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IMPLEMENTATION COMPLETION REPORT

FEDERAL REPUBLIC OF NIGERIA

**TECHNICAL EDUCATION PROJECT
(Loan 2926-UNI)**

August 8, 1996

Human Development III
Africa Region

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CURRENCY EQUIVALENTS

Currency Unit	=	Naira
US\$1.00	=	₦ 85.00
US\$1	=	1.441 SDR

WEIGHTS AND MEASURES Metric System

FISCAL YEAR OF BORROWER January 1 - December 31

ABBREVIATIONS AND ACRONYMS

AF4NG	Western Africa Region, Nigeria
EQUIPRO	Equipment Procurement Unit of ILO (now abolished)
FME	Federal Ministry of Education
FOS	Federal Office of Statistics
FTC	Federal Technical College, Yaba
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
ICR	Implementation Completion Report
IFESH	International Foundation for Education and Self Help
MIS	Management Information System
NBTE	National Board for Technical Education
NEPA	National Electric Power Authority
NMB	National Manpower Board
ODA	Overseas Development Administration of the United Kingdom
PIU	Project Implementation Unit of FME
RMN	Resident Mission Nigeria
SAR	Staff Appraisal Report No.6907a-UNI of November 11, 1987
SLA	Loan Agreement (Loan 2926-UNI) dated July 1, 1988
TA	Technical Assistance
TVSED	Technical, Vocational and Science Education Department of FME

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**IMPLEMENTATION COMPLETION REPORT
FEDERAL REPUBLIC OF NIGERIA
TECHNICAL EDUCATION PROJECT
(LOAN 2926-UNI)**

Preface

This is the Implementation Completion Report (ICR) for the Technical Education Project in Nigeria, for which Loan 2926-UNI in the amount of US\$23.3 million equivalent was approved on July 1, 1988, made effective on March 17, 1989, and closed on December 31, 1995.

It was disbursed up to an amount of US\$21.5. The Overseas Development Administration (ODA) of the British Government provided, on a grant basis, US\$1.2 million in co-financing for the project. The last disbursement was made on March 21, 1996.

The ICR was prepared by Sudharshan Canagarajah (ICR Task Manager, AF4PH). Valuable comments and inputs were provided by Mrs. Eileen Nkwanga (Task Manager, AF4NG), Mr. Hector Munro (Education Attaché, The British Council), Mr. Steve Berkman and Mr. Yemi Suleiman (Consultant). The report was reviewed by Mr. Ian Porter (Division Chief, AF4PH), Mrs. Irene Xenakis (Sr. Implementation Specialist, AF4PH) and Mr. Franz Kaps (Operations Advisor, AF4DR).

Preparation of this ICR was begun during the Bank's final supervision/completion mission in October 1995. It is based on field investigation coupled with material in the project file. The borrower contributed to preparation of the ICR by contributing views reflected in the mission's aide-mémoire, preparing its own evaluation of the project's execution and initial preparation, and commenting on the draft ICR.

**IMPLEMENTATION COMPLETION REPORT
FEDERAL REPUBLIC OF NIGERIA
TECHNICAL EDUCATION PROJECT
(LOAN 2926-UNI)**

EVALUATION SUMMARY

1. **Bank's Role in the Sector.** Before this project, the Bank's involvement in the education sector in Nigeria was limited. For eighteen years, between 1965 and 1982, the Bank financed three projects amounting to US\$91.3 million. The value of World Bank investments within this period amounts to about US\$5 million per year compared to over US\$37 million per year between 1985 and 1995 (para. 1.2).

2. The implementation experience of the above projects was only marginally satisfactory because of: (a) weak management capabilities of implementing agencies; (b) poor communication between implementing and beneficiary institutions; (c) complex and inefficient counterpart funding arrangements; and (d) poor project design covering too many beneficiaries. A few years after the projects closed, the need for high quality technical manpower in the country became obvious. Based on the implementation experience of the previous three projects, the broad objectives of this project (Ln. 2926-UNI) were restricted to five technical education institutions (paras. 1.3-1.5).

3. **Project Objectives and Components.** The Technical Education Project was signed on July 1, 1988 and became effective on March 17, 1989. Its principal objectives were to assist the Federal Government's program of: (a) improving the quality and efficiency of middle-level technical institutions; and (b) strengthening planning, management and coordination of technical and vocational education at the National Board for Technical Education (NBTE), the Federal Ministry of Education (FME) and at the Project Implementation Unit (PIU) (para. 2.1).

4. The project aimed at achieving the above-mentioned objectives, in two areas namely, Quality Objectives and Targets; and Management Strengthening. Under quality objectives were the following activities: (a) strengthen the quality of instruction; (b) strengthen management capability of the project polytechnics and the Federal Technical College (FTC); (c) institute a staff development program; (d) strengthen the practical component of the instructional program; (e) improve the internal efficiency of the institutions; and (f) establish programs for advanced crafts and technical teacher training. Management Strengthening included the following activities: (a) reinforcement of NBTE's capability for conducting in-service courses for administrators, teaching, and workshop assistants; (b) strengthening NBTE's capability to monitor, evaluate, and accredit instructional programs; (c) establish a procurement unit for equipment and instructional materials; and (d) reinforce the project officer's capability to identify, prepare, and implement projects (para. 2.2).

5. Credit Covenants and Special Agreements. Several loan covenants were to be met by the Borrower in order to achieve project objectives. These include: (a) open a special account and project accounts; (b) audit all project related accounts; (c) increase budgetary allocation for instructional materials to (i) five percent of total recurrent budget by 1989, and (ii) ten percent by 1992; (d) provide separate budget categories for instructional materials and ensure they are used exclusively for their intended purpose; (e) NBTE to prepare a plan for phased introduction of measures to increase staff teaching hours and class size while reducing student/class contact hours in the project polytechnics; and (f) NBTE to prepare, not later than October 6, 1990, an outline for a three-year work program (1989-91) and conduct a study of relevant technical and vocational education issues, including the cost and financing of this sub-sector and an action plan for the phased implementation of the main recommendations (para. 2.3).

6. Compliance with legal covenants was not satisfactory, especially in the areas of auditing requirements (item (b) above), Government's counterpart funds (item (c) above), and NBTE's preparation of a final study report (item (e) above). The NBTE final report was made available in March 1996, after the project closing date (para. 2.4).

7. Evaluation of Project Objectives. The project objectives were clear, well-founded, and relevant. They were based on the realities in the sector at the time. The improvement of quality of technical education and management and coordination of vocational skills provisions in Nigeria were felt rightly to be of paramount importance to Nigeria. In the early stages of implementation local commitment and ownership was lacking and there were many coordination and management problems. Lack of adequate and timely release of counterpart funds delayed workshop renovation and subsequent equipment installation. This disabled the timely achievement of most project objectives (paras. 2.5-2.6).

8. Due to delayed equipment installation impact on quality of technical education delivery is yet to be evidenced in most institutions. Although expected target of budgetary allocation for consumables was not met, it has increased in most institutions. The project's management objectives were not fully achieved. Most training was financed and provided by the Overseas Development Administration (ODA) and there was difficulty in ensuring the three-way coordination which was necessary to achieve the management objectives. In the last two years there has been some improvement in this area, especially through the setting up of the Steering Committee. Frequent changes in project staff and failure to implement proposed MIS affected the project implementation and realization of project objectives (paras. 2.7-2.8).

IMPLEMENTATION EXPERIENCE AND RESULTS

9. Assessment of Project's Success and Sustainability. Overall, project implementation was marginally satisfactory, despite many delays and constraints faced. Project sustainability is possible only if the Borrower's commitment is high, as displayed in the last two years, and ensures continuation in policy direction and strong stake-holder participation (para. 3.1).

10. Most institutions have not shown improvements in the practical components of instruction, despite the large amounts of equipment and training. Nearly all training earmarked for staff was completed. Nearly 95 percent of the equipment received under the project was fully installed and commissioned. With the delivery of additional stock of books, equipment and journals, library utilization has increased. Better quality instruction should be expected in the near future since most of these were completed just before closing (para. 3.2).

11. Improvements in management capacity has been marginal and delayed. This adversely affected the coordination between PIU, NBTE and the project institutions and eventually the timely achievement of project objectives. With the overseas training received, officials of NBTE have improved capacity to monitor and accredit polytechnic courses. Most of the courses supported by the project were accredited or re-accredited as the case may be. The NBTE has improved its capacity for conducting in-service courses for administrators, teaching staff, and workshop assistants, in the areas of management and equipment maintenance. However, NBTE's advisory role on course accreditation needs to be strengthened and it needs to strengthen the practical components of the instructional program in all technical colleges (paras. 3.3-3.5).

11. Due to poor communication between the project implementing agencies, the MIS component was not implemented. Attention should be given to this during the period of project sustenance. Most project institutions participated in drafting the technical specifications used for tendering. Procurement training was given to staff of PIU and NBTE, who later actively participated in developing bidding documents and evaluations of bids. Equipment so procured were of the right specifications; in a few cases industrial size equipment was delivered. Maintenance capability of the institutions was not fully developed through training. NBTE should establish maintenance centers in project institutions to improve the chances of project sustainability (paras. 3.6-3.8).

12. There has been substantial improvements in the internal efficiency of project institutions. Average staff teaching hours have increased from 14 hours per week to 20 hours per week. Class size for workshops/laboratory has increased from 7 to 35 students. Teacher contact hours have reduced from 31 hours per week to 28 hours week. However, a technical teacher training program was not established due to the creation of six additional colleges of education and subsequent resource constraint. Also, advanced crafts courses were not established in three of the polytechnics as envisaged due to late installation of equipment. The need to maintain project impact cannot be overemphasized (paras. 3.9-3.10).

13. **Summary of Costs and Financing Arrangements.** The total project cost was US\$27.96 million with a foreign exchange component of about US\$24.5 million. Of this amount, the Bank was to provide US\$23.3 million and ODA was to provide US\$1.2 million on a grant basis. The balance of US\$3.46 million equivalent was to be financed by the Federal Government, although at the closing date it had not exceeded US\$2.4 million.

Almost 95 percent of Bank funds were disbursed; all ODA funds have been disbursed (paras. 3.11-3.12).

14. Implementation Schedule. Project identification was jointly carried out by officials of FME, PIU, NBTE, participating institutions, and the Bank. The project was approved by the Board and the Loan Agreement was subsequently signed on July 1, 1988, became effective on March 17, 1989 and closed on December 31, 1995. Disbursement was rapid during the first two years of project life, but slowed to a trickle thereafter. This was due to factors such as: lack of counterpart funds, inadequate preparation to receive and install equipment, unavailability of consumables and mishandling of the special account. All these factors delayed the pre-agreed implementation schedule (para. 3.13).

15. Analysis of Key Factors Affecting Major Objectives. From implementation records it is evident that several factors related to project management, project accounting and procurement, project equipment, training fellowships and to the project document affected the timely achievement of project objectives (paras. 3.14-3.22).

16. Most of the problems in project management stemmed from frequent changes in project staff, lack of cooperation at implementing agencies and continued non-compliance with procedures advocated in the project SAR. Day-to-day communication between the PIU, FME, NBTE, and the project institutions was ineffective during the first four years of the project (paras. 3.15 and 3.16).

17. Non-adherence to the Bank's accounting and procurement procedures stipulated in the SAR led to a one-year suspension of disbursements. Government auditors were engaged for auditing purposes despite assurances at loan negotiations that an independent and qualified auditor would be used. Audit reports were prepared and sent to the Bank long after their due dates throughout the duration of the project (para. 3.17).

18. Counterpart funds were not regularly forthcoming which led to delays in workshop renovation and subsequent installation of project equipment. Until the project closing date, the Government's contribution had not exceeded more than 65 percent of the expected amount. This hindered meaningful progress in implementation and project outcomes (para. 3.18).

19. Poor liaison between implementing agencies led to the purchase of some industrial-sized equipment for the project institutions. Initial lack of knowledge of equipment specifications delayed preparation of bidding documents and subsequent equipment delivery. This was compounded by the fact that the equipment suppliers did not always provide operating manuals in English which made it difficult for project institutions to operate the equipment even after the delayed installation (paras. 3.19-3.20).

19. ODA's assistance was successfully implemented by the resident British Council. A total of 145 fellowships of 331 man months were awarded and completed. Also, 34 short-term consultants were used. All the consultancies which could not be completed before

the closing date are currently being arranged. Some of the training fellowships did not correspond to the expertise required to operate project equipment (para. 3.21).

20. Some constraints were dictated by the project design. For instance, the timing of the Technical Assistance was required to be determined prior to project effectiveness, which led to the arrival of experts before the equipment was installed. Thus, the TA program should have been delayed at least until the equipment was installed (para. 3.22).

21. **Assessment of the Bank's and Borrower's Performance.** Bank's supervision of project implementation was not satisfactory in the first four years due to frequent changes of task managers and task teams. Some project institutions were seldom visited due to their remote location. In the last two years the Bank's supervision was very effective because the Task Manager was stationed in the resident mission. The performance of the Borrower was only marginally satisfactory. The PIU was not effective in dealing with problems and providing solutions in a timely fashion. The introduction of a steering committee in 1994 by the FME improved communications between project entities, facilitated problem solving, and accelerated implementation. NBTE did not complete the report on a study of relevant technical and vocational education issues including the cost and financing of Technical Education sub-sector and an action plan for the phased implementation of the main recommendations (paras. 3.23-3.26).

22. **Assessment of Project's Outcome.** Overall the project outcome is marginally satisfactory. Most outcomes were substantially delayed. In the area of strengthening quality and efficiency of technical education delivery there has been scattered and limited improvements. Staff training was nearly completed; 95 percent of the equipment ordered was installed and commissioned; some have been put to good use; courses supported by the project were accredited or re-accredited; and TA could not be effectively utilized as it was arranged before the equipment was installed. In the area of strengthening planning, management, and coordination the progress has been marginal. Weak management at all implementing agencies affected the participation and coordination of project institutions and adversely affected project outcomes. The post-project monitoring committee plans to undertake the identified needs to ensure that project benefits are sustained (paras. 3.28-3.29).

SUMMARY OF FINDINGS, FUTURE OPERATIONS, AND KEY LESSONS LEARNED

23. Project sustainability is uncertain. If the Borrower's commitment and provision of counterpart funding continues as in the last two years there is a possibility some of the benefits can be sustained. FME has taken some steps towards sustainability including the creation of a post-project monitoring committee. These steps if followed systematically will ensure that most project benefits are sustained (paras. 4.1-4.3).

24. Following is a summary of important findings and key lessons learned (para. 4.4):

- (a) Project preparation should actively involve all the beneficiaries, thus reducing lack of project ownership and subsequent implementation delays. Beneficiaries should be aware of the project components and linkages to the project outcome to ensure active involvement.
- (b) Beneficiary selection should be based on a detailed study of the needs and resources available to ensure optimal allocation and high impact. All the training courses received under fellowship programs should be fully relevant to the project's principal objectives.
- (c) The Borrower should be required to abide by the Bank procurement guidelines at all times.
- (d) Active communication and staff continuity is essential for a project's success. Communication between implementing and beneficiary institutions should be timely, efficient and effective to ensure smooth implementation. Frequent changes of project implementation staff should be discouraged.
- (e) A proper accounting system should, in the future, form part of the conditions for effectiveness, in order to avoid a suspension of disbursements. Delegation of auditing to an independent and qualified auditor should be made a condition for project effectiveness.
- (f) Frequent visits to the project sites and joint supervision missions with all implementing agencies and bi-lateral donors involved in the project is essential to ensure smooth implementation of all components of the project.
- (g) Contractual obligations should be tied to project implementation activities rather than previously fixed time periods.
- (h) Project counterpart funds should be budgeted along with the Ministry's annual requirements. The funds should be released as a line allocation to the project account and not lumped with the overall ministerial allocation.

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PART I: PROJECT IMPLEMENTATION ASSESSMENT

INTRODUCTION

A. MACROECONOMIC SETTING

1.1 During the 1970s Nigeria made significant efforts at developing its social and economic infrastructure. The result in the social sectors was substantial as the expansion of primary education reached an all-time high; in the Northern states, enrollment rates nearly doubled. However, the sharp drop in oil prices in the 1980s impeded Nigeria's potential for increased economic growth. Diversification in the economic base was essential. Directly related to declining productivity and economic stagnation was the critical problem of developing human resources. This formed the major background to the project.

B. BANK'S ROLE IN THE SECTOR

1.2 Prior to the establishment of the project, the Bank had a limited role in Nigeria's educational development. Three projects amounting to US\$91.3 million were financed by the Bank in the sector. The First Education Project (Cr.72-UNI) for US\$20.0 million was signed on March 1, 1965 and closed on December 31, 1977. A follow-up Second Education Project (Loan 814-UNI) for US\$17.3 million was signed on April 18, 1972 and closed on December 31, 1979. The Third Education Project (Loan 929-UNI) for US\$54.0 million was signed on August 16, 1973 and closed on December 31, 1982. These projects were aimed, respectively, at: (a) increasing secondary school enrollments, particularly in Northern Nigeria, diversifying the secondary school curriculum, and increasing the number of secondary and technical teachers and trained craftsmen and technicians; (b) rehabilitating war-damaged, comprehensive secondary schools in Eastern Nigeria, as well as the training of technical subject teachers and secondary school curriculum development; and (c) assisting the Northern states to expand primary teacher training facilities, and increasing secondary school enrollments.

1.3 The implementation experience of the above projects was only marginally satisfactory. Expected results were hampered by factors such as: (a) weak management capabilities of the implementing states; (b) a low quality and overburdened construction industry; (c) poor communications; (d) uncertainties in the supply of materials, equipment,

and furniture; (e) complex and inefficient Federal-state counterpart funding arrangements; and (f) poor project design involving over 100 project entities.

1.4 Based on this experience, the project under review was designed to address the broad objectives mentioned below (paras. 2.1-2.2) of technical education in only five selected educational institutions. The criteria used for selecting the five institutions were geographically spread and the Government's plan to designate institutions as centers of excellence and principal catchment institutions in their respective zones.

1.5 Several factors influenced the design of the project. First, the role of the public sector in the training of technical manpower was crucial as the private sector was not yet sufficiently developed to assume the entire responsibility. Second, the sharp drop in oil revenues exposed the economic vulnerability of the country. Diversification and increased productivity was a natural response which could not be achieved without the development of human resources. Third, the labor market requirements were such that the middle-level and lower-level manpower (technicians and craftsmen) were in short supply. The ratio available at the time was 1:1:2 (higher, middle, lower level) against a more "normal" ratio of (1:4:20). Thus the Federal Government wished to increase science/technology training programs within the polytechnics.

PROJECT OBJECTIVES

A. ORIGINAL PROJECT OBJECTIVES

2.1 The Technical Education Project was signed on July 1, 1988 and became effective on March 17, 1989. Its principal objectives were to assist the Federal Government's program of: (a) improving the quality and efficiency of middle-level technical institutions; and (b) strengthening planning, management and coordination of technical and vocational education at the National Board for Technical Education (NBTE), the Federal Ministry of Education (FME) and at the Project Implementation Unit (PIU).

B. PROJECT DESCRIPTION AND COMPONENTS

2.2 The project aimed at achieving the above-mentioned objectives, in two areas namely, Quality Objectives and Targets; and, Management Strengthening. Under quality objectives were the following activities: (a) strengthen the quality of instruction; (b) strengthen management capability of the project polytechnics and the Federal Technical College (FTC); (c) institute a staff development program; (d) strengthen the practical component of the instructional program; (e) improve the internal efficiency of the institutions; and (f) establish programs for advanced crafts and technical teacher training. Management Strengthening included the following activities: (a) reinforce of NBTE's capability for conducting in-service courses for administrators, teaching, and workshop assistants; (b) strengthening NBTE's capability to monitor, evaluate, and accredit instructional programs; (c) establish a procurement unit for equipment and instructional

materials; and (d) reinforce the project officer's capability to identify, prepare, and implement projects.

C. CREDIT COVENANTS AND SPECIAL AGREEMENTS

2.3 Several loan covenants were to be met by the Borrower in order to achieve project objectives. These included: (a) open a special account and project accounts; (b) audit all project related accounts; (c) increase budgetary allocation for instructional materials to (i) five percent of total recurrent budget by 1989 and (ii) ten percent by 1992; (d) provide separate budget categories for instructional materials and ensure they are used exclusively for their intended purpose; (e) NBTE to prepare a plan for phased introduction of measures to increase staff teaching hours and class size while reducing student/class contact hours in the project polytechnics; and (f) NBTE to prepare, not later than October 6, 1990 an outline for a three-year work program (1989-91) and conduct a study of relevant technical and vocational education issues including the cost and financing of this sub-sector and an action plan for the phased implementation of the main recommendations.

2.4 Compliance with most legal covenants was not satisfactory, especially in the areas of Government's counterpart funds, auditing requirements, and NBTE's preparation of a final study report. The NBTE final report was made available in March 1996, after the project closing date.

D. EVALUATION OF PROJECT OBJECTIVES

2.5 The project objectives were clear, well-founded, and relevant. They were based on the realities in the sector at the time. The improvement of the quality of technical education and management and coordination of vocational skills provisions in Nigeria were felt rightly to be of paramount importance to Nigeria. In the early stages of implementation the local commitment was lacking and there were many coordination and management problems which acted as constraints in achieving the broad project objectives. Lack of complete ownership resulted in the project institutions displaying a lukewarm attitude towards workshop renovation and equipment installation. The PIU did not have the required technical education expertise and although NBTE, the project institutions and TVSED played a role in equipment specification, some equipment delivered was not suitable for the needs of the technical education curriculum and training. All these factors affected the timely achievement of the project objectives.

2.6 Some project objectives critically depended on the initial workshop renovation and rehabilitation which was left to be undertaken by the implementing agencies with counterpart funds. However, since the counterpart funds were not provided adequately and in time, the installation of the equipment was delayed which affected the timely achievement of project outcomes.

2.7 While the physical part of the project objectives have mostly materialized, their impact on quality of technical education has yet to be evidenced in most institutions. Tools are stored and ready for lending to staff and students. Books and journals have

been catalogued and are being used. However, the last shipment of books and journals ordered could not be delivered due to delays in contracting suppliers. Although the expected target was not met, the budgetary allocation for consumables increased in most project institutions; thereby, improving internal institutional efficiency.

2.8 The project's management objectives were not fully achieved. Some of the management training, for NBTE and FTC Yaba, was financed by the ODA, and managed by the British Council, and it was difficult to ensure the three-way coordination between the PIU, Bank and the ODA. The NBTE and project institutions felt excluded from the project management by the PIU's desire to control all the activities of the project. The implementing agencies did not initially reflect improved management capability due to delays in management training, frequent changes in PIU directors and not implementing the proposed MIS. In the last two years there has been some improvement in this area, especially through the setting up of the Steering Committee by the FME.

IMPLEMENTATION EXPERIENCE AND RESULTS

A. ASSESSMENT OF PROJECT'S SUCCESS AND SUSTAINABILITY

3.1 Overall, project implementation was marginally satisfactory, despite various implementation problems encountered in the early stages of the project. Project sustainability is possible only if the Borrower's commitment is high, as displayed in the last two years, and ensures continuation in policy direction and strong stake-holder participation.

3.2 *Quality of Instruction.* There are only marginal improvements in the quality delivery of technical education in the project institutions. A few project institutions have substantially enhanced their ability to deliver quality middle-level technical education. Most institutions have not shown substantial improvements in the practical components of the instruction, despite receiving large amounts of equipment and training. Judging by the level of training received by the teaching staff and the quality and quantity of equipment provided to the institutions, better quality instruction should be envisaged in the future. Nearly all training earmarked for staff under the project was completed. Similarly, about 95 percent of the equipment received under the project was fully installed and commissioned; only a few have been put to their intended use. The libraries received an additional stock of books, equipment, and journals which increased library utilization.

3.3 *Management Capacity.* Improvements in management capacity took place after much delay throughout the beneficiary institutions. This was mainly because of a lack of coordination between PIU and institutions in arranging training through the British Council. A center for staff development was also set up at NBTE to serve as a forum for exchanging ideas on technical education. Similarly, the procurement unit was strengthened, although there is room for further improvement.

3.4 The project institutions have developed new curricula delivery following training received under the fellowship program. The success in these developments will only be observed over time. However, there has not been progress in terms of the practical component of the curricula and instruction in most technical colleges.

3.5 In the area of monitoring and course accreditation, NBTE's performance has somewhat improved. All of the courses under the project were visited at least once during the life of the project. Most of them were accredited and re-accredited accordingly. The NBTE also demonstrated improved capacity for conducting in-service courses for administrators, teaching staff, and workshop assistants. Better linkages with technical institutions and colleges abroad could promote greater institutional improvement through the exchange of data and ideas.

3.6 Unfortunately, due to poor communication between the project implementing agencies, the MIS component was not implemented. The implementing agency was not aware of this development until the end of the project when it was too late to rectify the problem. Attention should be given to this issue during the period of project sustenance.

3.7 *Equipment Procurement and Maintenance capability.* Equipment procurement was mainly carried out under the Bank's International Competitive Bidding (ICB) procedure. Interference on procurement by the Borrower against Bank procedures delayed procurement. All project institutions, although not all departments, participated in drafting the technical specifications used for tendering. Most equipment so procured were of the right specifications, quality, and durability; in a few cases industrial-sized equipment were delivered. The arrival of the equipment improved curriculum delivery in some institutions, and assisted in some institutions receiving accreditation and re-accreditation for targeted courses.

3.8 Procurement training was given to the staff of the PIU and NBTE. Both PIU and NBTE staff actively participated in the development of bidding documents and evaluation of bids. To this end, both institutions enhanced their procurement capacity. The maintenance capability of the institutions was not fully developed through training. The project institutions did not establish strong maintenance centers capable of handling the large quantity of equipment received under the project. There is a need for NBTE to strengthen maintenance capability of institutions to improve the chances of project sustainability.

3.9 *Improve Internal Efficiency of the Institutions.* Average staff teaching hours have increased from 14 hours per week to around 20 hours per week. Also class size has increased for workshops/laboratory, from 7 students to a minimum of 35 students. Consequently, class size for lectures has increased from 24 students to 40 students. Similarly, teacher contact hours were said to have been reduced from 31 hours per week (14 hours for workshops/laboratory and 17 hours for lecture) to 28 hours (18 hours for workshop/laboratory and 10 hours for lecture). Students' access to the library and laboratory has also improved, from less than 14 hours to almost 20 hours in most institutions.

3.10 *Advanced Crafts and Technical Teacher Training.* A technical teacher training program was not established at the two polytechnics because FME created six additional colleges of education in the country during the project's life, and thus introducing resource constraints. Similarly, advanced crafts certificate courses were not established in three of the polytechnics as envisaged, due to late installation and commissioning of equipment. The programs have a greater chance of success now that 95 percent of the equipment are fully installed and commissioned.

B. SUMMARY OF COSTS AND FINANCING ARRANGEMENTS

3.11 The total project cost (including contingencies) was US\$27.96 million with a foreign exchange component of about US\$24.5 million; the Federal Government would contribute the local costs of about US\$3.46 million equivalent. The Overseas Development Administration (ODA) agreed to finance portions of the technical assistance and fellowship costs, on a grant basis, estimated at US\$1.2 million equivalent, and a Bank loan of US\$23.3 million equivalent filled the remaining gap.

3.12 US\$21.5 million out of a total of US\$23.3 million Bank funds have been disbursed. ODA has disbursed all of the agreed US\$1.2 million. The Government provided around US\$2.4 million of the counterpart funds, although it agreed to allocate US\$3.46 million equivalent. This is partly due to initial non-compliance and then later due to the substantial depreciation of Naira. Some of the activities which were to be covered by the counterpart funds like workshops renovation were later picked up by the International Foundation for Education and Self Help (IFESH), although they too had to stop activities abruptly due to US government decertification of Nigeria. IFESH contribution amounted to almost US\$1.0 million.

C. IMPLEMENTATION SCHEDULE

3.13 Project identification was jointly carried out by officials of FME, PIU, NBTE, participating institutions, and the Bank. The project was approved by the Board and the Loan Agreement was subsequently signed on July 1, 1988, became effective on March 17, 1989 and closed on December 31, 1995. Disbursement was rapid during the first two years of project life, but slowed to a trickle thereafter. This was due to factors such as: lack of counterpart funds, inadequate preparation to receive and install equipment, unavailability of consumables and mishandling of the special account. Until project closing date, the Government's contribution had not exceeded N32,956,245 or after allowing for inflation and fluctuating exchange rate over the period around 65 percent of the expected amount. Also, there were accounting discrepancies which were later rectified. All these factors adversely affected the pre-agreed implementation schedule. Counterpart funding was provided in the last two years to effect workshop renovation and rewiring. This enabled the equipment installation to be expedited.

D. ANALYSIS OF KEY FACTORS AFFECTING MAJOR OBJECTIVES

3.14 The main factors affecting the project were project management, project accounting and procurement, project equipment, training fellowships and to the project document.

3.15 *Project Management.* The performance on project supervision and implementation had many problems in the first four years, but has improved in the last two years. Most of the problems stemmed from weak management and lack of cooperation between implementing agencies and continued non-compliance with procedures advocated in the project SAR. The procedures advocated in the SAR for reporting and monitoring was not fully understood and implemented by the Borrower. Project management experience at the implementing agencies was inadequate. Due to poor telephone linkages, the general day-to-day communication between the PIU and project entities was deficient.

3.16 The PIU held quarterly project management meetings, however, these meetings, did not provide the timely information required for quick corrective measures. Problems therefore lingered for a long time before they were finally addressed. In the last two years a Steering Committee was established which improved the speed of corrective actions. Another problem was the frequent change of the Project staff at the implementing agencies. The Project Director was changed four times by the Government during the project life span, creating discontinuity and delays in decision making.

3.17 *Project Accounting and Procurement.* Non-adherence to the Bank's accounting and procurement procedures resulted in the Bank suspending disbursements for one year. Government auditors were engaged for auditing purposes despite assurances at loan negotiations that an independent and qualified auditor would be used. This was in spite of the recommendations made by an independent accounting firm whose services were paid for from the loan proceeds. Audit reports were prepared and sent to the Bank long after their due dates throughout the duration of the project. The PIU was made to comply with the procedures before the suspension was lifted, and the project allowed to continue to operate.

3.18 Counterpart funds were not regularly forthcoming which led to delays in implementation. Until the project closing date, the Government's contribution had not exceeded more than 65 percent of the expected amount. This was partly due to initial non-compliance and then later to the substantial depreciation of the Naira. Although this improved in the last two years, continued support to project institutions is vital for project success and sustainability.

3.19 *Project Equipment.* Poor liaison between the beneficiary institutions and the procurement agent led to the purchase of some industrial-sized equipment for the project institutions. Lack of knowledge of equipment specifications by the project entities delayed the preparation of bidding documents and equipment delivery. The equipment procurement agent's performance was generally satisfactory. Much of the equipment was received in good condition. Defective equipment was replaced by the agent.

3.20 A few delays in equipment operation were due to equipment suppliers. In a handful of cases, operating manuals were not supplied and some were not in English. This made it difficult for the project institutions to operate the equipment. Arrangements have now been made for project institutions to assist each other with copies of manuals where unavailable. Also, cross-institutional assistance has been suggested to enable staff to learn how to fully operate certain equipment.

3.21 *Training and Fellowships.* Most of ODA's assistance was successfully implemented. A total of 145 fellowships of 331 man months were awarded and completed under the administrations of the British Council. Also, 34 short-term consultants were used. A few of the remaining consultancies which could not be completed before the closing date are currently being arranged. The British Council effectively managed ODA's inputs. Some training fellowships did not fully correspond with the area of expertise required to operate the equipment provided under the project.

3.22 *Project Document.* Some constraints were dictated by the project design. For instance, the timing of the Technical Assistance was required to be determined prior to project effectiveness. Hence, the experts arrived long before the equipment was installed; they devoted a major part of their time to installing the equipment. This TA program could have been delayed at least until most equipment was installed. However, if not for the TA program, the total number of equipment installed would have been much lower than 95 percent.

E. ASSESSMENT OF THE BANK'S AND THE BORROWER'S PERFORMANCE

3.23 Bank performance in project identification, preparation assistance, appraisal and supervision was generally satisfactory. The Bank's supervision of project implementation suffered in the first four years due to a lack of continuity because of the frequent changes in Task Managers and the task team. Some project institutions were not visited more than once within the first four years of project life. The difficulty arose from the remote location of three of the project institutions reachable only by road, which were in poor condition. In the last two years the Bank's supervision improved when the Task Manager was stationed in the resident mission. Subsequently, more visits were scheduled to the project sites; a few of the institutions were visited more than twice within a year.

3.24 The performance of the PIU in implementing the project was marginally satisfactory. In the last two years, in addition to the quarterly meetings, a steering committee was established, to monitor project implementation. This helped to chart a clear and more decisive course for the project.

3.25 A few disappointing performances were recorded. The auditing requirements in the SAR and in the Loan Agreement were not strictly followed. This led to late submission of annual audit reports to the Bank. Also, an expenditure based on the single entry Government accounting system was adopted as opposed to a comprehensive accounting manual based on the requirements of the SAR and the accounting covenants in the Loan Agreement. Finally, the project account showed an incomplete record of income.

3.26 The performance of the project institutions was also marginally satisfactory. Although the spirit picked up later, the institutions were initially less committed to, and displayed little ownership for, the project; which they considered as belonging to the World Bank, since the funds were provided by the IBRD. Most of them did not release their own funds to renovate workshops and install new equipment. The institutions refused to provide needed instructional materials for use on the new equipment and requested that more allocations be provided by FME for that purpose.

3.27 NBTE's performance was not as satisfactory as anticipated. NBTE needs to strengthen the practical components of the instructional program in all technical colleges. NBTE was also marred by its inability to produce a study report throughout the duration of the project. Even though several promises were made to deliver the report, none was fulfilled. Unfortunately, the absence of the report prevented the hosting of a national conference on technology which could have served as the basis for identifying the future potential of the sub-sector and a possible follow-up project. However, the training of NBTE staff through the project improved technical education course accreditation and curriculum reform.

F. ASSESSMENT OF PROJECT OUTCOME

3.28 Overall the project outcome is marginally satisfactory. As noted earlier, there were substantial implementation delays. In the area of strengthening quality and efficiency of technical education delivery there has been limited and scattered improvements. Staff training was nearly completed; 95 percent of the equipment ordered was installed and commissioned. In some institutions it has already been put to good use, while at other institutions it is still not efficiently utilized; library books and journals were received, processed, stocked and are in use; courses supported by the project were accredited or re-accredited; internal efficiency of the institutions improved; NBTE management capacity has not been very satisfactory; and the PIU after substantial delays has improved its capacity to better manage projects.

3.29 The components for strengthening planning, management, and coordination were not satisfactorily implemented; project implementing and beneficiary institutions did not have good day-to-day communication, although it improved substantially during the life of the project. NBTE could not produce the study of relevant technical and vocational education issues including the cost and financing of this sub-sector and an action plan for the phased implementation of the main recommendations. Most of the equipment was installed after substantial delays and therefore did not allow the institutions to experience the quality improvements during the life of the project. Technical assistance could not be effectively utilized as some of it was arranged before the equipment was installed. Most of these shortcomings have been or are being currently addressed.

SUMMARY OF FINDINGS, FUTURE OPERATIONS AND KEY LESSONS LEARNED

A. IMPORTANT FINDINGS OF PROJECT IMPLEMENTATION EXPERIENCE

4.1 Project implementation has not been smooth from the beginning. Several reasons can be identified. Communication between implementing agencies has always been very weak which both delayed and hindered smooth implementation. Lack of counterpart funds constrained the timely actions in more than one instance. Lack of financial and administrative management skills at PIU, NBTE and project institutions was difficult to overcome. Some of the deficiencies in the implementation arrangements were not identified and rectified in a timely manner and therefore adversely affected project objectives. Closer supervision, through the increased responsibility at the Bank's Resident Mission, over the last two years, greatly helped the achievement of most project objectives.

B. FUTURE OPERATIONS AND SUSTAINABILITY

4.2 Project sustainability is uncertain. It is possible to sustain some benefits if the project institutions, NBTE, PIU and FME are committed to carrying out the follow-up activities to ensure project sustainability. FME, with a substantial time lag, has increased the recurrent expenditures for consumables to an average of 7.5 percent; this needs to be increased to 10 percent. The Government and the implementing agencies need to ensure that these needs are met for project sustainability. A project sustainability plan attached to this report in Annex C, details these needs. A set of questionnaires has been designed, with World Bank assistance, which will be administered bi-annually by PIU/NBTE to the project institutions. The Bank should use this forum to maintain a continuous dialogue in the sector.

4.3 Any future operation would depend on the installation of the remaining five percent of equipment supplied and the provision of adequate instructional materials for its operation. Beyond this, a sufficient allocation for consumable materials should be provided to enable the project institutions to meet the training needs of their ever-growing student population. Secondly, there is a need to provide adequate electricity to the project institutions through the national grid or heavy-duty electric generators. NBTE's efforts in this direction should be sustained. Thirdly, instructors should be trained in areas which will enable them to make the best use of the equipment supplied to their institutions. Despite training and equipment provisions, the practical content of the instruction is still weak in most institutions. Fourthly, spare parts need to be provided for the repairs of the new equipment. Fifthly, maintenance centers should be set up in each institution to deal with the day-to-day routine maintenance, maintenance policy formulation and general functioning of the equipment. Finally, the implementing agencies should visit the institutions frequently to monitor the project inputs.

C. LESSONS FOR FUTURE OPERATIONS

- 4.4 Following are lessons learned for future operations:
- (a) Project preparation should actively involve all the beneficiaries, thus reducing lack of project ownership and subsequent implementation delays. Beneficiaries should be aware of the project components and linkages to the project outcome to ensure active involvement.
 - (b) Beneficiary selection should be based on a detailed study of the needs and resources available to ensure optimal allocation and high impact. All the training courses received under fellowship programs should be fully relevant to the project's principal objectives.
 - (c) The Borrower should be required to abide by the Bank procurement guidelines at all times.
 - (d) Active communication and staff continuity is essential for a project's success. Communication between implementing and beneficiary institutions should be timely, efficient and effective to ensure smooth implementation. Frequent changes of project implementation staff should be discouraged.
 - (e) A proper accounting system should, in the future, form part of the conditions for effectiveness, in order to avoid a suspension of disbursements. Delegation of auditing to an independent and qualified auditor should be made a condition for project effectiveness.
 - (f) Frequent visits to the project sites and joint supervision missions with all implementing agencies and bi-lateral donors involved in the project is essential to ensure smooth implementation of all components of the project.
 - (g) Contractual obligations should be tied to project implementation activities rather than previously fixed time periods.
 - (h) Project counterpart funds should be budgeted along with the Ministry's annual requirements. The funds should be released as a line allocation to the project account and not lumped with the overall ministerial allocation.

**IMPLEMENTATION COMPLETION REPORT
FEDERAL REPUBLIC OF NIGERIA
TECHNICAL EDUCATION PROJECT
(Loan 2926-UNI)**

PART II: STASTISTICAL TABLES

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Table 1: Summary of Assessments

A. Achievement of Objectives	<u>Substantial</u>	<u>Partial</u>	<u>Negligible</u>	<u>Not applicable</u>
Macro Policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sector Policies	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Financial Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Institutional Development	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Physical Objectives (Equipment)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Poverty Reduction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Gender Issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other Social Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental Objectives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Public Sector Management	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Private Sector Development	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B. Project Sustainability	<u>Likely</u>	<u>Unlikely</u>	<u>Uncertain</u>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
C. Bank Performance	<u>Highly Satisfactory</u>	<u>Satisfactory</u>	<u>Deficient</u>	
Identification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Preparation Assistance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Appraisal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Supervision	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
D. Borrower Performance	<u>Highly Satisfactory</u>	<u>Satisfactory</u>	<u>Deficient</u>	
Identification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Preparation Assistance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Appraisal	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Supervision	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
E. Outcome		<input checked="" type="checkbox"/>		
	<input type="checkbox"/>			

Table 2: Related Bank Credits

Credit	Purpose	Year of Approval	Status
	Preceding Operations		
Cr. 0072-UNI	Education I	1964	Completed
Ln. 0814-UNI	Education II	1972	Completed
Ln. 0929-UNI	Education III	1973	Completed
	Following Operations		
Cr. 2139-UNI	Education University Development	1990	Ongoing
Cr. 2191-UNI	Primary Education	1990	Ongoing
Cr. 2481-UNI	Development Communication	1993	Ongoing

Table 3: Project Timetable

Steps in Project Cycle	Date Planned	Actual Date
Identification (Executive Project Summary)		November 1986
Preparation		July 1986
Appraisal		March 1987
Negotiations		October 1987
Board Presentation		March 29, 1988
Signing		July 1, 1988
Effectiveness	October 3, 1988	March 17, 1989
Credit Closing	December 31, 1995	December 31, 1995

Table 4: Credit Disbursements: Estimated and Actual
 (US\$ million)

Table 5: Key Indicators for Project Implementation and Operation

SUBJECT	PROGRAM	ACHIEVEMENTS
A. Improving Quality and Efficiency		
1. Strengthening Quality of Instruction	The project focuses on four Federal Polytechnics and the Federal Technical College, Yaba and provides essential instructional inputs including teaching materials, library books, spare parts and equipment and consumable materials for laboratories and workshops.	Implemented partially with delays. Quality improvements not evident yet. Need to ascertain through the Post-Project Monitoring Committee.
2. Strengthening Management Capability	To aid in improving the quality and efficiency of the institutions, the project would provide training in management skills for senior polytechnic administrators, delineate more clearly the lines of authority and responsibility among administrators (rector, registrar, bursar, academic and administrative department heads, etc.) and establish a management information system (MIS).	Implemented partially with delays using the assistance of ODA TA. MIS not implemented.
3. Strengthening Staff Development	To reinforce the technical expertise as well as the practical skills of the teaching staff, the project would finance seminars, workshops, and longer courses for key staff from the various teaching departments.	Provided successfully with ODA assistance. Effectiveness not evident in practice.
4. Strengthening Industrial Attachment	To relate the training program more closely to the needs and requirements of industry, the project would reinforce the industrial attachment component of the training program.	Implemented partially. Tracer Studies could not be completed.

Table 5: (continued)

SUBJECT	PROGRAM	ACHIEVEMENTS
5. Equipment Maintenance	To strengthen equipment maintenance, the project would assist project institutions in establishing equipment and facilities maintenance units under the department of works at each project institution.	Partially implemented. Need for further improvement with NBTE assistance.
6. Technical Teacher Training and Advanced Crafts	To increase the output of high quality technical teachers at minimum incremental cost, the project would initiate technical teacher courses (TTC) at two of the four project polytechnics.	Not implemented. Government established six additional colleges of education during the life of the project and resources were unavailable.
7. Improving Internal Efficiency	<p>To improve the internal efficiency of the project institutions, during negotiations, the Government provided assurances that within the guidelines of the NBTE, it would:</p> <ul style="list-style-type: none"> (a) increase the average staff teaching hours from about 14 to 18 hours a week; (b) increase class size from 8 to 16 students in workshops/laboratories, and from 24 to 32 students in lectures; and (c) reduce class contact hours from 31 hours per week (consisting of 14 hours of workshop/laboratory and 17 hours of lecture) to 28 hours per week (18 hours of workshop/laboratory and 10 hours of lecture). 	<ul style="list-style-type: none"> (a) Implemented with delays; (b) implemented; (c) implemented.
B. Strengthening Planning, Management and Coordination		
1. Staff Development	To strengthen the planning, management and co-ordination of the sub-sector, the project would reinforce the capability of NBTE to provide in-service courses in planning, management and evaluation of technical/vocational education.	Training provided for all project institutions and NBTE. But impact not clear.
2. Implementation Capacity	To strengthen the implementation capability of FME, the project would assist the newly established Project Office to identify, prepare and implement all externally assisted projects.	Implemented . Effectiveness not yet evident.

Table 6: Studies Included in the Project

Study	Purpose as defined at Appraisal/Redefined	Status	Impact of Study
NBTE Study: Issues in Technical/vocational Education	Prepare an action plan for phased implementation of important findings of the study on the needs of this sub-sector.	Delayed substantially and completed in March 1996.	Will be used in deciding the future needs of the sub-sector and to ensure that projects benefits are sustained.
Tracer Study: Continuous monitoring and evaluation of the Graduate of technical Colleges.	Reinforce the industrial attachment component of the training program in order to relate the training program more closely to needs and requirements of the industry	Pilot Phase was completed. No funds were available to complete the full study.	Liaison officers are in place to carry out the exercise if funds were made available.

Table 7A: Project Costs

	Appraisal Estimate (US\$M)			Actual/Latest Estimate (US\$M)		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
Improvement of Quality & Efficiency						
Library and workshop equipment, vehicles & spare parts	-	11.93	11.93		12.23	12.23
Consumable (training) materials	0.02	7.13	7.15	0.02	7.13	7.15
Equipment repairs, installation & rehabilitation	0.48	-	0.48	0.18	-	0.18
Library books and journals	-	1.01	1.01		0.34	0.34
Fellowships & Technical assistance	-	2.91	2.91		2.92	2.92
Library furniture	0.15	0.18	0.33	0.05	0.05	0.05
Systems repairs, installation, maintenance	0.48		0.48	0.05		0.05
Strengthening Coordination & Management						
Fellowships & technical assistance	-	0.38	0.38	0.13		0.13
Program development (accreditation, industr. attach.)	0.22	0.25	0.47	-		-
Evaluation, studies and future projects	0.09	0.10	0.19	0.09		0.09
Initial operating costs (equipment & book distribution, salaries)	0.19	-	0.19	1.29		0.29
Physical Contingencies	0.30	1.99	2.29	0.58		0.58
Special Account					0.04	0.04
Total	1.93	25.88	27.81	2.39	22.71	25.10

Table 7B: Project Financing

Source	Appraisal Estimate (US\$M)			Actual/Latest Estimate (US\$M)		
	Local Costs	Foreign Costs	Total	Local Costs	Foreign Costs	Total
IBRD/IDA		23.3	23.3		21.51	21.51
Government	3.4	-	3.4	2.39		2.39
ODA (UK)	-	1.2	1.2		1.2	1.2
Total	3.4	24.5	27.9	2.39	22.71	25.10

Table 8: Status of Legal Covenants

SELECTION NO. OF CREDIT/LOAN AGREEMENT	COVENANT	STATUS	COMMENTS	ACTION TAKEN OR REQUIRED
22.02 (b)	Open and maintain a Special Account (in dollars) in a Commercial Bank.	C	Refund effected and accepted by Bank.	Close supervision and scrutiny.
3.01 (c,d)	(i) Open and maintain a Project account of 3.0 million.	C	Naira 10 million allocated for 1995.	
3.01 (c,d)	(ii) Pay into Project Account semi-annually amounts sufficient to meet Govt. contribution for six month period.	C	Allocated during past 12 months.	
4.01 (a,b)	(i) Project and Special Accounts to be audited for each fiscal year.	CD	Audit reports were not satisfactory.	Close supervision and scrutiny.
4.01 (a,b)	(ii) Audit reports to be presented to Bank no later than six months after end of fiscal year.	CD	Audit reports were consistently late during the life of the project.	
4.01 (c)	(i) Re: Statements of Expenditures (SOE), maintain records until one year after audit report has been received.	CP	Records maintained adequately; quality of book keeping is still deficient.	
4.01 (c)	(ii) Enable Bank representatives to examine SOE records and ensure that accounts are audited.	CP	Collaborated but not complete transparency. Audits were incomplete.	Aide-Memoire raised this concern to the FME officials.
6.01 (a)	Employ an agency to assist in carrying out technical assistance and fellowship components.	CP	TA is 95% completed; remaining 5% to be completed by March 1996.	Have been discussing with PIU and ODA regarding the details.
Schedule 6, Para.1	Borrower to increase budgetary allocation for instructional materials to (a) 5% of total recurrent budget by 1989 and (b) 10% by 1992.	CD	Level in 1995 was 7.5% with range 0.7% to 20%.	The Government needs to ensure that funds were provided for instructional material.
Schedule 6,Para 1	Borrower to provide separate budget categories for instructional materials and ensure they are used exclusively for their intended purpose.	CP	Provided with substantial delays.	Post-Project Monitoring Committee (PPMC) has assured a close supervision.

Table 8: (continued)

SELECTION NO. OF CREDIT/LOAN AGREEMENT	COVENANT	STATUS	COMMENTS	ACTION TAKEN OR REQUIRED
Schedule 6,Section C	NBTE to prepare a plan for phased introduction of measures to increase staff teaching hours and class size while redoing student/class contact hours in the project Polytechnics. This plan to be provided for Bank review with 6 months of project effective date with implementation to start no later than 12/31/91.	CP	The full plan has never been received, but the measures are being implemented; staff teaching hours range from 8 to 14 for full time teaching staff; class size ranges from 14 to 63; student contact hours are 30 including 3 library periods.	Bank is committed to continuous involvement in the sector.
Schedule 6,Section C	NBTE to prepare outline for three-year work program (1989-91). Outline to be provided for Bank review within six months of project effectiveness.	CP	Draft work programs received 7/90. Returned for revision. Second draft 1991/3 submitted 5/91. NBTE current strategic plan under Board Review ready by December 1995.	PPMC needs to be actively involved in the sustainability of these objectives.
Schedule 6, Section C	NBTE to conduct study of relevant technical and vocational education issues including the cost and financing of this sub-sector and an action plan for the phased implementation of the main recommendations. ; This study is to be completed and provided for Bank review no later than 6/30/90.	CD	Study unofficially submitted and reviewed by Bank 10/91. May 1995 - study being revised and updated in response to internal and external comments. Final version was submitted on March 1996, after the project closed..	The national conference to plan the future needs of technical education in Nigeria should be organized in the near future.

C = Complied with

CD= Compliance after delay

NC= Not Complied with

SOON= Compliance Expected in Reasonably Short Time

CP= Complied with partially

NYD= Not Yet Due

Table 9: Bank Resources: Staff Inputs

Stage of Project Cycle	Actual Staff Weeks	US\$
Appraisal	10.3	24,720
Negotiation through Board Approval	15.6	37,440
Supervision	137.9	330,960
Completion	3.8	9,120
TOTAL	167.6	402,240

Table 10: Bank Resources: Missions

Stage of project cycle	Month /Year	Number of persons	Days in field	Specialized staff skills represented	Performance Rating		Types of Problems
					Impl. status	Dev. obj.	
Supervision	11/88	1	8	Sr. Educator	1	1	None yet. Contracts with British Council not finalized.
	7/89	2	14	Sr. Educator	1	1	Absence of adequate communication between PIU and project institutions.
	5/90	1	10	Opera. Officer	1	1	Incomplete records of Special Accounts.
	10/90	2	12	Sr. Voc. Educator Training Spec. Disbursement Off.	2	2	Misuse of counterpart funds.
	05/91	3	8	Sr. Voc. Educa. Lawyer Disbur. Officer	2	2	Procurement infringements and inefficient financial management.
	06/91	1	7	Sr. Voc. Educ.	3	3	Review of financial management indicates malpractice.
	06/92	1	10	Sr. Voc. Educ.	3	4	Lack of counterpart funds. Misuse of funds by PIU.
	12/92	2	8	Sr. Voc. Educ. Training & Equip. Spec.	3	4	Delays in installation. Financial Management unsatisfactory.
	12/93	1	10	Sr. Voc. Educ.	U	U	Lack of communication between project entities and inadequate involvement of project beneficiaries.
	06/94	4	15	Princ. Educ. Tech. Educ. Spec. Opera. Offic. IFESH	U	U	Only 60 percent of the delivered equipment installed. Audits delayed.
ARPP	05/95	2	10	Princ. Educ. Opera. Offic.	U	U	Installation of equipment incomplete.
	06/95	1	12	Proc. Analyst			Procurement review revisited. NBTE study still incomplete.
ICR	10/95	5	22	Opera. Offic. Economist Financial Mgmt. Procurement Princ. Educ.	S	S	Workshop renovations still incomplete in some project sites; incomplete disbursement documentation.
ICR	2/96	3	15	Princ. Educ. Opera. Offic. Economist	S	S	Sustainability Plan incomplete. NBTE study incomplete.

Ratings: 1=none or minor problems
2=moderate problems

**IMPLEMENTATION COMPLETION REPORT
FEDERAL REPUBLIC OF NIGERIA
TECHNICAL EDUCATION PROJECT
(Loan 2926-UNI)**

APPENDICES

- A. Mission's Aide-Memoire
- B. Borrower's Contribution to the ICR
- C. Project Impact and Sustainability Plan

NIGERIA

LOAN 2926-UNI: TECHNICAL EDUCATION PROJECT - IMPLEMENTATION COMPLETION REPORT (ICR)1/

AIDE MEMOIRE

1. A Supervision and Implementation Completion Mission led by Mr. Yemi Suleiman (Education Operations Officer and RMN Deputy Task Manager) was carried out from October 3 to October 25, 1995. The mission comprised Mrs. Eileen Nkwanga (Project Task Manager/PHR Group leader and Acting Resident Representative); Messrs. Sudharshan Canagarajah (Project Backup Task Manager at AF4PH) and Bayo Awosemusi (RMN Procurement Specialist); Jack Cresswell (Consultant, Vocational Technical Education) and Oluwole Komolafe (Financial Consultant). The mission was accompanied by representatives of the Federal Ministry of Education including: Mrs. E. E. Spiropoulos (Project Coordinator, PIU); Mrs. M. Idowu (Chief Project Officer, PIU); Mr. Ranti Akintokun (Assistant Chief Project Officer, PIU); Mrs. C. Coker and Mr. Patrick Aniekwena (Principal Project Officers, PIU); Ms. Mary Uwemedimo (Project Officer); Mr. D.B. Kussiy (Project Accountant, PIU); Mrs. B.I. Molokwu (Legal Adviser, FME HQ). The following summarizes the mission's findings, observations and recommendations.

2. The mission met with officials of the six Project Institutions at Ado-Ekiti, Bida, Mubi/Yola, Yaba, Uwana-Afikpo, and NBTE, Kaduna. The list of officials met are attached. The mission expresses its appreciation to the PIU, Rectors of the polytechnics at Ado-Ekiti, Bida, and Uwana-Afikpo for their cooperation and hospitality during the mission. Gratitude is also due to the Principal of Yaba Technical College and the Executive Secretary and Director of Programmes of NBTE along with the staff of these institutions. The mission also thanks the Rector and staff of the Federal Polytechnic Mubi for working with it.

Background

3. The project was signed on July 1, 1988 and became effective on March 17, 1989. Its major objectives were to assist the Government's programme for: (a) improving the quality and efficiency of middle-level technical institutions and (b) strengthening planning, management and coordination of technical and vocational education at NBTE, TVSED in the Federal Ministry of Education and at the Project Office.

Main Objectives and Targets

4. The following were the developmental objectives targeted by the Project:
 - a. Quality Improvement:
 - (i) strengthen the quality of instruction;

- (ii) strengthen management capability of the project polytechnics and the FTC;
- (iii) institute a staff development program;
- (iv) strengthen equipment procurement and maintenance capability;
- (v) strengthen the practical component of the instructional programme;
- (vi) improve the internal efficiency of the institutions;
- (vii) establish programmes for advanced crafts and technical teacher training.

b. Management Strengthening:

- (i) reinforce NBTE's capability for conducting in-service courses for administrators, teaching and workshop assistants;
- (ii) strengthen NBTE's capability to monitor, evaluate and accredit instructional programmes;
- (iii) establish a procurement unit for equipment and instructional materials; and
- (iv) reinforce the Project office's capability to identify, prepare and implement projects.

Overall Achievements

5. Extensive progress has been made on certain components of the project while minimal or no progress has been experienced on the others. Generally, the participating institutions visited had greatly enhanced their ability to deliver quality and efficient middle-level technical education through, on the one hand, installation and use of equipment purchased under the project; and on the other, acquisition and application of training skills by selected instructors. Arrangements have been made to install remaining equipment, much of which requires specialist input. Tools are on hand, and appropriately stored, and tool lending systems are in place. Routine stocking has been organized to supplement daily tallies of tools by storekeepers. Renovations to workshops have been carried out properly in nearly all cases, and most workshops have an appropriate layout. In addition, some books ordered under the project have been received, processed, shelved and are being used by students; budgetary allocation to consumable materials at the project polytechnic has increased with varying percentages at each institution; nearly all the courses supported under the project have been accredited or re-accredited as the case may be. Internal Efficiency of the institutions has also improved. Students laboratory hours have increased as expected while teachers' contact hours have reduced. Both class size and average teaching hours have also increased.

Management Capability:

6. Management capability was strengthened through a 100 man-month training of senior polytechnic and NBTE administrators. Fellows spent a period ranging from two weeks to twelve months abroad. This interaction with institutions abroad has, in the case of NBTE, led to better ties and linkages with technical colleges outside Nigeria. It has also led to the conceptualization of a staff development centre at NBTE, which will serve as a forum for exchanging ideas on issues relating to technical education. It is difficult to judge how beneficial the training has been to other project institutions. Unfortunately, the MIS component of management strengthening was not fully achieved. Poor communication between PIU and project institutions as regards the performance of the providers (ODA) is blamed. PIU only got feedback on the status of MIS component during the ICR mission. The importance of pursuing the goals of MIS cannot, at this time, be overemphasized. **PIU will discuss with British Council, the need to organize training for polytechnic staff to use the Lotus Programme developed under the project. It was agreed that NBTE will follow up on this.**

Industrial Attachment:

7. In spite of serious economic downturn faced by the nation, students' industrial attachment did not suffer significant setback. Engineering students have continued to benefit more than business students. As provided under Decree 16, 1995, NBTE has proposed to government to extend students' industrial work experience (SIWES) to business students and not restricted to students of technology and related courses as is now the case. In line with project objectives, basic office equipment and a vehicle was provided for each project institution to increase the mobility of the industrial attachment liaison officer. At the NBTE level, a committee comprising all project institutions was set up in 1992 to work on SIWES. Questionnaires were developed on Tracer studies and piloted by the committee. The survey could not hold in 1992 due to lack of funds. A set of revised test instruments is now available for use whenever funds is provided by PIU. The mission believes that the non release of funds may not have been unconnected with NBTE's failure to account in a timely way for the funds earlier received from PIU to undertake a study on technical education in Nigeria. In addition, the cost associated with the committee members' proposal to visit other countries outside Nigeria for the purpose of learning computer application to data analysis, as part of the overall study strategy, **may have increased PIU's inability to raise funds from available resources**

Equipment Maintenance:

8. Beyond training of NBTE and polytechnic staff on equipment maintenance in UK under ODA assistance, it was not clear what additional efforts were made by NBTE and the project institutions to establish equipment maintenance units in their respective department of works. Evidently, much has not been achieved in this area. If this project is to be sustained, attention should be paid to this aspect. However, Equipment Maintenance centres have been set up at the Yaba College of Technology, Kaduna and Enugu Polytechnic. The centres take the lead in repairing faulty equipment in the technical institutions within their catchment areas while the

maintenance unit in each institution carries out routine maintenance and minor repairs. NBTE agreed with the mission to instruct project institutions instructors to organize to maintain equipment forthwith. However, difficult cases should be referred to experts outside the institutions.

Technical Teacher Training and Advance Crafts:

9. Because of the creation of six additional colleges of education in the country admitting many students, it was considered unnecessary to introduce technical teacher courses (TTC) at two of the four Project Polytechnics. Similarly, Advanced Crafts Certificate courses were not established in three of the polytechnics due to the polytechnics' non submission to NBTE of proposals to run these courses. Polytechnics blamed the latter on late installation and commissioning of teaching equipment delivered under the project. Having commissioned most of these equipment, the basis for monitoring these programmes is now established.

Internal Efficiency:

10. Average staff teaching hours have increased from 14 hours per week to around 20 hours per week. For workshops/laboratory, class size has increased from 7 students to a minimum of 35 students and for lectures, from 24 to over 40 students. Again, teacher contact hours are said to have reduced from 31 hours per week (14hrs for workshops/laboratory and 17hrs for lecture) to 28 hours (18hrs for workshop/laboratory and 10hrs for lecture). Library facilities such as books, journals, and duplicating machines amongst others, have been provided to students to increase their access to a learning medium complimentary to teaching. This is meant to compensate for the reduction in contact hours.

Procurement Unit:

11. Procurement unit has not been established at NBTE as envisaged in the project, but a senior official of the board has been designated as Procurement Officer. The officer has received a 12-week training on International Procurement and is currently developing equipment specifications for technical institutions in the country. A procurement unit is expected to emerge in the process. When fully established, the unit could assist the polytechnics in undertaking bulk procurement of laboratory and workshop equipment; training staff in equipment procurement, record keeping, distribution, specification writing, and supplementary training in equipment maintenance. NBTE's rationale for not developing this unit immediately is borne out of the reality that equipment procurement has essentially been the responsibility of polytechnics. Given NBTE's other responsibilities, the mission recommends the setting up of the unit without much further delay.

12. The Division of Equipment and Materials Supply at NBTE was expected to liaise with the Project Office to procure a large amount of equipment under the project. This collaboration did not work well. Its failure, it is believed, is seen in the supply of a small percentage of mis-matched and industrial sized equipment to the project institutions. NBTE felt that the error arose because its involvement in the

procurement process was, at best, peripheral. The mission was told by PIU however that NBTE was fully involved in the procurement process.

Implementation capacity:

13. The project assisted in strengthening PIU's implementation capability to identify, prepare and implement externally assisted projects. Apart from this project, PIU developed two other World Bank/IDA projects and one Sector Study. These were the \$120 million Primary Education Project, developed in collaboration with NPEC; and a proposed \$15 million Secondary Education Project. The former is under implementation while the latter is yet to be approved by the Federal Government. The project also strengthened the capability of TVSED (now TSED) through staff training, provision of relevant reference publications, and joint supervision of the Technical Education Project.

Project funding and Withdrawal of Loan Proceeds:

14. The total project cost was estimated in 1987 at US\$27.9 million equivalent with a foreign exchange component of about US\$24.5 million. Out of this, ODA (UK) agreed to finance US\$1.2 million equivalent of technical assistance and fellowships on a grant basis ODA was to commit funds before loan effectiveness. The Bank was to fund the remaining US\$23.3 equivalent and the Federal government was to contribute the remaining US\$3.4 million (Naira 19,484,693.5) equivalent to finance all local costs. These estimates were based on March-April 1987 prices.

15. As at October, 1995 the undrawn balance was a little over \$2.65 million. Outstanding bills amount to \$2.1 million. This includes contracts for books, journals, consumables and payments in Naira to the polytechnics for installation already completed. A spending plan has been prepared by PIU which shows that all funds will be drawn by the end of December 1995. There is no money left in the special account and so future draw-downs will be made from Loan Account. PIU agreed with the mission to discuss the withdrawal process with Mrs. Eileen Nkwanga as soon as possible. In addition, PIU should submit reimbursement applications to the Bank, immediately document expenditures to be made by direct payment from the special account and seek refunds where necessary.

16. Counterpart fund provided to the project between 1989 and 1995 was N32,956,245. Considering the fluctuating Naira exchange rate over these years, the real value of this amount is put about US\$1,532,954 or 44% of the expected counterpart funding. This explains the slow pace of installation, commissioning and use of equipment delivered since 1992.

Major Constraints:

17. The mission identified some constraints which militated against project implementation. These include:

- (a) Initial lack of knowledge on equipment specifications by the project entities;

- (b) non provision of timely advise to PIU on equipment procurement matters due to the location of the agents in Netherlands without a back-up officer at the ILO office in Lagos;
- (c) inadequate counterpart funding leading to lack of initial preparation of project sites to receive equipment;
- (d) poor liaison between NBTE and PIU on procurement matters leading to purchase of industrial sized equipment and non receipt of a few essential equipment and tools;
- (e) general poor communication between PIU and project entities on a day to day basis leading to none replacement of equipment missing parts and operating manuals written in languages other than English;
- (f) late Management response to emerging project issues raised by joint World Bank/PIU/FME supervision team;
- (f) frequent changes in Management at PIU level - four Project Managers appointed within the life of the project. This has had a minimal negative impact compared with other constraints;
- (g) premature timing of ODA assistance prior to arrival of equipment as a result of pre-conditions set for loan effectiveness;
- (h) lack of complete ownership by FME due to difference between government's request and resultant project design, coupled with inadequate monitoring indicators in the SAR;
- (i) unprofessional handling of project funds leading to a long embargo on disbursements and Special Account replenishment.

General comments on Project Implementation

18. The following comments represent the views of the borrower, the Project Institutions and the Bank.

Summary

19. Project implementation was delayed by several factors internal and external to PIU, for example, bid evaluation was done outside Nigeria resulting in late delivery of equipment to colleges in 1992. The assistance received from ODA could have been more effective with better timing of equipment and training delivery. The loan condition which necessitated the TA and other actions prior to effectiveness is to blame as time for training was utilized, instead on equipment installation. There was less ownership of project at the project institutions level causing critical lukewarm response to equipment installation and commissioning. Also, many equipment were received without immediate inspection due to lack of space to install them. Several missing parts were thus discovered after - long after the warranty period. The MIS component has not improved the lot of the project institutions. There is still no

particular general direction charted for MIS at the project institutions. Everyone seems be pursuing a different direction.

PIU

20. The frequent changes in personnel and leadership at PIU over the life of the project resulted in some difficulty in project implementation. The signing of TA contract with the British Council was a pre-condition for project effectiveness which has not helped the project achieve some of its objectives. Similarly, Equipro did not arrange an effective installation plan which placed the burden of most equipment installation on the shoulders of PIU. For example, it took M-systems - a local firm, at the request of PIU to rectify the problems of mismatched computer parts supplied by Ashford.

Implementation Effectiveness and Efficiency

21. (a) Implementation arrangements between PIU, FME, NBTE, and polytechnics did not work smoothly at the initial stage. Some improvements have taken place since the introduction of a steering committee for the project. In the best interest of technical education in Nigeria more collaboration would be required between these institutions.

(b) Barring certain disagreement over expenditures made by PIU and NBTE, which led to the Bank placing an embargo on disbursement for some time, the implementation arrangements between the Bank and the PIU seems to have worked very well.

(c) PIU's monitoring and supervision of ODA activities betrays lack of total control over the organization's contractual obligations activities. The timing of the TA should have been changed, given late arrival of equipment to project sites.

(d) With respect to equipment, ILO as the procurement agent had sole contact with the suppliers. Once the procurement office was disbanded, all the problems attending to equipment was left with PIU.

Monitoring and Reporting Timeliness and Accuracy

22. The procedure advocated in the project SAR for reporting and monitoring was inadequate. As a result, day to day communication between PIU and the project institutions was almost non existent. This resulted in PIU producing monitoring reports which were considered weak and sometimes superficial.

23. The auditing requirements in the SAR and in the Loan Agreements were not strictly followed.. Despite assurances at loan negotiations that a qualified and independent auditor would be engaged for auditing purposes, government auditors from the Audit office were initially used instead. Again, rather than use a comprehensive accounting manual based on the requirements of the SAR and the accounting covenants in the Loan Agreement, an expenditure based, single entry, one-line government accounting system was adopted. This did not justify the expenditures incurred on the firm of chartered accountants which prepared the accounting manual.

In addition, audit reports were not prepared and sent to the Bank as and when due. Up till now (1995), outstanding audit reports for 1992, 1993 and 1994 have not been received at the Bank.

The project account also shows incomplete record of income. The total counterpart fund received on the project was N27,600,956 against a total expenditure of N32,956,245 and a bank balance of N7,856,586. This data suggests an income of N13,211,875 which was not reflect in cash inflow. There is a possibility that this amount was received from either of three sources; interest account, special account or separate budgetary allocation. The Accountant should be asked to put the record straight.

The following represents the status of the project on a school by school basis:

Yaba

24. The college has the potential to establish a profitable tool-shop if the equipment supplied under the project are fully installed and commissioned. At the automobile workshop, this can be enhanced if the plan to expand the workshop is quickly accomplished. The provision of instructional materials written in English will also help to use two ESAB spot-welding machines in the Fabrication/Welding workshop. PIU could assist in translating these materials or seek assistance from Bida Polytechnic which is already using a similar equipment. In the same workshop, five ESAB DTB275 AC/DC square wave welding machine have not been installed due to non delivery of accessories. The manufacturers should be contacted through their address (ESAB Jitesborg Sweden. Telex 22316/20625/20552, P.O. Box 8014, Sweden) or through the Swedish Embassy in Lagos.

25. In the Carpentry/joinery workshop, the circular saw of the rotary cutting machine was supplied without carbide tip. Future replacements should correct this error. However, all equipment supplied to the wood machine shop are in good working condition except the planing machine which had recently developed electrical fault. The maintenance group was attending to this. The Refrigeration/Air conditioning department has not installed a trainer and display cabinet supplied due to lack of accessories to complete the installation. These accessories were stolen when the workshop was burgled and vandalized by unknown persons. The matter was receiving the attention of the school authorities.

26. In the plumbing shop, the electrical threading machines were not properly connected to electricity. The machines should be provided with electrical plugs for installation on a more permanent basis. Again, one part of the building has lacked electricity supply since the last one year. Workshop attendants and the maintenance unit should be called to respond appropriately. The metallurgy workshop has been extended to install the furnace supplied. The equipment should be tested and commissioned subsequently to provide practical lessons for, and enhance the performance of the first set of students taking their external examinations next year. Power supply to the shop is also of low quality and needs improvement.

27. The Radio TV/Electronics department has installed all equipment and they are said to be in good working condition. Some consumables have also been received. The workshop needs to install fire extinguishers to improve workshop safety and enhance equipment sustainability. The mission was also received assurances of an improved teaching quality as a result of these new equipment. Thoughts have therefore been given to sustainability through provision of training to some Instructors on the use and care of equipment. Similarly the Principal is looking into ways of more internally generated revenue. Equipment supplied to the Electrical department have been installed and are all in good working condition.

Ado-Ekiti

28. About 85% of the equipment have been received, uncrated and installed. The remaining 15% require space and specialist assistance. A building is being erected to install equipment meant for the Mechanical Engineering department by March, 1996. Some of the equipment currently installed in the mechanical department are too choked up and not safety-friendly. In addition, a Tig-Mag machine was supplied with several missing parts. Missing parts can be supplied by the Contractor installing this equipment. Yaba has a similar problem which could be equally treated. Food technology equipment have now been mostly installed and residue laid out for installation by specialists. These include double effect evaporator, autoclave, curettes, sedimentation study apparatus, flowmeter, laboratory rotary vacuum filter, deep bed filter column, drum dryer, steam generators, pouch forming machine, laboratory roller mill, oil extraction screw press, solid liquid extraction unit and, solvent extraction apparatus. The local representative of Tecator is helping with the latter. All land-surveying equipment have been installed except one vital equipment (Plotter) which was incomplete when supplied. Arrangement should be made by PIU to supply whatever size of plotter to the department to ensure full utilization of the equipment. This was further discussed between PIU and the polytechnic on October 19 and 20.

29. Science technology laboratory did not receive brochure for its basic electronics trainers. The polytechnic could check with other institutions which received similar equipment. Also, the laboratory was neither air-conditioned nor well ventilated with ceiling fans. Additional requirements were already being addressed by PIU.

30. Several courses have been accredited at both OND and HND levels. These include Electrical/Electronic, Mechanical, Agriculture engineering, Building Technology and Food Technology. Details will be listed in the ICR.

31. Additional orders for Library Books and Journals for the polytechnic and other project institutions have been made through the PIU. Some books had earlier been delivered. Problems of frequent loss and mutilation of books persists but the polytechnic has beefed up security to combat the trend.

32. Budget for consumables/instructional materials has, in most institutions not met SAR targets. Recent salary increases announced by the Federal Government without a corresponding release of additional budgetary allocation to meet the cost has increased the burden of the polytechnics to provide adequate funds for consumable and examination papers. The latter has to be supplemented by students. Similarly, a

line budget for equipment maintenance has not yet been established. Equipment repairs may not take place without spares and tools; and this may lead to gradual winding down of the new equipment. One way to avoid this is to dovetail a new project to the one about to close. On the short run however, the mission recommends that the implementation committees should be retained to continue their normal work beyond project closing date.

33. Out of 22 computers supplied under the project, 13 are now in full working condition. The remaining 9 could not be rectified due to defective components and would have to be completely replaced, as the cost of purchasing missing parts is close to the price of new products. The network cable supplied was of the wrong specification. The polytechnic requests for more UPS to serve the number of working computers. The PIU should attend to this without delay to prevent damage to the computers due to electric power fluctuation.

34. Power supply to Ado Ekiti is enabled through a 33 KVA electric line supplied through Ekiti township - over 15km away. The polytechnic is therefore the first to be load-shed when demand for electricity reaches a peak in the main town. To ensure full utilization of equipment, the polytechnic requires a direct feed from 33KVA HT line. The steering committee should pursue this matter through NBTE and FME.

Bida

35. Bida continues to lead other institutions on equipment installation under the project. Nearly 90% of the new equipment have been installed and commissioned. The balance will be installed by specialist input. The institution has also maintained an equipment maintenance group based in the mechanical engineering department and headed by an Assistant Chief Technologist. Membership is drawn from major engineering departments. A workshop safety committee has also been maintained over the life of the project. The problem of mismatched tractor and plough is yet to be resolved. The polytechnic prefers a matching tractor than adopt a trade off approach to acquire a smaller one. The steering committee should look into this matter critically. The polytechnic agreed with the mission to do the following:- complete equipment identification system commenced already; request M-systems to upgrade computer equipment for the electronics/electrical department from 1 mgB to 2 mgB; install servo mechanism in the basic electricity laboratory once PIU provides funds for spares needed; install generating set in the electronic/electronics laboratory; install most (50%)of the equipment in the mechanical laboratory; install equipment not yet installed in the Material Sciences/Strength of materials/Metrology and Applied Mechanics laboratory; commission the remaining (50%) of the equipment in the chemical laboratory and provide lighting and repair the roof; install only two equipment in the fitting/fabrication workshop; install the CNC equipment in the mechanical workshop, control dust, and send staff to attend Equipment Maintenance training to be organized by PIU.

36. To speed up installation of remaining equipment, PIU agreed to release funds to the institution as quickly as possible. The modality for releasing funds from loan account should be discussed with Mrs. Eileen Nkwanga. In addition, the polytechnic should complete space to install water laboratory equipment. It should also contact

other polytechnics for operational manual not supplied with hydrology and universal testing machines. To ensure effective use of equipment, staff in this laboratory should be trained. The polytechnic is commended for successfully repairing a lathe machine which was damaged on delivery.

37. The mission also observed that low utilization of equipment was due to lack of consumable. This matter should be resolved once suppliers under recently executed contracts perform their obligations to PIU. **The mission wishes to point out that unless shipment of goods takes place before the official closing date of December 31, 1995 payment for goods supplied will not be entertained by the Bank.**

37. The library has received 425 titles of books comprising 1,302 volumes. Similarly, 25 titles and 235 volumes of journals were received in 1990 and 120 volumes in 1991. Journal publications for 1992 to 1995 have not been received, but PIU has just placed order for 1994 and 1995 publications. Both 1992/93 journals can be supplied through the Federal Universities which have received journals from 1991 to date. The polytechnic should provide a list of titles required to enable RMN contact NUC and request for assistance in providing 1992 and 1993 missing titles. Problem of lack of space persists in the library but a marked improvement in space management was observed. To solve the present space shortage at peak periods, the mission recommends the use of classrooms as a temporary measure. The modality will be worked out by the librarian. Through a self organized endowment fund, the polytechnic has been able to put up a library space which is still uncompleted. An estimated sum of Naira 20.0 million is required to complete the building. The polytechnic needs assistance from FME, NBTE, or other sources to accomplish the task.

38. The librarians need to be trained on computerized cataloguing and circulation system. PIU will incorporate this in the training for librarians under the remaining consultancy hours. The mission advised PIU to liaise with NUC and investigate the possibility of acquiring for the polytechnics; TINLIB software now in use in the libraries of federal universities. The problem of books stealing and mutilation persists but being tackled by the school. The mission suggests that photo copying facilities be made available within the reach of the students to reduce this incidence.

39. The mission was pleased to note that NBTE has now supplied the polytechnic with a 500KVA electric generator. When installed, it should enhance equipment utilization and effective curriculum delivery.

Yola/Mubi:

40. The Polytechnic has two campuses located at Yola and Mubi with the Headquarters in Mubi. The Yola campus will eventually relocate to Yola starting with the Electrical and Electronic Engineering Department by the end of November 1995. Subsequently, Food Science and Laboratory Technology Department will follow when the workshops are completed.

41. Progress has been made on the installation of Food science technology equipment at Yola campus. The remaining un-installed equipment fall under the category of sophisticated equipment requiring specialist attention. Some of these equipment are Gas Chromatography, Dual Trace Oscilloscope, Farimography, Amylography, Compact Spray Drier etc. Arrangements have been made with specialists to install these equipment as soon as PIU releases fund to the Institution. The mission recommends that, rather than install equipment to be relocated soon, the polytechnic should try to install them at the permanent site. The risk of damage to equipment is great during relocation.

42. At Mubi Campus, most of the Equipment yet to be installed are in the Mechanical Department. These are mainly Welding Machines like TOKVA Spot Welding Machine, Mig-Mag and Tig Welding Units. There is also the need to repair some of the Protek Oscilloscopes as well as Universal Frequency Counter in the Electrical and Electronic Engineering Department. The Polytechnic had submitted cost estimates to install these equipment as soon as PIU approves funding.

43. 22 Computers received by the Institution have been installed and commissioned by a local firm - Hasselmeier (Nigeria) Ltd. The Laboratory is very clean and conducive to learning. Two of the Computers are defective and need repairs. Like other courses in Food Science and Laboratory Technology, the Computer Science course was accredited as a result of the equipment received from the Project.

44. The Institution has a good standard Library. The Library environment is highly conducive to learning. The Institution received 918 titles of library books in 1992 along with some Journals and Audio-visual Aids. Also supplied under the Project were quality library furniture. Most of the books received were in Engineering courses. The supply of these books and Journals have increased library patronage by both students and staff in the School. Adequate books and Journals register are kept and the "Brown System of charging" applicable to loaning books to students and staff is in place. This has reduced the incidence of books lost in the library. The Library staff are well trained and organized. More books and journals are expected before the Project closing date.

45. Based on the recommendation of the previous missions, obsolete and damaged Land Survey Equipment received from Hungary and Germany have been separated from those supplied under the World Bank assistance. The latter are in good working condition except a theodolite. The mission recommends that the Institution should undertake the repairs.

Uwanna-Afikpo

46. A considerable amount of equipment has not been installed, tested and connected to electric power. For example, the computers supplied under the project have been well installed and tested but not hooked to electricity. This makes their effective utilization doubtful. In the structure laboratory, what is required is to place some equipment on benches (not the floor) and plugged to electricity provided from

sources close to the machine (not too distant). Similarly, two pieces of equipment in the same laboratory could be put to full use simply by fabricating a handle which has been broken since the last two or three years. A metal craftsman can make the handle within two to three days using, mild steel. Ceramic department is the worst hit in terms of equipment not put to use. The departmental staff also suffers from lack of training to use these equipment. Some equipment were crammed in a small space only suitable for display - not training. A number of them have accumulated dust and rust to the extent that, if they are not test-run immediately, the chances of getting them to work effectively may not be regained. The mission recommends that experts should be brought in to test-run these equipment and provide training to the technical staff on their use and maintenance. Pending the completion of a new ceramic laboratory, the mission recommends that few and inadequate equipment supplied for glass technology under the project should be tested and safely stored away to provide sufficient room for the pieces of ceramic equipment now crammed in a few rooms.

47. On the other hand, several pieces of equipment need expert installation, e.g. abrasive testing machine, kiln and vibrating table - all located in the block making laboratory. A number of the equipment (e.g. strength of materials tester) were inoperative due to lack of consumable materials. What is needed is sand, gravel and cement. In other cases, only acids prevents full use of equipment.

48. Of the 24 computers received, 21 are now said to be fully functional. The mission could not test them as there was no electricity supply to the entire campus during the visit. This has been the case in the last three visits to the polytechnic and the Rector had always lamented the serious lack of constant electricity to the campus. Surprisingly, electricity supply to the community around the polytechnic seems to flow undisturbed. PIU and FME should investigate why the polytechnic has had this problem all along, and should help to solve the problem to ensure full utilization of the huge investment which the FGN has made so far on training equipment.

49. Other than the above, the polytechnic has made tremendous strides in uncrating and positioning equipment for installation. A number of equipment could not be installed at all because they were defective when supplied. Two furnaces and two air compressors fall under this category. Ajaokuta steel industry or Bacita sugar industry should be contacted immediately to rectify these faults. The polytechnic should also be allowed to use the ingenuity of its many experienced and dedicated technical staff and teachers to rectify minor faults within their capacity. Other sister polytechnics should also be contacted for help where local ingenuity fails. The polytechnic was hopeful that as soon as PIU releases money to it for equipment installation as approved by the Bank, most of the equipment should be commissioned. The mission recommends that the committee responsible for project implementation at both the FME, PIU and polytechnic levels should not be disbanded until all equipment are confirmed to be working in perfect condition; and in fact beyond.

Project Sustainability

50. Project sustainability is now in doubt as FME has not fully complied with the agreements reached with the Bank. Recurrent expenditure for consumable in most colleges has not reached the target set. Very few had any consumable on hand and the

departmental heads could describe no particular system of obtaining the materials. This continues to be a difficult problem for the institutions given dwindling budgetary allocations to the technical colleges. The situation is complicated by a recent increase in staff salaries without a corresponding increase in the recurrent budget allocation to the schools. Some institutions have resorted to commercial activities and are charging higher tuition for part-time students to raise needed funds. The mission recommends funds be provided to Principal and Rectors to purchase consumable requested by HODs to enable transfer of practical skills.

51. There was neither spares on hand for new or existing equipment, nor was there appear to be any system for acquiring spares. Participating institutions have acquired equipment from a variety of countries. Even if parts can be fabricated locally, many spares can only and would be best provided by the manufacturers. The mission recommends that a system to obtain spares for the participating institutions is put in place to ensure project sustainability.

52. NBTE has not prepared an outline for the needs of the institutions as agreed at project inception. The project institutions seem to have an idea of what they require and have shown greater determination to survive. However, government's own commitment appears too weak to assure anyone of a brilliant future for technical education in the country. A follow up project may help to correct this situation.

Loan Covenants

53. As mentioned in the last aide memoires most of the legal covenants have been met. Details are attached.

Borrower's ICR

54. FME has set up a 15 member project completion committee which will commence work on November 21. It is hoped that a workshop will follow at which all its findings will be discussed.

Operational Plan for the Project

55. An operational plan for project sustainability will be jointly prepared with the project institutions and PIU. This will be included in the ICR for clearance. The timetable for preparing the ICR is attached to this aide memoire.

56. The mission findings presented in this aide-memoire are subject to review by the World Bank management who would refer to them in correspondence in the next few weeks.

Lagos, October 27, 1995

For the Mission: —



Adeyemi A. Suleiman

(Mission Leader)

Schedule of ICR Processing

<u>Activity</u>	<u>Time Frame</u>
1. Transmission of draft ICR to borrower for comments	January, 15, 1996
2. Borrower transmits comments to the Bank	February 15, 1996
3. Preparation of the gray cover ICR	March 15, 1996
4. Transmission of ICR	April 15, 1996

BORROWER'S
SUMMARY REPORT

Introduction and Background

This is the ICR summary report for the Technical Education Project (Ln 2926-UNI) which was supported by the World Bank with an amount of US\$23.2 million. The report was prepared by a 15 member team made up of project implementing officers in the Ministry and Project Institutions.

Before this project, the World Bank had assisted the Nigerian Government on three projects. These are the First Education Project (Credit 72-UNI); Second Education Project (Ln 814-UNI); and Third Education Project (Ln 929-UNI). These projects were executed at various times between 1965 and 1979. Their major contributions were for expansion and quality improvement of Primary and Secondary Schools in specific regions of the federation. Notwithstanding the contributions of these projects, the need for middle level manpower development in Nigeria grew to a level requiring immediate attention. This gave rise to the Technical Education Project.

The Project

The project was approved on July 1, 1988, made effective on March 17, 1989 and closed on December 31, 1996. The project was co-financed by the Overseas Development Agency (ODA) of the British Government, the Federal Government of Nigeria (FGN) and the International Federation for Self-Help (IFESH). The first contributed the sum of US\$1.2 million equivalent in Grant Aid while the second and third contributed UA\$3.4 million and US\$1.0 million respectively - the last being in Grant Aid.

Project Objectives:

The major objective of the project was to improve the quality, efficiency, planning, management and co-ordination capacity of NBTE, TSED, PIU and five middle-level Federal Technical Institutions namely; Federal Polytechnics at Ado-Ekiti, Bida, Uwanna-Afikpo and Mubi. The fifth one is the Federal Technical College, Yaba.

Specific objectives related to the project Institutions were to:-

- a. Strengthen management capabilities of the institutions;
- b. Improve the practical component of the instructional programme;
- c. Strengthen equipment procurement and maintenance capability;
- d. Improve the internal efficiency of the institutions;
- e. Establish programmes for advanced crafts and technical teacher training;

f. Institute a staff development programme

With respect to NBTE, TSED and PIU, the objectives were to:-

- i. Reinforce NBTE's capability to conduct in-service courses for administrators, teaching staff and workshop assistants;
- ii. Strengthen NBTE's capability to monitor, evaluate and accredit instructional programmes;
- iii. Establish a procurement unit for equipment and instructional materials at NBTE and PIU;
- iv. Reinforce PIU and TSED's capability to identify, prepare and implement projects

Project Covenants

The following loan covenants were agreed with the World Bank:

- a. Institutions would increase budgetary allocation for consumable training materials from 5% of total recurrent budget by 1989 to 10% of the total recurrent budget by 1992.
- b. Institutions would provide separate budget categories for consumable training materials and ensure that they are used exclusively for their intended purposes.
- c. NBTE would prepare a plan for the phased introduction of measures to increase staff teaching hours and class sizes while reducing student/class contact hours in the Project Polytechnics.
- d. NBTE would prepare, not later than October 6, 1990, an outline for three year work programme (1989-1991) and would conduct a study of relevant technical and vocational educational issues including the cost and financing of this sub-sector and action plan for the phased implementation of the main recommendations.
- e. Each project institution would designate a project liaison officer who would liaise with industry, NBTE and ITF for effective industrial attachment.

- f. Each project institution would put in place a machinery for continuous monitoring of its past graduates through tracer studies. To this end, the project provided a vehicle for each institution to monitor these activities.
- g. Each project institution would establish an equipment maintenance unit as a means to ensure sustainability.

Project Implementation Results

Generally, Project Implementation experience was satisfactory. About 95% of the equipment delivered to the project institutions were installed, commissioned and put to use; books/journals were substantially procured, shelved and being utilised by staff and students; spare-parts and consumable were delivered in large quantity to project institutions; local training in computing, library science and equipment maintenance Courses were undertaken for project staff. In addition, the greater number of project institutions' staff benefited from the ODA Fellowships and Technical Assistance, and from IFESH's assistance for workshop renovation. All these have led to qualitative improvement in curriculum delivery and in the number of courses accredited and re-accredited.

Most of the covenants agreed with the Bank were met by the Project Institutions. For example, institutions have generally increased their budgetary allocation for consumable training materials and have provided separate line budget for same. Similarly, internal efficiency has improved at the project institutions in terms of staff teaching hours, class size and student/class contact hours. Furthermore, NBTE prepared a three year work programme as scheduled and delivered the study report on the future of technical education in Nigeria four months after the project closing date; student industrial attachment programme was effectively carried out.

Unfortunately, a few of the project objectives and covenants were not achieved. These include; (a) the introduction of advanced craft certificate courses in the polytechnics, which could not be achieved as a result of government's introduction of six new Colleges of Education (Technical) to cater for these courses; (b) the establishment of advanced craft certificate courses at the polytechnics for which NBTE has recently directed project institutions to run these courses based on improved equipment supplied under the project; (c) untimely delivery of NBTE's report on the future of technical education in Nigeria which led to the non hosting of the National conference on Technical Education in Nigeria.

Project Implementation Experience

Several factors combined to aid or impede the pace of implementation. Factors which enhanced implementation include, (a) continuous World Bank/PIU supervision of the project within the last two years of project implementation; (b) introduction by FME, of a steering committee for regular project monitoring; close working relationship

between the World Bank, British Council, IFESH and PIU; useful inputs made by Polyconsults, local consultants and contractors on equipment installation. Factors which impeded project implementation include: inadequate and untimely release of counterpart funds, weak communication link between the project institutions/procurement agent and PIU; strict project pre-effectiveness condition limiting FME to sign Technical Assistance contract much earlier than it could have been most effective; initial lack of experience by project institutions in equipment specification writing; none inclusion of civil works in the project components; absence of procurement agent's liaison officer in Lagos.

Lessons Learned for Future Operations

For future operations, the following factors should be considered:

- (i) Condition for loan effectiveness should not lead to a situation in which the beneficiaries would sign a time-based, rather than an activity-based contract.
- (ii) Beneficiary institutions should be more actively involved in project appraisal.
- (iii) Counterpart funds should be vigorously pursued through the Ministry of Finance. Also, allocated funds should be transferred directly to the Project Account.
- (iv) Project funding of major components should be fully reimbursed by the World Bank. This will prevent non completion of vital project components due to inadequate counterpart fund.
- (v) Communication between all parties involved in project implementation should be encouraged on a day to day basis.

Project Sustainability

Project sustainability is in hand. The government has set up a steering committee to ensure that the benefits of the project are sustained through direct and constant link with the project institutions. The committee will meet twice a year to review reports and maintain project gains. Also, the World Bank, British Council/ODA and IFESH are to undertake post-project reviews as and when desirable to ensure project sustainability and determine future assistance.

To aid the process, each institution has developed a plan to provide consumable training materials, library books/journals, and maintenance/staff training. A sum of N55.5 million will be required to execute this plan. FME has promised to press for budgetary allocation through NBTE as special grant for implementing the 3-year plan. Also, they were advised to establish a maintenance unit in each of their institutions and appoint a staff as equipment maintenance officer. It is hoped that a day will be set aside within the month, in each institution, to clean and oil all equipment and workshops. This

process has commenced with the delivery of an equipment maintenance course, organised for maintenance officers of project polytechnics and their teams.

At the PIU level, the Federal Ministry of Education has created a Post Project Implementation Monitoring Team to ensure that the benefits of the project are sustained through contact and close links with project institutions. Each project institution has devised peculiar ways of sustaining the project, such as setting up various committees for the purpose.

With respect to consumable training materials, each project institution has created a line item in their budgets into which allocations for these items are deposited.

LOAN 2926-UNI: TECHNICAL EDUCATION PROJECT
PROJECT IMPACT AND SUSTAINABILITY PLAN

Introduction

1. Impact. A project such as this may be expected to have several levels of impact. These are:

Level One initial inputs under the project - equipment, training, consumables, management information system

Level Two direct consequences of level one inputs - course accreditation, improved instructor skills, better access to computer-generated management information

Level Three - improved classroom instruction - qualitative improvement in teaching processes

Level Four enhanced student knowledge and skills

Level Five higher achievement levels - better course output

Level Six better employment opportunities, salary and advancement with higher levels of employer satisfaction - improved outcomes

Since it took some time to install and commission level one inputs provided under the project only the first two levels of impact were available by the project's closing date.

2. Sustainability. Sustainability of project benefits and improved impact depend upon the following

- continued active commitment on the part of the beneficiary institutions, NBTE and the Federal Ministry of Education together with cooperation from the Ministry of Finance
- availability of funding for consumables, spare parts, maintenance, books and journals
- appointment of a responsible and accountable maintenance officer at each institution
- improved income generation by institutions
- more effective links with the community
- ongoing monitoring and evaluation of progress under the six levels noted above and of measures to sustain the benefits

Measures to Improve Impact and Sustainability

3. Short term. To improve short term impact and sustainability the following steps have been taken:

- (i) Staff in the electrical engineering department at Bida provided technical assistance to Ado-Ekiti and Yaba to install their remaining items of equipment - a power generation and distribution simulation plant at Ado and an armature winding machine at Yaba. The cost was from counterpart funds.
- (ii) Each institution has been allocated a grant of N200,000 from counterpart funds for consumables.
- (iii) Government has allocated N44 million to two of the beneficiary polytechnics - Ado Ekiti and Mubi - to consolidate the project benefits and improve training facilities.
- (iv) In the interests of a more reliable electricity supply NBTE has provided each polytechnic with a 500 KVA generator.

4. Medium and long term. To improve impact and sustainability in the medium and long term the Rectors have proposed the following which was agreed by the Ministry of Education:

- (i) Each beneficiary institution be designated a center of excellence in at least one area.
- (ii) Sufficient recurrent funding be provided annually over at least a three year period for consumables, spares, maintenance, books and journals.
- (iii) Each institution will appoint and equip a maintenance officer who will be held accountable for the state of the equipment.
- (iv) Each institution will aggressively develop its income-generation potential particularly in relation to the local productive sector.
- (v) NBTE, PIU and the World Bank will carry out a three-year study of project impact and sustainability. Initially, this study will be started by the PIU within which a post-project monitoring team has been created to assess the continuing impact of all completed World Bank-assisted projects. After a period of time the technical education monitoring study will be handed over to NBTE to manage. A description of the study is attached.

In addition, the National Board for Technical Education will conduct a survey of employers' ratings of National Diploma and Higher National Diploma Diplomates from Nigerian Polytechnics using the attached questionnaire.

IMAGING

Report No: 15879
Type: ICR