PD-ABA-356

64389

FY 90 -- Project Identification Document

MAURITIUS ADVANCED TECHNOLOGY TRAINING PROJECT

REDSO/ESA

January 1990

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AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT IDENTIFICATION DOCUMENT FACESHEET (PID)

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete) — Revision No. ____

DOCUMENT CODE: 1

2. COUNTRY/ENTITY: Mauritius

3. PROJECT NUMBER: 642-0011

4. BUREAU/OFFICE: A. Symbol: AFR; B. Code: 06

5. PROJECT TITLE (maximum 40 characters): Advanced Technology Transfer

6. ESTIMATED FY OF AUTHORIZATION/OBLIGATION/COMPLETION

A. Initial FY 90

B. Final FY 94

C. PACD 95

7. ESTIMATED COSTS ($000 OR EQUIVALENT, $1 =)

FUNDING SOURCE		LIFE OF PROJECT
A. AID		6,750
B. Other U.S.	1.	
	2.	
C. Host Country		2,250
D. Other Donor(s)		
TOTAL		9,000

8. PROPOSED BUDGET AID FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. 1ST FY 90		E. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) DFA	620	630		1,500		6,750	
(2)							
(3)							
(4)							
TOTALS				1,500		6,750	

9. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 660, 670

10. SECONDARY PURPOSE CODE

11. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	TNG	TECH					
B. Amount							

12. PROJECT PURPOSE (maximum 480 characters)

The purpose of the project is to strengthen the University of Mauritius so that its teaching and research capacities in technology-related areas are enhanced in support of industrial diversification. This will involve developing the Center for Informatics and Computer Sciences, upgrading electronics/electrical engineering courses, and upgrading management sciences course offerings.

13. RESOURCES REQUIRED FOR PROJECT DEVELOPMENT

Staff: REDSO PDO - 6 weeks
AFR/TR/EHR HRD Specialist - 3 weeks

Funds: Funding already obligated under the Mauritius Industrial Diversification Project will fund a development plan for the Center for Informatics and Computer Sciences which will provide the analytical basis for PP preparation.

14. ORIGINATING OFFICE CLEARANCE

Signature: Satish P. Shah

Title: Director, REDSO/ESA

Date Signed: MM 01 DD 17 YY 90

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 01 DD 23 YY 90

16. PROJECT DOCUMENT ACTION TAKEN

S = Suspended
A = Approved
D = Disapproved
CA = Conditionally Approved
DD = Decision Deferred

17. COMMENTS

18. ACTION APPROVED BY

Signature

Title

19. ACTION REFERENCE

20. ACTION DATE: MM DD YY

AID 1330-2 (8-79)

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Abbreviations

AEPRP	African Economic Policy Reform Program (AID)
AFGRAD	African Graduate Fellowship Program (AID)
AID	U.S. Agency for International Development
ATLAS	African Training for Leadership and Advanced Skills (AID)
B.Sc.	Bachelors of Science Degree
CAD	Computer-Aided Design
CIP	Commodity Import Program (AID)
DFA	Development Fund for Africa (AID)
EPZ	Export Processing Zone
ESF	Economic Support Fund (AID)
FY	Fiscal Year
HRDA	Human Resource Development Assistance (AID)
GDP	Gross Domestic Product
IESC	International Executive Service Corps
ITTC	Industrial Trade Training Centre
IVTB	Industrial Vocational Technical Board
MBA	Masters of Business Administration Degree
MCCI	Mauritius Chamber of Commerce and Industry
MEDIA	Mauritius Export Development and Investment Authority
MEPD	Ministry of Economic Planning and Development
MEPZA	Mauritius Export Processing Zone Association
MIDP	Mauritius Industrial Diversification Project (AID)
MOI	Ministry of Industry
M.Sc.	Masters of Science Degree
Ph.D.	Doctor of Philosophy Degree
PID	Project Identification Document (AID)
PP	Project Paper (AID)
REDSO/ESA	Regional Economic Development Service Organization for East and Southern Africa (AID)
SIL	State Informatics Limited
UM	University of Mauritius
USIA	United States Information Agency

Executive Summary

This Project Identification Document (PID) for the Mauritius Advanced Technology Training Project (642-0011) is the logical outgrowth of AID-funded work undertaken in FY 88 and beyond under the Mauritius Industrial Diversification Project (642-0010), as amended. As such, it supports AID's overall program goal of promoting economic stability and increasing incomes in Mauritius.

The purpose of the new project is to strengthen the University of Mauritius so that its teaching and research capacities in technology-related areas are enhanced in support of Mauritian industrial diversification efforts, primarily in the informatics and electronics sectors. This will involve: (1) developing the institutional capacity of the Engineering School's existing computer facility into an autonomous Center for Informatics and Computer Sciences; (2) upgrading course offerings of the School of Engineering, particularly in the electronics and electrical engineering field; and (3) upgrading selected course offerings of the Management Sciences Division of the Law, Management and Social Studies School. Over the five year life-of-project, AID will provide $6,750,000 under the DFA for technical assistance, training, and equipment, as well as modest funding for demonstration projects and applications research. The Government of Mauritius will provide $2,250,000 of support, including construction of expanded facilities for the Center, office facilities and staff support for the technical assistance team, and salaries and international travel associated with training.

The University of Mauritius will be the implementing agency. On its behalf, the Government of Maurtius will enter into an implementation contract with a U.S. institution of higher education or a not-for-profit organization experienced in education and training. Under either arrangement, technical assistance and training will be provided by a combination of public and private sector entities. This implementation arrangement will enable REDSO/ESA to manage the project non-intensively.

E

MAURITIUS

Advanced Technology Training Project

I. PROGRAM FACTORS

A. Conformity with Recipient Country Strategy / Programs

Mauritius continued its strong record of export led economic growth into 1989, although the pace slowed, at least in part as a result of its current transformation into a capital-intensive economy. Real GDP growth is expected to be about 5 percent in 1989, in contrast to almost 6 percent in 1988 and more than 8 percent in both 1986 and 1987. The slowdown is reflected across several sectors of the economy. The sugar sector declined by more than 10 percent in real terms because of severe storm damage to the crop. Growth of the export processing zone (EPZ) sector decelerated to 12 percent, compared to an annual average rate of 22 percent during the previous two years. The Government attributes the decline to reduced European demand for Mauritian products, as well as the failure of a number of enterprises to compete successfuully due to inadequate management skills and obsolete equipment. Tourism grew at about 10 percent in real terms, compared to 15 percent last year.

The economic slowdown has been accompanied by a decline in the rate of domestic savings which fell from 28 percent of GDP in the last three years to an estimated 25 percent last year. Overall investment is expected to increase in real terms by about 3 percent this year and 5 percent next, with tourism, transport and telecommunications being the leading sectors in terms of investment. Until last year, Mauritius made significant progress in reducing inflation which was brought down from 8.3 percent in 1984/85 to 1.5 percent in 1987/88. In 1989, inflation was expected to average 16 percent, however, due to a combination of external and internal factors. As a result of full employment, the Government was unable to resist pressures for substantial wage increases which threaten the country's competitiveness. With respect to the external sector, over the past three years Mauritius achieved a surplus on the current account. This year's surplus is Rs. 960 million (roughly $65 million), as against a surplus of Rs. 660 million last year. Total imports are expected to increase to Rs. 15 billion (slightly more than$ 1 billion) while exports are expected to increase to Rs. 14.4 billion, leaving a small deficit which will be more than offset by the surplus in services and transfer accounts due to higher receipts from tourism. The overall balance of payments is expected to show a surplus of Rs. 2.2 billion (nearly $200 million) and foreign exchange reserves in the Bank of Mauritius will increase to about Rs. 7 billion ($ .5 billion) which represents 4.5 months of imports.

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In 1983, the Government's highest priority was to address chronic, widespread unemployment then estimated at 19.4 percent. By undertaking a series of economic policy reforms and aggressively promoting the growth of export-oriented industry, the Government turned the situation around in just a few years. Since 1984, the country has moved from a situation of high unemployment to one of full employment. In fact, unemployment is projected to fall to 2.8 percent by the end of 1989, a situation the Government characterizes as one of over-employment. The state of full- or over-employment is generating new tensions within the economy. It has led to severe labor shortages in all sectors, especially key export sectors, and the imbalance in the labor market is responsible for wage increases at all levels of the labor force. This situation is contributing to widespread absenteeism and exacerbating a long-standing concern over productivity and competitiveness. It has also led to a dramatic increase in consumption rates which is contributing to rising inflation.

In his 1989-90 Budget Speech, the Minister of Finance set forth objectives designed to address several problems associated with a full employment economy. The Government's objectives are to: (1) bring inflation under control by reducing public sector demand and introducing monetary measures to encourage savings and control demand; (2) speed up implementation of reforms designed to promote the transition from a labor-intensive economy to a capital-intensive one; (3) limit government expenditures, both recurrent and capital, thereby reducing the overall deficit; and, (4) improve the environment and enhance living conditions, particularly housing which is in critically short supply.

To summarize the current economic situation, Mauritius is presently confronting the twin problems of capacity constraints and inflation, both symptoms of an overheated economy. Its balance of payments position is strong but export sectors are threatened by higher costs. In its current transition to a capital-intensive economy, the Government recognizes it must increase the rate of savings to modernize the economy and step up manpower training efforts.

Mauritius has a number of comparative advantages which make it an attractive investment location. They include: a stable government; good fiscal incentives; preferential access to markets in Europe, North America and Africa; a central location among Europe, Asia, and Africa; generally adequate infrastructure, including good air links; good business support services in many areas but not including telecommunications at this time; a stable, trainable work force with excellent language skills in both French and English, although there are currently labor shortages and productivity is declining; and, labor costs equal to or lower than many industrializing countries, although they are rising rapidly.

Despite these advantages, diversification from textiles into higher value added industries has proceeded slowly. The dangers

of slow transformation are accentuated by the increasingly competitive environment in the textile industry world-wide, as well as continued stagnation of the sugar sector. Today, diversification efforts are hampered by: a shortage of engineers and other technicians, especially computer specialists, as well as semi-skilled laborers; a paucity of manufacturing support industries; expensive and mediocre quality telecommunications; lengthy and confusing investment approval procedures; too few free zone style industrial parks; and increasing concern over environmental degredation. In addition, of course, Mauritius must seek investments which are not unduly hampered by its long distance from both markets and suppliers. These are constraints which the Government must address, in concert with the donor community, if Mauritius is to experience continued economic growth through export-oreinted industrial diversification.

B. Relationship to the A.I.D. Strategy for Mauritius

Beginning in 1979, AID initiated a series of activities largely funded from the Economic Support Fund (ESF). They involved the provision of balance of payments support in the form of commodity import programs (CIPs), a cash grant for economic policy reform under the African Economic Policy Reform Program (AEPRP), training, and modest support for family planning and housing construction, as well as the provision of Section 416 food commodities to offset the impact of decreasing U.S. sugar imports. Local currency generations resulting from the CIPs, AEPRP cash grant and food imports were programmed in support of Mauritian development efforts. Starting in FY 88, AID altered its approach from balance of payments and budgetary support to project assistance under the Development Fund for Africa (DFA). The change was prompted by a shortage of ESF funds for Africa as a whole. The rationale for taking a more developmental approach in Mauritius was supported by the substantial improvement in its foreign exchange reserves as a result of the export-led economic boom.

Sharing the Government's concern over the potential adverse consequences on economic growth of over-concentration of export manufacturing in textiles, in FY 88 AID provided $850,000 for the Mauritius Industrial Diversification Project (MIDP) to assist the country to diversify its industrial base through the provision of sector and policy analyses as well as direct assistance to private firms. That year, AID also provided $750,000 for a complementary training activity under the Africa Bureau's Human Resources Development Assistance (HRDA) Program. Studies conducted to date uncovered several possibilities for Mauritius to enter high value added markets in such sectors as informatics and electronics. The informatics study pinpointed offshore computer aided design (CAD), slow turn-around data entry, software development, and desk top publishing as areas in which Mauritius has real potential because it can offer substantial cost savings over developed country informatics firms. On the other hand, Mauritian informatics firms are not likely to be competitive for telecommunications-intensive

informatics fields such as voice center operations because of relatively high local and international telecommunications costs. The slightly less optimistic electronics sector analysis supports diversification into the electronics subassembly and commercial and industrial finished products fields. However, there is an apparent reluctance on the part of Mauritians to invest, because of a history of failures in the electronics field over the past ten years and justifiable concern that the society has too few electrical, electronic and mechanical engineers, as well as a dearth of technicians and high skilled workers. (See Annex 2 for a description of completed, on-going, and planned MIDP studies.)

The studies also highlighted the role of the Government in creating a more attractive investment environment and the critical need for attention to human resource development, including involvement of the University of Mauritius (UM) in the development process. In FY 89, AID amended MIDP, providing another $1.5 million to expand upon previous studies and analyses by adding: (1) another $600,000 of technical assistance to the Government and private firms to increase capabilities in market research, promotional activities and training related to the informatics and electronics sectors; (2) $150,000 additional firm-specific assistance from the International Executive Service Corps (IESC); (3) $350,000 for equipment, software and technical assistance to develop a computerized data base to enable the Government to improve its efficiency in reviewing and processing applications for business permits and export licenses; and (4) $400,000 to initiate the process of developing a long-term linkage between the University of Mauritius and one or more U.S. universities, with a view toward expanding the country's capacity to train a qualified technical and managerial workforce.

As an early activity under the MIDP amendment, AID contracted with the Academy for Educational Development (AED) to provide background studies to help assess UM's potential to improve the country's human resources skills base in support of industrial diversification, as well as take a first look at the level of support the University would require to make the transition to a more technologically sophisticated teaching institution. The two studies -- one entitled "The University of Mauritius - An Institutional Analysis" and a second, "A University Linkages Project Proposal for the Advancement of the University of Mauritius" -- were completed in December and provided valuable inputs to this PID for the Mauritius Advanced Technology Training Project (see in particular description of the implementing entity, Section III.D. below).

II. PROJECT DESCRIPTION

A. Perceived Problem

In 1988, the Ministry of Economic Planning and Development (MEPD) published "Mauritius: Towards an Industrial Training

Strategy," addressing the role of industry, private training institutions and Government in meeting the human resources development challenge faced by Mauritius. The report predicted "industrial training and re-training will occupy an important place in policy-makers' minds as the country leaves behind its sleepy 'rag trade' image and lifts itself progressively higher into industrial spheres with their greater and more rapid technological innovation." Recognizing that the challenge is to view training as a basic policy tool to promote industrial growth, MEPD's Strategy calls for a training policy, distinct from the country's overall education policy. Moreover, it acknowledges the limitations of existing training institutions -- the Lycee Polytechnique which offers advanced vocational-technical training but is not fully utilized and the Industrial Trade Training Centers (ITTCs) that provide more basic vocational training -- which train for current requirements rather than prepare students for the industries of the future. The Strategy acknowledges that UM has a role to play in meeting the country's technical training challenge. It suggests that the University change the way it operates, for example by relaxing entry requirements and adopting new curicula, to become more relevant to Mauritian training needs. It has also been urged to equip itself to conduct applied research in key areas, as well as provide leadership and take initiative in the development process. Finally, a 1987 Government study (the so-called Visitor's Report) recommended that UM reorganize and introduce several new courses of study: MBA, Masters in Economics, Bachelors in Humanities and Social Studies, and Diploma in International Marketing and Finance.

Recent establishment of the Industrial and Vocational Training Board (IVTB) is another positive development. The Board is administering a recently instituted one percent payroll tax which is levied on industry to support vocational training programs. However, the Board which is headed by the Minister of Economic Planning and Development, is still organizing itself, and new training programs are yet to begin on a significant scale.

The importance the Government attaches to developing labor skills to ease the transition from a labor- to capital-intensive economy is reflected in the emphasis given to manpower training and development in the 1989/90 Budget Speech: "Manpower training and the acquisition of modern high technology equipment are the sine qua non conditions to steer Mauritius successfully through this critical but crucial phase of development. This is why manpower training has become the centre of our preoccupations since last year." Despite this stirring statement, the speech made only three new proposals. The first, and most interesting, is to allow all companies which invest in manpower training and development to deduct from their income tax 200 percent of the amount spent for training under IVTB-approved programs. The other two proposals pertain to the textile sector exclusively.

The Government recently called on UNDP to convene a Donors' Meeting on Human Resource Development which will be co-chaired

by the Minister of Planning and the UNDP Regional Director for Africa. A draft investment program for the 1990-93 timeframe proposes more than $74 million for Basic Education and Training Infrastructure and $39.5 million for industry-specific training facilities, as well as funding for research and related infrastructure. Two proposals for supporting UM include $7 million related to high-tech training for industrial needs. It is anticipated that the meeting will be held in March 1990 and that AID will be asked to attend, because of its long-term support for training in Mauritius and its current interest in supporting the University.

Finally, both the informatics and electronics sector studies financed under MIDP identified critical gaps in educational and vocational-technical training facilities, including the University. While the informatics study emphasized the role of the private sector in offering practical skills training, it recognized that UM has an important role in providing advanced training, especially in areas that may have few immediate practical applications but are nonetheless essential for long-term competitiveness in the field. The electronics sector study attached a high priority to improving programs in electrical, electronic, maintenance and support industries, as well as industrial management skills. Both studies emphasize the shortcomings of the telecommunications industry, pointing to a shortage of trained technical personnel as well as outdated equipment and costly services. Specific recommendations concerning the role of UM concern the importance of deepening ties with the private sector, including encouragement for the faculty to consult with local firms, and the desirability of increasing and strengthening its continuing education offerings.

An AID-financed summary study on industrial policy for Mauritius drew upon the two sector studies to formulate a human resources development action plan. Assuming Government encouragement of pioneering efforts by local entrepreneurs to develop both the electronics and informatics sectors, the plan highlights the severe shortage of engineers, supervisory technical personnel, skilled technicians, systems analysts, systems and applied programmers, and computer operators, as well as middle managers. It reiterates the inadequacy of local facilities, teaching faculty and trainers, and offers several recommendations, including: (1) the need for Government encouragement for the formation of industry-specific associations to be involved in planning and implementing training programs; (2) the desirability of MEPD and the Ministry of Industry (MOI) setting up training task groups, including representatives of industry associations, concerned ministries, IVTB, the University, and the Mauritius Chamber of Commerce and Industry (MCCI), to review training recommendations emanating from various reports; and, (3) the need for coordinated implementation of training programs which aim to strengthen the capabilities of existing institutions, in lieu of the current ad hoc approach to training.

B. Project Goal and Purpose

Because the Mauritius Advanced Technology Training Project is viewed as a logical outgrowth of AID-funded work under MIDP, as amended, the goal of the new project will be the same, namely: To promote economic stability and to increase incomes in Mauritius.

The purpose of the project is to strengthen the University of Mauritius so that its teaching and research capacities in technology-related areas are enhanced in support of Mauritian industrial diversification efforts. This will involve:

(1) Developing the institutional capacity of the Engineering School's Computer Center into an autonomous Center for Informatics and Computer Services reporting directly to the Vice Chancellor and performing the following functions: (a) supporting the teaching of computer sciences; (b) supporting the teaching of related disciplines, including engineering and management sciences; (c) providing computer services within the University; and, (d) planning and conducting research leading to the broader application of computer technology in support of the country's industrial diversification effort.

(2) Ugrading course offerings of the School of Engineering, particularly in the electronics/electrical engineering field, including telecommunications, to support development of the Center for Informatics and Computer Services, as well as the country's overall industrial diversification effort.

(3) Upgrading the institutional capacity of the Law, Management and Social Studies School's Management Sciences Division to: (a) carry out more industry-responsive and higher quality management education and training, particulary in the area of international marketing; and, (b) conduct applied research on private sector management issues.

As such, the purpose is directly supportive of the revised purpose statement for MIDP which is to: (1) assist the private sector and the Government to identify, evaluate and implement alternative industrial and service sector diversification opportunities; and (2) assist the private sector directly to increase sales and value added for export. The contribution of the new project will be to develop Mauritian skills and facilities in an area which is critical to its diversification efforts -- namely informatics and computer sciences --, as well as upgrade engineering and to a lesser extent management training.

C. Expected Achievements / Accomplishments

The project components, including a notional description of specific outputs and inputs required to produce them, are as follows:

1. Technical Support

Long- and shorter-term technical assistance supplied under the project by one or more U.S. institutions of higher education or a not-for-profit organization, coupled with appropriate private sector entities, will develop the ability of the University to: (a) transform the existing computer facility into a free-standing, broader-guaged Center for Informatics and Computer Services; (b) strengthen existing degree and diploma programs in computer sciences, electronic/electrical engineering, and management sciences; (c) within the PACD, introduce new training programs, including a Bachelors in Computer Sciences, as well perhaps as Bachelors and/or Diploma programs in Computer Engineering and Computer Technology; and, (d) facilitate collaboration between the University and the private sector leading to the eventual provision of consulting services and applied research to the public and private sectors which contribute to Mauritian efforts to diversify industry. U.S. faculty members and private sector experts will assist in developing the Computer Center and the School of Engineering's Computer Sciences faculty, including program and curriculum development, as well as provide teaching services (in lieu of UM faculty away on training) and oversight for demonstration projects and applications research undertaken by the University faculty. Depending on what arrangements are made with participating universities, the long-term advisors could also oversee research done in Mauritius in fulfillment of Ph.D. and M.Sc. degree requirements following completion of coursework in the U.S.

2. Training

Training will fall into several categories: (a) U.S. degree training (Ph.D.s and M.Sc.s) for key members of the teaching staffs of the Computer Center and the Engineering School; (b) U.S. short-term and in-country training for relevant University staff and faculty; and (c) workshop and conference attendance for university staff and faculty, and perhaps, relevant members of the public and private sectors.

3. Demonstration Projects and Applications Research

Demonstration projects will be aimed primarily at developing the capacity of the University to undertake applied research. This will involve gaining experience, with the guidance of project technical assistance, in examining proposals to determine their feasibility, as well as identifying and accessing appropriate funding mechanisms, and preparing implementation plans and evaluation designs. It is expected that project-funded activities would focus on computer, engineering, and management applications in support of industrial diversification generally and the development of the informatics and electronics sectors specifically.

4. Equipment

Equipment will directly support the effort to upgrade the University's capacity to provide teaching, training, and consulting services as well as undertake applied research in support of the country's industrial diversification efforts. Equipment for the Center for Informatics and Computer Services will include: computers and peripherals; software, books, journals, and periodicals; and teaching aids.

D. Project Outline and How It Will Work

With support provided under the Mauritius Advanced Technology Training Project, UM's computer facility will be developed into a Center for Informatics and Computer Services capable of performing four primary functions:

(1) Academic computing services - Focused on servicing faculty and study computer needs, this element will provide training, afford access to remote data bases, and introduce new computer systems.

(2) Administrative computing services - Focused on establishing and operating a management information system for the University, this element will automate key administrative functions and information bases.

(3) Communications services - This element will establish and operate centralized systems (e.g. telephone, television, security, and so forth) for the University.

(4) Operations services - This element will be responsible for operations and maintenance of all computer systems.

Assuming that the Center develops as envisioned and the University as a whole gains greater private sector acceptance by providing more industry-relevant and higher quality training, it could eventually assume a fifth important function as well -- the provision of computer-aided productivity services. Services would be targeted on private and possibly public sector managers and engineers, as well as faculty and students. Whether the Center eventually branches out in this direction will be a function of its success in its four primary functions. For this reason, productivity services are not considered a realistic output of the Advanced Technology Training Project within its anticipated timeframe.

Recognizing that REDSO/ESA, which manages AID's program in Mauritius, has limited staff resources to devote to this responsibility (see Section III.E. below), the project will include sufficient funding for the University to enter into a long-term host country contract with a U.S. implementing entity, in all likelihood either a not-for-profit experienced in the development of educational and training institutions or an academic institution. The contractor will identify appropriate

technical assistance and training opportunities geared to developing the institutional capacity of the University to expand its course offerings and improve its educational and training skills, as well as provide consulting services and undertake industry-relevant applied research, particularly in the emerging informatics and electronics sectors. The lead institution will also be responsible for arranging for procurement of project commodities.

The contractor will provide a long-term technical assistance team headed by a senior information systems manager. An illustrative scope of work includes overall responsibility for: (1) coordinating technical assistance and providing overall direction to the team; (2) identifying and arranging for degree, non-degree, and in-country training and conference travel, including participating in the selection of appropriate trainees; (3) providing overall direction for demonstration projects and applied research activities; and (4) assisting in the selection of equipment to be procured under the project. The balance of the long-term technical assistance team will include an academic computing specialist, a lab director to oversee Center operations, a computer scientist and a computer engineer. Because of the importance of developing UM capabilities to assume full responsibility for operating the Center, members of the long-term team will turn over responsibility for their functions before the end of the project. Short-term technical assistance will be provided in the fields of administrative computing, management information systems, software development, and international marketing. The contractor's U.S.-based staff will support the in-country team, including arranging for the procurement of project-funded equipment.

Planned long-term training will include arranging for two members of the School of Engineering/Computer Center staff to obtain Ph.D.s and for five faculty to receive M.Sc.s. It is not yet decided whether the lead contractor will be responsible for arranging for degree training or whether this will be handled through the Africa Bureau's new African Training for Leadership and Advanced Skills (ATLAS) Project (698-0475), a vehicle for funding quality academic training and for providing sustained followup of academic returnees. In any case, because of concern about not taking UM staff involved in developing the Computer Center away from the country for too long, the PP design team will explore the approach of having degree research done in Mauritius under the supervision of the long-term technical assistance team whenever possible. In addition to shortening the time of key staff away from the Center, this would ensure greater relevance of the research to Mauritian problems and reduce costs.

Modest funding for demonstration projects and applied research activities will enable the technical assistance team to develop the capacity of the Computer Center, as well as the Engineering School, to conduct industry-relevant, higher quality research. If feasible, such research will be conducted by project-funded trainees in fulfillment of their degree requirements.

Equipment purchased under the Project will supplement the mini-computer and PCs now operated by the Computer Center. New equipment will include a more up-to-date mini and roughly twenty-five additional PCs, as well as printers and peripherals. The Project will also provide for the acquisition of software, books, journals and teaching aids.

This conceptual model for developing UM's computer facility into a Center for Informatics and Computer Services takes into consideration the appropriate level of facility for the Mauritian economy in the near- to medium-term. The temptation to try to develop UM into a first-world technological university or to envision a Computer Center which supports a high level of training or provides a wide-range of sophisticated services to public and private sector clients was resisted. At this juncture, the planned expansion is considered suitable for the size and level of development of the Mauritian economy, it will be supportive of the drive to move toward a more capital-intensive economy, and it is felt to be within the grasp of University to implement.

III. FACTORS AFFECTING PROJECT SELECTION AND FURTHER DEVELOPMENT

A. Social Considerations

Due to its recent successes in generating employment through industrial development (largely as the result of the rapid growth of the EPZ sector) and a significant reduction in the fertility rate, Mauritius today confronts problems associated with a full employment economy. Principal among them are labor shortages and relatively low productivity due to absenteeism. This leaves the society with few options if it wishes to continue to develop economically, especially into more up-market industries.

The Government is justifiably wary about importing labor, despite considerable pressure to do so particularly in the construction sector. To date, permission has been granted only for selected technicians for prescribed time periods. Those who oppose importing labor argue persuasively that the country lacks the social and physical infrastructure to cope with an influx of immigrant workers. Statistics on housing, water, and sanitation conditions, as well as access to health and educational facilities support this view.

Instead, the Government is pursuing a rapid transition from a labor-intensive to capital-intensive industrial sector through its efforts to promote diversification into higher value added ventures, including but not limited to growth of the informatics and electronics sectors. Success will depend in large measure on the Government's ability to promote human resource development, as well as improve other aspects of the business climate.

Today, studies of absenteeism and other dimensions of the human resource problem are leading to a growing recognition that many

firms have failed to retain or motivate their employees through neglect or mismanagement. Too little effort has been made to improve conditions in the workplace, for instance by greater use of automation, mechanization or robotization, to say nothing of higher pay or better fringe benefits. Instead, a large share of EPZ employment is of poorly paid, semi-skilled, predominantly younger workers, some in laboring in near sweat shop conditions.

Some surmise that the failure to improve the conditions of work is attributable at least in part to the fact that most Mauritian firms have been run for the better part of their history as family businesses, long on paternalism and short on delegation. Another dimension of the motivation problem may be the result of a workforce which is already relatively better off in terms of access to consumer goods (including televisions and motorcycles) than it was even a few years ago and one which is therefore relatively satisfied. Unable to aspire realistically to significantly greater gain (e.g. home or automobile ownership), much of the workforce is apparently unwilling to trade leisure time for additional hours of employment. Finally, it has been suggested that a shortage of transportation facilities coupled with a still fairly traditional family structure preclude widespread reliance on more efficient multiple shifts. Quite simply, women who perform certain critical functions in the textile industry are unwilling to work other than the day shift because of family responsibilities; even if they were willing, they would find it difficult to travel to work for either the swing or night shifts.

Statements of worker expectations suggest a growing concern about career planning, participation in the conduct of business, and recognition and social acceptance, as well as better remuneration. Hastening the transition to more capital-intensive industry will ameliorate the growing labor shortage. Better training and education of the workforce will provide part of the answer to the labor shortage. Greater attention to human resource management will also address the concern over low productivity.

Nonetheless, there continues to be a genuine need to study the process of social transformation which the society has been undergoing since the transition to an industrialized economy began just a few years. Although research on issues concerning women and family structure in Mauritius is almost non-existent, a major MEPD study is getting underway with EEC funding. The University recently completed a future-oriented document entitled "Mauritius 2000: A Generalized Framework for Academic Activities." Applied research on Mauritian development problems, including women's studies, emerges with a high priority. In response to "Mauritius 2000," the School of Law, Management and Social Studies developed a course outline leading to a certificate in women's studies beginning in 1989/90. Moreover, the University of Connecticut received funding from USIA, through its 1989 University Affiliations Program, to support an exchange with UM. The objective of this university-to-university partnership is to strengthen applied research on women's and

family studies on both campuses. The University expects that findings of these studies will be incorporated into its management sciences and women's studies curricula.

Direct beneficiaries of the Advanced Technology Training Project will be the University faculty and staff who are counterparts to U.S. technical assistance and/or the recipients of training. UM students will benefit as a result of improved course and research offerings. (For an estimate of the number of direct beneficiaries, see the description of the University contained in Section III.D.) As progress is made toward achieving project outcomes, including improved education and training in the areas of computer sciences and electronic/electrical engineering, as well as more and better applied research, the project will contribute to hastening the transition to a more capital-intensive economy. Successes in the management sciences sphere will, in addition to contributing directly to the transition, encourage Mauritian managers to adopt modern management techniques more consistent with the realities of today's labor force.

B. Financial and Economic Considerations

The merits of investing AID funds toward the goal of promoting Mauritian economic stability and increasing incomes, a goal shared by this project and MIDP, were discussed in the MIDP PP Studies performed to date under MIDP, principally the informatics and electronics sector studies, identified human resource development as a key constraint to Mauritian efforts to hasten the transition from a labor-intensive economy to one which is capital-intensive and characterized by higher-value added exports.

The Advanced Technology Training Project proposes relying on a proven approach to human resource development, namely the establishment of a medium-term linkage between the University of Mauritius and one or more U.S. institutions of higher education and possibly private sector entities, with the objective of strengthening UM in critical areas: computer sciences, electronic/electrical engineering, and, to a lesser degree, management sciences. Major categories of costs for AID will be the acquisition of long- and shorter-term technical assistance, long-and short-term U.S. and in-country training, and eqipment. Less costly will be funding for pilot applied research activities. Major categories of costs for the University will be support for the technical assistance team, construction of new facilities for the Computer Center,and salaries of faculty and staff in the Schools of Engineering and Law, Management and Social Studies, as well as the costs of international travel.

The PP will include a least cost analysis of proposed implementation arrangements. Among others, this will be a factor in making the all- important decision about whether the Government should contract directly with an academic institution or with a not-for-profit entity experienced in education and

training to identify appropriate technical assistance and training opportunities.

In the course of final design an important issue will be to decide more precisely the level to which UM capacities should be raised. This will require agreement between the Mauritians and project designers about the future role of the University. It will be important to ask: How sophisticated a university can a nation of one million people support? When is it more economical to rely on overseas training than to develop domestic capabilities? What is the appropriate mix between degree, diploma and certificate level training? Is it realistic to plan for the University eventually to mount a sizeable applied research program? If so, will the private sector support and/or underwrite a portion of the costs?

C. Relevant Experience with Similar Projects

Although AID has not attempted a project such as this in Mauritius, it has considerable experience with university linkages activities, principally through reliance on Title XII institutions and most often in the agriculture sector. Moreover, the Mauritians themselves have considerable experience with linkages arrangements. For example, the British Council for some time has funded considerable short- to medium-term assistance from British universities, particulary in support of the UM School of Engineering which also has received help from the University of Delhi. The French provide a cooperant to the School of Law, Management and Social Studies. Finally, the University is familiar with U.S. institutions of higher education. Several of its faculty have received advanced training under the Africa Bureau's AFGRAD Program, including two key members of the engineering faculty; still others had Fulbright Fellowhips, and the University currently has two Fulbright Fellows teaching management sciences and helping develop its proposed MBA program.

Two examples of other university linkages activities have come to light from which lessons can be learned. The Tunisia Computer Technology Project (664-0334) is a useful model of how AID has built up a developmentally-relevant computer center elsewhere through a series of host country contracts. USAID/Peru, on the other hand, entered into a Cooperative Assistance Agreement with the Academy for Educational Development to coordinate implementation of its Private Sector Management Improvement Project (527-0272), an effort to strengthen five Peruvian institutions to carry out more industry-responsive and higher quality management education, training, consulting, and applied research on private sector management development issues.

D. Proposed Grantee and Implementing Agency

The grantee will be the Government of Mauritius; UM, however, will be the implementing agency. The University will contract

for implementation assistance with a U.S. institution of higher education or an appropriate not-for-profit.

The University is fully-funded by the Government; its very modest recurrent and capital budget allocations are a portion of the Ministry of Education's budget. The UM 1989/90 recurrent budget is Rs. 42 million (or somewhat less than $3 million). Throughout its history, the University also has been the recipient of foreign assistance, more often than not in an ad hoc fashion as donors become interested in particular courses of study. Although its budget is relatively small, the University has consistently met its commitments to foreign-assisted undertakings. Nonetheless, the PP team will address the issue of recurrent cost implications with the Government as well as the University.

Since its founding in the mid-1960s, the development of the University has been presided over by its British-trained Vice-Chancellor. The University currently has an enrollment of 500 full-time students and 700 part-time students. Of this total, 275 full-time and 100 part-time students are enrolled in School of Engineering programs; while nearly 100 full-time and several hundred part-time students are involved in management courses. From the outset, the University sought to have an immediate impact on Mauritian development. Therefore, UM adopted a curriculum of specialized courses that are professional and/or vocational in nature. They have by-and-large been formulated in response to demands from the public and private sectors for trained manpower and targeted to produce specialists in a wide variety of occupational fields considered important to the development of the economy. For the most part, courses of study are at the Certificate (one year) and Diploma (two year) levels; in some cases B.Sc., M.Sc. and D.Phil. degrees are offered.

The pattern of the development of the Mauritian economy, especially over the last five years, stimulated external demand for university expansion. What emerges from a review of UM's curriculum today is that the faculty's course offerings grew without much design or overall plan. By acquiescing to a plethora of demands for curriculum expansion, by expanding enrollment, and by eliminating course fees, the University runs the risk of becoming a kind of teaching factory. Thus, to meet increasing requirements, more and more part-time instructors have been hired, and full-time faculty have become increasingly difficult to retain, especially because salaries are tied to the abysmally low civil service pay scale.

Despite these handicaps, the University has taken some important steps to improve itself. In selected departments, including some in both the Schools of Engineering and Law, Management and Social Studies, course offerings are being reviewed and upgraded. In general, the aim is to move away from over-reliance on certificate and diploma courses and to develop, where appropriate, B.Sc. and M.Sc. courses. These moves appear to be in the right direction. However, educational quality is dependent upon the excellence of the faculty.

Few UM faculty have Ph.D. degrees, and many still lack any graduate training at all. Because of the wide range of course offerings and pressing recruitment problems, many staff have overly diverse teaching assignments. Further, there is almost no record of research, because it is not expected nor, in most cases, is it even possible to conduct research given the lack of laboratory facilities, equipment, and the dearth of library resources. Regretably, at this time, the business community is skeptical of the faculty, perhaps for some of the wrong reasons. Generally allegations concern it's overly theoretical orientation and its lack of real world experience. In the view of too many, these weaknesses are reflected in the University's current crop of graduates.

The University's potential as an effective agent of change in the economy will depend of a number of important factors. On the debit side, several forces militate against its development into a higher quality technological university, including: (1) its poor image with much of the private sector and some important elements of the public sector; (2) its dependence on the Government for financial support and its inability to escape from unrealistic salary ceilings; and (3) in view of its preoccupation with addressing essential training needs of the economy, it has only recently begun to improve significantly its educational offerings. On positive side of the ledger, there is evidence that the University is a viable Mauritian institution: (1) it enjoys strong support from the donor community and in critical Government ministries, including MEPD which proposed the Advanced Technology Training Project concept; (2) given current labor shortages and the desire to move the economy into higher technology areas, there is a great deal of demand for training, and the University is assured of a pool of qualified students; (3) important forces in both the public and private sectors are increasingly concerned about overdependence on overseas training, as well as the tendency to import skilled labor; and, (4) the UM administration has committed itself to reform, including upgrading its faculty and course offerings. On balance, investing in the development of the University at this stage seems a worthwile gamble.

E. AID Support Requirement and Capability

The project will be the management responsibility of REDSO/ESA, the AID Mission for Mauritius. Because REDSO maintains no professional staff in Port Louis, it was decided from the outset to propose that the University enter into an implementation contract with either a U.S. higher education institution or a not-for-profit with experience in the education and training fields. This decision was made on the basis of REDSO's experience with implementing MIDP. Despite repeated assurances by MEPD that it could implement the Project, as well as HRDA, without project-funded management assistance, it has consistently fallen to REDSO to identify contractors, prepare scopes of work, and monitor implementation of specific technical assistance and training activities. A great deal of day-to-day

support has been required from the American Embassy which has generously made its very capable staff available to assist REDSO. Nonetheless, in view of staff cutbacks, REDSO can no longer provide this level of support to the Mauritius program. Hence the decision to program virtually all AID resources in one activity over the next several years, and the plan to consider a host country contract with an implementing entity. To minimize further implementation responsibilities which could involve REDSO and the Embassy vis-a-vis the training element of the project, during the design process consideration will be given to using project funds to buy-into ATLAS I, the new Africa Bureau-managed academic training program.

The variants discussed above are considered arrangements which will permit AID to provide up to $1.5 million annually over the next four-to-five years in support of Mauritius' economic development without imposing an unacceptable workload on REDSO. Although host country contracting is staff intensive at the outset, once one is in place, a REDSO PDO will be able to manage the project on very much of a part-time basis, assuming support is available, as needed, from AFR/TR/EHR.

F. Estimated Costs and Methods of Financing

The Project will be financed by a grant which will cover all foreign exchange and local currency costs, with the exception of those local cost items which constitute the Government of Mauritius' share (office and staff support for the TA team, salaries and international travel of trainees, and construction). AID will incrementally fund the five year project. The illustrative life of project budget is for $6.75 million, the major share of the projected Mauritius OYB for the FY 90-94 time period. (Any remaining funds will be used to buy-into ATLAS I for degree training in fields other than those directly related to the Advanced Technology Training Project.)

ILLUSTRATIVE PROJECT BUDGET ($ 000)

(1) Long-Term Technical Assistance

(a) Professional Support

Senior Information Systems Mgr. (Chief of Party)	4.5 py
Academic Computing Specialist	3.0 py

(b) Technical

Director of Lab Operations	3.0 py

(c) Teaching

Computer Scientist	3.0 py
Computer Engineer	3.0 py

Subtotal - 16.5 py @ $150,000/yr.		2,475
(2) Short-Term Technical Assistance		
(a) Software Developer	12.0 pm	
(b) Admin. Computing Specialist	12.0 pm	
(c) MIS Specialist	9.0 pm	
(d) Internat'l Marketing Specialist	9.0 pm	
Subtotal - 42.0 pm @ $15,000/month		630
(3) Intermittent Home Office Support		
(a) Professional Staff	1.0 py	
(b) Support Staff	1.0 py	
Subtotal - 2.0 py @ average of $ 75,000/year		150
(4) Training		
(a) Degree Training		
2 Ph.D.s @ $100,000 each	200	
5 M.Sc.s @ $ 60,000 each	300	
(b) Non-Degree Training / Conference Atttendance		
U.S.	300	
In-Country	150	
Subtotal		950
(4) Research (Demonstration Projects / Applied Research Grants)		300
(5) Equipment		
(a) Hardware		
Mini-Computer	500	
25 PCs	70	
Printers, etc.	25	
(b) Software	100	
(c) Books, Journals, Teaching Aids	50	
Subtotal		745
(6) Evaluations and Audit		100
(7) Contingency/Inflation		1,400
TOTAL		$6,750

G. Design Strategy

Anticipating design of the Advanced Technology Training Project, the MIDP Amendment included $400,000 of funding to initiate activities with the University, including project design. Roughly $15,000 was used to procure two background papers for the PID. Design of the PP will also be financed from MIDP.

The next step, following PID approval, is to contract for the preparation of an institutional development plan for the Center for Informatics and Computer Services. This will be undertaken by a team of computer specialists acquired through an AID IQC at a cost of roughly $95,000. The University has agreed that March would be an optimal time for this work which would provide the analytical basis for the PP.

A desirable succeeding step would be to conduct an observation tour for selected UM and Government officials to familiarize them with how an informatics/computer services center functions in a U.S. technological university setting. Possible participants in such a tour include: the Vice-Chancellor (Prof. Manrakhan), the Head of the Engineering School (Prof. Baguant), Electronics/Electrical Engineering Senior Lecturer (Prof. Bhurtun), the Computer Center Director (Mr. Nuckchady), the Director of MEPD (Mr. Bheenick), MEPD's Principal Economist for Training (Ms. Hanoomanjee), and possibly an official of the Ministry of Education. It is estimated such an observation tour would last three weeks and cost $65,000. The University has agreed such a visit should take place only after it has received and reviewed the Center for Informatics and Computer Sciences institutional development plan, possibly in early May or June.

Assuming this schedule holds firm, the PP could be finalized in late May and funding obligated by the end of July. It is anticipated that a REDSO PDO and someone from AFR/TR/EHR can prepare the PP based on the studies done for the PID and the proposed institutional development plan for the Center for Informatics and Computer Sciences.

H. Recommended Environmental Threshhold Decision

A categorical exclusion is recommended (see Annex III). The rationale is that intended major project elements -- technical assistance, training, demonstration or pilot projects, and equipment procurement -- will not have an effect on the natural or physical environment. The Government of Mauritius is fully responsible for funding and implementing associated construction activities, and its environmental assessment procedures are considered adequate.

I. AID Policy Issues / PP Design Issues

Several design issues will require attention during the PP preparation process, including:

(1) Do the Government and University have a vision of UM which is commensurate with the planned project? Can the University absorb the proposed level of assistance? - To date, the University has been largely reactive to changes in the economy which has led to a proliferation of course offerings which do not constitute a cohesive program. Will involving the University in the preparation of a development plan for the Center for Informatics and Computer Services, as part of the PP design process, ensure that it becomes more proactive based on a firmer vision of its own role in support of Mauritian development?

(2) Will project-funded improvements at the University prove sustainable? Can the University and/or Government solve its staff recruitment/retention problem? Will the University's budget be adequate to address recurrent cost implications of the project? - Given the objective of building long-term institutional capacity, success will depend upon the University's ability to upgrade staff. There are other recurrent cost implications of the Center for Informatics and Computer Sciences as well. To date, the Government has resisted efforts to raise salaries to levels commensurate with the market and it has kept the University's budget modest. To what extent will this pose an insurmountable problem in high technology fields such as informatics and computer sciences? Is it critical enough to consider introducing conditionality on this point?

(3) Will planned long-term training get in the way of institution building? - Key UM figures, especially the director of the Computer Center and the Head of the Electronic/Electrical Engineering faculty, desire and/or require additional training. Will sending them to the U.S. for long-term training compromise our ability to develop the institutional capacity of the Computer Center?

(4) Can AID successfully marry an essentially British university and U.S. institutions of higher education? - UM has developed and runs according to the British model of higher education; moreover, the vast majority of its staff is British educated. Further, with active support from the British Council, many faculties, including that of the School of Engineering, have continuing links with British universities? In such an atmosphere, does forging a long-term linkage between UM and one or more American universities make sense?

(5) Which type of U.S. entity is most appropriate for implementing the Advanced Technology Training Project? - The University will contract for the services of a lead implementing institution. In the course of designing the Project Paper (PP), AID and the University will decide whether this activity can best be implemented by an academic institution or a not-for-profit organization. In either case, it is envisioned that the implementing entity will draw upon public and private sector resources to provide technical assistance and training. Title XII, AID's traditional approach to establishing linkages between U.S. institutions of higher education and/or research

and developing country universities has the advantage of building in a role for the lead institution at the design stage. However, AID's experience with Title XII institutions is limited almost exclusively to the agriculture field and Title XII has not traditionally built in a significant role for the private sector. These factors were considered to offset the advantages of using Title XII, given the project purpose.

(6) Is planned host country contracting a feasible approach to reducing AID project management responsibilities? - The PP team will undertake a host country contracting assessment to determine whether the University has the capacity to contract with a U.S. institution of higher education or a not-for-profit organization. If, in the team's judgment, a heavy investment of institutional capacity building would be required to make host country contracting work, it will consider the alternative of an AID direct contract, recognizing that the trade-off for less work upfront will be a higher level of REDSO management responsibility during implementation.

(7) Is the Government of Mauritius' planned share of projected costs sufficient? - At this juncture, discussions with the University regarding its contribution to the Project have covered only salaries and international travel, as well as construction of the new Computer Center facility. It is likely this will not be sufficient to meet the requirement for a 25% host country contribution. In this event, the PP team will have to seek MEPD/UM agreement to additional support. This may be difficult given the small size (less than $3 million) of the University's annual recurrent budget.

Annex 1 - LOGICAL FRAMEWORK MATRIX

Narrative Summary	End of Project Status	Means of Verification	Assumptions
Goal: Promote economic stability and increase incomes in Mauritius.	More diversified industrial base; more, higher skilled jobs.	Embassy economic reports; project evaluations.	Demand continues to grow for Mauritian manufactured goods and services, esp. the informatics and electronics sectors. Demand by Mauritian employers continues for quality univ. trainees in the areas of informatics, electrical/electronic engineering, and management sciences.
Purpose: Strengthen UM teaching and reseach capacities in technology-related areas in support of industrial diversication.	Equipped and staffed Center for Informatics and Computer Sciences (CICS); diploma and B.Sc. programs in computer sciences in place; engineering & management curricula improved and staff better trained.	Project evaluations.	Autonomous CICS will strengthen engineering and management programs, and provide quality academic/administrative/communications/operations services. Technical assistance and training will improve curricula and teaching in engineering and management programs.

Narrative Summary	Verifiable Indicators	Means of Verification	Assumptions
Outputs:			
1. Staffed/equipped CICS providing full academic/administrative/communications/operations services.	Full range of computer services provided to UM by CICS.	Project evaluations.	TA successfully recruited; commodities delivered; trained CICS staff returns to center.
2. Improved curricula at B.Sc., diploma and certificate levels.	Improved course offerings.	UM catalogue; project evaluations.	TA successfully recruited; GOM provides budget for increased course offerings.
3. More and better trained faculty.	Adequate faculty/staff for CICS, engineering and management programs.	UM budget; project evaluations.	GOM salary levels sufficient to recruit/retain staff.
4. Demonstration and applied research projects.	Industry-relevant projects completed.	Project evaluations.	
Project Inputs:			
A.I.D.			
1. Technical assistance.	16.5 py long-term ($2.475 m.); 42 pm short-term ($0.63 m); 2 py home office support ($ 0.15 m).	Quarterly financial and progress reports.	
2. Training.	Degree and non-degree training ($ 0.95 m).	Quarterly financial and progress reports.	
3. Funding for demonstration/research projects.	$ 0.3 m.	Quarterly financial and progress reports.	

4. Commodities.	Hardware, software, books, etc. ($ 0.745 m)	Quarterly financial and progress reports.

Host Country

1. Construction funding.	Rs. 7 m.	GOM budgets; project evaluations.
2. Support services and facilities.	Support to TA.	GOM budgets; project evaluations.
3. Salaries and travel for trainees.	Trainees supported.	Project evaluations.

Doc. 6367D.

Annex 2

COMPLETED, ON-GOING, AND PLANNED DIVERSIFICATION EFFORTS (as of December, 1989)

1. AID-Funded Activities

a. Completed/On-Going Studies Under MIDP

Preferential Access Seminar

A specialist in U.S. preferential access programs gave a seminar in Port Louis, and conducted individual consulting sessions with seminar participants. The seminar and sessions met with a lukewarm reception, for two main reasons. First, most seminar participants were in the textile industry, and the specialist gave discouraging news about preferential access to U.S. markets for textile exports. Second, the audience hoped for more information about the PTA and European market access programs.

The Sector Studies

Specialists in information sercices, electronics, and agro-industry analyzed industry prospects in Mauritius and made recommendations on promotion, training, infrastructure, and policy changes.

Informatics Sector Study

Two consultants with experience in the offshore information services industry in the Caribbean spent four weeks in Mauritius. During their consultancy, and especially at their wrap-up seminar, the Mauritian private sector was very excited about the findings and recommendations.

The consultants saw immediate prospects for the slow turnaround data entry, computer aided design, and software development subsectors. With the construction of a teleport and specialized industrial park, the telecommunications intensive subsectors may become very attractive as well.

The timing of the information services consultancy was particularly fortuitous. A number of overseas firms, coincident with their visit, were scoping out the possibilities of informatics joint ventures in Mauritius. In addition, the Mauritian Export Development and Investment Authority (MEDIA) has received inquiries from Far Eastern and U.S. firms interested in establishing information services ventures in Mauritius.

The FY 89 MIDP Amendment includes funding for additional work on the informatics sector which will address key issues that will allow Mauritius to exploit current advantages in this rapidly growing sector (see new activities section below).

Electronics Sector Study

One electronics and electrical industry consultant with experience in Caribbean and Far Eastern offshore operations spent four weeks in Mauritius.

The export electronics industry has not been a resounding success in Mauritius, although the Government views electronics as a promising sector. Until recently, the strategy for development of the sector seemed to be the encouragement of assembly operations for the domestic market, which would provide a base of experience to expand into export markets. The electronics sector consultant found that Mauritius had a comparative advantage in the subassembly and commercial/industrial finished product subsectors, but requires foreign involvement to make up for deficiencies in marketing and design.

The wrap-up seminar was very well received by private and public sector alike. Even those involved in electronics venture that had failed left the seminar with the realization that past failures were largely due to avoidable mistakes, and that future electronics ventures may be very attractive.

Agro-industrial Sector Study

An agro-industry expert with experience in Africa, the Pacific, and Latin America spent three weeks in Mauritius.

Agro-industry in Mauritius is far more developed than either the electronics or information services sectors. As a consequence, the consultant analyzed why diversification has not occurred more rapidly and assessed future prospects for the industry. He confirmed that diversification from sugar was inhibited by the current price structure set under the sugar protocol with the EEC, Sugar still yields more per hectare than any other agricultural activity. Two other inhibiting factors to diversification are shortages of arable land not already under sugarcane and the annual cyclonic season.

Nonetheless, the consultant saw potential for high value exotic and off-season horticulture, particularly as the Mauritian "brand name" improves with increased tourism. The consultant recommended that the estate sugar sector be encouraged to form a "diversification consortium" to provide a critical mass of capital and expertise and share the risk of failure, as well as set an example to the smallholder sector which traditionally looks to the estates to take the lead.

The consultant found that the level of understanding of agricultural diversification opportunities and constraints, as well as how to address them, was very high amongst private and public sector alike. This, coupled with the fact that the French

are already heavily involved in this sector, makes further AID involvement a lower priority than working in the informatics and/or electronics sectors.

b. Planned Activities Under the MIDP Amendment:

Expanded Firm-Specific Assistance Technical Assistance

The firm-specific assistance component of the project, which is managed currently by the Mauritius Chamber of Commerce and Industry (MCCI), will be continued and augmented with additional funds. Two basic modifications will be made to this component, as described below.

- All firm specific assistance will be provided through the International Executive Service Corps (IESC)
- The range of firm specific assistance will be expanded to include U.S. based market research (American Business Linkage Enterprise) and Joint Venture services

Expanded Informatics/Electronics Sector Technical Assistance

The Government and private sector will be provided technical assistance to understand and exploit opportunities in the information services, and to a more limited extent, the electronics sectors. Assistance of four types is planned: market research, promotion, training, and feasibility of infrastructure development.

Computerization of Key Government Agencies in Support of Trade and Diversification Activities

A consistent finding of the sector studies conducted under MIDP is that onerous, overly complicated, and protracted systems are being used by the Government to issue EPZ certificates, business licenses, import/export permits, and provide customs clearance. This component of the MIDP supplement will provide the necessary hardware and software packages and training to State Informatics Limited (SIL), a quasi-private service entity, to develop databases for the Ministries of Finance, Trade and Shipping, Industry and Industrial Technology, as well as MEDIA. State of the art training in systems design, implementation, and management will also be provided to SIL staff to enable them to use the hardware and software to their optimum potential.

University of Mauritius - Linkage with a U.S. University

The University of Mauritius (UM) wants to establish a mediuim-term linkage arrangement with a U.S. university, that would cut across several departmental lines to develop UM into a stronger institution of higher education. The linkage arrangement would focus initially on those UM departments which are identified as

key to the economic growth of Mauritius, including the Computer Center and the Schools of Engineering and Law, Management and Social Studies.

The first stage of this program will be initiated under the MIDP amendment. AID will finance the preparation of a development plan to transform the Computer Center into a Center for Informatics and Computer Sciences, including supporting training programs of the Electrical/Electronics Faculty and the Management Sciences Faculty. The development plan will confirm priority areas for assistance under the University Linkages Project. Assistance under MIDP will begin the process of identifying potential U.S. linkage partners which could include the private sector as well as one or more universities. This will be accomplished through an observation tour for Government and UM officials to observe how an informatics/computer services center functions in a U.S. technological university and to meet with potential U.S. partners.

c. HRDA Activities Completed to Date:

Export Marketing Seminar

A four week course in export marketing was presented in Mauritius by the International Marketing Institute (IMI) of Boston College.
Evaluations done by the course participants were very positive about course content. One indication of the value attached to IMI's course is that some firms have decided to send staff, at their own expense, to the IMI residential course in Boston. Also, the IMI course inspired local marketing professionals to form the Mauritian Marketing Association, to be affiliated with the American Marketing Association in Chicago.

Productivity and Quality Improvement Workshop

This workshop provided training to senior managers from private and public sector firms and to trade union representatives related to improving management, organization, and motivation for increased productivity.

2. Other Donor Programs Supporting Industrial Diversification

The EEC provided $28 million from 1985 through 1988 in support of agricultural and industrial diversification and promotion. Among other activities, the EEC is supporting the Mauritian Standards Bureau; MEDIA-sponsored trade promotion tours to Kenya, Malawi, and Zimbabwe; and the University of Mauritius to develop its electrical engineering program. Together with the Italian government, the EEC is providing equipment and staff to the Lycee Polytechnique for training programs in leather and shoe working.
The EEC is also supporting a major study in socio-economic

impacts of industrialization.

The World Bank and UNDP have been interested in the area of vocational-technical training for some time. A number of studies pointed out the critical need for attention to human resource development as the Mauritian economy develops. These studies were important precursors to the establishment of the IVTB in 1988/89. More recently, the World Bank agreed to sponsor a Donors' Conference on education and training, now rescheduled for March of 1990.

The French are the largest bilateral donor in Mauritius and involved in virtually all areas. The French provide major support to the Lycee Polytechnique, including equipment and trainers. They also supply a cooperant to UM's School of Law, Management and Social Studies; and, a singificant number of UM faculty members have studied in France.

Britain is Mauritius' other large traditional bilateral donor. The British Council has actively supported the University's development, as well as other academic and training institutions. As a forerunner to the University Linkages Project, the British Council has for some time maintained an exchange program between Mauritian and British faculty; this relationship has been particularly important to the School of Engineering. Many UM faculty have also received advanced training in Britain.

3. GOM Initiatives in Industrial Diversification

The GOM is addressing Mauritius' new set of problems with a mix of initiatives that will streamline investment approval procedures, improve the island's labor and capital base, and attract higher value-added and service sector industries. A few key initiatives are discussed below:

Streamlined Investment Procedures

All of the MIDP sector assessments indicated that one of the biggest constraints to investment and diversification is Government approval processes. Both start up investment and normal import and export permits take a great deal of time. The GOM is committed to streamlining the investment, export, and import approval processes; and eventually, to establish a "one stop" investment center where investors can obtain all the necessary approvals. AID is helping lay the groundwork for the streamlining process, by supporting computerization of various government agencies.

Creation of a Stock Exchange

With capital market development a high priority in Mauritius, Parliament passed the Stock Exchange Act in 1988. The GOM expects that the stock exchange, which opened July 1989, will

Annex 3

INITIAL ENVIRONMENTAL EXAMINATION OR CATEGORICAL EXCLUSION

Project Country: Mauritius

Project Title: Mauritius Advanced Technology Training Project 642-0011

Funding: FYs 1990-1994 - $6,750,000

IEE Prepared By: Monica K. Sinding, REDSO Deputy Director

Environmental Action Recommended: X - Categorical Exclusion

This project includes AID financing for several activities. Categorical Exclusions are accorded to project components as detailed below.

Activity 1, Technical Support, qualifies for a Categorical Exclusion in accordance with Reg. 16, Section 216.2(c)(2)(i) [Education, Training, and Technical Assistance].

Activity 2, Training, qualifies for a Categorical Exclusion in accordance with Reg. 16, Section 216.2(c)(2)(i) [Education, Training, and Technical Assistance].

Activity 3, Demonstration Projects and Applications Research, qualifies for a Categorical Exclusion in accordance with Reg. 16, Section 216.2(c)(2)(ii) [Research], because planned activities will have no immediate or direct impact on the environment in light of their limited scope and carefully controlled nature.

Activity 4, Equipment, qualifies for a Categorical Exclusion in accordance with Reg. 16, Section 216.2(c)(2)(i) [Education, Training, and Technical Assistance].

Approved _____ Date _____

Disapproved _____ Date _____

Concurrence:

Acting AFR Environmental Officer, John Guedet _____

REDSO/RLA, SSpielman _____ Date Ja 1 90

A. Project Description

The project supports AID's overall program goal of promoting economic stability and increasing incomes in Mauritius. The purpose of the project is to strengthen the University of Mauritius so that its teaching and research capacities in technology-related areas are enhanced in support of Mauritian industrial diversification efforts, particularly in the informatics and electronics sectors. This will involve: (1) developing the institutional capacity of the Engineering School's Computer Center into an autonomous Center for Informatics and Computer Sciences; (2) upgrading course offerings of the School of Engineering, particularly in the electronics and electrical engineering field; and (3) upgrading selected course offerings of the Management Sciences Division of the Law, Management and Social Studies School. AID will provide technical support, training, and equipment, as well as modest funding for demonstration projects and applications research. The Government of Mauritius will finance construction of expanded facilities for the Center, as well as salaries and international travel.

B. Focus of Environmental Considerations

Planned project activities were examined for potential adverse environmental impact. A categorical exclusion is recommended. The rationale is that intended major project elements -- technical assistance, training, and equipment procurement -- will not have an effect on the natural or physical environment. The very limited funding for demonstration projects and/or applied research will not have a significant effect as a result of this limited scope and careful monitoring. The Government of Mauritius is fully responsibile for funding and implementing associated construction activities. Its environmental assessment procedures have been reviewed by AID and other donors and are considered adequate.

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