstrable vocational value to its students, student tuition can represent a significant source of the institutional funding required.

Specifically, we feel that all of these objectives are consistent with those established already by the government of Mali for professionalized, regionalized, technically-oriented higher education that can serve and stimulate the country's economic development. We feel that the proposed combination of technical institutes at Ségou, an ideal location for such a complex, could achieve all of these objectives and we recommend the most serious consideration of this element of the 1986 plan.

G. Other Implications for the University of Mali

Faculty Recruitment. Qualified and committed faculty will be an important part of the success of the national university. During the earliest stages in the creation of the university, decision-makers must identify the recruitment and selection criteria for faculty, in addition to addressing those measures that will be required to attract and retain high quality faculty.

In principle, recruitment should be open, competitive and not limited to hiring those already employed in higher education. In addition, if faculty will be classified as government employees, then approval for these new positions should be received prior to initiating recruitment. Given the importance of high quality faculty to the success of the university, it may be appropriate to establish an international recruitment and selection commission for key faculty and senior management. At least 12 to 18 months must be allowed to identify, select and bring faculty into the university.

There is no a priori reason for faculty to be part of the civil service. In fact, several advantages follow from authorizing the university to employ faculty directly as university employees. Direct faculty (and staff) employment becomes another incentive for university management and faculty to seek and assure continued income for the university. In part such a policy can help assure the responsiveness of the university and faculty to those who hold their purse strings, whether it be government agencies, producer groups or others interested in university faculty services. In addition, this type of employment can also be an incentive for university management and faculty to solicit additional sources of income through contracts, grants and consulting arrangements.

Scholarship and Admissions Policy. Experience elsewhere in sub-Saharan Africa shows the need to start small and to grow slowly. Policy-makers will need to give close attention to admissions criteria and the enforcement of a well-defined admissions policy.

The university's scholarship policy deserves separate study and adaptation to the conditions of a new, national university. Instead of a system based solely on student grants, administrators may want to examine the possibilities for offering and/or requiring student employment in full or partial exchange for tuition, room or board. (Many U.S. land-grant universities started by requiring all students to work on the university farm in exchange for tuition.)

Faculty Teaching and Research. Long-term relationships with U.S. universities could be a basis for helping to keep Malian faculty current in their field of study and for assuring that they have adequate time for teaching, research, and outreach activities.

University administrators also need to evaluate the combination of responsibilities (teaching, research and extension) expected of their faculty. Faculty staffing requirements need to be adapted in order to assure that adequate numbers of faculty are assigned to handle the different, albeit joint, responsibilities for teaching, research and extension.

Gender Concerns. The national university cannot compensate for fundamental structural weaknesses in the country's primary and secondary school systems that have led to systematic biases against women in the education system (see Appendix F.).

University recruitment and admissions policy, however, can begin to help overcome some of the more egregious gender biases against women in higher education. Moreover, the university can adopt a deliberate policy to identify women candidates for faculty positions. Finally, the university's curriculum and research programs - like those of universities worldwide - can be progressively adapted to give scholarly attention to gender issues along with other cultural and social issues.

VI. Financial Considerations

Here we explore the financial consequences of the establishment of the university. First, we attempt to evaluate the construction and operating costs if the entire system is established. Second, we present estimates of the costs of a more modest system, based on the options explored in Section V., above. Third, we examine the revenue side: possible transfers from the current higher education budget as well as other, more innovative, sources of funding for higher education. Finally, we discuss the serious problem of financial assistance to students, which currently absorbs two-thirds of Mali's higher-education expenditures (over one-half of the operating costs of the *Grandes Ecoles*, not counting the budgetary costs of Malian *boursiers* studying abroad.)

1. Costs of the University as it is specified in the 1986 Decree

This section is based on the technical specifications for the eight institutes and faculties in six regional capitals, plus an administrative facility in Bamako, contained in the Ministry of Education (1990). It makes the unrealistic assumption that the entire university will be established at once, under the rubric of a single project. The budget assumes that all of these facilities will be constructed in Year 0, and begin activities in Year 1 of the project at full capacity. The summary budget is presented in Table VI-1; the assumptions underlying each budget line are given in Appendix E.

Initial construction and equipment costs in Years 0 and 1 amount to over 4 billion FCFA, and annual operating costs rise (essentially due to increases in salaries and scholarships) from 4 billion FCFA in Year 1 to 5 billion in Year 10. The total cost of the university over its first decade of operation is about 50 billion FCFA. Capital and recurrent costs are separated in Table VI-2; the large increase in capital costs in Year 6 is essentially caused by renewal of vehicles and other equipment.

Table VI-1
Budget Summary - University of Mali
8 institutes and faculties
in 6 regional capitals
and an administrative center in Bamako

All figures in millions of FCFA

CATEGORY	YEAR											Total
	0	1	2	3	4	5	6	7	8	9	10	
Salaries	0	965	1014	1064	1118	1174	1232	1294	1358	1426	1498	12143
Benefits	0	316	331	348	365	383	402	422	443	465	488	3965
Travel	0	132	132	132	133	139	140	141	141	142	143	1374
Other	0	161	82	85	88	90	145	97	102	105	109	1064
Equipment	865	866	99	104	146	104	814	117	134	104	99	3453
Supplies	0	1445	1445	1445	1445	1445	1445	1445	1445	1445	1445	14449
Construction	2626	0	0	0	0	0	0	0	0	0	0	2626
Scholarships	0	970	970	970	1067	1067	1067	1067	1173	1291	1291	10929
TOTAL	3491	4855	4072	4148	4362	4402	5245	4581	4797	4978	5073	50003

Table VI-2
Recurrent and Capital Costs
for 8 faculties and institutes in 6 regional capitals
and an administrative center in Bamako

All figures are in millions of FCFA

	Recurrent Costs	Capital Costs	Total Costs
Year 0	0	3491	3491
Year 1	3989	866	4855
Year 2	4061	11	4072
Year 3	4132	16	4148
Year 4	4303	59	4362
Year 5	4386	16	4402
Year 6	4499	746	5245
Year 7	4553	28	4581
Year 8	4750	47	4797
Year 9	4962	16	4978
Year 10	5061	11	5072
Total	44696	5307	55003

This is clearly a very expensive undertaking, with annual costs exceeding the current government expenditures on the *Grandes Ecoles* and overseas scholarships. It also educates fewer students: as Table VI-3 shows, the total number of students in the eight facilities (as presented in Ministry of Education 1990) is about 4,000, whereas there are currently about 5,000 students in the *Grandes Ecoles* and another 2,500 scholarship-holders abroad. This figure represents an average annual per-student cost of nearly 1,250,000 FCFA, including both recurrent costs and capital costs amortized over 10 years. Table VI-3 shows that the cost varies considerably from one establishment to another; the Mopti Veterinary Medicine School costs over 3 million FCFA per student per year, whereas the two Sikasso facilities exhibit per-student costs of less than 1 million. This compares to budgetary costs per student-year (recurrent only) of approximately 400,000 FCFA for the *Grandes Ecoles* and 600,000 for the Malian contribution to students with overseas scholarships (see Section III., above and Cuenin and Orivel 1988).

As Table VI-3 clearly shows, there is an inverse relationship between the size of enrollment and the cost per student; the Veterinary School (for which we will discuss the

detailed budget below, in part B.) and the Architecture and Urbanism Institute are by far the smallest in size, and have the smallest aggregate budget; the two establishments in Sikasso have the largest number of students. Since enrollments were presumably calculated by the Ministry in terms of estimated demand for graduates, there is probably little that can or should be done in terms of increasing enrollments in veterinary medicine or architecture and urbanism in order to reduce unit costs.

There are, however, a number of possible options that could significantly reduce both the capital and recurrent costs associated with the university without reducing the number of students in the system. The first option to consider is the possibility of reducing the overall number of university sites by combining two or more of the faculties/institutes into a single facility. This would allow faculties/institutes to share teaching facilities and allow the university to operate with fewer support staff, faculty, buildings, vehicles, libraries and laboratories, without substantial reduction in the level of educational resources available to students.

Preliminary calculations made by the team suggest that the cheapest way to create the university would be to concentrate all facilities in a single site; this, however, would violate the spirit of the Malian program, which is to use the university as a tool of regional development. As mentioned in Section V., one more modest option is to combine the Gao and Kayes technical institutes with the Ségou Institute; careful planning could probably bring the average cost down to close to the figure given for Ségou.

Table VI-3
Annual Cost Per Student

All costs are in thousands of FCFA

City	Fac./Inst.	Ave. Annual Budget	Number of Students	Cost Per Student Per Year	Bko/Admin. Annual Cost Per Student	Total Annual Cost Per Student
Kayes	TIA	616,151	500	1,232	75	1,307
Kayes	FSJE	581,381	500	1,163	75	1,238
Sikasso	SCI	623,979	690	904	75	979
Sikasso	TRA	857,433	1,000	857	75	932
Ségou	ISET	510,219	500	1,020	75	1,095
Mopti	VET	453,946	150	3,026	75	3,101
Tombouctou	FSH	577,175	500	1,154	75	1,229
Gao	ARC	475,412	200	2,377	75	2,452
TOTAL		4,695,696 *	4,040	1,162 (ave.)	75 (ave.)	1,237 (ave.)

* NOTE: This total does not include Bamako costs

Another option, to be discussed in more detail below in VI-4 is to eliminate or substantially reduce financial support to students. The scope for this is considerably less for the university than it is for the current system of *Grandes Ecoles* and overseas study, because in the university budget as presented in Table VI-1 scholarships represent only about 25% of total operating costs, as compared to nearly 70% in the current system. A third option is to make hard choices about which elements of the university are of highest priority, and seek to establish them first, postponing the others until the financial situation of the country (and manpower demand) justifies them. This is a strategy which has been outlined, without quantification, by the Ministry of Education (1990), and with which we agree completely. The next section explores some of the cost implications of such a phased approach.

Tables VI-4 and VI-5, reproduced on the following pages, summarize our detailed cost estimates.

2. Costs of high-priority establishments in the university

The thrust of the discussion in Section V. is that the priority areas for university attention in the near future are in the sciences and technology, most particularly focused on the rural sector. This suggests that the university establishments which should be implemented first are the Sikasso Faculty of Sciences, the Sikasso Institute of Rural Techniques, the Mopti Institute of Veterinary Medicine, and the Ségou Institute of Technical Education. These would not need to be established simultaneously; in some cases, a phased introduction might be desirable. For example, the Faculty of Sciences, as outlined in the Ministry of Education planning document (1990, Tome II), is to begin as a two-year preparatory cycle for the Institute of Veterinary Medicine, among other institutions; this could imply that the Faculty of Sciences could begin furnishing students to the Institute of Veterinary Medicine two years after its creation.

In Table VI-4 we present one possible ten-year program for the creation of the four establishments discussed above plus a Rectorate in Bamako. In year 0, the Rectorate, the Faculty of Sciences and the Technical Education Institute are created, followed in year 2 by the Institute of Veterinary Medicine, and by the Institute of Rural Techniques in year 4. By the end of the ten-year program, all establishments will be operating at full planned capacity, with 2,340 students enrolled. Table VI-5 gives the budget for one establishment, the Institute of Veterinary Medicine, in greater detail; the others have been calculated but are not shown here for reasons of brevity of presentation. Cost assumptions in these tables have been changed somewhat from those given in Table VI-1; for example, vehicle purchases per establishment have been reduced and equipment maintenance allowances increased, and schools do not reach full enrollments until the second, third or fourth year of operation depending on the length of their program of study.

Table VI-4
Estimated Ten-year Budget:
Rectorate and Four Schools

I. Recorat à Bamako

CATEGORY	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
Salaries	0	38,622	40,553	42,581	44,710	46,945	49,293	51,757	54,345	57,062	59,915	485,783	0
Fringe Benefits	0	11,836	12,412	13,018	13,654	14,321	15,023	15,759	16,532	17,343	18,195	148,092	0
Travel	0	17,994	17,154	17,217	17,283	17,756	17,829	17,905	17,986	18,070	18,159	177,353	0
Other	0	24,805	13,220	13,484	13,774	14,094	17,770	14,832	15,257	15,725	16,239	148,050	11,150
Equipment	39,374	162,425	17,350	17,350	17,350	17,350	87,100	17,350	17,350	17,350	17,350	161,500	225,625
Supplies	12,750	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	6,350	76,250	0
Construction	50,000	0	0	0	0	0	0	0	0	0	0	0	50,000
TOTAL	102,124	262,032	107,039	110,000	113,121	116,816	193,364	123,953	127,819	131,900	136,209	1,237,602	286,775

II. Sciences à Sikasso

CATEGORY	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
Salaries	0	57,792	111,995	117,595	123,475	129,648	136,131	142,937	150,084	157,588	165,468	1,292,713	0
Fringe Benefits	0	18,361	36,607	38,422	40,328	42,330	44,431	46,638	48,955	51,387	53,942	421,399	0
Travel	0	13,029	13,089	13,152	13,218	13,892	13,965	14,042	14,122	14,207	14,295	137,012	0
Other	5,120	14,805	11,660	12,188	12,769	17,408	15,485	14,883	15,734	16,669	17,698	149,420	5,000
Equipment	92,763	68,313	11,501	21,176	17,739	83,926	16,364	19,801	16,364	15,676	14,476	138,287	239,815
Supplies	27,050	27,050	27,050	27,050	27,050	27,050	27,050	27,050	27,050	27,050	27,050	421,750	0
Construction	329,250	0	0	0	0	0	0	0	0	0	0	0	329,250
Bourses	0	82,800	165,600	165,600	182,160	182,160	182,160	182,160	200,376	220,414	220,414	1,783,843	0
TOTAL	454,183	282,150	377,502	395,183	416,739	496,414	435,587	447,512	472,685	502,991	513,343	4,220,224	574,065
STUDENTS	0	345	690										
COST/STUDENT	--	818	547	573	604	719	631	649	685	729	744		

Table VI-4 (continued)

III. Techniques Rurales à Sikasso

CATEGORY	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
Salaries	0	0	0	0	0	62,972	108,751	153,878	203,247	213,409	224,079	966,335	0
Fringe Benefits	0	0	0	0	0	19,809	35,378	50,719	67,507	70,867	74,395	318,674	0
Travel	0	0	0	0	0	15,111	15,231	15,357	15,489	16,195	16,341	93,725	0
Other	0	0	0	0	12,775	18,655	9,020	9,284	9,574	9,894	15,620	77,572	7,250
Equipment	0	0	0	0	77,263	165,313	17,813	18,501	31,926	28,489	102,176	195,230	246,252
Supplies	0	0	0	0	107,250	27,050	27,050	27,050	27,050	27,050	27,050	269,550	0
Construction	0	0	0	0	309,375	0	0	0	0	0	0	0	309,375
Bourses	0	0	0	0	0	60,000	120,000	180,000	264,000	264,000	264,000	1,152,000	290,400
TOTAL	0	0	0	0	506,663	368,910	333,243	454,789	618,793	629,904	723,662	3,073,087	853,277
STUDENTS	0	0	0	0	0	250	500	750	1,000	1,000	1,000		
COST/STUDENT	0	0	0	0	--	1,476	666	606	619	630	724		

Table VI-4 (continued)

IV. Ecole Vétérinaire de Mopti

CATEGORY	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
Salaries	0	0	0	50,772	72,053	90,540	95,066	99,820	104,811	110,051	115,554	738,667	0
Fringe Benefits	0	0	0	15,745	22,933	29,160	30,603	32,118	33,709	35,380	37,134	236,782	0
Travel	0	0	0	12,621	12,681	12,744	12,810	13,384	13,457	13,533	13,614	104,843	0
Other	0	0	8,925	23,071	8,760	9,058	9,314	9,668	20,166	10,406	10,797	79,697	30,470
Equipment	0	0	77,263	128,188	14,438	15,126	22,739	23,427	133,426	20,489	19,801	136,708	318,190
Supplies	0	0	63,750	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	210,150	0
Construction	0	0	453,750	0	0	0	0	0	0	0	0	0	453,750
Bourses	0	0	0	8,400	18,000	27,600	39,600	39,600	39,600	43,560	43,560	259,920	0
TOTAL	0	0	603,668	257,097	167,166	202,528	228,433	236,317	363,469	251,720	258,759	1,766,767	802,410
STUDENTS	0	0	0	35	75	115	150	150	150	150	150		
COST/STUDENT	--	--	--	7,346	2,229	1,761	1,523	1,575	2,423	1,678	1,725		

Table VI-4 (continued)

V. Enseignement Technique à Ségou

CATEGORY	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
Salaries	0	51,522	77,723	81,609	85,690	89,974	94,473	99,197	104,156	109,364	114,832	908,541	0
Fringe Benefits	0	16,002	24,874	26,103	27,393	28,748	30,170	31,664	33,232	34,879	36,607	289,672	0
Travel	0	11,613	11,673	11,736	11,802	12,275	12,348	12,424	12,505	12,589	12,678	121,643	0
Other	11,425	21,403	10,280	10,544	10,834	11,154	17,768	11,892	12,317	12,785	13,299	123,650	6,775
Equipment	49,763	112,023	11,773	12,461	18,084	18,772	95,946	16,509	15,821	18,772	18,084	143,119	243,690
Supplies	101,250	28,250	28,250	28,250	28,250	28,250	28,250	28,250	28,250	28,250	28,250	282,500	0
Construction	295,625	0	0	0	0	0	0	0	0	0	0	0	295,625
Bourses	0	60,000	120,000	120,000	132,000	132,000	132,000	132,000	145,200	159,720	159,720	1,292,640	0
TOTAL	458,063	300,812	284,574	290,703	314,053	321,172	410,955	331,936	351,481	376,358	383,471	3,277,488	546,090
STUDENTS	0	250	500	500	500	500	500	500	500	500	500		
COST/STUDENT	--	1,203	569	581	628	642	822	664	703	753	767		

Table VI-4 (continued)

TOTAL: RECTORAT + FOUR SCHOOLS

CATEGORY	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10	
												RECURRENT	CAPITAL
Salaries	0	147,936	230,271	292,557	325,927	420,079	483,713	547,589	616,643	647,475	679,849	4,392,040	0
Fringe Benefits	0	46,198	73,893	93,288	104,308	134,368	155,605	176,897	199,934	209,856	200,273	1,414,620	0
Travel	0	42,636	41,916	54,726	54,984	71,778	72,183	73,112	73,559	74,594	75,087	634,575	0
Other	16,545	61,013	44,085	59,287	58,913	70,369	69,358	60,559	73,049	65,478	73,653	578,389	60,645
Equipment	181,900	342,761	117,887	179,176	144,874	300,487	239,963	95,589	214,888	100,777	171,888	774,844	1,273,572
Supplies	141,050	61,650	125,400	79,950	187,200	107,000	107,000	107,000	107,000	107,000	107,000	1,260,200	0
Construction	674,875	0	453,750	0	309,375	0	0	0	0	0	0	0	1,438,000
Bourses	0	142,800	285,600	294,000	332,160	401,760	473,760	533,760	649,176	687,694	687,694	4,488,403	0
TOTAL	1,014,370	844,993	1,372,803	1,052,983	1,517,742	1,505,841	1,601,582	1,594,506	1,934,248	1,892,874	2,015,443	13,543,070	2,772,217
STUDENTS	0	595	1,190	1,225	1,265	1,555	1,840	2,090	2,340	2,340	2,340		
COST/STUDENT	--	1,420	1,154	860	1,200	968	870	763	827	809	861		

Table VI-5
Detailed Budget: Veterinary School at Mopti

CATEGORY	No. MOS	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
SALARIES														
Faculty	30 12	0	27,000	42,525	59,535	62,512	65,637	68,919	72,365	75,983	79,783	83,772	638,031	0
Administration	5 12	0	2,250	4,725	4,961	5,209	5,470	5,743	6,030	6,332	6,649	6,981	54,351	0
Clerical	10 12	0	2,100	4,410	4,631	4,862	5,105	5,360	5,628	5,910	6,205	6,516	50,727	0
Support	15 12	0	9,000	9,450	9,923	10,419	10,940	11,487	12,061	12,664	13,297	13,962	113,201	0
Temporary	10 6	0	1,500	1,575	1,654	1,736	1,823	1,914	2,010	2,111	2,216	2,327	18,867	0
Consultants	2 6	0	1,200	1,260	1,323	1,389	1,459	1,532	1,608	1,689	1,773	1,862	15,093	0
Int'l Experts	2 3	0	4,122	4,328	4,545	4,772	5,010	5,261	5,524	5,800	6,090	6,395	51,846	0
Visiting Faculty	2 12	0	3,600	3,780	3,969	4,167	4,376	4,595	4,824	5,066	5,319	5,585	45,280	0
TOTAL SALARIES		0	50,772	72,053	90,540	95,066	99,820	104,811	110,051	115,554	121,332	127,398	987,397	0
FRINGE and BENEFITS														
INPS TAXES														
Permanent staff	12	0	7,424	11,244	14,545	15,272	16,036	16,838	17,680	18,564	19,492	20,466	157,561	0
Temporary staff	12	0	1,159	1,217	1,278	1,342	1,409	1,479	1,553	1,631	1,713	1,798	14,580	0
PAYROLL TAXES														
Permanent staff	12	0	3,026	4,583	5,929	6,225	6,536	6,863	7,206	7,567	7,945	8,342	64,223	0
Temporary staff	12	0	473	496	521	547	574	603	633	665	698	733	5,943	0
VACATIONS	1	0	3,363	5,093	6,587	6,917	7,263	7,626	8,007	8,407	8,828	9,269	71,359	0
BONUSES	2	0	300	300	300	300	300	300	300	300	300	300	3,000	0
TOTAL BENEFITS		0	15,745	22,933	29,160	30,603	32,118	33,709	35,380	37,134	38,975	40,909	316,667	0

Table VI-5 (continued)
Detailed Budget: Veterinary School at Mopti

CATEGORY	No. MOS	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
TRAVEL AND RELOCATION EXPENSES														
Incidental	12	0	300	300	300	300	300	300	300	300	300	300	3,000	0
Temp. Housing	12	0	600	600	600	600	600	600	600	600	600	600	6,000	0
Transportation	12	0	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	18,000	0
Fuel	12	0	5,040	5,040	5,040	5,040	5,544	5,544	5,544	5,544	5,544	5,544	53,424	0
Per diem in Mali	12	0	1,200	1,260	1,323	1,389	1,459	1,532	1,608	1,689	1,773	1,862	15,093	0
Personal Freight	12	0	600	600	600	600	600	600	600	600	600	600	6,000	0
Int'l Travel 2	1	0	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	1,926	19,260	0
Int'l Per Diem 2 14 da		0	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	11,550	0
TOTAL TRAVEL		0	12,621	12,681	12,744	12,810	13,384	13,457	13,533	13,614	13,698	13,787	132,327	0
OTHER DIRECT COSTS														
Equip. Shipping 5t	1	5,000	500	500	500	500	500	5,000	500	500	500	500	0	14,500
Vehicle Insurance 7	1	0	420	420	420	420	420	420	420	420	420	420	4,200	0
Taxes and duties 5%		3,863	5,748	60	94	60	94	5,741	94	60	94	60	0	15,970
Legal/audit fees	1 ye	0	100	100	100	100	100	100	100	100	100	100	1,000	0
Communications	12	0	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	30,000	0
Recruitment	12	0	120	120	120	120	120	120	120	120	120	120	1,200	0
Bldg. Maintenance	12	0	2,400	2,640	2,904	3,194	3,514	3,865	4,252	4,677	5,145	5,659	38,250	0
Bank fees	12	0	120	120	120	120	120	120	120	120	120	120	1,200	0
Utilities	12	0	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	18,000	0
TOTAL OTHER		8,925	23,071	8,760	9,058	9,314	9,668	20,166	10,406	10,797	11,299	11,779	93,850	30,470

Table VI-5 (continued)
Detailed Budget: Veterinary School at Mopti

CATEGORY	No. MOS	YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	TOTAL COSTS YEARS 0-10 RECURRENT CAPITAL	
EQUIPMENT														
Elec. Generator	2 60	4,125	0	0	0	0	0	4,125	0	0	0	0	0	8,250
Laboratories	120	27,500	0	0	0	0	0	0	0	0	0	0	0	27,500
Comp + Softw.	30 60	30,000	0	0	0	0	0	30,000	0	0	0	0	0	60,000
Technical	60	5,500	0	0	0	0	0	5,500	0	0	0	0	0	11,000
Audio Visual	48	688	0	0	688	0	688	0	688	0	688	0	0	3,440
Photocopiers	4 60	8,250	0	0	0	0	0	8,250	0	0	0	0	0	16,500
Other	12	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	0	12,000
VEHICLES														
4 X 4	4 60	0	25,000	0	0	0	0	25,000	0	0	0	0	0	50,000
404-type Bachee	4 60	0	15,000	0	0	0	0	15,000	0	0	0	0	0	30,000
Truck	1 120	0	30,000	0	0	0	0	0	0	0	0	0	0	30,000
Buses	2 60	0	18,750	0	0	0	0	18,750	0	0	0	0	0	37,500
OFFICE & CLASS FURNITURE														
Office	120	0	15,000	0	0	0	0	5,000	0	0	0	0	0	20,000
Classroom	120	0	5,000	0	0	0	0	1,000	0	0	0	0	0	6,000
Library	120	0	5,000	0	0	0	0	1,000	0	0	0	0	0	6,000
EQUIP. RENT	6	0	500	500	500	500	500	500	500	500	500	500	5,000	0
EQUIP. MAINT.	1	0	12,738	12,738	12,738	21,039	21,039	18,101	18,101	18,101	21,039	21,039	176,674	0
TOTAL EQUIP.		77,263	128,188	14,438	15,126	22,739	23,427	133,426	20,489	19,801	23,427	22,739	181,674	318,190
SUPPLIES														
Lab & General	12 0	0	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	24,000	0
Office	12 0	0	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	12,000	0
Duplication	12 0	0	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	12,000	0
Books	1 62,500	0	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	6,250	62,500	0
Prof. Journals	1 1,250	0	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	12,500	0
Misc.	12 0	0	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	60,000	0
TOTAL SUPPLIES		63,750	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	183,000	0

Table VI-5 (continued)
Detailed Budget: Veterinary School at Mopti

CATEGORY	No. MOS												TOTAL COSTS YEARS 0-10 RECURRENT		
		YEAR 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10			
CONSTRUCTION		453,750	0	0	0	0	0	0	0	0	0	0	0	0	453,750
STUDENT BOURSES		0	8,400	18,000	27,600	39,600	39,600	39,600	43,560	43,560	43,560	43,560	347,040	0	
Salaries		0	50,772	72,053	90,540	95,066	99,820	104,811	110,051	115,554	121,332	127,398	987,397	0	
Fringe Benefits		0	15,745	22,933	29,160	30,603	32,118	33,709	35,380	37,134	38,975	40,909	316,667	0	
Travel		0	12,621	12,681	12,744	12,810	13,384	13,457	13,533	13,614	13,698	13,787	132,327	0	
Other		8,925	23,071	8,760	9,058	9,314	9,668	20,166	10,406	10,797	11,299	11,779	93,850	30,470	
Equipment		77,263	128,188	14,438	15,126	22,739	23,427	133,426	20,489	19,801	23,427	22,739	181,674	318,190	
Supplies		63,750	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	18,300	183,000	0	
Construction		453,750	0	0	0	0	0	0	0	0	0	0	0	453,750	
Bourses		0	8,400	18,000	27,600	39,600	39,600	39,600	43,560	43,560	43,560	43,560	347,040	0	
GRAND TOTAL		603,688	257,097	167,166	202,528	228,433	236,317	363,469	251,720	258,759	270,591	278,472	2,241,954	802,410	
STUDENTS		0	35	75	115	150	150	150	150	150	150	150			
COST/STUDENT		--	7,346	2,229	1,761	1,523	1,575	2,423	1,678	1,725	1,804	1,856			

Total capital costs are about 2.8 billion FCFA, or slightly more than U.S. \$10 million, amounting to approximately half of the capital costs for the entire university as shown in Table VI-2. Total operating costs average less than 1.4 billion FCFA per year, or about U.S. \$5 million, approximately the same amount as the current Malian budgetary contribution to overseas *boursiers*. The cost per student, while still greater than that of the current system, is well below one million FCFA per year excluding construction costs.

This is a partial, although still ambitious, program. It creates the core of a university dedicated to the needs of the Malian economy for the foreseeable future: science and technology for rural development. It does so without neglecting the important capital equipment, supplies and other direct costs budgetary lines which are practically absent in the present budgets of the *Grandes Ecoles*. (As Cuenin and Orivel show, in recent years only about 2 per cent of the *Grandes Ecoles*' budget has been available for these items; the rest goes for salaries and scholarships.) Table VI-6 indicates that approximately 30% of the ten-year budget for the option depicted in Table VI-4 (excluding construction costs) is available for non-salary, non-scholarship items. It should be remembered that this breakdown assumes that all students at the university will receive a scholarship; if they do not, costs would be lower and/or more funds would be available for operating costs.

Table VI-6
Percentages of ten-year budget
by major expenditure category
(excluding construction):
Option from Table VI-4

<u>CATEGORY</u>		}	
Salaries	29.52%	}	> 69.19%
Fringe Benefits	9.51%		
Scholarships	30.17%		

Travel	4.27%	}	> 30.81%
Other Direct	4.30%		
Equipment	13.77%		
Supplies	8.47%		

TOTAL			100.00%

This program is of an appropriate scale and scope. Its capital requirements are those of a modest foreign-assistance project, and its recurrent costs are of an order of magnitude which Mali could handle with judicious resource allocation policies. We consider that such a program is an appropriate starting point for serious discussion and a more detailed feasibility study under Phase I-B.

3. Sources of revenues for the university

It is likely that the *Grandes Ecoles* were started with similar plans for adequate financing of non-salary costs in mind, but the budgetary stringency of the past fifteen years has made it impossible to equip and maintain them satisfactorily. This must not happen to the university as well. The goal of the university should be to establish a sufficient level of outside sources of income to attain some degree of independence from the central government budget. This may, however, be difficult to achieve. There will probably have to be a reallocation of existing the government higher-education budget towards the university. Most plans under consideration call for the transfer of parts of the curriculum from the *Grandes Ecoles* to faculties or institutes; this should mean that some proportion of their budget would be available to fund the university. In addition, over 1 billion FCFA are currently spent to support students abroad; a savings will be available in this category insofar as the University reduces the need for some of the overseas studies.

There are several alternative sources of financing which should be investigated. One source, probably modest at first, could be the provision of services to the community. A number of international conferences are held annually in Mali; the university could, if provided adequate facilities, be an appealing venue. The university could also provide such services as data processing, translation, or business administrative support. University facilities could also be used for cultural events, such as concerts and theatre. In Mali, there are a large number of NGO's, bilateral agencies, and international organizations involved in implementing rural development projects. They also represent a potential source of income in such areas as research, program evaluation, and project design. University expertise and facilities could be provided on a contract basis to conduct such development-related assistance.

The university could also provide courses for non-students in the community. Courses in the areas of business management, accounting, computer science, administration, and languages could be taught by advanced students, or by faculty as a means of supplementing their salary. Fees should include charges to cover university overhead as well.

Among the other financial resources that should be investigated:

- Debt-for-education swaps with international lending institutions, which could be used as the source of endowment funds.
- PL480 reflows from United States sponsored food gifts.
- Cooperative research programs with universities in developed countries.

4. Financing of students

Perhaps one of the more difficult issues to resolve is the question of student finances. At present, students at the *Grandes Ecoles* are allotted a *bourse* of 15,000 FCFA per month, and students pay no tuition or fees. This was justifiable in the past, when students graduating from the *Grandes Ecoles* were guaranteed entry into the civil service; they essentially became salaried government employees upon entry into the *Grandes Ecoles*. For the planned University of Mali (and, in fact, for the *Grandes Ecoles* at present), there is no such justification. It has been suggested that this policy be modified or discontinued, and that students and their families begin to shoulder more of the burden of higher education costs. Significant numbers of families already pay for their children to study at private secondary schools; it is highly likely that they would be willing to contribute to the cost of study at the university as well.

On the other hand, requiring family participation in educational financing has obvious equity implications. If students are required to contribute a substantial share of the costs of their education, a great number of qualified students might be excluded because of their inability to pay (or because they are women; see Appendix F). If this occurs, the university will be an elitist institution where wealth and gender are more important criteria for access than academic performance.

Financial aid targeted to qualified, needy students may be a way to resolve this problem, but it may be difficult, if not impossible, to implement. In Mali, it would be problematic to identify such students. At present, there are few, if any, standard verifiable means of documenting family financial condition or income upon which financial aid can be based. Unless some such system is created, it appears that there can be no equitable or reliable way to establish need.

There has also been some discussion in Mali regarding educational loans from Malian financial institutions. Although this is fairly common in the United States, it is somewhat unrealistic to expect that it will be possible in the near future in Mali. Even if loan criteria could be established, it appears that the private banking system in Mali is averse to making small, high risk, long-term, unsecured loans. The banks' strong skepticism was confirmed on a number of occasions in conversations with both public and private sector people. Another major difficulty is the substantial number of unemployed graduates of the *Grandes Ecoles*; they have not gone unnoticed by the parent of students currently in the system. Many families are becoming increasingly skeptical of the value of higher education. If scholarships are discontinued and fees charged, parents will certainly be less inclined to provide an even greater level of assistance than they currently must sustain.

One solution to the recurrent cost of scholarships could be to establish a permanent endowment in a private bank, financed by a debt-for-education swap, by commodity-aid counterpart funds or by capital contributions from sympathetic donors. The interest paid on such an endowment could be used to pay student scholarships and erase the need for an annual budget allocation. Table VI-7 estimates the requisite size of an endowment based on an interest rate of 10% and a university system with 4,040 students (the entire system) and with 2,340 students (the system outlined in Section B., above). It may be possible to make arrangements with a private bank to manage the fund and issue payments to students in return for an adequate margin. There are some commercial debts (such as that held by Barclay's Bank) which could serve as the nucleus of a debt-for-education swap if the financial complexities are resolved -- the fact that the CFA is not a completely inconvertible currency implies that the financial leverage associated with such swaps is not very great.

The Ministry may also consider making a number of policy changes regarding the scholarship system. The payment of scholarships could also be tied to academic performance, possibly with higher scholarships equated with better academic performance, or with loss of scholarship for the year a student "redoubles." In addition, some form of work-study program or community service for a limited number of hours each week could be tied into the scholarship program; the latter would not, however, contribute to resolving the finance issue.

5. Conclusion

It is evident that much work needs to be done by the Ministry of Education, in collaboration with the Ministry of Finance and prospective donors, before the financing of a new university will be possible. The program outlined above should provide an adequate basis to begin serious discussions of financial feasibility.

Table VI-7
Size of endowment required to finance all scholarships

	Entire System	Ten-year Program
I. Annual Bourse Calculations		
Number of students in the University	4,040	2,340
Monthly Bourse in FCFA	20,000	20,000
Number of months paid per year	12	12
Total Annual Bourse Costs (FCFA '000)	969,600	561,600
II. Endowment Calculation		
Annual Income Required (FCFA '000)	969,600	561,600
Annual % Yield Assumed:	10.00%	10.00%
Required Value of Endowment (FCFA '000)	9,696,000	5,616,000
Exchange Rate Used (FCFA per US \$)	275	275
Dollar Equivalent of Income (US \$ '000)	\$ 3,526	\$ 2,042
Dollar Equivalent of Endowment "	\$35,258	\$20,422

I. SALARIES

FACULTY

This line is based on the number of faculty indicated by the Ministry of Education's Plan for the University of Mali (Ministry of Education 1990). For some of the schools not included in the plan, an estimate was made. A base salary of 150,000 FCFA per month was used, based on a 12-month year, with 5% annual increases.

ADMINISTRATIVE STAFF

This calculation is for senior administrative staff and is based on Ministry-provided data on required numbers and salary levels.

CLERICAL STAFF

This line covers secretarial and other administrative staff, and was also based on Ministry data.

SUPPORT STAFF

This line includes such employees as guards, drivers, workers, maintenance, etc.

TEMPORARY EMPLOYEES

It is assumed that each regional campus will require the temporary services of some clerical and support staff (drivers, translators, etc.) for a period of six months per year.

CONSULTANTS

It is assumed that each of the facilities will engage the services of in-country consultants for such functions as contract supervision, curriculum planning, management assessment, etc.

INTERNATIONAL CONSULTANTS

It is assumed that 2 international consultants will be required for each of the regional campuses, as well as the Bamako facility. It is assumed that each would be engaged for a period of 3 months and compensated at a rate of approximately \$2,500 per month (where \$1.00 = 275 FCFA).

VISITING FACULTY

It is assumed that 2 persons per year from the Malian business and government sector will be recruited each year to teach classes. The pay scale used is identical to that of permanent staff.

II. FRINGE BENEFITS**EMPLOYER CONTRIBUTION TO INPS TAXES**

This tax is required by law and represents payments to a fund that resembles the "social security" system in the US. The tax is levied at a rate of 18.4% of total salary.

PAYROLL TAXES

This tax is required by law and is paid by the employer at a rate of 7.5% of total payroll. The salaries of international consultants are not included in this calculation.

VACATIONS FOR PERMANENT EMPLOYEES

Permanent employees receive one month of annual leave per year. If an employee chooses not to take a vacation, he/she is paid an extra month's salary. This calculation reflects an extra month's salary for all permanent employees.

PERFORMANCE AWARDS

This line is for set aside funds to reward outstanding performance by faculty and staff. It is assumed that 2 awards of 150,000 FCFA will be awarded each year at each facility.

III. TRAVEL AND RELOCATION EXPENSES**INCIDENTAL TRAVEL EXPENSES**

This line covers incidental expenses related to travel such as vaccinations, visas, taxis, airport taxes, etc. The differences in rates among the various facilities reflects the varying distance from the capital. The amount calculated for Bamako reflects the fact that the administrative staff in Bamako will most probably travel a great deal.

TEMPORARY HOUSING

This line assumes that for visiting consultants and faculty, temporary housing will be provided. The differing amounts represent the assumed difference in the cost of living at the various campus sites.

TRANSPORTATION

This line covers in-country travel by University faculty and staff and includes air and river travel. The differing amounts budgeted for the 8 regional campuses is based on their distances from Bamako and the transportation infrastructure available. A higher amount has been budgeted for the Bamako office due to a higher cost of living and the assumption that the Bamako staff will travel more to the regional campuses.

FUEL

This line covers the purchase of fuel for vehicle operation and for electricity generation where applicable. The differing rates are a function of the travel distance to Bamako and the presence or absence of municipal sources of electricity. The first entry is reflected in liters per month required and based on a standard cost per liter of gasoil of 210 FCFA.

IN-COUNTRY PER DIEMS FOR TRAVEL

Rough estimate for in country per diem

PERSONAL FREIGHT

This line covers the cost of relocation of the household goods of faculty and staff from one campus location to another. It is based on rough cost estimates.

INTERNATIONAL TRAVEL

This assumes 2 round trip international air tickets per year for each campus based on an average unit cost of \$3,000 at an exchange rate of 275 FCFA to one U.S. dollar. Four tickets have been allocated for international travel at the Bamako facility.

INTERNATIONAL PER DIEMS

This calculation is based on the travel described in the previous line and provides per diem for each international trip at a rate of \$150 per day for a period of one week at an exchange rate of 275 FCFA per US dollar.

IV. OTHER DIRECT COSTS**AIR FREIGHT**

This line is intended to provide transportation funds for material purchased in other countries, such as computers, equipment, etc.

TAXES AND DUTIES

This calculation is based on two taxes levied on automobiles. The first tax is levied on the purchase of automobiles, and is based on 100% of the purchase price. The second tax included in this category is for utility vehicles and is charged at a rate of 5% (PCP tax).

LEGAL AND AUDIT FEES

This line is include for charges related to contracting, legal consultation and an annual audit by an outside firm. Each of the eight campuses are allocated 100,000 while the administrative center in Bamako, which is presumed to have a greater responsibility for contracting, etc is allocated 400,000 FCFA.

TELEPHONE/TELEX/FAX/POSTAGE

Differing amounts are set for each of the regional campuses based on distance from the capital. The Bamako administrative center, which will more likely have greater contact with international institutions will need a greater level of funding.

ADVERTISING AND RECRUITING

Each regional campus has been allocated 25,000 FCFA per month for advertising and recruiting costs associated with student recruiting, while the Bamako administrative center has a greater level of funding because it is assumed that the recruitment of consultants and professors will take place at that level.

BUILDING MAINTENANCE

This line is based on Ministry estimates.

BANK FEES

Each of the regional campuses is allocated 10,000 FCFA per month for charges on local bank accounts, while the Bamako administrative center is allocated a greater level due to the expenses resulting from such activities as international transfers.

V. EQUIPMENT**EQUIPMENT**

This line includes equipment such as electric generators, computers, audio-visual, maintenance, copiers, etc.

VEHICLES

This line includes the purchase of vehicles including 4 wheel drive vehicles, light utility vehicles (404's), passenger cars (for the Bamako administrative center), trucks, and buses. It is assumed that each faculty will require vehicles based on the nature of the institution, the distance from the capital, and the absence or presence of a road infrastructure. It also includes an additional 25% for each vehicle for the purchase of spare parts.

OFFICE AND CLASSROOM FURNITURE

This line includes calculations for office, library, and classroom furnishings.

EQUIPMENT RENTALS

This line includes funds for the short term rental of specialized equipment.

VEHICLE AND EQUIPMENT REPAIR

This calculation includes funds for the repair and servicing of all project vehicles and equipment. Repair and service costs are assumed to rise with the age of the equipment.

VI. SUPPLIES**GENERAL SUPPLIES**

This line covers all general use supplies related to in-class, laboratory, machine shop, and studio supplies.

OFFICE SUPPLIES

This calculation is for all other general supplies related to administration.

PRINTING AND DUPLICATION

This line covers all supplies or services related to printing or photocopying.

BOOKS

This line covers the purchase of books for facility libraries. A large amount is allocated initially to create the library, with annual budgets for expansion and updating of collections.

JOURNAL SUBSCRIPTIONS

This line covers the purchase of journal, newspaper and magazine subscriptions for the various facility libraries.

MISC. SUPPLIES

This line was intended for additional supplies related to janitorial, maintenance, etc.

VII. CONSTRUCTION**CONSTRUCTION**

This line covers the construction of classrooms, administration facilities, faculty housing, sports facilities, etc. and is based on a construction rate of \$500.00 per square meter at an exchange rate of 275 FCFA/\$1.00. The number of square meters constructed comes from Ministry estimates.

VIII. STUDENT SUPPORT***BOURSES***

This line is for student scholarships paid 12 months per year at a rate of 20,000 FCFA per month (with periodic increases during the ten-year budget period). It assumes that all students will receive scholarships.

VII. Toward an Overall Plan

The principal objective of Phase I-B, the next phase of this study, is to identify and prepare a detailed project, including specific investment and recurrent costs, for the establishment of Mali's national university. As stipulated by the African Development Bank, the Phase I-B project document will treat six principal subjects: the coordination of university, research and extension activities and organizations; the university's teaching and research programs, with special attention to the pedagogical approach, program organization and the relationship to research and extension; the conditions of student recruitment, evaluation and degree equivalency; faculty recruitment from among Malians and foreign nationals; project management and execution; and, the physical plant technical studies.

In addition, several recommendations arise from the work during Phase I-A. The incorporation of these recommendations into the next phase of project preparation could improve the quality of the Phase II detailed project document and lead to the more effective establishment of the national university.

First, the Government of Mali should identify and select key national educators who have the proven commitment and who will give Malian leadership to the establishment of the national university. These individuals should play a central role in preparing the detailed project document. If possible, selected members of the *Grandes Ecoles* faculty should also be identified to deal with a range of pedagogical issues, including the preparation of the curriculum.

Second, these Malian educational leaders should meet with the consultant team for Phase I-B to specify the terms of reference for this phase and to prepare the calendar of activities for completing the project document. Given the specific and separate steps required for Phase I-B, it may be useful to prepare the project document through a series of discrete phases over a period of time.

Third, two additional analyses would be useful: 1) a survey of national candidates for faculty positions; and 2) an examination of innovative approaches to meeting the university's textbook and library needs through the supply of conventional materials and through electronic networks.

APPENDIX A

List of Team Members

A. In Mali

Ms. Koryoe Anim	Central State University
Dr. Paul Beckett	University of Wisconsin
Dr. James Bingen	Michigan State University
Ms. Barbara Hoffman	Indiana University
Ms. Hazel Williams Howard	Central State University
Dr. James Riordan	MUCIA
Dr. James Scoville	University of Minnesota
Mr. Michael Short	Indiana University
Ms. Aminata Soumaré	University of Illinois
Ms. Victoria Wise	University of Minnesota

B. Home Office

Dr. Peter Bloch	University of Wisconsin
Ms. Mary Woodward	University of Wisconsin
Mr. Rick Ferris	University of Wisconsin

Note: The final report was assembled and written from the individual contributions of the team members by a committee composed of Paul Beckett, James Bingen, and Peter Bloch.

FICHE TECHNIQUE N° 5

INTERPRETATION DES TERMES DE REFERENCE POUR LA PHASE I-A

Les Termes de Référence suggèrent les travaux suivants pour la Phase I-A:

1. Résumer la situation globale de l'éducation malienne, et en identifier les atouts et les implications pour l'avenir de l'enseignement supérieur;
2. Analyser le cadre régional et national dans lequel s'insérera l'Université du Mali. Cette tâche doit se faire par l'examen des politiques et des perspectives du développement régional, en visitant les régions prévues pour l'installation des unités de l'Université et en consultant les documents pertinents. Cette analyse a pour but l'évaluation de la contribution possible de l'Université:
 - a. au système éducatif de chaque région;
 - b. à la formation des cadres de chaque région;
 - c. à la recherche, aussi bien fondamentale qu'appliquée aux problèmes régionaux;
 - d. aux activités économiques, sociales, et culturelles de chaque région -- le Mali étant un pays de diversité et de capital historique particulièrement riches.
3. Projeter les besoins en main d'oeuvre de haute qualification de l'économie et la société du Mali en fonction des politiques et les potentialités de développement nationale et régionale. Dans ce cadre il faudra nécessairement souligner la contribution indispensable des femmes aussi bien que celle des hommes.
4. Etablir la disponibilité actuelle et projetée de la main d'oeuvre (masculine et féminine) en analysant les études déjà faites de la main d'oeuvre et les capacités de formation des structures existantes de l'enseignement supérieur, y compris l'extérieur. Il sera nécessaire aussi de mener des études des sortants des grandes écoles et des diplômés revenus de l'étranger pour comprendre non seulement les emplois que ces anciens élèves ont pu trouver mais également leurs compétences spécifiques. Cette démarche permettra des recommandations pour l'utilisation possible des diplômés disponibles pour les fins du développement du Mali.
5. Examiner la situation budgétaire du Mali pour comprendre les possibilités financières pour la création et l'opération de l'Université du Mali. Cette tâche doit évaluer les potentialités d'une autonomie financière de l'Université, donc des sources de financement indépendantes du budget de l'Etat.
6. Estimer, en fonction des tâches précédentes, et notamment les n° 2. et 3., les besoins en éducation post-secondaire et en recherche par catégorie pendant les 10 à 15 ans à venir.

7. Evaluer les propositions du Gouvernement du Mali, y compris la conception de l'Université du Mali telle qu'elle est précisée dans le Décret n° 91 du 29 mars 1988 portant organisation et modalités de fonctionnement de l'Université du Mali. Cette évaluation doit prendre en considération les conclusions tirées des travaux cités ci-dessus, aussi bien qu'une estimation des coûts d'une telle entreprise et une analyse des coûts et les avantages (sociaux aussi bien que financiers) de la décentralisation.
8. Proposer plusieurs options raisonnées pour la conception et la concrétisation de l'Université pour faire face aux besoins de développement économique, social et culturel des régions et de la nation du Mali. Parmi ces options pourraient figurer:
 - a. l'incorporation des grandes écoles existantes dans l'Université, en les restructurant et réaménageant si nécessaire;
 - b. la création d'une Faculté ou d'un Institut Supérieur de Développement Rural, des Sciences Agronomiques et de l'Elevage, basé sur l'Institut Polytechnique Rural de Katibougou, dans la perspective d'un Centre d'Excellence pour la région sahélienne;
 - c. la création d'un campus universitaire à orientation scientifique pour la formation et la recherche, dans une des capitales régionales (Ségou, Sikasso ou Kayes);
 - d. la création de plusieurs centres universitaires régionaux qui se concentreraient plutôt aux efforts de recherche, de vulgarisation et de services aux populations rurales qu'à l'enseignement;
 - e. la création d'une Université de style américaine, qui insiste aussi bien sur une formation polyvalente des étudiants que sur une formation étroite et spécialisée -- ceci dans le but d'accroître la souplesse des diplômés face aux transformations imprévisibles dans la structure de l'emploi au cours du développement.

La présentation des options pour examen au Gouvernement doivent comprendre des considérations financières (estimations des coûts de construction et des charges récurrentes) aussi bien que les grandes lignes des implications pour l'organisation institutionnelle de l'enseignement supérieur. A partir d'un rapport sommaire et une présentation orale au Gouvernement, ce dernier et la BAD doivent approuver les recommandations avant la rédaction d'un rapport final.

9. Le rapport final soumis au Gouvernement et à la BAD au terme de la Phase I-A doit inclure les résultats des travaux sus-cités, y compris les conclusions et les recommandations constituant un plan directeur pour le développement de l'Université.

INTERPRETATION DES TERMES DE REFERENCE POUR LA PHASE I-B

Les Termes de Référence suggèrent les travaux suivants pour la Phase I-B, en supposant un accord sur un projet défini dans la Phase I-A:

1. Préparer un plan détaillé du projet retenu, qui comprendra:
 - a. la définition claire des composantes du projet;
 - b. la précision des programmes d'enseignement, de recherche et de vulgarisation pour chaque élément de l'Université à créer;
 - c. la concrétisation de l'approche pédagogique, l'organisation et la structure de la formation, la recherche et la vulgarisation;
 - d. la détermination des conditions de recrutement et d'orientation, le système d'évaluation des connaissances et la nature des diplômes à décerner;
 - e. l'évaluation des besoins en personnel d'enseignement, de recherche, de vulgarisation et d'administration, et la proposition de solutions pour satisfaire à ces besoins (y compris l'assistance technique);
 - f. la détermination des besoins en locaux, en équipements et en mobilier;
 - g. l'établissement d'un plan architectural, basé sur des consultations avec les spécialistes pédagogiques aussi bien qu'avec des spécialistes d'équipement et de bâtiment;
 - h. l'analyse du coût total du projet, réparti par catégorie de dépenses, et par composante, en soulignant les coûts en devises et les charges récurrentes;
 - i. l'élaboration du programme de mise en oeuvre du projet.
2. Proposer des politiques gouvernementales à instituer pour le bon fonctionnement de l'Université, dont:
 - a. une politique de coordination des structures universitaires à créer avec les institutions régionales existantes impliquées à la formation, la recherche et la vulgarisation;
 - b. des politiques du marché du travail visant à l'insertion des diplômés des nouvelles structures universités dans l'économie du pays. Ces politiques doivent comprendre des schémas d'équivalence des diplômes pour le recrutement à la Fonction Publique qui pourraient aussi être utilisés par le secteur privé, aussi bien qu'une politique salariale et la création d'un service d'orientation des diplômés;

- c. une politique d'attribution des bourses offertes par les pays donateurs guidée par les capacités de l'Université aussi bien que par les soucis des pays donateurs et des candidats.

ORGANISATION PROPOSEE DES TRAVAUX DE LA PHASE I-A

Vu notre interprétation des termes de référence, le MUCIA propose d'organiser ses travaux dans le cadre de la Phase I-A de l'étude de faisabilité sous les rubriques suivantes (qui serviront aussi comme plan pour le rapport final de la Phase I-A):

I. Diagnostic des Problèmes Généraux du Développement du Mali

Ici nous reprendrons les questions soulevées dans le n° 2 des termes de référence pour la Phase I-A, à savoir la détermination du cadre institutionnel, économique et social dans lequel l'Université devra opérer. Nous nous concentrons dans cette section sur la diversité des situations et des potentialités de développement des différentes régions du pays, aussi bien que sur la diversité culturelle et l'importance du rôle des femmes dans le développement.

II. Le Rôle de l'Education dans le Développement

Ici nous présenterons les considérations générales et théoriques qui démontrent la nécessité d'un système éducatif bien conçu pour favoriser le développement approprié et harmonieux d'un pays.

III. L'Etat Actuel de l'Education au Mali et ses Capacités de Faire Face aux Besoins du Développement

Ici nous nous adresserons aux questions soulevées dans les n°s 1, 3, 4, 5 et 6 des termes de référence pour la Phase I-A. Cette section, qui nécessitera la proportion d'effort la plus importante de toutes les rubriques, dressera un portrait du système actuel d'éducation face aux demandes de l'économie et la société maliennes pour une population instruite et ouverte aux exigences du processus de développement.

IV. Options Générales pour Résoudre les Problèmes de l'Education

Ici nous nous proposons de présenter des solutions générales aux problèmes du système éducatif telles qu'elles sont élaborées dans la littérature de pédagogie et d'administration de l'éducation, et telles qu'elles ont été adoptées dans d'autres pays du monde. Cette section servira comme introduction aux propositions concrètes à suivre sous la rubrique suivante.

V. Options Proposées pour l'Université du Mali

Ici nous élaborerons des propositions alternatives pour la structure de l'Université, comme prévu dans le n° 8 des termes de référence pour la Phase I-A, en considérant l'évaluation de la proposition du Gouvernement prévue dans le n° 7. Pour chaque option discutée, nous présenterons des analyses coûts-avantages économiques et sociales aussi bien que des considérations institutionnelles et les impacts sur le reste du système éducatif.

Les cinq premières rubriques seront présentées de façon sommaire dans un rapport préliminaire à présenter au Gouvernement et à la BAD dès la septième semaine de l'étude. Ensuite le rapport préliminaire sera complété par des détails supplémentaires dans chacune des rubriques déjà adressées, et en plus les deux rubriques suivantes:

VI. Analyse Détaillée des Option(s) Choise(s)

VII. Description du Projet pour Orienter la Phase I-B

Les titres des rubriques expliquent bien leur contenu.

T 6 FICHE TECHNIQUE

Sur la base de notre compréhension des termes de référence (décrite dans la Fiche technique 5) et aussi de notre connaissance précise du pays et ses régions (décrite dans la Fiche technique 4), MUCIA propose le plan de travail y la méthodologie qui suivent pour l'application de l'étude.

PHASE I-A

Orientation et planification avant le départ

De façon à faire augmenter l'efficacité et maximiser l'usage des ressources du projet, les membres de l'équipe doivent être capables de commencer le travail aussitôt qu'ils arriveront au Mali. Dans ce but, MUCIA a organisé une rencontre de planification dans les premiers jours du mois d'avril pour les membres proposés de l'équipe dans les Bureaux du Siège de MUCIA, Columbus, Ohio, pour délibérer sur l'étude de faisabilité. Pendant cette rencontre les membres de l'équipe ont reçu des instructions de membres de l'équipe de MUCIA de 1987 qui préparèrent la portée des travaux pour l'étude proposée. Un des résultats de cette rencontre de planification est cette proposition que comporte la pensée et les écritures de tous les membres proposés pour l'équipe de MUCIA.

Pour en être sûr de ce que les membres auront une préparation exceptionnelle du point de vue conceptuel ainsi que technique, de façon à commencer le projet le mois de septembre prochain, l'équipe se rassemblera encore une fois pendant deux jours dans les Bureaux du Siège de Mucia peu avant l'arrivée des membres de l'équipe dans le pays. Puisqu'ils ne seront pas au Mali tous les experts au même temps, cette période d'orientation commune fournira l'opportunité d'encourager une approche d'équipe intégrée avec une compréhension commune du temps, le travail avec les collègues, le rôle du chef d'équipe, les formats du rapport, etc., pour atteindre les buts du projet.

Révision des matériaux écrits

Une partie très importante de l'étude sera la révision des matériaux écrits existants sur le développement et l'éducation au Mali. On utilisera une approche de deux objectifs pour en être sûr de ce que les membres de l'équipe auront les documents nécessaires et l'information de base pour les permettre de réaliser leur missions assignées d'étude. D'abord, on établira des contacts avec des agences internationales telles que la Banque Mondiale, la Banque Africaine du Développement, l'UNESCO, etc., de façon à identifier les documents plus à jour que l'on peut en trouver au Mali, ainsi que pour identifier les projets actuels et proposés au Mali. De même, on fera une recherche de bibliothèques électroniques dans des ordinateurs, aux bibliothèques universitaires membres de MUCIA qui sont parmi les plus grandes au monde.

Deuxièmement, puisqu'il est possible que beaucoup des documents identifiés n'existent pas qu'au Mali, le Coordinateur du contrat prendra les mesures nécessaires pour le rassemblement de ces documents, ainsi que tous les autres matériaux que les membres de l'équipe devront utiliser dès son arrivée au Mali.

La bibliographie qui sera préparée pendant l'étude, comme résultat des recherches dans les bibliothèques, ainsi que les copies imprimées des documents reproduits, seront donnés au Ministère de l'Education et les fonctionnaires de la nouvelle Université du Mali à la fin du projet.

Démarrage du projet et appui logistique au Mali

On embauchera localement un aide de personnel pour faciliter le démarrage du projet et fournir des appuis logistiques aux membres de l'équipe pendant leur séjour au pays. De façon très précise, l'aide en question contribuera à réunir des documents pertinents pour une révision immédiate par les membres qui soient en train d'arriver, pour aider à trouver des logements, acheter des matériaux de bureau, établir des rendez-vous avec les fonctionnaires propres, assurer le louage de voitures, etc.

En fait, MUCIA a commencé déjà à explorer des contacts et à mettre à jour ses informations sur les conditions locales, en portant cette proposition directement à Bamako, avec une visite à Abidjan pour prendre d'autres documents importants.

Visites sur le terrain et rassemblement de données

Tout en reconnaissant l'importance qu'attachent tous les maliens à la possibilité d'avoir une université que puisse fournir les capacités techniques propres, et donner des appuis pour le développement de toutes les régions du Mali, l'équipe visitera toutes les régions en vue de réviser les besoins en puissance des régions, comme premier démarche pour identifier méthodes que l'Université du Mali puisse utiliser pour donner service à toutes les régions du pays.

Les membres de l'équipe réviseront aussi l'état et la pertinence des institutions de l'éducation supérieure en existence, en vue de proposer des méthodes pour pouvoir les intégrer d'une façon plus réelle et efficace dans un système pratique et sensible aux besoins de l'éducation supérieure.

On révisera les plans et développements les plus récentes en ce qui concerne l'éducation élémentaire et secondaire, en partie parce que c'est de là qu'on recevra des apports pour le système de l'éducation supérieure. En plus, les membres de l'équipe chercheront des méthodes pour utiliser l'Université du Mali de façon à renforcer les systèmes d'éducation élémentaire et secondaire.

Les membres de l'équipe réviseront aussi l'information plus récente sur la situation de l'emploi et les plans pour la résoudre. Cette information sera très utile pour indiquer les champs de l'enseignement que doivent être prioritaires dans l'Université du Mali et la vitesse à la que devrait s'étendre cette université.

Même si la quantité d'étudiants enregistrés à l'Université du Mali ne justifie pas l'établissement immédiat des Facultés dans toutes les régions, il est très vraisemblable que l'on pourra trouver des moyens pour assurer la présence de l'université dans toutes les régions qui supporteront le développement local et fourniront des opportunités aux étudiants universitaires pour mieux connaître d'autres régions du pays. Les membres de l'équipe poursuivront ces idées avec des fonctionnaires du gouvernement et des personnes intéressées.

L'équipe est complètement capable d'identifier et préparer une proposition pour des moyens efficaces et effectives de satisfaire le désir du gouvernement de compter avec une Université du Mali qui soit importante du point de vue technique et technologique et qui puisse servir de façon économique et sociale à toutes les parties du pays.

Utilisation des ressources à l'intérieur du Mali

Les membres de l'équipe recevront dans la plupart des activités du projet l'aide prêtée par des collègues assignés par le Ministère de l'Education. Il est aussi possible d'engager des personnes et même des sociétés locales d'assistance technique pour qu'ils prennent part aux travaux de surveillance sur le terrain dans les lieux de rassemblement régional des données. L'équipe explorera aussi les possibilités d'utiliser des talents locaux dans la Phase I-B de l'étude.

Préparations et rapports

A la fin de la septième semaine de la Phase I-A, on préparera un rapport préliminaire pour résumer les trouvailles et présenter les choix les plus importants pour la structure de l'Université, avec des estimations approximatives des coûts et des recommandations pour les premiers cinq ans d'activités. Ce rapport sera aussi soumis au Ministère de l'Education et la Banque, et il en suivra un débat avec des fonctionnaires du Ministère et d'autres personnes intéressées.

Dans le cas que l'on recevra l'approbation immédiate par le gouvernement et qu'il en décide d'accepter un des choix, l'équipe passera immédiatement à la Phase I-B pour développer une proposition détaillée du projet pour le soumettre à la Banque de façon à obtenir leur approbation pour le financement. S'il n'y a pas une décision immédiate du gouvernement, on présentera au gouvernement et à la Banque un rapport plus détaillé sur les choix possibles pour sa révision à la fin de la Phase I-A. Cette documentation finale, y compris un plan directeur, sera préparée aux Etats Unis après avoir obtenu les données nécessaires et information sur les réactions du gouvernement du Mali (Dans la Fiche technique numéro 5 il y a des ébauches détaillées pour les rapports préliminaire et final qui devront être soumis pendant la Phase I-A).

PHASE I-B

L'application de la Phase I-B dépend des décisions prises par les fonctionnaires propres à la fin de la Phase I-A. Dans le cas qu'ils décideront aller de l'avant avec la Phase I-B, des membres choisis de l'équipe auront une nouvelle rencontre aux bureaux centraux de MUCIA pour faire des plans pour la préparation d'une étude beaucoup plus détaillée de l'option choisie pour la structure de l'Université. On calcule que cette phase aura une durée d'environ sept mois. Il est aussi prévu que le même chef d'équipe et le même architecte de la Phase I-A prendront part dans la Phase I-B.

PHASE I-A

Semaines

1 2 3 4 5 6 7 8 9 10 11 12

Pre-Depart-Aux Etats-Unis

Orientation et Planification

Revue de la litterature

Au-Mali

Orientation et contacts officiels

Visites sur le terrain

Collection des donnees
en main d'oeuvre

Visites aux institutions
de l'enseignement superieur

Analyse des donnees et continuation
de la recherche/interviews

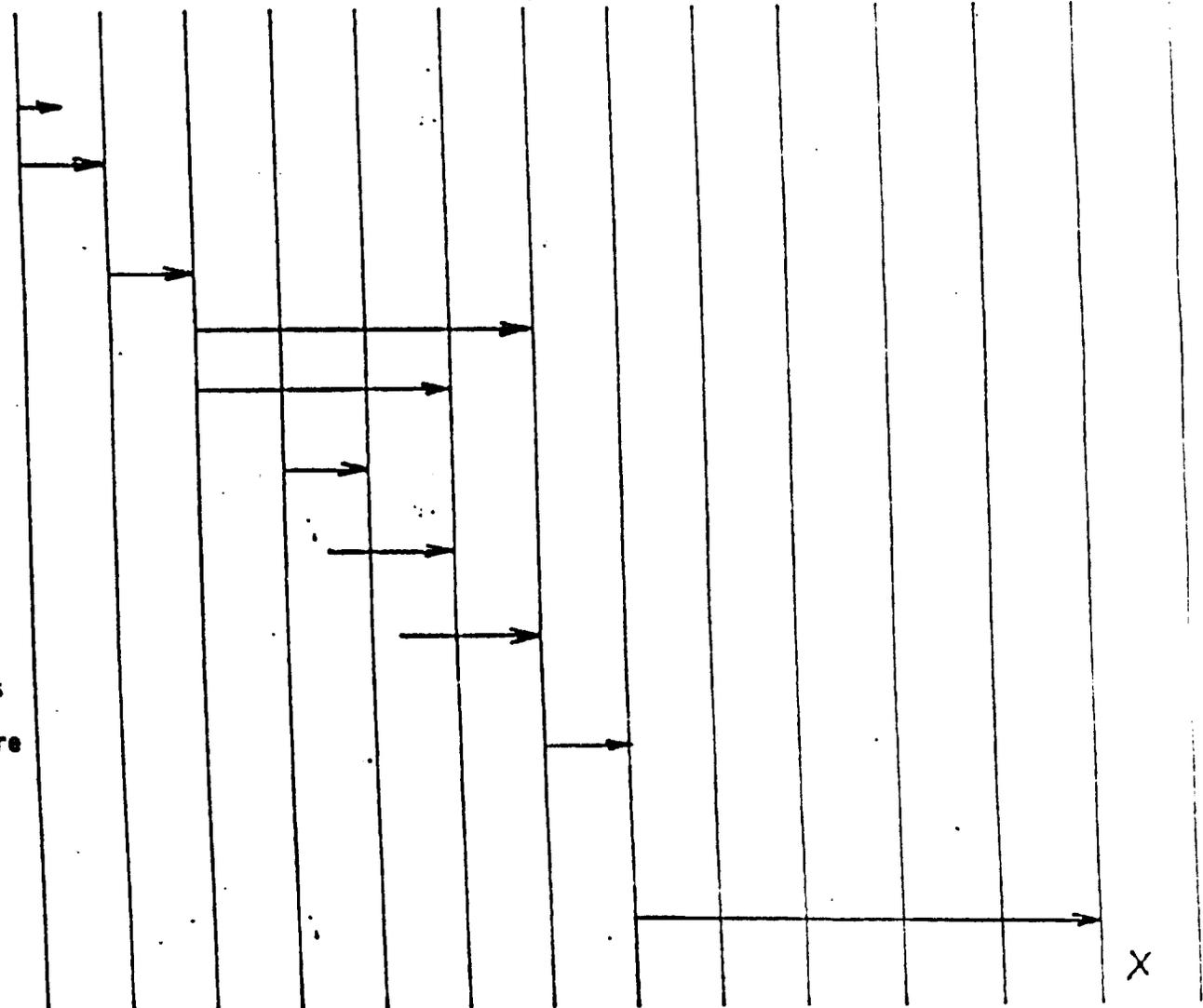
Reunions de l'equipe et preparation
d'un document preliminaire
des conclusions et recommandations

Presentation du document preliminaire
y compris un plan directeur
et commentaire du GRM

Aux Etats-Unis

Finalization du Rapport Final

X - Soumission du Rapport Final



X

APPENDIX C

PERSONS MET BY THE MUCIA TEAM

Bamako:

M. Oumar Issiaka BA	Président de la Commission Nationale pour l'Université du Mali, Ministère de l'Éducation
M. Mossadeck BALLY	Directeur Général Adjoint, Bally S.A.
M. Mamadou BAMBA	Ingénieur Electronicien Spécialiste de la Commutation Temporelle. Directeur de l'École Nationale des Postes et Télécommunications (ENPT).
M. Yoro DIAKITE	Professeur de Mathématique, Directeur Général de l'École des Hautes Etudes Pratiques (EHEP).
Mme. Fatimata DIALLO	Directrice des Projets Educationnels, Ministère de l'Éducation
M. Michel DORE	Directeur Général Adjoint, Bank of Africa
M. Makan KEITA	Directeur Technique, Entreprise Générale de Batiments
M. Mathieu KEITA	Directeur de Cabinet du Ministre, Ministère de l'Éducation
M. Bakary KONATE	Professeur de Chimie, Directeur Général de l'École Nationale d'Administration (ENA).
Général Sékou LY	Ministre de l'Éducation, Ministère de l'Éducation
M. Tiémolo MALE	Professeur de Mathématiques, Directeur Général de l'École Normale Supérieure (ENS).
M. Regis POLLOT	Directeur Général, Itenia
M. Konimba SIDIBE	Contrôleur de Gestion, Hotel Sofitel L'Amitié
M. Ousmane SIDIBE	Directeur Général Adjoint, École Nationale d'Administration
Mme. Assana SY	Directrice du Crédit, BIAO
M. S. M. TOURE	Conseiller Technique du Ministre, Ministère de l'Éducation

M. Abdoulaye TRAORE **Professeur d'Electromécanique (Dr. Ph.D.), Directeur Adjoint de l'ENI.**

M. Daba TRAORE **Secrétaire Général, Chambre de Commerce et d'Industrie du Mali**

**PARTICIPANTS AT THE MEETING OF THE
NATIONAL COMMITTEE ON 6/25/90**

M. Oumar Issiaka BA - Professeur/Conseiller Technique du Ministre de l'Education Nationale, Président de la Commission de Mise en Oeuvre de l'Université.

M. Sédé Mohamed TOURE - Docteur d'Etat en Droit Public, Professeur/Conseiller Technique du Ministre de l'Education Nationale.

Mme. Diallo Fatoumata CAMARA, Doctorat 3e cycle en Sciences de l'Education, Directeur Adjoint, BPE.

M. Mamadou BAMBA - Ingénieur Electronicien Spécialiste de la Commutation Temporelle. Directeur de l'Ecole Nationale des Postes et Télécommunications.

M. Yoro DIAKITE - Professeur de Mathématique, Directeur Général de l'Ecole des Hautes Etudes Pratiques (EHEP).

Professeur Sambou SOUMARE - Chirurgien Generaliste, Chef de Service de Churugie A de l'Hopital du Pt6, Directeur Général de l'Ecole Nationale de Medecine et Pharmacie.

M. Tiémolo MALE - Professeur de Mathématiques, Directeur Général de l'Ecole Normale Superieure (ENS).

Docteur Oumarou SYLLA - Veterinaire/Inspecteur, Chef de la Clinique Veterinaire de Bamako. Directeur de l'Annexe DPR.

Professeur Lassana KEITA - Professeur de Physique, Directeur Général Adjoint du CNRST du Mali.

Bakary KONATE - Professeur de Chimie, Directeur Général ENA.

**Abdoulaye TRAORE - Professeur d'Electromécanique (Dr. Ph.D.)
Directeur Adjoint de l'ENI.**

Alex. CAMARA
PRESIDENCE DE LA REPUBLIQUE

SECRETARIAT GENERAL DU GOUVERNEMENT

REPUBLIQUE DU MALI

UN PEUPLE - UN BUT - UNE FOI

LOI N° 86 - 12/AN-RM
Portant création de l'Université du Mali

L'ASSEMBLEE NATIONALE a délibéré et adopté en sa séance du 9 Janvier 1986,
LE PRESIDENT DE LA REPUBLIQUE promulgue la loi dont la teneur suit :

ARTICLE 1er : Il est créé un établissement public à caractère administratif nommé "Université du Mali", doté de la personnalité morale et de l'autonomie financière.

ARTICLE 2 : L'Université du Mali a pour mission :

- La formation et le perfectionnement des cadres supérieurs et des techniciens supérieurs ;
- La préparation aux grandes écoles ;
- La recherche et la promotion de la recherche scientifique et technologique ;
- La diffusion de la culture et des connaissances.

ARTICLE 3 : Les organes d'administration et de la gestion de l'Université du Mali sont :

- 1) Le Conseil de l'Université ;
- 2) Le Rectorat ;
- 3) L'Agence Comptable ;
- 4) Le Conseil Pédagogique, Scientifique et Technique.

ARTICLE 4 : L'Université du Mali est dirigée par un Recteur nommé par décret pris en Conseil des Ministres.

ARTICLE 5 : L'Université du Mali comporte des Facultés et des Instituts moyens supérieurs dont la création et l'organisation feront l'objet d'un décret pris en Conseil des Ministres.

ARTICLE 6 : Les Facultés et les Instituts peuvent être créés en tout lieu de la République du Mali.

ARTICLE 7 : Les études et les travaux qui sont entrepris à l'Université du Mali sont sanctionnés par des grades universitaires et des titres créés par décret pris en Conseil des Ministres.

ARTICLE 8 : Le patrimoine initial de l'Université du Mali est constitué par la dotation de l'Etat.

ARTICLE 9 : L'Université du Mali dispose des ressources ordinaires et extraordinaires.

ARTICLE 10 : Un décret pris en Conseil des Ministres fixe l'organisation et les modalités de fonctionnement de l'Université du Mali.

Koulikouba, le 8 Mars 1986

LE PRESIDENT DE LA REPUBLIQUE

Mme SISSOKO
PRESIDENCE DU GOUVERNEMENT

SECRETARIAT GENERAL DU GOUVERNEMENT

REPUBLIQUE DU MALI

UN PEUPLE - UN BUT - UNE FOI

DECRET N° 91/PG-RM
Portant organisation et modalités de fonctionnement
de l'Université du Mali

LE PRESIDENT DU GOUVERNEMENT,

Vu la Constitution ;
Vu la Loi n° 86-12/AN-RM du 8 Mars 1986 portant création de l'Université du Mali ;
Vu l'Ordonnance n° 20/CMLN du 20 Avril 1970 portant réorganisation de l'enseignement en République du Mali ;
Vu l'Ordonnance n° 79-9/CMLN du 19 Janvier 1979 portant principes fondamentaux de la création, de l'organisation, de la gestion et du contrôle des services publics ;
Vu l'Ordonnance n° 46 bis du 16 Novembre 1960 organisant le règlement financier du Mali ;
Vu le Décret n° 322/P-RM du 31 Décembre 1984 portant nomination des membres du Gouvernement ;

STATUANT EN CONSEIL DES MINISTRES,
DECRETE

ARTICLE 1er : L'Université du Mali est organisée conformément aux dispositions du présent décret.

ARTICLE 2 : L'Université du Mali a pour mission :
- La formation et le perfectionnement des cadres supérieurs et des techniciens supérieurs ;
- La préparation aux grandes écoles ;
- La recherche et la promotion de la recherche scientifique et technologique ;
- La diffusion de la culture et des connaissances.

TITRE I - TUTELLE ET ADMINISTRATION
CHAPITRE I - DE LA TUTELLE

ARTICLE 3 : L'Université du Mali est placée sous la tutelle du Ministre chargé de l'Enseignement Supérieur.

ARTICLE 4 : La tutelle sur les organes et sur les actes de l'Université du Mali est exercée conformément aux dispositions du présent décret par voie de nomination, d'autorisation préalable, de suspension, d'annulation ou de substitution.

ARTICLE 5 : Le Ministre chargé de l'Enseignement Supérieur veille à ce que l'Université du Mali poursuive l'objectif pour lequel elle a été créée.
A ce titre, il a droit de regard sur toute son activité et peut se faire présenter tous documents. Il peut faire effectuer des enquêtes ou des rapports sur ses activités dont les résultats sont communiqués au Conseil de l'Université.

ARTICLE 6 : Le Ministre chargé de l'Enseignement Supérieur peut suspendre de sa fonction, pour faute grave, le Recteur jusqu'à décision du Conseil de l'Université.

ARTICLE 7 : Les actes d'acquisition, de disposition ou d'aliénation d'immeubles de même que les baux, conventions et contrats d'un montant supérieur à 5 millions de F CFA sont soumis à l'autorisation préalable du Ministre chargé de l'Enseignement Supérieur.

ARTICLE 8 : Sont soumises à l'approbation du Ministre chargé de l'Enseignement Supérieur les décisions en matière d'acquisition, de disposition et d'aliénation de biens, meubles appartenant au patrimoine de l'Université du Mali.
A défaut d'opposition notifiée au Recteur dans le mois qui suit leur réception, l'approbation est considérée comme acquise à l'expiration de ce délai.

ARTICLE 9 : Les emprunts, l'acceptation des fonds d'aides extérieures, ainsi que les dons et legs de toutes natures assorties de conditions et charges sont soumis à l'autorisation préalable du Ministre chargé de l'Enseignement Supérieur.

CHAPITRE II - DE L'ADMINISTRATION

ARTICLE 10 : Les organes d'administration et de gestion de l'Université du Mali sont :

- 1) Le Conseil de l'Université ;
- 2) Le Rectorat ;
- 3) L'Agence Comptable ;
- 4) Le Conseil pédagogique, scientifique et technique.

SECTION I - DU CONSEIL DE L'UNIVERSITE

ARTICLE 11 : Le Conseil de l'Université est l'organe de contrôle et d'orientation des activités de l'Université du Mali.

A cet effet, il assure les fonctions suivantes :

- Il adopte le budget et en contrôle l'exécution ;
- Il approuve les comptes et l'exercice financier précédent ;
- Il donne son avis sur l'attribution des postes d'enseignement ou de recherche ;
- Il délibère sur l'organisation des enseignements et sur l'orientation des activités de recherche ;
- Il délibère sur les affaires administratives et disciplinaires, intéressant le personnel enseignant, les chercheurs et les étudiants ;
- Il délibère sur l'organisation matérielle et culturelle des campus universitaires ;
- Il délibère sur les programmes d'équipement et d'investissement ;
- Il autorise la signature par le Recteur de tous conventions et contrats pour une durée qui excède 12 mois ;
- Il approuve les marchés dont la valeur est supérieure à la limite déterminée par la réglementation en vigueur.

Le Conseil de l'Université propose aux autorités et organismes compétents les créations des diplômes, ainsi que celles des Facultés et Instituts.

Il donne son avis sur les créations, transformations, suppressions de postes, sur toutes les questions qui lui sont soumises par le Ministre chargé de l'Enseignement Supérieur.

ARTICLE 12 : Le Conseil de l'Université est composé des membres suivants :

PRESIDENT : le Ministre chargé de l'Enseignement Supérieur.

MEMBRES : - le représentant du Bureau Exécutif Central de l'Union Démocratique du Peuple Malien.

- la représentante de l'Union Nationale des Femmes du Mali ;
- le représentant de l'Union Nationale des Jeunes du Mali ;
- le représentant de l'Union Nationale des Travailleurs du Mali ;
- le représentant de l'Assemblée Nationale ;
- le représentant de chacun des Ministères ;
- le directeur des enseignements supérieurs et de la recherche scientifique ;
- le Recteur ;
- le Vice-Recteur ;
- les doyens des Facultés ;
- les directeurs des Instituts ;
- le secrétaire général de l'Université.

La liste nominative des membres fera l'objet d'un décret pris en Conseil des Ministres.

ARTICLE 13 : Le Conseil de l'Université se réunit une fois l'an en session ordinaire sur convocation de son Président.

Il peut se réunir en session extraordinaire, soit à la demande de son Président, soit à la demande des 2/3 des membres.

ARTICLE 14 : Les décisions du Conseil de l'Université sont prises à la majorité de ses membres.

SECTION 2 - DU RECTORAT

ARTICLE 15 : L'Université du Mali est dirigée par un recteur nommé par décret pris en Conseil des Ministres, sur proposition du Ministre chargé de l'Enseignement Supérieur.

Il est assisté d'un Vice-Recteur nommé par arrêté du Ministre chargé de l'Enseignement Supérieur.

ARTICLE 16 : Le Vice-Recteur remplace le Recteur en cas d'absence ou d'empêchement. Il le seconde dans ses tâches de conception, de coordination et de contrôle. Des attributions lui sont fixées par l'arrêté de nomination.

ARTICLE 17 : Le Recteur représente l'Université dans tous les actes de la vie civile. A cet effet :

- il assiste au Conseil de l'Université ;
- il exerce toutes les fonctions d'administration et de gestion non expressément réservées au Conseil de l'Université ;
- il statue sur toutes questions principales relatives aux inscriptions des étudiants ;
- il contrôle le fonctionnement des Facultés et des Instituts ;
- il a qualité pour signer tout accord de coopération avec les institutions nationales ou étrangères après avis du Ministre chargé de l'Enseignement Supérieur ;
- il exerce l'autorité sur le personnel qu'il recrute et licencie dans le cadre de la législation en vigueur ;
- il soumet au Conseil de l'Université les objectifs annuels à atteindre et le budget correspondant ;
- il passe les baux, conventions et contrats ;
- il exécute le budget dont il est l'ordonnateur ;
- il exerce l'action en justice.

SECTION 3 - DE L'AGENCE COMPTABLE

ARTICLE 18 : L'Agence Comptable est placée sous l'autorité d'un Intendant Universitaire nommé par le Ministre chargé de l'Enseignement Supérieur et du Ministre chargé des Finances.

ARTICLE 19 : L'Intendant Universitaire a la qualité de comptable public.

A ce titre, il est soumis aux obligations et encourt les responsabilités propres à cette catégorie d'agents.

L'Intendant Universitaire exerce ses attributions sous l'autorité administrative du Recteur et le contrôle technique du Directeur du Trésor.

SECTION 4 - DU CONSEIL PEDAGOGIQUE, SCIENTIFIQUE ET TECHNIQUE

ARTICLE 20 : Il est constitué auprès de l'Université du Mali un Conseil Pédagogique, Scientifique et Technique qui a pour mission :

- de préparer à l'intention du Conseil de l'Université l'orientation et la planification des activités des facultés et des Instituts en matière d'enseignement et de recherche scientifique ;
- de veiller à l'harmonisation des programmes de recherche des facultés et des instituts avec les programmes nationaux de recherche ;
- d'évaluer les activités des facultés et des Instituts en matière d'enseignement et de recherche ;
- de faire toute étude sur les facultés et les Instituts à la demande du Conseil de l'Université.

ARTICLE 21 : Le Conseil Pédagogique, Scientifique et Technique est composé comme suit :

PRESIDENT : Le Directeur National des enseignements supérieurs et de la recherche scientifique

MEMBRES : - Le Recteur de l'Université ;

- Le Directeur du Centre National de la recherche scientifique et technologique ;
- Le Vice-Recteur de l'Université ;
- Les Doyens des facultés ;
- Les Directeurs des instituts ;
- Le représentant du comité scolaire de l'union nationale des jeunes du Mali par faculté ou Institut ;
- Le représentant du comité syndical par faculté ou Institut.

TITRE II - LES STRUCTURES

ARTICLE 23 : L'Université du Mali comprend :

- un Rectorat dont le Siège est Bamako ;
- une Faculté des Sciences sise à Sikasso ;
- une Faculté des Lettres et des Sciences Humaines sise à Tombouctou ;
- une Faculté des Sciences Juridiques et Economiques sise à Kayes ;
- un Institut Supérieur de Médecine Vétérinaire sis à Mopti ;
- un Institut Supérieur d'Enseignement Technique sis à Ségou ;
- un Institut Supérieur d'Architecture et d'Urbanisme sis à Gao ;
- un Institut des Techniques Rurales et de l'Alimentation sis à Sikasso ;
- un Institut des Techniques Industrielles et de l'Aménagement sis à Kayes ;

Le Rectorat, les Facultés et les Instituts peuvent être transférés en tout autre lieu par décret pris en Conseil des Ministres.

Il sera créé tout autre Faculté ou Institut, en cas de besoin, par décret pris en Conseil des Ministres.

ARTICLE 24 : Les facultés sont dirigées par des Doyens et les Instituts par des Directeurs. Les Doyens et les Directeurs sont nommés par arrêté du Ministre chargé de l'Enseignement Supérieur.

ARTICLE 25 : L'organisation et les modalités de fonctionnement de chaque faculté ou institut feront l'objet d'un décret pris en Conseil des Ministres.

ARTICLE 26 : Le Rectorat de l'Université du Mali comprend :

- une division chargée de l'information, de la documentation universitaire des bibliothèques et de la publication ;
- une division chargée des relations inter-universitaires, de la scolarité et de la statistique ;
- une division chargée des activités culturelles et des œuvres universitaires.

ARTICLE 27 : La division chargée de l'information, de la documentation universitaire des bibliothèques et de la publication a pour mission :

- d'informer les étudiants sur les filières de formation dans les facultés et instituts ;
- de mettre à la disposition des étudiants toute documentation utile pour la formation et la recherche au Mali ;
- de mettre à la disposition des étudiants et professeurs des ouvrages indispensables au développement des enseignements et de la recherche scientifique ;
- de publier des travaux de recherches effectués au sein de l'Université ;
- de développer les échanges et publications.

Elle comporte quatre sections :

- 1- la Section de l'Information,
- 2- la Section de la Documentation,
- 3- la Section des Bibliothèques,
- 4- la Section de la Publication.

ARTICLE 28 : La division chargée des relations inter-universitaires, de la scolarité et de la statistique a pour mission :

- de développer la coopération entre les facultés et Instituts au Mali, et la coopération entre l'Université du Mali avec celles d'Afrique et d'ailleurs ;
- l'inscription des étudiants et le suivi de leur scolarité ;
- la collecte des résultats ;
- la tenue à jour des fichiers des étudiants.

Elle comporte quatre sections :

- 1- la Section des Relations Intérieures ;
- 2- la Section des Relations Extérieures ;
- 3- la Section de la Scolarité ;
- 4- la Section des Statistiques.

ARTICLE 29 : La division chargée des activités culturelles et des oeuvres universitaires a pour mission :

- d'organiser l'accueil des étudiants et leurs activités culturelles et sociales ;
- d'assurer aux étudiants les conditions décentes de travail et d'existence ;
- d'assurer la gestion des bourses et indemnités allouées aux étudiants.

Elle comporte deux sections :

- 1- la Section des actions culturelles et sociales ;
- 2- la Section des Bourses.

ARTICLE 30 : Les chefs de division du Rectorat de l'Université du Mali sont nommés par arrêté du Ministre chargé de l'Enseignement Supérieur.

TITRE III - DISPOSITIONS FINANCIERES

ARTICLE 31 : Les règles de comptabilité et de gestion de l'Université du Mali sont celles de la comptabilité et de la gestion publique.

ARTICLE 32 : Le budget de l'Université du Mali est préparé par le Recteur adopté par le Conseil de l'Université et voté en annexe au budget d'Etat. Il doit être équilibré en recettes et en dépenses.

ARTICLE 33 : L'exercice commence le 1er Janvier et se termine le 31 Décembre. Les documents relatifs à l'exécution du budget sont transmis au plus tard 3 mois après la clôture de l'exercice au Conseil de l'Université et soumis aux organes de contrôle compétents.

CHAPITRE I - LES RESSOURCES

ARTICLE 34 : Les ressources financières de l'Université du Mali sont constituées par :

- les revenus provenant de la vente des biens et services ;
- des produits d'aliénation des biens, meubles et immeubles ;
- les participations de l'Etat, sous forme de subventions de fonctionnement et d'équipement ;
- les fonds d'aides extérieures ;
- les emprunts ;
- les dons et legs ;
- les revenus du patrimoine ;
- les recettes diverses.

CHAPITRE II - LES DEPENSES

ARTICLE 35 : Les dépenses de l'Université du Mali comprennent :

- les dépenses de fonctionnement (personnel et matériel) ;
- les dépenses d'équipements et d'investissement ;
- les soldes passifs des exercices précédents ;
- les charges de la dette.

CHAPITRE III - DISPOSITIONS PARTICULIERES

ARTICLE 36 : Les créances et dettes de l'Université du Mali bénéficient des privilèges du Trésor public tels que définis par l'Ordonnance n° 46 bis du 16 Novembre 1960.

ARTICLE 37 : Les fonds libres de l'Université du Mali sont versés dans un compte ouvert en son nom à la Banque de Développement du Mali.

ARTICLE 38 : Le contrôle de gestion de l'Université du Mali est assuré conformément aux dispositions en vigueur en matière de contrôle des établissements publics.

ARTICLE 39 : Un arrêté conjoint des Ministres chargés de l'Enseignement Supérieur et des Finances fixe les modalités d'application du régime financier de l'Université du Mali.

TITRE IV - DISPOSITIONS TRANSITOIRES

ARTICLE 40 : Pendant la mise en œuvre des facultés et instituts, les dispositions suivantes sont applicables :

- la formation des étudiants sera dispensée dans les établissements d'enseignement supérieur existants, conformément à la législation en vigueur ;
- la formation des formateurs sera assurée au sein de l'Institut Supérieur de Formation et de la Recherche Appliquée (ISFRA) et dans les pays étrangers.

TITRE V - DISPOSITIONS FINALES

ARTICLE 41 : Des arrêtés du Ministre chargé de l'Enseignement Supérieur fixent les règles du fonctionnement de l'Université du Mali.

ARTICLE 42 : Le présent décret abroge toutes dispositions antérieures contraires.

ARTICLE 43 : Les Ministres de l'Education Nationale, des Finances et du Commerce sont chargés, chacun en ce qui le concerne, de l'exécution du présent décret qui sera enregistré et publié au Journal Officiel.

Koulouba, le 29 Mars 1986

LE PRESIDENT DU GOUVERNEMENT

GENERAL MOUSSA TRAORE

LE MINISTRE DE L'EDUCATION NATIONALE

LE MINISTRE DES FINANCES ET DU
COMMERCE

GENERAL SEKOU LY

DIANKA KABA DIAKITE

APPENDIX E.

Cost assumptions for the line items in the budget

I. SALARIES

FACULTY

This line is based on the number of faculty indicated by the Ministry of Education's Plan for the University of Mali (Ministry of Education 1990). For some of the schools not included in the plan, an estimate was made. A base salary of 150,000 FCFA per month was used, based on a 12-month year, with 5% annual increases.

ADMINISTRATIVE STAFF

This calculation is for senior administrative staff and is based on Ministry-provided data on required numbers and salary levels.

CLERICAL STAFF

This line covers secretarial and other administrative staff, and was also based on Ministry data.

SUPPORT STAFF

This line includes such employees as guards, drivers, workers, maintenance, etc.

TEMPORARY EMPLOYEES

It is assumed that each regional campus will require the temporary services of some clerical and support staff (drivers, translators, etc.) for a period of six months per year.

CONSULTANTS

It is assumed that each of the facilities will engage the services of in-country consultants for such functions as contract supervision, curriculum planning, management assessment, etc.

INTERNATIONAL CONSULTANTS

It is assumed that 2 international consultants will be required for each of the regional campuses, as well as the Bamako facility. It is assumed that each would be engaged for a period of 3 months and compensated at a rate of approximately \$2,500 per month (where \$1.00 = 275 FCFA).

VISITING FACULTY

It is assumed that 2 persons per year from the Malian business and government sector will be recruited each year to teach classes. The pay scale used is identical to that of permanent staff.

II. FRINGE BENEFITS

EMPLOYER CONTRIBUTION TO INPS TAXES

This tax is required by law and represents payments to a fund that resembles the "social security" system in the US. The tax is levied at a rate of 18.4% of total salary.

PAYROLL TAXES

This tax is required by law and is paid by the employer at a rate of 7.5% of total payroll. The salaries of international consultants are not included in this calculation.

VACATIONS FOR PERMANENT EMPLOYEES

Permanent employees receive one month of annual leave per year. If an employee chooses not to take a vacation, he/she is paid an extra month's salary. This calculation reflects an extra month's salary for all permanent employees.

PERFORMANCE AWARDS

This line is for funds set aside to reward outstanding performance by faculty and staff. It is assumed that 2 awards of 150,000 FCFA will be awarded each year at each facility.

III. TRAVEL AND RELOCATION EXPENSES

INCIDENTAL TRAVEL EXPENSES

This line covers incidental expenses related to travel such as vaccinations, visas, taxis, airport taxes, etc. The differences in rates among the various facilities reflects the varying distance from the capital. The amount calculated for Bamako reflects the fact that the administrative staff in Bamako will most probably travel a great deal.

TEMPORARY HOUSING

This line assumes that for visiting consultants and faculty, temporary housing will be provided. The differing amounts represent the assumed difference in the cost of living at the various campus sites.

TRANSPORTATION

This line covers in-country travel by University faculty and staff and includes air and river travel. The differing amounts budgeted for the 8 regional campuses is based on their distances from Bamako and the transportation infrastructure available. A higher amount has been budgeted for the Bamako office due to a higher cost of living and the assumption that the Bamako staff will travel more to the regional campuses.

FUEL

This line covers the purchase of fuel for vehicle operation and for electricity generation where applicable. The differing rates are a function of the travel distance to Bamako and the presence or absence of municipal sources of electricity. The first entry is reflected in liters per month required and based on a standard cost per liter of gasoil of 210 FCFA.

IN-COUNTRY PER DIEMS FOR TRAVEL

Rough estimate for in country per diem

PERSONAL FREIGHT

This line covers the cost of relocation of the household goods of faculty and staff from one campus location to another. It is based on rough cost estimates.

INTERNATIONAL TRAVEL

This assumes 2 round trip international air tickets per year for each campus based on an average unit cost of \$3,000 at an exchange rate of 275 FCFA to one US dollar. Four tickets have been allocated for international travel at the Bamako facility.

INTERNATIONAL PER DIEMS

This calculation is based on the travel described in the previous line and provides per diem for each international trip at a rate of \$150 per day for a period of one week at an exchange rate of 275 FCFA per US dollar.

IV. OTHER DIRECT COSTS

AIR FREIGHT

This line is intended to provide transportation funds for material purchased in other countries, such as computers, equipment, etc.

TAXES AND DUTIES

This calculation is based on two taxes levied on automobiles. The first tax is levied on the purchase of automobiles, and is based on 100% of the purchase price. The second tax included in this category is for utility vehicles and is charged at a rate of 5% (PCP tax).

LEGAL AND AUDIT FEES

This line is include for charges related to contracting, legal consultation and an annual audit by an outside firm. Each of the eight campuses are allocated 100,000 while the administrative center in Bamako, which is presumed to have a greater responsibility for contracting, etc is allocated 400,000 FCFA.

TELEPHONE/TELEX/FAX/POSTAGE

Differing amounts are set for each of the regional campuses based on distance from the capital. The Bamako administrative center, which will more likely have greater contact with international institutions will need a greater level of funding.

ADVERTISING AND RECRUITING

Each regional campus has been allocated 25,000 FCFA per month for advertising and recruiting costs associated with student recruiting, while the Bamako administrative center has a greater level of funding because it is assumed that the recruitment of consultants and professors will take place at that level.

BUILDING MAINTENANCE

This line is based on Ministry estimates.

BANK FEES

Each of the regional campuses is allocated 10,000 FCFA per month for charges on local bank accounts, while the Bamako administrative center is allocated a greater level due to the expenses resulting from such activities as international transfers.

V. EQUIPMENT

EQUIPMENT

This line includes equipment such as electric generators, computers, audio-visual, maintenance, copiers, etc.

VEHICLES

This line includes the purchase of vehicles including 4 wheel drive vehicles, light utility vehicles (404's), passenger cars (for the Bamako administrative center), trucks,

and buses. It is assumed that each faculty will require vehicles based on the nature of the institution, the distance from the capital, and the absence or presence of a road infrastructure. It also includes an additional 25% for each vehicle for the purchase of spare parts.

OFFICE AND CLASSROOM FURNITURE

This line includes calculations for office, library, and classroom furnishings.

EQUIPMENT RENTALS

This line includes funds for the short term rental of specialized equipment.

VEHICLE AND EQUIPMENT REPAIR

This calculation includes funds for the repair and servicing of all project vehicles and equipment. Repair and service costs are assumed to rise with the age of the equipment.

VI. SUPPLIES

GENERAL SUPPLIES

This line covers all general use supplies related to in-class, laboratory, machine shop, and studio supplies.

OFFICE SUPPLIES

This calculation is for all other general supplies related to administration.

PRINTING AND DUPLICATION

This line covers all supplies or services related to printing or photocopying.

BOOKS

This line covers the purchase of books for facility libraries. A large amount is allocated initially to create the library, with annual budgets for expansion and updating of collections.

JOURNAL SUBSCRIPTIONS

This line covers the purchase of journal, newspaper and magazine subscriptions for the various facility libraries.

MISC. SUPPLIES

This line was intended for additional supplies related to janitorial, maintenance, etc.

VII. CONSTRUCTION

CONSTRUCTION

This line covers the construction of classrooms, administration facilities, faculty housing, sports facilities, etc. and based on a construction rate of \$500.00 per square meter at an exchange rate of 275 FCFA/\$1.00. The number of square meters constructed comes from Ministry estimates.

VIII. STUDENT SUPPORT

BOURSES

This line is for student scholarships paid 12 months per year at a rate of 20,000 FCFA per month (with periodic increases during the ten year budget period). It assumes that all students will receive scholarships.

APPENDIX F

Gender Issues in Malian Higher Education

Higher education in Mali is undergoing a radical transformation. Historically a large percentage of students were trained to prepare for jobs in the public sector. This is now changing on account of cuts in public sector employment and efforts to develop the private sector. Institutions of higher education need to rethink their mission and objectives in order to meet these new needs. In particular, institutions need to improve the nature of training and composition of the student body. Within this context, there is an explicit interest in the role of education for women and subsequently the role of women in the economy.

In Mali, as in most other low income countries, few women enroll in complete higher education. A survey of 140 developing countries showed that 47 percent of Malian girls enter school, but by the time they reached the secondary level only 14 percent of them remained in school. Only 5 percent reach higher education. In another survey of women worldwide, Malian women fell in the lowest categories for percentages of women in higher education, literacy rate and number of women in the paid labor force.

This paper will discuss data collected from a group of individuals in Mali concerning women and higher education. Surveys were conducted with female and male graduates and current students of higher education to solicit their perceptions of women and education. Time and budgetary constraints made it necessary to limit the sample to a nonrandom selection of 45 respondents in order to gain some broad views on higher education. A series of open-ended questions were asked to 24 men and 21 women. This discussion focuses on the following concerns: (1) the benefits of education to men and women; (2) how education affects men's and women's lives; (3) what problems men and women face as they pursue their education; and (4) what considerations need to be directed to current educational practices.

Benefits of Education

Men and women were asked their opinions of the value of education for women and for men. Tables F-1 and F-2 list the responses for each of the questions. Both tables reveal that intellectual development is thought of as the most significant benefit of

attaining an education. Looking at sex-disaggregated responses in Table F-1, women responded more frequently that social freedom is the primary outcome of acquiring an education. Employment opportunities are not viewed by women as a benefit of education and only one man mentioned jobs for women.

This is interesting when considering the orientation of a new institution of higher education which will serve the needs of both women and the economy. If women are to orient their productive activities to meet the needs of the economy, educational systems should evaluate women's economic activities and create appropriate programs.

Table F-1. What does education do for women?

	GENDER				Total	
	MEN		WOMEN		Count Percent	Count
	Count	Count Percent	Count	Count Percent		
INTELLECTUAL DEVELOPMENT	6	13.3%	5	11.1%	11	24.4%
BETTER JUDGEMENT	3	6.7%	1	2.2%	4	8.9%
SOCIAL FREEDOM	5	11.1%	6	13.3%	11	24.4%
IMPROVED STANDARD LIVING	2	4.4%	5	11.1%	7	15.6%
EMPLOYMENT OPPORTUNITIES	1	2.2%	0	.0%	1	2.2%
EQUALITY WITH MEN	2	4.4%	2	4.4%	4	8.9%
INCREASED SOCIAL STATUS	0	.0%	2	4.4%	2	4.4%
NOTHING	2	4.4%	3	6.7%	5	11.1%
Total	21	46.7%	24	53.3%	5	100.0%

Table F-2. What does education do for men?

	GENDER				Total	
	MEN		WOMEN		Count	Count Percent
	Count	Count Percent	Count	Count Percent		
NO RESPONSE	5	11.1%	5	11.1%	10	22.2%
INTELLECTUAL DEVELOPMENT	10	22.2%	4	8.9%	14	31.1%
IMPROVED SOCIAL STATUS	0	.0%	3	6.7%	3	6.7%
IMPROVED STANDARD OF LIVING	4	8.9%	4	8.9%	8	17.8%
BETTER JOB OPPORTUNITIES	1	2.2%	3	6.7%	4	8.9%
FLEXIBILITY IN TAKING DIFF. JOBS	0	.0%	2	4.4%	2	4.4%
BETTER JOB TRAIN	1	2.2%	3	6.7%	4	8.9%
Total	21	46.7%	24	53.3%	45	100.0%

In contrast, Table F-2 shows a different view of the benefits for education for men. Again we see intellectual development as the primary outcome of education. There is no expression that education has an affect on social behavior as is the concern for women. For men, employment is seen to be positively affected by participation in education. More than 22% responded either that education brings better job opportunities, allows for flexibility to undertake different types of jobs or gives better job training.

Effects of Education on Women's and Men's Lives

Men and women were asked how education affects the life of both sexes. The responses are presented in Tables F-3 and F-4. Looking at Table F-3, it is apparent that for women the nature of the responses focussed on social concerns. One of the major problems facing development of higher education is the conflict of education with social customs. This conflict is strongly felt by the female population, as already illustrated in the above discussion, and presents a difficult obstacle to overcome.

Pursuing higher education requires women to make some difficult choices. Early marriage is common in Mali. More than 50% of Malian women marry between the ages of 14 and 19. Women who enter into marriage find it difficult to continue their education because of the social expectations of a wife to carry out specific duties as well as follow a code of "proper" behavior. Over 35% of the respondents stated that women pursuing higher education are prevented from either early marriage or getting married. Respondents stated that women who went to school could not be married and at the same time continue their educations. Others pointed out that by the time women have finished their studies, they have reached an age that is considered old for marriage and these women would have a difficult time finding a husband.

Marriage is important for women in Malian society. When a women marries, she attains a new status in society. Married women gain more respect, have new freedoms and power that is not granted to unmarried women. Because women desire to be married and marriage for women happens at an age when women are going to school, in order to attract and keep girls in school, the educational system should be sensitive and responsive to the needs of married women. Not only does a women take a risk when she pursues higher education in the chances of getting married, but formal education competes with the opportunity to learn other important skills required of married women such as cooking, child care and household management. Given the importance of marriage to the social roles and expectations of women, many women are not ready to risk an uncertain future in terms of social standing as well as employment. When there is a choice, and education has to compete with other life options, it seems that education falls lower on the priority list of women.

In spite of these findings, women do desire to be educated. Women are aware of the benefits of education. Other individuals stated that education gives women confidence and prevents inferiority in relation to men. These are positive outcomes experienced by women.

Table F-3. How does education affect women's lives?

	GENDER				Total	
	MEN		WOMEN		Count	Count Percent
	Count	Count Percent	Count	Count Percent		
NO RESPONSE	2	4.4%	0	.0%	2	4.4%
PREVENT EARLY MARR	2	4.4%	9	20.0%	11	24.4%
PREVENT MARRIAGE	4	8.9%	1	2.2%	5	11.1%
GIVES THEM CONFIDENCE	1	2.2%	4	8.9%	5	11.1%
PREVENTS INFERIORITY	2	4.4%	5	11.1%	7	15.6%
MAKES LIFE DIFFICULT	3	6.7%	1	2.2%	4	8.9%
DON'T LEARN HOUSEHOLD SKILLS	4	8.9%	0	.0%	4	8.9%
LACK RESPECT FOR SOCIAL CUSTOMS	2	4.4%	0	.0%	2	4.4%
DOES NOTHING	1	2.2%	4	8.9%	5	11.1%
Total	21	46.7%	24	53.3%	45	100.0%

Table F-4. How does education affect men's lives?

	GENDER				Total	
	MEN		WOMEN		Count	Count Percent
	Count	Count Percent	Count	Count Percent		
NO RESPONSE	3	6.7%	7	15.6%	10	22.2%
NO EFFECT, THERE ARE NO JOBS	10	22.2%	9	20.0%	19	42.2%
PROMOTES BOREDOM AND INDOLENCE	3	6.7%	2	4.4%	5	11.1%
RESPECT OF TRADITIONS	5	11.1%	1	2.2%	6	13.3%
INCREASES KNOWLEDGE	0	.0%	1	2.2%	1	2.2%
LIMITS OPPORTUNITIES	0	.0%	3	6.7%	3	6.7%
INCREASES INCOME	0	.0%	1	2.2%	1	2.2%
Total	21	46.7%	24	53.3%	45	100.0%

Problems Students Confront in Pursuit of Education

Despite the growing numbers of students who are continuing their education through the *Grandes Ecoles* or at other advanced degree institutions world wide, potential students are confronted with many obstacles in trying to complete higher education. Tables F-5 and F-6 show the problems respondents identified in continuing on through higher education.

Table F-5 reveals that the main problem women face is financial. Housing problems can also be interpreted in conjunction with the financial constraints women face. If a woman does not have family living in the city where the institute of study is located, she and her family must be able to afford housing for her.

Other obstacles confronted by women relate to social constraints. Family problems involve a lack of support especially from parents who do not want their daughters living away from their home. Others stated that women who continue their education have difficulties finding or keeping a husband. One woman stated that "when women continue in school they have to separate from their husbands; her in-laws usually will find a way to arrange for the marriage of her husband to another woman."

Men confront financial constraints just as women do, as illustrated in Table F-6. Additionally, respondents felt that the choice of study offered at the level of higher education is limited in light of the skills demanded for employment in the current job market. It is interesting that women recognized this constraint for men but not for women.

The issue of financial constraints has a particular interest to policy makers in the case of the university. One of the possible characteristics of a new university will be an increased economic contribution by students. But in many countries there is a belief among parents that it is more sensible to finance a son than a daughter through higher (or any) education. Such parental attitudes vary, however, with social class, those with the economic means being more likely to treat daughters equally. In the less affluent classes, this problem of financing young people in higher education becomes more pronounced. It is also among the less affluent classes that the discrepancy between male and female educational rates becomes wider.

This issue needs to be researched for Mali, as the initiation of a tuition structure might result in a decrease in the numbers of women entering higher education.

Table F-5. What problems confront women as they continue their education?

	GENDER				Total	
	MEN		WOMEN		Count	Count Percent
	Count	Count Percent	Count	Count Percent		
NO RESPONSE	0	.0%	2	4.4%	2	4.4%
FINANCIAL CONSTRAINTS	10	22.2%	9	20.0%	19	42.2%
FAMILY PROBLEMS	3	6.7%	1	2.2%	4	8.9%
RESISTANCE FROM PARENTS	1	2.2%	1	2.2%	2	4.4%
TROUBLE FINDING HUSBAND	1	2.2%	4	8.9%	5	11.1%
CONTRARY TO TRADITIONS	2	4.4%	5	11.1%	7	15.6%
HOUSING	4	8.9%	2	4.4%	6	13.3%
Total	21	46.7%	24	53.3%	45	100.0%

Table F-6. What problems confront men as they continue their education?

	GENDER				Total	
	MEN		WOMEN		Count	Count Percent
	Count	Count Percent	Count	Count Percent		
NO RESPONSE	5	11.1%	4	8.9%	9	20.0%
FINANCIAL CONSTRAINTS	12	26.7%	14	31.1%	26	57.8%
LIMITED CHOICE OF STUDIES	1	2.2%	2	4.4%	3	6.7%
DIFFICULTY MANAGING HOUSEHOLD	1	2.2%	1	2.2%	2	4.4%
PROBLEMS LEAVING WORK	2	4.4%	1	2.2%	3	6.7%
NO PROBLEMS	0	.0%	2	4.4%	2	4.4%
Total	21	46.7%	24	53.3%	45	100.0%

Considerations for Current Educational Practices

Equality of education for women suffers not only from lack of access to schooling but also from restrictive stereotypes outside of school and in the education process itself.

Stereotypes of what is "natural" and "acceptable" for each sex create subtle barriers to the full development of intellectual abilities even when academic access is unlimited. If and when the numbers of women in education begin to increase in Mali careful evaluation of women's educational experiences needs to be undertaken.

Another side to the discrimination of women effectively concealed in sex-disaggregated statistics of female enrollment rates is the distribution of females among the various disciplines. Even when there are not any formal regulations barring women from any field, there are strong cultural notions concerning "appropriate" fields for women.

Asking men and women about fields of study revealed two distinct patterns concerning the appropriateness of study. In Table F-7 we see that 37% of the respondents replied that all fields are appropriate for women and in Table F-8 we see that 44% of the respondents replied similarly for men. The reason given in most instances was simply that men and women share the same intellectual capabilities. One respondent pointed out that employment is a matter of training, experience and culture, and is not dependent on sex.

Men and women categorized consistently men's and women's fields of study. Education and medicine were most often stated as the fields of study for women. The reasoning for this rested on assumed inherent biological differences between the sexes: "women are more sensitive to the society", "women are more sentimental", "women are in direct contact with the target population" and "women are motivated for these causes". Less often it was stated that "women are more serious in all they do."

For men, the domains most often given were economics, justice, agriculture and administration. Most of the reasons given were related to physical strength, although we fail to find much justification for this point of view concerning these professions. Also, people discussed the fact that men have less responsibility for child care so they can leave the house to work. Medicine and education were never specifically mentioned in terms of work for men.

Policies to increase women's participation in higher education

If the assumed goal of higher education in Mali is to increase economic growth then it is important that those who are part of the system shared those views. The pursuit of higher education emanates from a desire for economic advancement, academic achievement, and personal development. Women do not necessarily view education in these terms. Education for many of the women who responded to the questionnaire was seen as a means to escape some of the pressures society puts on women. If appropriate behavior is defined in specific terms, then the design of the institution needs to be undertaken with those specifications in mind.

Table F-7. What fields of study are appropriate for women?

	GENDER				Total	
	MEN		WOMEN		Count	Count Percent
	Count	Count Percent	Count	Count Percent		
NO RESPONSE	3	6.7%	7	15.6%	10	22.2%
MEDICINE AND MIDWIFE	4	8.9%	3	6.7%	7	15.6%
TEACHING	2	4.4%	3	6.7%	5	11.1%
LAW	0	.0%	1	2.2%	1	2.2%
BIOLOGICAL SCIENCE	0	.0%	2	4.4%	2	4.4%
HOUSEHOLD SKILLS	3	6.7%	0	.0%	3	6.7%
ALL FIELDS	9	20.0%	8	17.8%	17	37.8%
Total	21	46.7%	24	53.3%	45	100.0%

Table F-8. What fields of study are appropriate for men?

	GENDER				Total	
	MEN		WOMEN		Count	Count Percent
	Count	Count Percent	Count	Count Percent		
NO RESPONSE	9	20.0%	4	8.9%	13	28.9%
ADMINISTRATION AND MANAGEMENT	0	.0%	1	2.2%	1	2.2%
EDUCATION	1	2.2%	0	.0%	1	2.2%
ENGINEERING	0	.0%	2	4.4%	2	4.4%
INDUSTRY	0	.0%	3	6.7%	3	6.7%
AGRICULTURE	1	2.2%	2	4.4%	3	6.7%
LAW	1	2.2%	0	.0%	1	2.2%
SCIENCE AND MEDICINE	0	.0%	1	2.2%	1	2.2%
ALL FIELDS	9	20.0%	11	24.4%	20	44.4%
Total	21	46.7%	24	53.3%	45	100.0%

Some suggestions for policymakers to consider in developing a system of higher education in Mali include:

1. **Most of the curriculum content reinforces stereotypes of men and women.**

This is a worldwide problem, of course. Attempts have been made in many countries, guided by resolutions of the U.N. International Women's Conferences, to find solutions; Mali should study these in designing new curricula.

2. **Sensitivity to the importance of marriage and family development for women.**

For both cultural and biological reasons, women will be more likely than men to have family responsibilities while they are pursuing higher education. Their needs may include the possibility of part-time study, flexible or staggered hours, and availability of convenient and affordable child-care facilities.

3. **Equal access to student housing.**

Dormitories for women need to be built. They need to ensure appropriate living conditions for women such as separate toilet facilities, separate eating areas, proper chaperons. Conditions such as these will encourage parents to send their daughters to school. One report states that men's dormitories are often built first, reinforcing stereotypes that men's education is more important than women's.

4. **Proper classroom building conditions that include women's toilets and lounges.**

The development of child care facilities and married student housing are needed for those women who are mothers or anticipating that role. Facilities for child care would enable women to continue their education. This is true for women at secondary school as well.

5. **Change of attitude towards women in education.**

This can happen through several different actions. Women are in need of role models to follow. Hiring policy for teaching and administrative staff needs to be evaluated at all levels of education, but especially for higher education. There is a need for more women in higher administrative levels and among teaching staff. Women need to be hired for positions in disciplines that are traditionally limited to males. Other role models need to be upheld in society so that more people realize the important role women play in the economic development of the country.

APPENDIX G
Case Study:
Observations from the adaptation of
the U.S. Land Grant university model in Morocco

Background

Several African nations involved in building colleges of agriculture have patterned institutions to some degree after the U.S. land grant model: Sierra Leone, Nigeria, Malawi, Ethiopia, Morocco, Tunisia, Uganda, Kenya, and Tanzania. These experiences make it clear that different political, economic and social realities of each country affect and shape their universities; it is evident that the American model cannot be and probably should not be identically duplicated.

Among the university institutions in a number of countries that have applied aspects of the land grant system, the Institut Agronomique et Vétérinaire Hassan II in Morocco (IAV) is gaining a growing reputation for its accomplishments in solving agricultural problems in Morocco. IAV has been cited as one of the few institutions in Africa capable of contributing significantly to the processes of generating and managing the technical change processes required to respond to the challenges of development.* Given the significance of the IAV experiment, it will be useful to summarize its experience.

In 1964, the Government of Morocco announced its intent to establish a Moroccan college of agriculture. The IAV was created in 1966 by the Government of Morocco to become the center for higher education in agriculture. The institute started with a student population of 12 and a single Moroccan faculty member, taking their basic science training in temporary facilities. It was first oriented to teaching soil and plant sciences relevant to Moroccan agricultural development needs. In 1973 horticulture was added at the complex in Agadir. The following year veterinary medicine was added. The first doctorate was awarded in 1982. Throughout the 70-80's the institute diversified into 9 colleges with 35 departments including: food technology, biochemistry, rural engineering, surveying, agricultural mechanics and marine science.

The IAV currently has over 2,100 students and 346 faculty members on its own campuses in Rabat and Agadir. The Institute now offers degrees equivalent to the American B.S., M.S., and Ph.D. degrees in agriculture and a doctorate of veterinary medicine.

* IAV was recognized for its achievements at two high level seminars on the challenges of agriculture and economic development: USAID/ANE Bureau's Symposium on Agriculture in the 1990's and BIFAD's "Getting Ready for the 1990's" September 1988.

The major land grant features adapted by IAV that are especially relevant for the consideration in the establishment of the University of Mali are outlined below.

1. Strong leadership and commitment

One of the key features of the land grant model in the US and at the IAV is that of strong leadership with a clear mission and the ability to clearly articulate this vision. The IAV was designed to create a Moroccan center of excellence in agronomic (and later veterinary) sciences equal to the best that France and other developed countries had to offer. This was a self-conscious mission on the part of the institute's founder, who remained its director for the next thirteen years.

As in the US experience, the IAV was fortunate to have first, a capable leader who saw clearly the necessary steps to developing a first class institution and, second, a committed and dynamic staff. The dynamic characteristic of the faculty was not an accident. The founder only selected those people who demonstrated total dedication to the development of the institute and understood its mission. The USAID's 1988 evaluation of the IAV labeled the leaders and staff "charismatic" in their devotion to the project.

Commitment of the staff to the Institute continues to remain strong. This is fostered by the atmosphere of honest intellectual enquiry and the quality of the student body and faculty colleagues. To become a faculty member at the IAV is an honor. Thus, though the status and remuneration of teacher-researchers is not formally different from that enjoyed by faculty at other institutions of higher education in Morocco, an esprit de corps has been developed at the IAV from the start. The IAV is recognized as a first class educational institution by the international community. As a result there is little faculty turnover despite many alternative job opportunities available for such highly trained individuals as those found at the Institute.

Stemming from strong leadership comes a strong measure of entrepreneurial opportunism. Leaders at the IAV actively seek to establish constituencies both nationally and internationally for support of teaching and research activities.

2. Community Support

The land grant model depends on broad based community support, especially from the agricultural sector. To establish this support, the IAV staff offers training and seminars for farmers on topics of concern for agricultural development. These seminars are held throughout the country.

The stage program (a hands-on training experience explained in number five) puts students and faculty directly in contact with farmers. Students live with farm families on their farms and faculty visit the students on location to monitor research activities.

Linkages are also established with private and public enterprises at the national level. Through providing quality consulting on agricultural problems to these firms and organizations IAV has established a positive reputation. These activities have enabled IAV to create scientific and financial linkages with a wide range of donors. Thereby, their dependency on any single donor is reduced. Strong community support at these levels has increased research opportunities and provided a wide range of experiences for students and staff. Linkages with various groups has kept IAV faculty up-to-date on developments in the agricultural sector and has enabled research to be responsive to the prevailing situation.

3. Organizational Structure

Several themes were important to the organization of IAV. First, IAV has been given a statutory mandate to provide all training in the fields for which it is responsible. It is incorporated as a public establishment, which means that it has a certain amount of autonomy, although it comes under the "tutelage" of the Ministry of Agriculture and Agrarian Reform.

The IAV encompasses agricultural sciences, veterinary medicine, and forestry studies. These fields are all united in a single institution, thereby creating a single strong center capable of articulating its needs to Government officials. The combination of veterinary medicine with agricultural sciences is a rare occurrence in the French system. IAV argues that given limited resources, consolidation of resources is more effective to carrying out the mission of the institute. Furthermore, IAV feels that giving students a broader exposure to both veterinary medicine and agricultural sciences given the importance of mixed crop and livestock production, is appropriate and useful training.

A second theme is the "Moroccanization" of the IAV. The founders of the institute agreed that the institution had to be truly Moroccan to be able to carry out the mission of serving the Moroccan agricultural sector. For this to happen, it had to have Moroccan faculty, and teach students skills that would enable them to deal with Moroccan agricultural problems in the Moroccan setting. This was accomplished through overseas training for faculty of most departments --master's level training in the United States as well as doctoral-level training leading to granting of the IAV doctor of Sciences degree. Doctoral and master's-level research were only carried out in Morocco. This was a sine quo non of the principle of the Moroccanization and adaptation of modern agricultural science to the Moroccan setting.

Third, the founder realized early that for the institute and its graduates to compete on equal terms with those graduating from the French grandes écoles, it was critical that the degrees from the IAV be seen as equivalent to those obtainable abroad. The IAV now grants its own, internationally-refereed doctorate, and has an established master's level program.

Fourth, the institute sought to prepare students to address the problems of Moroccan agriculture, which meant they must become familiar with those problems in the field --both on the institute's farms, and on farmers' fields. This led to the formulation of the fieldwork

program, or stage system, through which all students must pass each year. In many cases this is the student's first exposure to rural life and to agriculture and animal husbandry. Each year's stage is designed to teach specific skills and further develop overall awareness of the agriculture setting. A fifth important premise is that students should compete to enter, and then remain at the institute. Socio-economic status and pressure from influential persons has been eliminated. Gender is not a determinant of admission. Grades are based on performance, including performance in fieldwork and practical work. At the same time, the scientific caliber of programs is maintained at the highest level, jointly with the Faculty of Science at the university. The first-year intake remains substantially larger than the capacity of the institute for second-year students and beyond.

4. Long term relationship with USAID/University of Minnesota

Like most other African colleges of agriculture which have adopted aspects of the land grant model, IAV has been the recipient of foreign aid for its institutional development program. Unique to the Moroccan case is the fact that this aid has continued for over 20 years. IAV has benefitted from two types of aid: first, a long-term financial commitment by USAID through three successive projects; second, ardent and sustained institutional support from the University of Minnesota. This support has been key in helping the Institute achieve the training of faculty to the necessary level to carry out the institute's mission.

The collaborative relationship with the University of Minnesota has been encouraged and expanded throughout the duration of the project. Researchers at the IAV have been successful in conducting research and publishing the results in refereed scientific and scholarly journals. This is largely due to the financial support of USAID and the institutional support from the University of Minnesota. Educational training, laboratory supplies and collaboration with faculty at other institutes are possible with proper funding. The advent of microcomputer purchases under the project has transformed the capacity of IAV research faculty to process data and prepare information for publication.

5. Teaching, Extension, and Research

Teaching

Teaching remains the primary activity of the faculty at the IAV. The Board of Governors consisting of the Ministry of Agriculture, Ministry of National Education and Finance; directors of the various services concerned with agricultural extension, research, professional training, and forestry; and the director of the national office of manpower training along with the teaching staff, determine training needs.

An advisory committee monitors program development and content at IAV. This group consists of representatives of public and parastatal agencies in addition to the above mentioned individuals. An alumni association consults on curriculum development as well.

The purpose in this organization of teaching materials is to keep curriculum relevant to changing demands in the agricultural sector. The history of IAV shows continuous revisions, additions and developments in curriculum.

Extension

Extension activities of the IAV follow three lines. First, the IAV in a sense, acts as a wholesaler, providing scientific and technological knowledge to extension specialists in the extension branch of the Ministry of Agriculture, including the latest results of on-going research, as well as information derived from doctoral dissertation, masters theses, the student stage reports. Although IAV staff has no direct control over extension activities, they serve as instructors for specialized training sessions for extension agents.

Second, individual departments have organized Professional Associations to conduct seminars and symposia for public and private parties. These take place at different locations throughout the country to reach the broadest number of people as possible.

Third, because IAV has a real comparative advantage at extending scientific research results to Moroccan farmers. IAV is involved in contract on-farm extension and applied research for some larger producers. The national extension service, in contrast, is oriented toward service delivery -- plowing, spraying, pruning, and providing agricultural machinery, credit and other inputs.

Research

Research plays an important role in the sustainability of the IAV for three reasons. First, research activities keep faculty tied into state-of-art developments world wide. This helps maintain international standards of education as well as generating interest in and support for the IAV from national and international organizations. Second, students receive appropriate training in applied research to serve agricultural sector demands. Third, farm level research nurtures the broader constituency of Moroccan small farmers.

The development of the Rural Development Direction (DDR) at IAV has served to integrate research, teaching and community development. The DDR contracts with national and international clients for faculty involvement in research and development projects. Faculty integrate students into the projects by designing thesis research on project activities and incorporating findings into teaching curriculum. Key facets of DDR are that the projects are participatory, action-research oriented and they lead to integration of results into teaching and outreach programs.

6. Curriculum model

IAV has developed a curriculum model that combines classroom experience with rural realities. This is achieved by an appropriate mix or balance of "hands-on", practical experience with professional training to produce a graduate who can function effectively in Moroccan agriculture. The hands-on experience involves a series of stages, each one training students in problem solving and the application of the sciences to the realities to the Moroccan agriculture. All students no matter the field of study participate in all levels of the stage program. First year students are required to spend three months working on a farm. The goal of this experience is to acquaint the students with the realities of his or her chosen profession. The farms selected are private farms, and the students take part in all farm activities.

In the second year field experience, groups of three students are sent to rural villages chosen by the faculty. The three students have to get admitted to the village and pay a small sum to a village family for room and board. Then they must make detailed observations on weather, technology, nutrition, social and economic relations, and the history of the village. Observations are formally recorded in a group notebook.

The third year field experience is designed to provide students with a farmer's perspective on operating a farm. Groups of two students spend 2 weeks each in autumn, spring, and summer in the country side. Their research on the agronomy, livestock, ecology, socioeconomic conditions, nutrition, and technology of the farm is presented in a comprehensive report. In addition, the participating farmers are invited to the Institute -- with transport and room and board provided --- to spend 3 or 4 days with the students, discussing the fine points of the group's report and being introduced to IAV operations.

In the fourth year, students are introduced to the development problems of the region in which they examined a farm during the previous year. Through field-study questionnaires and interviews, the students attempt to determine the principal problems of the region. A faculty member accompanies each team to the field, and local technical service agents are invited to contribute to the study. The concentration is on detailed analysis of constraints to agricultural production at the farmer and village levels. Students are required to work in groups to analyze the constraints and propose solutions to local problems based on their own theoretical knowledge and their consultations with faculty advisers.

The field training program constitutes the backbone of the pedagogical program of the Institute by demanding that students integrate materials from diverse disciplines. The fieldwork program is supported by the interdisciplinary approach characterizing the institute as a whole, integrating both agriculture and veterinary medicine, and the human sciences along with the physical and natural sciences. The fieldwork experience also provides students with direct experience that enables them to ask faculty members challenging questions in class.

Recent shifts from guaranteed employment in the public sector to uncertain job opportunities in the private sector has raised some concern that students need even more

practical experience in school so they will be marketable. In addition to the stage program teachers are activity involved in arranging internship type programs with government and private organizations.

7. Emerging issues

After 20 years, IAV continues to expand and experiment with new ways to improve its mission. Some of the persist and emerging issues IAV confronts in its development are:

- **The strong charismatic leadership in program and institutional management on which the institute was founded is now being replaced by more routine bureaucratic authority.**
- **The IAV is confronting an extremely critical recurrent cost financing burden which is impinging on its ability to maintain an effective teaching and research program and to retain highly motivated staff.**
- **In light of the recurrent cost financing burden, the institute's ability to pursue a research agenda which responds to uniquely Moroccan concerns and provides quality education is a concern in the absence of non-donor tied research funds. In addition is the problem of providing adequate incentives to retain the institute's highly trained and motivated faculty members.**
- **Financing comes from the following sources: government, payments for Institute services rendered to clients, revenues from farms and other facilities under institute control, and project support from foreign aid and student fees. Some of the considerations for increasing revenue are mechanisms for training contracts, increasing student responsibility for tuition and boarding fees, PL 480 support for teaching and research, income-generating exploitation of the experimental farms consistent with teaching and research objectives, and an increased number of fee paying foreign students.**

8. Lessons

From the example of the IAV's adaptation of the land grant model, the following features can be highlighted for their usefulness in the design of future colleges of agriculture in Mali.

- **Leadership should be dynamic and committed to the success of the institute. The institute's mission should be clearly defined and understood by all involved in its conceptualization and development.**

- **Linkages with community groups at all levels, nationally and internationally, should be established to enable the development of responsive research. Linkages should enable teachers to bring to the classroom relevant examples and experiences which in turn will give students appropriate training.**
- **Long term funding should be available for institution development.**
- **Institutional support should be developed with national and international institutions.**
- **The institution should facilitate the experience of applying what is learned in the classroom to real problem solving and the development of research skills.**
- **The institute should be "nationalized". That is, staff should be highly trained nationals, all degree level research should be undertaken in-country and center on national agricultural development needs, and students should be trained on problems related to national agricultural development.**
- **International level teaching and research standards should be achieved and maintained.**
- **The institute should maintain a flexible structure responsive to the changing environment, and the ability to adjust to the external environment by managing the interface between capacity and performance.**
- **The evolution of the institute should take place in a politically and economically stable country.**
- **Curriculum should be designed in light of the realities of the agricultural sector.**

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ANNEXE H

LES PERCEPTIONS DE L'ENSEIGNEMENT SUPERIEUR ET DE LA CREATION DE L'UNIVERSITE DU MALI PAR LES ENSEIGNANTS DES GRANDES ECOLES

REMARQUE METHODOLOGIQUE

Les informations sur lesquelles se base ce rapport proviennent tout d'abord d'un questionnaire écrit (Annexe 1) distribué à un échantillon représentatif d'enseignants à temps partiel et à plein temps dans les sept Grandes Ecoles. La partie qualitative du questionnaire comportait neuf questions ouvertes sur trois sujets:

1/ Les points forts et les points faibles du système actuel de l'enseignement supérieur du Mali.

2/ La nécessité d'une université et le rôle dans l'avenir des Grandes Ecoles dans le système universitaire du Mali.

3/ Le problème de la centralisation par opposition à la décentralisation de l'université.

Un total de 68 questionnaires ont été distribués sur les sept Grandes Ecoles; 36 (53%) ont été rendues au consultant. Des mesures ont été prises afin de garantir l'anonymat des participants au questionnaire.

En outre, certaines informations figurant dans ce rapport ont été réunies par le moyen d'entretiens (enregistrées pour la plupart) dirigées par le consultant en personne avec les participants qui avaient reçu une formation universitaire aux Etats Unis d'Amérique et dans d'autres pays.

Une seconde source d'information provient des Etats Généraux de l'Education à partir de la publication donnée par le Secrétariat des Affaires Economiques du Bureau Exécutif Central de l'Union Démocratique du Peuple Malien (UDPM). Cette publication est le rapport officiel des débats qui ont eu lieu lors de la conférence générale sur la situation de l'éducation au Mali tenue du 20 au 24 mars 1989 sous l'égide du parti politique.

RESULTATS: LES PERCEPTIONS DE L'ENSEIGNEMENT SUPERIEURE MALIENNE

Les quatre premières questions de l'enquête adressées aux enseignants avaient pour objectif de dégager les points forts et les points faibles de l'enseignement supérieur malien en général et de leurs spécialités en particulier. Dans pratiquement tous les cas les commentaires faits à propos de l'éducation supérieure en général étaient réitérés à propos de domaines académiques particuliers. Cette convergence des remarques sur quelques domaines précis devraient encourager les responsables de

l'éducation malienne dans la mesure où elle indique que les problèmes les plus sérieux qu'ils doivent résoudre sont peu nombreux et bien définis, et par conséquent ils sont potentiellement sujets à une résolution systématique par le moyen d'une planification stratégique appropriée.

Le problème mentionné le plus fréquemment auquel se trouve confronté l'enseignement supérieur au Mali aujourd'hui, cité par presque 70% des participants, est celui d'un manque de matériel pédagogique de base tel que livres, équipements de laboratoire et bibliothèques. Ceci est un problème qui a souvent été évoqué lors de précédentes études et évaluations.

Pour la moitié des enseignants interrogés le second problème en ordre d'importance était les classes surchargées. La plupart ont suggéré que pour résoudre ce problème il fallait construire des immeubles supplémentaires, c'est-à-dire des salles de classe.

Un bon tiers des participants ont soulevé le problème d'une certaine démoralisation des enseignants comme étant l'un des problèmes les plus sérieux de l'enseignement supérieur actuellement. Un professeur, particulièrement découragé par la situation, a déclaré:

Aucune considération pour l'enseignement du Mali; nous mourrons à petit feu. L'enseignant par la faiblesse de son revenu n'a aucune possibilité de faire des recherches. La documentation laisse à désirer. Nous devons nous mêmes avec un salaire de misère nous documenter.

Ce problème est aussi à la base d'une des recommandations faite par l'Union Nationale des Enseignants Retraités (UNEREC) lors des Etats Généraux, recommandation en faveur de la revalorisation de l'enseignement par la création d'un statut administratif pour les enseignants qui leur garantirait l'amélioration des conditions de travail et de vie et le respect de leurs libertés fondamentales (p. 23). Sans aucun doute, tout changement significatif dans le système de l'enseignement supérieur au Mali devra examiner ce problème d'importance en lui accordant toute la considération qu'elle mérite. Dans la phase 1b il faudrait faire une étude détaillée de la quantité de travail des enseignants par rapport à leur salaire, et l'impact de leurs activités lucratives extérieures sur leurs responsabilités d'enseignant en vue de déterminer des échelons de salaire qui les encourageraient à se consacrer entièrement et à plein-temps à leur travail.

Un autre problème qui figure de façon proéminente parmi les réponses des participants est celui de la crise de l'emploi actuelle pour les diplômés de l'enseignement supérieur. Un quart de ceux qui ont répondu au questionnaire et presque tous les

participants à l'entretien oral ont mentionné l'urgence de la situation. La plupart des participants semblent d'accord qu'il faille prendre des mesures à tous les niveaux de l'enseignement, et plus particulièrement de l'enseignement supérieur, pour répondre plus directement à l'évolution des besoins de l'économie en développement.

Ceci fut aussi l'une des principales préoccupations lors de la conférence sur les Etats Généraux de l'Education. (voir les messages de l'UNJM et de la Fédération Nationale des Employeurs et le chapitre intitulé "de l'Esprit de l'Ecole Nouvelle du Profil de l'Homme Nouveau à former," p. 35-41 du "Rapport Général"). Une solution généralement proposée est l'ouverture du système pour que l'étudiant puisse choisir les matières qu'il ou elle souhaite étudier plutôt que d'être soumis à un programme rigide. La plupart des participants ont estimé qu'un tel changement ne serait pas possible au sein de la structure des Grandes Ecoles telle qu'elle existe maintenant, mais qui serait possible dans une structure universitaire.

Un nombre d'enseignants (22% des participants qui ont répondu au questionnaire et plusieurs de ceux qui ont participé à un entretien oral) ont parlé de l'absence de cohérence entre les différents niveaux du système de l'enseignement. "C'est comme si les écoles primaires fonctionnaient dans leur propre monde, les écoles secondaires dans un monde différent, et les Grandes Ecoles dans un troisième," a remarqué un enseignant qui au cours de sa longue carrière avait enseigné à chacun de ces trois niveaux.

Aucun des autres problèmes cités furent mentionnés par plus de 8% des participants, y compris notamment celui de l'insuffisance de l'aide étrangère qui n'a été soulevé qu'une fois. De ces réponses il ressort clairement que ceux qui sont le plus directement touchés par les problèmes du système de l'enseignement supérieur sont aussi les plus déterminés à trouver une solution interne à ces problèmes.

Ceci est en outre soutenu par les descriptions qu'ont fait les participants des points forts de l'enseignement supérieur malien: le plus fréquemment mentionné est la prédominance malienne dans le corps enseignant. Il existe un optimisme général au sein du corps enseignant quant à son propre potentiel, et quant au potentiel qui existe parmi les cadres actuellement employés dans des secteurs autres que l'enseignement. Un certain nombre de participants ont montré qu'ils croyaient que beaucoup de cadres hautement qualifiés se rendraient disponibles pour enseigner à l'Université du Mali si certaines conditions étaient remplies, c'est-à-dire la régularité du paiement d'un salaire adéquat, la disponibilité de l'équipement et de la documentation nécessaires. La possibilité

d'attirer des enseignants universitaires qualifiés d'autres secteurs de l'économie malienne devrait être examinée dans la phase I-B.

Le deuxième point fort du système de l'enseignement supérieur malien, d'après cette enquête, provient de son enracinement dans les réalités du milieu culturel et social. Un quart des participants ont mentionné les avantages d'une formation sur le terrain. Plusieurs d'entre eux ont déclaré que les étudiants formés sur place quittent l'école prêts à une insertion professionnelle immédiate alors que ceux qui ont étudiés à l'étranger nécessitent une période d'adaptation après leur retour avant de devenir entièrement fonctionnels dans le milieu professionnel local.

Un nombre de participants aux entretiens oraux ont soulevé les avantages financiers aussi bien que culturels de la présence d'une université dans le pays. Les groupes pour lesquels l'accès à un enseignement supérieur national paraissait particulièrement avantageux étaient:

- 1/ les travailleurs, hommes et femmes, qui désirent une formation académique plus poussée mais qui ne souhaitent pas ni ne peuvent quitter leurs emplois à cette fin, et
- 2/ les femmes mariées pour qui des études à l'étranger vont à l'encontre des exigences sociales de leur statut.

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