Report No. --328

CONFIDENTIAL

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

EVALUATION OF FIRST KENYA EDUCATION PROJECT

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Operations Evaluation Department

PREFACE

The Bank Group began lending for education in Fiscal Year (FY) 1963, and commitments have risen rapidly from $5 million in that year to nearly $25 million in FY1968 and $280 million in FY1973, and they are still growing. Ex-post evaluation of Bank lending for education therefore seems desirable, but it is also particularly difficult, for various reasons including the exceptionally long 'gestation' period that normally occurs, even under the best circumstances, between signing the contract for school construction and stable employment of the graduates.

In view of the importance of learning more about the actual results of Bank-supported education projects, it was nevertheless decided to include an evaluation of a completed education project in the Operations Evaluation Department's work program for FY1973. As of June 1972, when selection had to be made, there were only four education loans/credits on which disbursement had been completed.[1/] Of these four, only one -- to Kenya -- met two criteria considered important in selection of a project for evaluation, namely that the project should have been oriented mainly to secondary and technical education (the Bank's main focus of attention in this field)[2/] and designed to have qualitative as well as quantitative impact on the education system (a persistent theme of most Bank activity in this field). The following report is the synthesis of the evaluation (carried out discontinuously between June 1972 and June 1973) of the project financed under IDA Credit 93-KE of August 1966, which provided $7 million for a $10 million equivalent expansion of general and technical secondary education and of primary teacher training in Kenya; credit disbursements were completed in 1970.

Beyond the audit of physical execution and adherence to credit covenants, evaluation of education projects should assess their internal efficiency (covering matters such as costs of education and student performance in school examinations) and their external productivity (contribution to supply of trained manpower and larger economic benefits). During

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1/ To Chile, Kenya, Tanzania and Tunisia. During FY1973 disbursements were completed on a further three loans/credits for education, to Bangladesh, Ethiopia and Philippines.

2/ Some 80% of Bank lending for education through the end of FY1971 was for secondary schools, and 30% for technical (as opposed to general and teacher training) education at all levels.

the course of this study two major surveys were planned -- the first of a sample of secondary school graduates, tracing their employment history and generating data principally for analysis of external productivity, and the second of a sample of current secondary school students, using standard testing techniques recently developed[1/] and designed mainly to answer questions about internal efficiency. In the event both these plans were frustrated, for various reasons among which the study's scheduling and time constraints and lack of support in Kenya were dominant. The study had to rely on published data, interviews and small-scale surveys which the evaluation mission was able to carry out in its fieldwork. All the available information has been drawn together to deal with project implementation, internal efficiency and external productivity, but the answers to many important questions still remain tentative. Annex 1 describes briefly the methodology used.

The principal purpose of the IDA project, in line with Bank educational lending policies at the time, was to help meet the educated manpower requirements of the modern sectors of Kenya's economy as forecast in the mid 1960s. The purpose of this evaluation study is mainly to answer the following questions:

(a) were the project's objectives, as stated in the Credit Documents, achieved, and if not, why not; and

(b) were the project design and objectives right in light of the information and criteria available at the time of project appraisal.

Lessons, both policy and operations oriented, were drawn from the answers.

Consequently the report not only covers to some extent the audit of the project's execution and operating results as a completion report would, but also reviews the actual developments and growth patterns of the relevant education systems and manpower sectors. The first part of the report deals with manpower supply and demand, the whole secondary education system, and national expenditures for education. An audit of the physical implementation of the project follows. The project's operating results and forecasts are treated next, in more detailed sections dealing with each of the four types of education financed under the project; because the project's qualitative objectives referred essentially to general secondary education, achievement of these objectives is assessed in the corresponding section. Equalization of secondary education opportunity is treated in the same section. The report ends with conclusions and suggestions for the future.

1/ By the Institute of Educational Achievement of Stockholm (Dr. Torsten Husen).

The reader should bear in mind that the project studied was one of the earlier education projects to receive Bank Group financial support.1/ Because the Bank's experience has increased and its objectives and policies have markedly changed since, the project set-up and achievements were evaluated, and operational and policy lessons drawn, in the perspective of respectively past and present Bank criteria and objectives for lending in education; it is believed that this report's analysis and some of its conclusions will be relevant and useful to present Bank activities in education.

The assistance rendered to this study by officials of the Kenya Ministry of Education and by the headmasters and staff of many schools in Kenya is deeply appreciated. The invaluable cooperation and access to ongoing studies afforded by staff members of the Institute of Development Studies of the University of Nairobi, and particularly by Dr. Anthony Somerset and Mr. Peter Kinyanjui, is most gratefully acknowledged. The assistance and cooperation of the National Industrial Vocational Training Center, of the Ministry of Labor, in the execution of the mission survey of technical school graduates in their Nairobi premises are highly appreciated.

Currency Equivalent 1965-72:

K£	1.00	= KSh 20.00	= US $2.80
KSh	1.00	= US $0.14	
US	$1.00	= KSh 7.15	

1/ It was the 12th education project, out of a cumulative total of nearly 100 by the end of Calendar Year 1973.

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SUMMARY

In August 1966, IDA granted a US$7 million credit (93-KE) to the Kenya Government to help finance a US$10 million project for the expansion of secondary and technical education and of primary teacher training. Manpower forecasts in the 1966-70 Development Plan indicated that secondary schools should produce over the period 1964-70 at least 56,000 students with four years of secondary education. Three-quarters of the total project expenditure were allocated to the creation of 11,800 places in 42 new and expanded general secondary schools, representing 40% of the secondary places to be added over the period 1966-70; other places were to be provided through better use of existing schools. The project was also to provide 1,250 additional places in 2 new and 6 expanded technical/vocational schools[1/] and 950 places in 18 expanded primary teacher colleges, which represented all the new places to be added in 1966-70.

About 50% of the additional places in secondary schools and practically all those in technical schools and teachers colleges were planned for boarding. The project included construction of 545 staff living quarters, accounting for 25% of the project cost. In addition, each secondary school in the project was to be equipped with at least one workshop in either agriculture, commerce, home economics or industrial arts.

Curricula and examinations were to be modernized, particularly in secondary education, on the basis of the findings of the Government Curriculum Development Center; the percentage of passes on examinations was expected to increase. Curricula in project secondary schools were to be broadened with the introduction of practical courses associated with the workshops. Science teaching was to receive greater emphasis, particularly in the final years of secondary education.

All project works except on two secondary schools, one technical school and one college, were completed by the December 1969 target date, but disbursements from the Credit were behind schedule by one year on average, due to initial delays in construction. All secondary and technical schools originally envisaged were built or expanded, and the funds planned for 18 teacher colleges were reallocated by the Government among 11 larger colleges to achieve scale economies.

Regarding construction, the results of the first bids were substantially higher than the cost estimates; so the Bank urged changes in bidding procedures and cheaper design standards. As a consequence, at the cost of some delay, schools were grouped in bulk tenders, and international bids called;

1/ Excluding a Technical Institute in Mombasa where IDA involvement was marginal.

in the end, all contracts were made with local contractors and bulk tenders did not yield the expected reduction in costs.

Due to higher than expected costs, the quantity and quality of project facilities were lowered below original plans. The number of classrooms and teacher houses built was reduced by 5% and the number of dormitories was cut by half; standards of accommodation were reduced, particularly in libraries and some workshops, and building design was somewhat too much standardized. Savings were made on furniture and equipment, particularly on the amount or the specifications of machinery. Total cost overruns on the project were finally negligible; on construction, which accounted for 90% of the total cost, the cost overrun was 9% and was compensated by savings of 25-45% made on equipment and furniture. Overall, the project physical achievements have been satisfactory, given the decision not to increase the financing of the project.

Procurement procedures and practices of the Project Unit, which was set up in the Ministry of Education to execute the project in accordance with the Bank's requirements, added to the difficulties in project implementation. Too many of some items were procured, and too few of others. Some equipments were incompatible with one another or lacked adequate manuals. Some laboratory equipment was ill-distributed among schools. More seriously, the lack of proper tendering specifications and reductions in standards have hampered the effective use of the school facilities and equipment; difficulties in equipment maintenance and in obtaining spare parts may have offset the advantage of international bidding.

Overall enrollment in the project schools reached targets; output (in terms of leavers) lagged behind by about two years, as follows:

Enrollment and Output in Project Schools

	Enrollment Index		Output Index	
	1970	1972	1970	1972
Secondary (as % of 1970 target)	103	110	95	105
Technical (as % of 1969 target)	89	124	55	79
Teacher Colleges (as % of 1970 target)	86	100	83	100
Total (as % of total target)	98	110	85	100

The project teachers colleges have contributed by 30% to the expansion of primary teacher training. Qualified teachers now represent 80%, instead of 65% of the primary teaching force. The concentration of teacher training in larger colleges has enabled reduction of unit recurrent costs in colleges by 15%.

The technical education system received insufficient attention at appraisal time. The three project technical secondary schools (secondary schools with a technically biased program) have had declining examination performances. In the vocational schools, unstable programs of two- and three-year courses resulted in low output and rising unemployment of graduates; graduates employed within five months of graduation were 90% in 1966, but 50% in 1971. A four-year course designed in 1971 reversed

the trend, and vocational schools are becoming popular and productive. The availability of qualified technical teachers and the pattern of workshop training have been the key factors in the graduates' post-school performance. The workshops installed under the project need extension and additional equipment to cope with the new course.

The project secondary schools met rapidly their enrollment targets. They have been, on average, similar to the other Government secondary schools in terms of student-teacher ratios, proportion of qualified teachers (nearly 100%), and examination results. Recurrent costs per student enrolled have also been similar, despite the much larger size of IDA schools.

Of the 30 project schools planned for rural areas, 20 were to include at least one day-stream. Consequently, project schools were allocated mainly to the densely populated regions, which already had the best education facilities and secondary enrollment ratios. Kenya maintained competitive selection policies spreading each school intake over a whole district; as a result, only 7 of the 30 rural project schools have one or more day-streams, and boarders account for 65% of the places added by the project. Dormitories in most rural schools are presently overcrowded.

Practical courses workshops in secondary schools have been well utilized, except the agricultural ones. The latter, equipped with modern equipment and tractors, were generally not located in large farming areas, and agricultural courses have been somewhat theoretical. Practical courses have remained marginal in the curricula, teach techniques relevant mainly to the modern sector, and do not seem to benefit much the local communities. Using experience gained from the Bank's initiative, the Government plans to equip other schools with workshops and practical courses.

Little progress has been achieved on the project's qualitative objectives. Secondary school curricula received only minor modifications, partly because the Curriculum Development Center lacked the necessary expertise, and remain dominated by terminal examinations not well adapted to Kenya and the curricula. Examination performance has declined in all secondary schools.

Project implementation coincided with a large upsurge in the demand for secondary education. Confronted by comparatively poor employment and wage earning prospects in the agriculture sector, the rural communities established large numbers of "harambee" secondary schools, built and operated on a community self-help basis. The communities were expecting large benefits from providing their children with secondary education, which would give them a better chance in a modern employment market characterized by hiring practices, and increasingly large wage differentials, tied to education level. Under pressure from the communities, the Government took over a substantial number of these schools, thus expanding the Government system beyond the 1966 targets and compensating somewhat the IDA schools' regional imbalance. Harambee schools, unaccounted for in either the Plan or the appraisal report, contributed almost half of 1970 total secondary enrollments, which were double the targets.

The Harambee schools have, since 1964, provided secondary education up to the final examination. Performance has been poor, due to low proportions of qualified teachers and a lack of science teachers, materials and laboratories; recurrent costs per student enrolled, covered by fees, have been less than half those in Government schools. In recent years, harambee schools have supplied 25 to 30% of Kenya's secondary school leavers and final examination passes.

Principally as a result of a fast growth of labor productivity, the actual employment demand for Kenyan secondary school leavers - 44-51,000 over the period 1964-1970 - has been somewhat less than projected; while, due to the harambee expansion, the number of leavers - some 50-58,000 - has exceeded targets. The surplus appeared around 1967, and is likely to continue to grow. Tracer studies show that employment requires good examination performance, and that at least 15% of the 1968-69 secondary school leavers were unemployed during the first year after school.

The lessons to be drawn from this evaluation study deal with project implementation, procurement, project follow-up, methodology and new education policies. These lessons apply primarily to Kenya, but could, with care, be applicable to similar projects in other countries. They can be summarized as follows:

- The Bank should aim at establishing Project Units with staff to stay throughout project implementation, including at least one with experience in procurement practices. Units' responsibility, relative to those of other Government agencies, for project supervision, also needs to be clearly defined.

- The Bank should generally recommend that tender specifications for equipment require suppliers to have local networks for maintenance and spare parts.

- Project Units and Bank supervision missions, during project implementation, should review education and manpower indicators, undertake school surveys and students' tracer studies, and recommend project modifications when necessary. The need for such monitoring and evaluation should be explicitly recognized in Loan/Credit documents.

- Analysis of the demand for, and private rates of return to, education should complement the manpower projections.

- In designing nation-wide projects, a differentiated approach giving due attention to regional and local conditions should be used.

- Qualitative objectives should be defined in precise and possibly quantifiable terms; sound curriculum development needs carefully selected technical assistance.

- In line with the Bank's new criteria and policies, projects for the expansion of existing systems might desirably include some innovating schemes integrated with and responsive to the surrounding communities; evaluation and recurrent costs of such schemes could be financed by the Bank as an investment in developing new solutions.

Evaluation of First Kenya Education Project

I. Post-Independence Objectives for Kenya Education

1. Upon its independence in December 1963, Kenya's economic development objectives emphasized the need for a vigorous expansion of the modern sector of its dual economy. Employment in the monetary sector accounted for a quarter of the country's labor force in 1964. Kenya's first Development Plan for the period 1966-1970 based the projected growth of modern employment on monetary agriculture, government services and construction industry essentially, and expected any further increase in the "residual" labor force to be absorbed by smallholder/subsistence farming. Educated and qualified manpower was seen to be a crucial input for the growth of the modern sector of the economy.

2. An Education Commission, appointed by the Government in 1964 to advise it on new education objectives and policies, recommended a concentrated effort to raise education standards in the primary schools up to acceptable levels, introduction to secondary schools of practical courses and related workshops (in industrial arts and agriculture) designed to generate the attitudes required by modern productive societies and break with students' general prejudice against manual work, and finally restraint and control on the uncoordinated and excessive expansion of the "harambee" unaided secondary schools (cf. para 7). The Commission pointed out the need for more and larger primary teacher training colleges equipped with good library and craft-training facilities and staff; it recommended also urgently needed research and work on curricular changes aimed at lessening the "backwash" effect of final exams on both primary and secondary schooling. The Commission's recommendations were neither accepted nor rejected by the Kenya Government. But of the total K£ 8.8 million capital expenditure eventually allocated to education under the 1966-1970 Development Plan, two-thirds were actually planned for secondary education, which was projected to double its enrolment from 33,000 in 1965 to 66,000 students in 1970. The expansion program for the primary teacher training colleges foresaw an increase in the colleges' size and output from 2,250 graduates in 1965 to 2,900 in 1969/70 and a capital expenditure of K£ 0.5 million.

3. When the Government made its first approach for assistance in education in 1964, the Bank recommended that a manpower survey be done. The survey, which was carried out by a Ford Foundation expert secured for the Government with Bank assistance, led to the manpower projections incorporated in Kenya's 1966-70 Development Plan and underlying the Bank's project. To support the growth of the modern sector of the economy, at least 57,000 additional Kenyans educated to Secondary Form II (i.e. seven years of primary education plus two years secondary - see Chart for description of Kenya Education Structure) or higher levels would be needed over the

period mid 1964-mid 1970. This requirement for High and Medium Level Manpower implied in turn, with allowance for further education and post-Plan period needs, that within these six years 56,000 Secondary Form IV leavers should be generated. Existing capacity of the public school system was considered adequate to produce only a portion of this. The principal purpose of Credit 93-KE was to help Kenya meet its educated manpower requirements by financing 70% of a $10 million project; three-quarters of the project were to finance an expansion of the public secondary education system representing 40% of the total 1966-1970 expansion program forecast for this system.

II. Actual Developments of Manpower Demand and Supply

4. During the period 1964-1970, labor productivity in Kenya grew faster than expected, particularly in the modern sector of the economy. Table 1 summarizes the national situation.

Table 1

Growth of Kenyan GDP and Monetary Sector Employment 1964-70 and 1972

	1964 base	1970 Target[a]	1970 Actual	Rate of Growth 1964-70 Target[a]	Rate of Growth 1964-70 Actual	1972 Actual
GDP (K£ mln 1964 pr.)	281	405	485	6.3	9.5	554
Employment (in '000)						
Agriculture						
Modern	209	250	204	3.0	-	225
Sm. Farms/Settlements	120	270	415	14.5	23.0	n.a.
sub-total	329	520	619	7.9	11.1	n.a.
Non-Agriculture						
Public sector	175)	516	226)	5.2[b]	4.4	249
Modern private	191)		214)		1.9	236
Self-employment	54	68	125	3.9	15.0	n.a.
sub-total	420	584	565	5.0[b]	5.0	n.a.
Total Employment	749	1,104	1,184	6.3[b]	8.0	n.a.
of wh. wage emply't[c]	575	766	644	4.5[b]	1.9	710

a/ 1966-70 Development Plan.

b/ These targeted rates of growth are based on the estimate given in the Plan document of 1964 employment in the public and modern private non-agriculture sectors (381,000) rather than the 366,000 cited in the above table (175 + 191 thousands) from the official statistical series.

c/ i.e. sum of Modern Agriculture, Public sector non-agriculture and Modern private non-agriculture.

The large majority of the labor force (aside from students there were about 5.1 million people between the ages of 15 and 59 in 1969/70, of which 5 million Africans) remains engaged in subsistence agriculture. Open urban unemployment was estimated at about 10% overall in 1970. Wage employment has increased more rapidly after 1970 (about 4.9% p.a. 1970-72) mainly due to the 1970 Tripartite Agreement[1/] and the growth has been more rapid for Africans than for the nation as a whole, so that the average annual increase 1964-72 for African wage-employees has been 3.0%. But productivity increases of employees in the modern sectors of the economy have been large -- about 7.5% p.a. in agriculture, 5.5% in non-agriculture (excluding Government) and 4.5% in Government,[2/] in real terms for the period 1964-72 -- and wages have not lagged far behind.

5. Recent IBRD studies[3/] suggest that the pattern of growth in the modern sector has been considerably more capital-intensive than it should have been, given the relative availability of resources, and that appropriate adjustments to the exchange rate, interest rate levels and tax legislation could significantly improve performance, although the employment problem would still remain serious and the majority of additions to the labor force would continue to be absorbed by the low-productivity "informal"[4/] sectors which have grown rapidly in recent years.

6. The modern sector employment has been characterized by wide income differentials between the levels of education. A 1969 IBRD study[5/] showed earnings differentials for different levels of education sufficient to yield private rates of return to secondary schooling (in Government schools) of about 20% and in particular, for Forms III and IV (see Chart), of about 30%. More recent data (Annex Table A.1) suggest that the differentials have remained at least as great and probably increased. Regression analyses based

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1/ Agreement between labor unions, on the one hand, and Government and employers on the other whereby the latter would expand their establishment by 10% -- thereby providing wage employment for some 45,500 additional people -- in return for a one-year wage freeze.

2/ The figure of 4.5% largely reflects average wage increases above inflation, since there is no independent productivity measure in this sector.

3/ The Economy of Kenya, 1973 basic economic report.

4/ The "informal" sectors can be described as the lower range of the continuum of private enterprise activities: enterprises are typically unregulated, underdocumented, operating on small scale, labor-intensive, paying low wages and providing at low prices products and services essentially to low income markets. Informal sectors include also subsistence farming.

5/ "Cost Benefit Analysis in Education: A Case Study on Kenya" IBRD EC-173, 1969.

on them suggest that in Kenya the most important determinant of wages has been the number of years of education; furthermore, the increment in earnings per additional year of education, averaging 400 Shs a month per year of education over the range Primary-University, increases with the level of education since it averages 650 Shs in secondary education. The number of years of post-school training has also a substantial but lower influence; the earning increment per additional year of training, averaging 260 Shs per month, increases from 145 at primary level to 280 Shs at secondary level. Finally, experience alone counts to the least extent, with an average increment of about 120 Shs a month per additional year of experience.

Harambee Secondary Schools Development

7. In addition to the Government system there has long been in Kenya a large number of schools unaided by the Government and financed from private sources; the growth of this private sector since the early 1960s has been due to the steadily increasing number of "harambee" schools, built and operated on a community self-help basis. Harambee activity in secondary schooling has been tolerated, if not encouraged, by Kenyan Officials and was already considerable by the mid 1960s; at least 50 Harambee secondary schools were established in 1964, and there were in 1964/65 already 46 Form IV classes in unaided schools as a whole. However, due probably to the uncertainty about the education value of these schools, no allowance was made for them in either the Plan or the appraisal report, despite the Education Commission recommendations;[1/] the manpower targets were to be met entirely by expansion of the Government system. In fact, most of the post-1966 growth of the Government system other than that assisted by IDA has been by take-over, under communities' pressure, of harambee schools and there has simultaneously been a vast rise of new harambee secondary schools, mainly at Secondary Forms I and II but increasingly extending to Form IV. By 1972 there were 585 unaided secondary schools in operation (most of them harambee), and 360 aided schools representing the Government system; as a result total enrolments have been about double the number projected in the Plan, and the proportion of the relevant age group enrolled in secondary schools rose from some 3.5% in 1965 to about 10% in the early 1970s.

8. The strength of the impressive harambee movement stems essentially from the fact that formal education has traditionally been the entree to high-paying urban employment in a situation characterized by wide income differentials between urban and rural areas. In 1969 average annual wages for Africans in the modern sectors in main towns were about K£ 360 (K£ 445 in Nairobi) and in urban areas as a whole K£ 250; in modern agriculture and in the urban/rural non-agricultural informal sectors, they were in the neighborhood of K£ 60; in small farms and settlement schemes they were about

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1/ See its 1965 report (Kenya Education Commission Report, Nairobi, 1965), Part II, para. 667.

KE 36. The terms of trade have also been moving against the agricultural sector.[1] In this situation communities have understandably been prepared to invest increasingly in construction of harambee secondary schools (already in 1968 at the rate of more than $3.5 million equivalent a year) and to pay harambee school fees of nearly $100 equivalent per student-year, compared with average family income in rural Kenya of about $200 and Government school fees of about $30 for day school and $60 for boarding school.[2] Such fees are important charges to the students' families; investigations and tracer studies in IDA schools suggest that about 70% of the secondary students come from poor, or very poor, generally illiterate families, of small-scale subsistence farmers or unskilled workers and small traders (Annex Table A.2). However, the amounts involved are small compared with the increases in a student's income that secondary schooling can make possible, and remittances from urban workers have become a significant source of additional income in rural areas.[3]

9. Harambee secondary schools have typically 100-115 day students, who have generally been unable to win entry into the Government schools upon their KPE[4] performance, compared to the 250 average of Government schools (and 500 average of those supported by IDA). Student-teacher ratios are about the same in both types of schools, but the harambee schools have much lower proportions of qualified teachers -- 50% or less compared with 90% or more for Government schools -- and lower proportions of graduate teachers -- 25-30% compared with 45-60% for Government schools (see Annex Table A.3). Harambee schools have had particular difficulty obtaining science teachers. Teaching materials are generally kept to a minimum to save costs, books tend to be insufficient and out-of-date, and sciences are taught by demonstration only, due to the general lack of laboratories. Harambee total recurrent costs, which are virtually covered by the $100 fee, are less than half the approximately $220 total recurrent cost per student in the Government secondary schools. These factors result in poor examination performance, despite the greater concentration on preparation for the exams. Of the unaided schools' Form IV candidates in 1972 only some 20% obtained School Certificate[5]

1/ The analysis in Appendix 1 of IBRD Basic Economic Report AE-22 shows a deterioration in the farmers' terms of trade to 87 in 1970 (1964=100).

2/ Actual fees in Government schools appear to be somewhat higher than these official ones, mainly because all students contribute to the costs of unaided streams within the aided schools: 1973 fees in the IDA-assisted schools averaged $34 and $83 for day students and boarders, respectively.

3/ In 1969 these remittances, estimated at 20% of the urban African wage bill, represented about 8% of total rural income.

4/ Kenya Preliminary Examination (KPE), held at the end of primary education (see Chart). KPE scores are used by Government schools to select their Form I students.

5/ East African Certificate of Education, the final examination at Form IV level. Among the students who have a Pass, those with best performance receive a School Certificate.

compared to 60% in the Government schools, a figure that is down sharply from better than 70% in 1967; EACE Passes[1] are slightly over 60% in unaided schools compared with 85-90% in Government schools. The proportion of Form II students passing the KJSE,[2] instituted in 1966 essentially for harambee students for entry into aided Form III, has been only 20-40%. Although the total recurrent cost per School Certificate graduate in 1971 averaged K£ 680 in unaided schools compared to K£ 520 in Government schools, figures for EACE Pass graduates were K£ 340 and 370 respectively; unaided schools have been comparatively efficient in producing "average" students, and less efficient in producing "good" students.

Unemployment of School Leavers in the Modern Sector

10. As a result of the pattern of economic growth, the actual demand (employment or further education) for secondary school leavers has been somewhat less than projected; due to the development of harambee schools the number of Form IV leavers has increasingly exceeded targets. Estimates summarized in Annex Table A.4 and based on education system data together with the Ministry of Finance's 1972 survey of high level manpower indicate that actual demand for Form IV leavers[3] over the 1964-70 period was in the range 44-51,000, while supply was some 50-58,000.[4] The situation changed from one of deficit to excess around 1967 and the excess has been growing, as shown by the following figures based on the highest estimate of demand and the lowest estimate of supply in the Annex Table:

Table 2

Estimated Total Demand and Supply for Form IV Leavers (Kenyan Citizens Only)

	1964	1965	1966	1967	1968	1969	1970
Demand	5,809	6,250	7,378	8,717	10,647	12,021	14,240
Supply	3,380	4,410	5,148	8,587	12,714	15,648	17,831
Surplus/Deficit	-2,429	-1,840	-2,230	- 130	2,067	3,627	3,591
EACE Passes	2,205	3,450	4,232	6,443	9,193	13,083	14,449
Surplus/Deficit	-3,604	-2,800	-3,146	-2,274	-1,454	+1,062	+ 209
School Certificates[a]	1,974	2,745	3,431	5,132	6,737	8,461	9,801
Surplus/Deficit	-3,835	-3,505	-3,947	-3,585	-3,910	-3,560	-4,439

a/ See footnote 5 on preceding page.

1/ See footnote 5 on preceding page.
2/ Kenya Junior Secondary Examination.
3/ The number of Form IV leavers is stressed here since the projections in the Bank's appraisal report were entirely in these terms.
4/ Refer to the years 1964-1969 inclusive in Annex Table A.4.

For the Plan period as a whole some 39-45,000 had an EACE pass (and only 29-31,000 obtained a School Certificate). By consequence, some of the demand for secondary school output had to be met with leavers without an EACE pass, while an increasing proportion of the latter had either to accept jobs below secondary school level or to resign themselves to unemployment.

11. Excess supply of secondary school leavers is also indicated by the data from tracer studies summarized in Annex Table A.7, which show at least a 15% unemployment rate in the year following departure from school for those who left in 1968 and 1969; the drop in unemployment of these school leavers by 1971 was mainly due to the 1970 Tripartite Agreement which gave a temporary boost to employment growth. Information from other sources[1/] confirms the findings. The tracer studies also show, as might be expected, that the students with the highest exam performance have the least difficulty gaining employment or entry to further education while those with only 'pass' grades tend to enter primary school teaching or face significant difficulty in obtaining employment; already in 1968 as many as 40% of school leavers without an EACE pass were still without employment 18 months after leaving school (see Annex Table A.8). A special check of data for 4 IDA-assisted schools[2/] suggested that the same pattern applied to students leaving these schools; detailed data on the 1969 school leavers from the same schools suggested also that very few -- at most 5% -- went to self-employment. Finally, the excess supply of Form IV leavers has very likely increased since 1970, and will continue for some years if demand grows along the past trends -- 16% p.a. on average -- while supply grows by at least 17% p.a.[3/] In this situation, the Harambee movement is now shifting part of its efforts to the field of technical education, which is considered promising, though the existing wage structure disfavors blue-collar positions.[4/]

Cost of Education

12. The strong demand for secondary education has, in the Kenyan context, come also to a large extent from expansion of the primary system; final primary year enrolments tripled between 1964 and 1972. Moreover, while unit recurrent costs in Government secondary schools have fallen somewhat from

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1/ E.g., the Kenyanization of Personnel Bureau of the Ministry of Labor and a random survey of 1,600 Nairobi adults.

2/ By Mr. Peter K. Kinyanjui of the Institute of Development Studies, University of Nairobi.

3/ On the basis of the present enrolment in secondary Forms I-IV.

4/ Data of the 1972 Manpower survey (cf. Annex Table A.1) indicate that monthly wages in the private sector for manual workers and clerks at C level (cf. Annex Table A.5 for definition) average KShs 1,450 and 1,950 respectively.

K£ 84 per student-year in 1967 to K£ 79 in 1971 (K£ 72 in 1967 prices), those for primary education have risen rapidly, from K£ 7.9 in 1967 to K£ 11.8 in 1971 (K£ 10.8 in 1967 prices). As a result, total Government expenditures on education have increased much faster than envisaged; in particular, Central Government recurrent expenditures reached K£ 8.6 million in 1969 as compared to K£ 7.7 million forecast in the appraisal report. Recurrent costs have more than doubled between 1967 and 1971, and risen from less than 14% of the total public recurrent budgets to nearly 20%; more than half of this increase was absorbed by primary education alone. Other major increases were for higher education, secondary schools and administration of the system (see Annex Table A.9). Private expenditures on education have grown at almost the same pace. As a result, total resources allocated to education -- on both capital and current account -- have risen from about 5% of GDP in 1967 to about 7% in 1971.

Table 3

Cost of Education in Kenya[a/]
(K£ million)

	1967	1969	1971
Government (Central & Local)	14.0	19.7	28.9
Private Sector	5.3	8.2	9.9
Total	19.3	27.9	38.8
GDP of Kenya	403.3	475.7	575.8
As % of GDP:			
Government	3.5	4.2	5.0
Private Sector	1.3	1.7	1.7
Total	4.8	5.9	6.7

a/ Excluding informal education and industry training.

In Kenya's economic situation, these proportions of GDP devoted to education are relatively high.[1/] And recent developments and trends do not indicate any levelling off in the growth. The proportion of GDP devoted to education will mount quite rapidly if expenditures continue to grow at about 15% while the economy grows at about half this pace, as projected in the last IBRD economic report -- better than the 6.3% of the first years of the 1970s.

1/ In 1969, public expenditures for education in the developing countries represented about 3.5% (median value) of GDP.

III. Project Implementation

13. The physical objectives of the project consisted of:

- the construction and equipment of 16 General Secondary Schools and 2 Technical Schools;
- the expansion and equipment of 26 General Secondary Schools, 7 Technical Schools and 18 Primary Teachers Training Colleges; and
- the construction and equipment of 545 staff housing facilities, half of which for teachers.

Completion was forecast by the very end of 1969. A Project Unit established within the Ministry of Education (MOE) was responsible for project execution. All architectural standard designs and works supervision have been, by law, the responsibility of the Ministry of Works (MOW) architects; some local private firms worked as consultants to adapt the standard designs to particular sites. The equipment lists were prepared by the Project Unit staff with the assistance of the Curriculum Development Center and revised in some instances to match new syllabi.

14. Despite delays of one or two years on many schools within the construction period, all works except on four schemes were completed by the December 1969 target date. The number of schools covered was as originally envisaged, with the exception that the budget originally planned for 18 Teacher Training Colleges was reallocated in 1968 among 11 colleges, at the Government's initiative, in order to achieve scale economies in teacher training. Disbursements from the Credit were behind schedule by one year on average (Annex Table A.10), partly due to delays in finalizing architectural documents and mainly due to the Bank's insistence on procedures and design changes aimed at saving costs.

15. The overall physical achievements of the project have been satisfactory, given the restricted amount of funds available to the project. The Bank's strong preoccupation with the danger of cost overruns led to several changes in project bidding procedures and design standards. After construction bids for the first 16 schools in early 1967 had come in about 30% above the original estimates, the Bank insisted that the schools be grouped in order to attract more competitive international contractors and eliminate any possible collusion among the local contractors; the appraisal report had found MOW's normal tendering procedures satisfactory and clearly expected domestic firms to build the schools. At the cost of 6-9 months delay to allow for the lengthier procedures involved, international bids were called; foreign contractors won no contracts. Comparison of unit prices per type of facility in general secondary schools -- the group for which works contracted under both types of tendering were substantial -- indicates that bulk tenders yielded 5-20% lower costs for some items but substantially higher costs for other items (see Annex Table A.11); the overall difference has

been small, and this raises a question as to whether the delay was worthwhile.1/

16. The joint financing of foreseeable cost overruns by additional IDA and Government funds was proposed by the Government; the Bank did not encourage it, due to its general reluctance to finance cost overruns and its view that Kenya should keep down its education costs. Steps were taken to cut costs, and the project's physical accomplishments in quantity and quality of facilities provided were less than originally envisaged. Annex Table A.12 gives a detailed comparison between what was actually built and the original list of facilities; the number of classrooms and teacher houses built was only 5% less than forecast, but the number of dormitories and other houses built was less than 50% of forecast and most other items showed shortfalls of 10-30%; sick bays and paved walks were eliminated. Most standards of accommodation were reduced; in particular, libraries and dining halls in most schools, and workshops in some, were reduced to sizes that have proved inconveniently small. The failure to provide special foundations in black cotton soils, which would have added some 50-75% to standard building costs, resulted in some project buildings at three schools now showing sizeable cracks that need substantial repair. A few two- or three-year old buildings elsewhere already need renovation, due to cheap construction by contractors2/ and difficulties in coordinating construction supervision between the MOW and the Project Unit. Moreover, despite the use of private architectural firms, there has been too much standardization in building design, with high-altitude schools too cold and lower ones too hot; also the building siting on some school compounds was improperly made,3/ partly because school headmasters were seldom if ever consulted prior to construction.

17. The extent of the physical shortfalls in furniture and equipment cannot be precisely assessed because the schools were never supplied with lists of what they were originally supposed to receive. Many savings were made without altering the main framework of the project. Lockers were eliminated in most dormitories and classrooms, making it less easy to use classrooms on the rotating basis envisaged to economize space.4/ Some other furniture obtained was of lower than expected quality and has virtually

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1/ It also lends plausibility to the claim of the Project Unit Director and architect that the cheapest procedure would have been to contract the school schemes individually to small local contractors.

2/ In one instance, final payment to contractors was held back during the defects and liabilities period and finally used by the headmaster for completing the works.

3/ E.g., locating noisy workshops close to classrooms, making it impossible to use them simultaneously.

4/ Rotating basis means that students, instead of teachers, move from one classroom to another for different periods.

exhausted its life already. Equipment provision for the workshops was cut back; machines in secondary school metal/wood workshops have been too few to permit much student practice (cf. para. 24), and some minor economies (such as purchase of lathes without coolant pump or conversion units from imperial to recently adopted metric system) have led to difficulties in operation of the vocational schools workshops. Overall, a reasonable indicator of the physical shortfalls in quantity and quality of furniture and equipment is given by the reduction in total expenditures on these items shown in the following table on the total cost of the project. Cost overruns on the project as a whole were finally negligible, as the table makes clear.

Table 4

Total Cost of Project, Forecast and Actual
(In $ million)

	Forecast	Actual	% Difference
Secondary Schools	4.91	5.20	+ 6
Technical Schools	1.04	1.07	+ 3
Teacher Training Colleges	1.36	1.09	-20
Staff Housing	2.35	2.43	+ 3
Total	9.66	9.79	+ 1
Of Which:			
Construction	8.06	8.77	+ 9
Furniture	0.79	0.42	-47
Equipment	0.81	0.60	-26

Procurement Problems

18. Some of the problems of project implementation are directly connected with the way in which procurement was administered and organized. A delaying factor for many of the schools was the supply of steel frames. Project architects had decided to design the schools with steel frames rather than pillars and wooden structures. The frames were to be procured by international bidding. The bid was won in February 1967 by an Indian firm which had still not started to build the frames by March 1968 and closed down in August 1968; the frames were purchased from local suppliers at higher prices than they had originally bid, leading to some $50,000 additional cost. Workshop and laboratory equipment was procured through the Crown Agents in London, apparently without local advertisement in Kenya and sometimes with delays. There have been problems with it. Equipments coming from different parts of the world sometimes proved incompatible with each other (e.g., in motor vehicle workshops for technical schools). Instruction manuals were in some cases left out or not supplied in English. Besides omission of some items, as mentioned earlier, other pieces proved excess to requirements or were ill-distributed among the schools due to inadequate stores management by the Project Unit. Most seriously, this pattern of procurement

led to problems in project utilization; spare parts were not obtained along with the machines, and they have been difficult or impossible to get in cases where the bid was won by a supplier without any agent or service network in Kenya, forcing some machines to remain idle.[1] While many of the procurement problems seem to have been due to the lack of experience and expertise of the Project Unit, rather than to international competitive bidding per se, the procedures required for international bidding may have added to the difficulties. The use of consultants could have been a solution, but it would have added substantially to the US$ 0.6 million actually spent on equipment.

IV. Project Operating Results and Forecasts

General Secondary Schools

19. The largest share of the IDA financing went to 42 General Secondary Schools (32 were assisted for Forms I-IV, 3 for both Forms I-IV and V-VI, and 7 for Forms V-VI only). Table 5 summarizes the development of enrolments and outputs (in terms of Form IV leavers and EACE passes) for the 35 lower General Secondary Schools assisted and the remainder of the system. The IDA schools reached their enrolment targets on schedule but were a little behind target in production of Form IV leavers. Instead of accounting for 50% and 40% of the national increases in secondary enrolments and Form IV leavers respectively between 1964 and 1970 as projected, they accounted for 15% and 25% respectively, for reasons discussed earlier. Girls, who constituted a specific target group of the project, accounted for only 1,540 of places added under the project by 1971, compared with 2,380 planned.

20. The IDA schools have been quite similar to the other Government secondary schools in terms of student-teacher ratios, proportion of qualified teachers and students' EACE performance (see Annex Table A.3). Despite their much larger size, from which scale economies were expected by IDA, their unit recurrent costs, normalized to reflect national day/boarding proportions of students, averaged K£ 77 per student-year for 1971/72 compared with K£ 79 for all Government secondary schools. Students normally rise automatically from one form to the next; apparent drop-out has been fairly low, and real drop-out is difficult to assess since drop-outs are quickly replaced with students from other (generally Harambee) schools.

21. The Government initially requested assistance for a project, with a total cost of $20 million, aimed at upgrading some 150 small-sized secondary day schools spread rather evenly throughout Kenya. This was reduced during appraisal to 35 schools of a minimum size of 3 streams[2] including

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1/ In addition to the workshop equipment, twin generators were provided for school power supply. Of the 6 schools visited which still rely on IDA-financed generators, one had both generators in working condition; in the others, one generator has been out of order for several years due to lack of parts. In most wood workshops visited, hand-drills (of inadequate strength) have not been repaired for several years for the same reasons.

2/ A stream consists of a series of Forms from I through IV, therefore containing 4x35 students if each Form has 35 students.

Table 5

Growth of General Secondary Education (Forms I-IV) in Kenya 1964-72[a/]

I. Enrolment in Forms I-IV

Schools	Pre-project 1964	Target 1970	Actual 1970	Actual 1971	Actual 1972
IDA-assisted	2,491	14,700	15,270	15,845	16,130
Other Government	23,644	36,300	52,850	57,875	67,025
Total Government	26,135	51,000**	68,120	73,720	83,155
Unaided	8,359	none	52,185	59,440	70,045
Total	34,494	51,000**	120,305	133,160	153,200

** cited as Plan target in the appraisal report; final Plan target was 60,700.

II. Output from Form IV

Schools	Pre-project 1964	Target 1970	Actual 1970 Leavers	Actual 1970 Passes[b/]	Actual 1972 Leavers	Actual 1972 Passes[b/]
IDA-assisted	390	3,675	3,510	2,900	3,850	3,335
Other Government	4,043	8,625	10,510	9,540	14,045	12,120
Total Government	4,433	12,300**	14,020	12,440	17,895	15,455
Unaided	1,192	none	4,905	2,870	8,545	4,845
Total	5,625	12,300**	18,925	15,310	26,440	20,300

** cited as Plan target in the appraisal report; final Plan target was 13,000.

a/ Excluding the four technical secondary schools.

b/ I.e., passes on EACE.

in most cases at least one day stream, in accordance with the recommendations of the Education Commission for scale economies. Selected by the Government on the basis of demographic criteria principally, the schools tended to be concentrated mainly in the more developed regions and towns, which already had the best education facilities. The Bank seems to have given inadequate attention to the matter,[1/] despite the Education Commission's recommendations for both gradual increase of Government school places in all regions, to limit harambee development, and controlled and planned cooperation with harambee promoters where financial stringencies made it necessary. The following Table 6 displays the provinces of Kenya (except North-Eastern) in order of their 1968 secondary school Opportunity Index (i.e., ratio of Form I enrolment in Government secondary schools to entries for the final primary exam in the previous year). IDA schools were located in all regions listed but, on the whole, the project had the largest impact in provinces with an already relatively high Opportunity Index and/or secondary school enrolment ratio such as Nairobi, Central and Western Provinces and the least in Eastern and Nyanza Provinces. By expansion of other schools and take-over of Harambee schools, the Government to some extent compensated for this regional imbalance, but the greatest increase in the Opportunity Index from this source was in the relatively privileged Central Province where Harambee pressure and expansion were also particularly high.

22. The principle of having at least one day stream has not proved so widely applicable in practice as expected. Only 10 of the 30 IDA-supported schools outside Nairobi and Nakuru townships were supposed to be entirely boarding, but in fact 23 are, despite their location in the more densely populated areas. About 65% of the enrolment increase under the IDA project is boarding, compared with 51% expected, and for the Government General Secondary School system as a whole boarders now represent some 60% of students compared with 39% forecast in the appraisal report for 1970. Approximate estimates on the basis of a simple model[2/] suggest in fact that the IDA target for day students in schools supported would be unattainable without a change in the present intake policy whereby students are competitively selected for any given school over a whole district instead of going to the nearest school. Table 7 gives the estimates. The IDA appraisal mission seems to have considered and rejected buses, on grounds of maintenance problems, safety considerations and foreign exchange requirements. Once this step was taken and since the Government decided after discussions with the appraisal team still to maintain the competitive principle of student selection, there would have been no reason not to accept an investment pattern that would

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1/ Due to some extent to the lack of adequate project preparation by the Ministry of Education and the fact that UNESCO Project Identification missions were still not part of Bank preparation work.

2/ Based on the assumption that students are distributed regularly over the district to which they and their school belong and the estimate that one bus would enable collection of students within a radius of 5 kms, two 8 kms and three 14 kms.

Table 6

Regional Distribution of Secondary Education[a/]

	Nairobi	Coast	Rift	Western	Central	Eastern	Nyanza
1969 Enrolment Ratio[b/]	25.3	6.1	3.8	5.6	9.5	4.0	3.9
1968 Opprotunity Index[c/]	47.4	17.6	8.6	7.7	6.6	6.2	5.7
Increase in O.I.[d/] 1968-1972							
due to IDA schools	1.6	1.2	1.5	1.5	1.7	0.5	0.8
due to other Government schools	-6.7	2.0	3.2	2.8	5.5	3.2	2.0
Sub-total Government schools	-5.1	3.2	4.7	4.3	7.2	3.7	2.8
1972 Opportunity Index[d/]	42.3	20.8	13.3	12.0	13.8	9.9	8.5
Unaided Schools Opportunity Index[e/]							
in 1968	-	24.7	13.7	11.8	12.9	10.1	12.1
Increase 1968-1972	-	6.6	3.8	1.8	8.4	5.6	2.7
1972 O.I. unaided schools	-	31.3	17.5	13.6	21.3	15.7	14.8
1972 Overall Student/Qualified Teachers Ratio in unaided schools[f/]	-	89.2	90.8	118.3	61.3	77.0	97.7

a/ Excluding the North-Eastern Region, of 250,000 essentially nomadic people, which had only one secondary school with 56 students in all in 1966. It was not covered by the IDA project.

b/ 1969 enrolment in Government secondary schools as a proportion of the 15-19 age group.

c/ Defined as the ratio of Form I enrolment in Government secondary schools to entries for KPE (Kenya Preliminary Examination, at end of primary schooling) in the previous year. Variations arise from differences in secondary and primary enrolment ratios.

d/ Opportunity Index defined in c/ above.

e/ Defined as the ratio of Form I enrolment in unaided secondary schools to entries for KPE in the previous year less Form I enrolment in Government schools in the same year. Nairobi omitted because most unaided schools there are private.

f/ Index for the teaching quality and recurrent expenditures which harambee can afford.

have done more to compensate regional inequalities. Had the IDA assistance been more concentrated on the poorer regions it might well have stimulated additional self-help efforts in the more privileged areas,[1/] and have somewhat reduced the diversion of resources from agriculture to Harambee investment in the poorer ones. But it is doubtful whether adjustment to the regional allocation pattern of the IDA credit would have had a major effect on national enrolment and output of secondary schools.

Table 7

Number of Feasible Day Streams Per School Under Different Transport and Allocation Policies

Number of Feasible Day Streams	Expected IDA Project	Number of Buses per School			
		None	One	Two	Three
I. District-wide Selection of Students					
None	10	23[a/]	23	20	14
One	12	4[a/]	4	7	13
Two	8	3[a/]	3	2	-
Three	-	-	-	1	3
	30	30[a/]	30	30	30
II. Community Schools (i.e. nearest school)[b/]					
None		15	6 (5)	5	5
One		11	11 (12)	10 (7)	5 (4)
Two		4	5 (3)	2 (5)	6 (4)
Three		-	8 (10)	13	14 (17)
		30	30	30	30

a/ I.e. present actual situation.

b/ Figures in brackets correspond to a situation without the constraints put in the case of 10 schools by the insufficient density of the road network. Other figures take into account these constraints.

1/ Analyses made on a regional basis indicate that harambee communities have been responding strongly to any drop in their Opportunity Index. The post-Independence blooming of harambee schools can be largely explained by the fact that the national Opportunity Index, despite its steady rise since 1966, was in 1972 still below its 1964 level (13.2% against 14.4%).

23. Most of the schools presently show signs of overcrowding mainly with regard to boarding facilities, although some of the shortfalls in project facilities were made up later by the Government by building additional houses, dormitories and classrooms outside the project. This is partly due to enrolments per school and the proportion of boarders being higher than expected, since many of the additional boarders are housed in harambee dormitories built on IDA school premises. A 1972 Government survey, with UNESCO assistance, which established secondary school accommodation norms appropriate to Kenya, showed in the IDA schools shortages of facilities which on the whole correspond to the reduction in classrooms and dormitories made during construction (cf. para. 16), as summarized in the following Table 8.

Table 8

Space Availability in the IDA Secondary Schools

(Forms I-IV and I-VI) 1972

Schools	No. of Schools	Available Space (m^2)	Excess/Shortage (UNESCO Norms)[a/] Area (m^2)	% of Available
		I. Boarding		
In shortage	27	36,550	-21,775	-60
In excess	4	6,950	+ 1,320	+19
In balance	1	1,510	-	-
	32[b/]	45,010	-20,455	-45
		II. Education[c/]		
In shortage	18	24,670	- 5,230	-21
In excess	8	18,940	+ 2,555	+13
In balance	11	19,970	-	-
	37[c/]	63,590	- 2,675	- 4

a/ Shortages and excess are computed by difference with the minimum and maximum limits of the norms respectively.

b/ Excludes the 7-day schools and also 3 schools for which data were not available.

c/ The UNESCO norms for Education were established on the basis of rotating classrooms.

d/ Excludes three new and two expanded schools for which data were not available.

In 9 of the 12 boarding schools visited during the evaluation, the dormitories were overcrowded, and the cubicles designed for four students were occupied generally by six, or eight in the worst cases.

24. Practical courses workshops were built approximately in the numbers originally forecast, and constitute the main distinguishing feature of all the IDA-assisted schools, each of which has had at least one workshop. The cuts in equipment provision under the project have limited the usefulness beyond Form II of the Industrial Arts workshops (woodwork and metalwork) in which band saws and lathes for woodwork and welding units for metalwork have been critically lacking. But the workshops have generally been well utilized. Annex Table A.13 provides an analysis of workshop utilization in the General Secondary Schools, based on statistical data from the Ministry of Education and a small survey of 12 schools, and Annex Table A.14 gives detail. Teachers have been available in adequate numbers for the Agriculture and Domestic Science workshops, and the Bank played a substantial role in helping Kenya to obtain in 1968 major Swedish assistance for providing and training teachers for the Industrial Arts workshops. The Commerce workshops, financed entirely by the Government, have suffered to some extent from lack of qualified teachers. Workshop operating costs have been reasonable, generally ranging between US$3 and 7 equivalent per student-year. The Government has programs for spreading the workshops to many other schools.

25. The least successful workshops have been the agricultural ones which were introduced into 13 of the IDA schools (against 14 targeted) following a USAID initiative in 7 other schools. IDA workshops were equipped following the patterns established by USAID with a good deal of modern equipment, including a medium-sized tractor and implements and a substantial stock of American textbooks (but practically no equipment for animal husbandry). Only two of the 13 workshops were located in extensive farming areas (in the Western Province, and none in the similar corn-growing region of the Rift Valley) where farmers have been using tractors on a cooperative basis. Moreover, maintenance and repair training received by future teachers at Egerton College on a set of USAID equipment was not fully applicable to IDA equipment (this could have been avoided by providing Egerton College with one set of IDA equipment). When in working order, the equipment has therefore been of limited value for teaching, and the American textbooks have been generally too advanced. As a result the agricultural courses have tended to remain theoretical, and the little practical work actually done has been carried out more on school plots, poultry or stables. The Government has however benefitted from this experience, and all future agriculture workshops[1/] will be established on a more modest scale and without tractors.

26. The practical courses were not intended to do more than "to acquaint (the students) with the applied practices of modern societies on the land, in the home, in workshops, in offices"[2/] nor to provide vocational

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1/ 14 new workshops will be established in general secondary schools each year over the next five years.

2/ Appraisal Report, para. 59. The objective of the practical courses were stated by the Government as follows: "to instill in the students an appreciation for skilled manual work and to establish some of the elementary skills required in a broad range of daily occupations." 1970-74 Development Plan, p. 460.

training. Nevertheless, their main deficiencies -- in terms of educating Kenya's youth in directions appropriate to the country's needs -- are that they remain only a marginal part of the academically dominated curriculum (see Annex Table A.15), that they still inculcate techniques relevant mainly to the modern sector, and that they have not been used productively to the benefit of local communities (farmers, harambee groups). Some of the planned new agricultural workshops may be oriented for instance to the use of intermediate-level techniques such as ploughing with trained oxen as developed by Kenyan research stations; but there are none yet. The Domestic Science courses prepare girls for an urban type of living through the use of somewhat sophisticated equipment uncommon in rural areas, and the particularly popular Commerce courses concentrate more on typing and office skills marketable in modern employment than on less expensive training in commerce and bookkeeping needed by future small-scale entrepreneurs.

27. Upper Secondary Schools targets with regard to enrolment and graduation of Forms V and VI students and their division between science and arts specialization seem to have been met, with not more than one year delay -- except in the group of 10 schools assisted by IDA for these forms -- as shown in the Table 9.

Table 9

Enrolment and Output of General Secondary Schools Forms V and VI

Schools	Target 1970		Actual 1970		Actual 1971	
	Arts	Sciences	Arts	Sciences	Arts	Sciences
I. Enrolment						
IDA-assisted	500	650	606	509	641	602
Other	1,200	1,550	1,449	2,053	1,774	2,552
	1,700	2,200	2,055	2,562	2,415	3,154
Total	3,900**		4,617		5,569	
II. Output (Leavers)						
IDA-assisted	250	325	282	228	328	284
Other	600	775	607	893	772	1,174
	850	1,100	889	1,121	1,100	1,458
Total	1,950**		2,010		2,558	

** as cited in Appraisal Report; final Plan target was 4,800.

** as cited in Appraisal Report; final Plan target was 2,300.

Laboratories seem to be slightly less equipped than planned, and they are, particularly, unevenly equipped. Examination performance[1/] was rather poorer in the 10 IDA-assisted schools than for Kenya as a whole prior to 1970, but it has been brought up to approximate equality. However exam performance, in the IDA schools as in the others, seemingly remains much weaker in Sciences than in Arts with only some 50% of examinees getting two or more principal passes (regarded as the adequate level) in the former, compared with 70% in the latter. There is no evidence that unemployment has yet seriously affected Form VI leavers.

28. The qualitative objectives of the IDA project dealt essentially with the quality of general secondary education in Kenya. During project appraisal the Bank was concerned, like the Education Commission, about the overvaluation of final "watershed" examinations, ill adjustment of curricula to Kenya's needs and the almost complete lack of practical courses. In a supplementary letter to the Credit Agreement, the Government undertook to give greater emphasis to science teaching in the project schools and more generally to modernize curricula, teaching methods, textbooks and examination procedures and content; the Curriculum Development Center in Nairobi was to be supported and its findings used. Some useful improvements have been made in curricula, but much remains to be done. An earlier achievement at the lower primary level was the introduction in 1967 of the New Primary Approach syllabus which encourages the children to investigate their environment and analyze and solve problems by themselves, and breaks through the traditional formal class teaching method and teacher-pupil relationship; it appears to work well with qualified teachers. The Curriculum Development Center, now the Department of Curriculum Development of the Kenya Institute of Education, has done useful work on improvement of curricula and preparation of texts for Primary and Secondary schools (through Form IV), particularly in Maths, Sciences and English; for technical education, syllabi have been prepared but no pupil learning materials. The Department has suffered from lack of leadership and difficulty in retaining experienced staff due to poor salaries. Many of its recommendations and proposals appear to have been applied widely through the school system, but systematic follow-up is seldom carried out, and assistance is urgently needed in the techniques of evaluating curriculum materials. Agriculture and Domestic Sciences syllabi have existed for a long time and have been options for EACE since prior to 1966; in Industrial Arts, syllabi are still being drawn up for Forms III and IV and the subject will be introduced in EACE only in 1974. Practical courses in the IDA-supported schools have accounted for about 10% of the schools programs, while Sciences (including maths) have accounted for about 45% (see Annex Table A.15). Science teaching in general remains excessively reliant on books and demonstrations, and often based on inadequate syllabi. Very little progress has been made in Kenyanizing examinations. Despite its take-over by the East African Examination Council established in 1968, the EACE examination remains essentially unchanged and unduly important, and does not yet reflect Kenyan curricula for Secondary Forms I-IV.

1/ In the East African Advanced Certificate of Education, at Form VI.

Technical Education

29. Kenya's small technical secondary school system, to which the IDA project contributed more than $1 million for expansion and equipment, has been handicapped by instability of programs and shortage of technically qualified teachers resulting from the low priority it was given in 1966. Although undifferentiated in the appraisal report, the IDA assistance went principally to two very different types of schools[1] -- to three (out of Kenya's present four) secondary technical schools similar to general secondary schools but with an orientation towards a technically biased EACE to be followed by higher technological studies, and to five (out of Kenya's present eight) vocational schools emphasizing practical training for boys to be apprenticed afterwards as craftsmen or technicians.

30. Sigalagala secondary technical school, whose establishment was to be the main contribution of the IDA project to the secondary technical schools sub-system, has suffered from frequent teacher and especially headmaster changes, low standards and poor management. Sigalagala 1969 enrolment target (of 500 students) was still not met by 1972, and this accounts for most of the shortfalls reflected in the Table 10. Sigalagala appears to have had adequate numbers of technical teachers (some five or six), but the other project schools in the system have suffered from shortage and this has led to underutilization of some of the workshop facilities which were the only contributions of the IDA project to them. Unit recurrent cost per student-year averaged K£ 103 in 1971 in the IDA-assisted schools, that is 30% above that in general secondary schools. Except in the non-project school of Nakuru, EACE results have seriously deteriorated, due mainly to poor performance of Sigalagala students. Annex Table A.16 shows the key trends. No records are kept of the students leaving technical schools, but it seems that about 20% of them go on to Form V at Nakuru and about four-fifths of the remainder gradually find employment in the year following graduation.[2]

1/ A small amount of assistance was also included in the IDA credit for the Mombasa Technical Institute which concentrates increasingly on post-Form IV technical and commercial education. The work actually financed under the IDA credit at this Institute is quite different from that foreseen in the appraisal report, consisting of student accommodation, two Drawing Offices, and one Electrical and one Mechanical Engineering Workshop, instead of the envisaged four laboratories and one Building and Mechanical Engineering Workshop. Civil works were completed on schedule, but there was a very large overrun (financed out of the 1970 IDA credit to Kenya for education) because the large machine tools provided could not be used without a major reinforcement of the electrical installation. Accommodation and workshops provided seem now to be quite fully and effectively utilized. The Institute was renamed Mombasa Polytechnic in 1972.

2/ Information from Kenyanization of Personnel Bureau.

Table 10

Technical Secondary Schools: Enrolment and Output

Schools	Pre-project 1965	Target 1969	Actual 1969	Actual 1972
	I. Enrolment			
IDA-assisted	956	1,456	1,111	1,320
Other (Nakuru)	480	480	498	700
Total	1,436	1,936	1,609	2,020
	II. Output (Leavers)			
IDA-assisted	264	389[a/]	191	296
Other (Nakuru)	170	170	121	133
Total	434	559	312	429
With EACE Pass	n.a.	n.a.	279	328

a/ Including 125 from Sigalagala which may have been expected to be reached in 1970 or 1971.

31. Vocational schools constituted the major part of the technical school component of the IDA project, including the establishment of one new one (Kisumu). In 1966 they were trade schools, mainly providing two-year courses with practical emphasis; planned extension to three years was implemented later and the programs have been further reformed on a number of occasions since then, in response to the dissatisfaction of employers, graduates' increasing difficulty in finding employment and the particular bent and experience of the foreign technical assistance groups involved. In 1971 a four-year course was designed, ending with a new Kenya Certificate of Education examination combining academic subjects with practical and theoretical tests based on a London City and Guilds examination; this is now being phased in. During the period covered, most of the students have in fact been leaving school after three years, as envisaged in the appraisal report. Although they have had much less prestige than secondary schools,[1/] the trade/vocational schools have been increasingly popular, and enrolments have been up to expectations. But output of school leavers has been lower than expected, due to drop-out and lengthening of the program resulting in longer retention in school. Table 11 summarizes the evolution.

1/ See footnote 4 on page 11.

Table 11

Vocational Schools:[a] Enrolment and Output

Schools	Pre-project 1965	Target 1969	Actual 1969	Actual 1970	Actual 1971	Actual 1972
I. Enrolment						
IDA-assisted	877	1,474	1,500	1,778	2,168	2,311
Other	188	188	749	768	883	903
Total	1,065	1,662	2,249	2,546	3,051	3,214
II. Output (Leavers)[b]						
IDA-assisted	433	581	340	n.a.	n.a.	468
Other	94	94	65	n.a.	n.a.	75
Total	527	675	405	551	396[c]	767[c]
With final exam pass	n.a.	n.a.	405	391	327[c]	748[c]

a/ Excluding Polytechnics.
b/ Excluding those continuing education in vocational schools or at Mombasa Technical Institute.
c/ Includes allowances for students finishing up at Mombasa after transfer in earlier years from vocational schools (40 leavers in 1971 and 224 in 1972).

Employment records show that the proportion of graduates from the three-year course employed within five months of graduation fell from some 80-100% in 1966-67 to less than 50% by 1971. Extension of the course to four years seems to have been necessary; at NIVTC,[1] where some of the best vocational school graduates go as apprentices for further training, the 1972 results of the proficiency test in basic practical and theoretical knowledge that all trainees are expected to pass showed that 51% of the trainees had failed (61% for IDA schools leavers). Failure rate in 1973, when most examinees came from the new four-year course in vocational schools, was only 19%.

1/ National Industrial Vocational Training Center, established in the 1960s as a cooperative endeavor of public and private employers, with UNDP-ILO assistance.

32. Availability of qualified technical teachers and adequacy of practical workshop training have been key factors in the post-school performance of vocational school graduates; the particular school attended has also been crucial, there being wide differences among schools in the performance of their graduates. These findings emerge from analyses of data about students taking the 1973 NIVTC proficiency test (see Annex Table A.17 for details). The student to technical teacher ratio has actually deteriorated seriously from about 25/1 in both IDA and non-IDA vocational schools in 1968 to averages of 45/1 for all system schools and 55/1 for the IDA-assisted schools in 1972. The deterioration has been due less to the expansion of enrolments (tripling over 1965-72) than to the frequent changes in the courses and emphases, insufficient supply of teachers from the Kenya Polytechnic, and the high turnover of the foreign volunteers teaching in the workshops. The test analysis indicates that students who had enjoyed a student to technical teacher ratio in vocational school of 50/1 or less (58% of all examinees) averaged about 56 on the test and passed, while those with ratios of more than 70/1 (4% of examinees) averaged only 44 and failed. The major influence of the ratio was confirmed by regression analyses.1/ The teacher shortage will be met gradually, particularly after the opening in 1974 of a Canadian-assisted Technical Teacher Training Center.

33. The analysis throws some doubt on the ability of the new in-school examinations especially the practical part, to discriminate adequately between "good" and "bad" students,2/ and on the importance that should be given, for raising students' employability, to some traditional in-school factors such as per student recurrent costs. Finally, some equipment supplied under the Credit was used seldom or not at all due to the lack of qualified teachers or of parts for foreign-supplied machines (see para. 17 on procurement problems); the workshops are also too small and poorly equipped for the recently introduced courses and need extension.

Key Contribution to Teachers for Primary Schools

34. The IDA project contributed somewhat over $1 million equivalent to expansion and improvement of facilities for training of primary school teachers, and this has helped significantly in the increase and upgrading of Kenyan teachers. Under the original plan the IDA project was to cover 100% of the expansion of primary teacher training through 1970; a Plan revision in 1967 reduced this to about half by increasing national enrolment

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1/ These regression analyses were carried out to determine the respective influences of the socio-economic background and in-school parameters on the variance in the proficiency test results. Social background (see Annex Table A.2) was not influential.

2/ In terms of the proficiency test. This test, designed to reflect essentially the employers' norms and needs, was regarded as a first proxy for the measure of the external productivity of the vocational schools.

and output targets without substantially changing the project's quantitative targets. National targets were largely met, and the IDA-assisted colleges reached their targets with two years' delay as shown in the following table.

Table 12

Teacher Training Colleges: Enrolment and Output

Schools	Pre-project 1965	1st Target[a/] 1970	2nd Target[b/] 1970	Actual 1970	Actual 1971	Actual 1972
		I. Enrolment				
IDA-assisted	3,325	4,275	4,200	3,603	3,971	4,178
Other	1,500	1,500	2,350	3,129	3,273	3,300
Total	4,825	5,775	6,550	6,732	7,244	7,478
		II. Output (Leavers)				
IDA-assisted	1,650	2,135	2,100	1,735	1,842	2,088
Other	600	750	1,175	1,449	1,717	1,611
Total	2,250	2,885	3,275	3,184	3,559	3,699
Graduates:						
IDA-assisted	n.a.	n.a.	n.a.	1,627	1,734	1,950

a/ 1966-70 Development Plan, with Teacher Training Colleges to be cut from 34 to 25, of which IDA would assist 18.

b/ Plan as revised in 1967, with Teacher Training Colleges to be cut further to 16, with IDA resources concentrated on 11.

It has enabled Kenya to upgrade the share of qualified primary teachers -- from 66% in 1965 to nearly 80% in 1972, while the proportion of children aged 6-12 enrolled in primary schools rose from 55% (1.02 million pupils) in 1965 to 70% (1.68 million pupils) in 1972. The concentration of teacher training in a smaller number of larger colleges has brought scale economies, as expected, with the average recurrent cost per student in college falling from K£ 168 in 1967 to K£ 156 in 1971 (K£ 143 in 1967 prices), despite some upgrading of staff quality and the addition of workshops. However, the teacher training courses still remain closer to normal secondary school curriculum than is appropriate and have insufficient practical emphasis -- partly due to lack of teachers with the right skills. Some of the facilities installed with IDA financing, and particularly the libraries, have been comparable to those for secondary schools and are inadequate for teacher training colleges.

V. Conclusions

35. The IDA Project assisted by Credit 93-KE successfully met the most important quantitative objectives it had been designed to reach; these objectives largely reflected the Government's aim to supply the manpower required to support the expected rapid growth of Kenya's modern economic sectors. The high and middle level manpower requirements of the modern sectors were amply met, mainly with EACE holders, because the supply from Government and Harambee schools expanded beyond forecasts and manpower requirements were somewhat lower than forecast due to larger than expected increases in labor productivity. Schools were built or expanded fairly close to schedule and, by means of reductions in facilities and equipment, within original cost estimates. The quality of construction and building standards have been generally acceptable. In most types of IDA-assisted education, enrolment and school-leaver targets were exceeded at the national level, and met with at most a two-year delay in the IDA-assisted schools.

36. There were several implementation problems which could have been solved or avoided by a strong Project Unit in the Ministry of Education, maintaining some necessary contacts with the assisted schools. The Bank required that a Project Unit be established, and it was. But it was not strong; the Project Director has changed five times, and his position seems to be outside the main career structure of the Ministry. The main control over the project construction works has remained within the Ministry of Works, leading to difficulties in coordinating works' supervision. The Bank attempted in vain to improve the situation, resulting mainly from the staffing situation in the Ministry of Education. Above all, contacts of the Project Unit with the assisted school headmasters were insufficient during project execution. In retrospect, it seems that the Bank should have tried to obtain, during negotiations, assurances that the Project Unit would be adequately staffed on a long-term basis, and that procedures adapted to Kenya's needs would be established for setting out clearly the responsibilities of the Unit and the Ministry of Works and for involving school headmasters in building-siting and works' initiation.

37. The Bank's requirement of international competitive bidding added somewhat to the difficulties in implementation. Reissue of civil works tenders on an international basis did not result in bids markedly lower than those made when bidding was limited to local contractors. Building standardization, introduced in Kenya under Bank recommendations, has been a desirable policy but seems to have been carried somewhat too far. Maintenance difficulties have offset, to an unknown extent, the price advantages originally obtained by international bidding from "one-shot" foreign suppliers; a few pieces of equipment have been useless for lack of parts or proper tendering specifications. The Project Unit had difficulties in effecting adequate inspection upon delivery, storage, distribution among schools, and inventory control of small equipment. Some of the problems associated with equipment procurement might have been avoided if the Bank had previously developed basic equipment lists for major subjects and requested that specifications include the availability of an adequate local

network for maintenance and spare parts supply (initial steps in preparing basic lists have since been taken successfully within the Bank). On a few items, such as books and minor laboratory equipment, involving many makes and small funds, the money would probably have been better used by granting the schools lump sums subject to audit by the Project Unit. These features underline the need for a careful judgement in selecting the appropriate bidding procedures in nationwide education projects involving many small schemes, as the Kenya case.

38. The Bank also seems to have been excessively rigid about the composition of the project once set down in the appraisal report and Credit Documents. It did accept the Kenya Government's wise reduction of project Teacher Training Colleges from 18 to 11 in 1967/68. But when cost overruns loomed in this period, the Bank should have tried to discuss with the Government the necessity to reconsider the main secondary education component of the project -- to see whether, especially in light of Harambee trends, some schools should be omitted or whether cost overruns (which would probably have totalled about 20% overall) should be squarely faced up to -- rather than to stick rigidly to the number of schools selected in a 1965 appraisal and offset the overruns by reductions in standards that have hampered somewhat the effective operation of the project schools. The Credit Documents did call for secondary expansion to be brought into "harmony with estimated manpower requirements of the economic development plan as it may be modified from time to time," but this has been a dead letter for the formal reason that the relevant part of the Development Plan was never in fact modified. In such a fluid educational situation as existed in Kenya in the 1960s, national education and manpower indicators, school surveys and students' tracer studies could have been recommended as part of the regular project reporting requirements and Bank supervision mission duties, and then carefully scrutinized to see whether modifications were required in project plans. This case would suggest that in future similar situations, when feasible and acceptable to Governments, such tasks be requested as part of Project Unit and Bank supervision mission duties.

39. Within the framework of criteria used by the Bank for analyzing and designing the project, a number of omissions were made. The manpower projections, limited to the modern economic sectors as recommended by the then existing guidelines, seem to have overlooked the effect of Kenya's prevailing economic policies on the ability of the modern sectors to generate employment opportunities. Had the Bank investigated the use of rate of return studies in education before 1966, the manpower projections could have been usefully complemented by consideration of the private rate of return to secondary education, the private investment that the high return would induce and the supply of educated manpower that would result from private sources, reducing the need for public system expansion. As a result of the emphasis put by Kenya on general secondary education, insufficient preparation and detailed attention was given to the planned development of the technical and vocational schools and to the availability and training of technical teachers for the vocational schools.

40. The more important point that emerges from this review is that the project has provided for an expansion of an established education system, and that it could have been possible, within the set of Bank policies prevailing at that time, to give more consideration in project planning and implementation to the intended beneficiaries and users of the project. This applies to the way the construction work was planned, without reference to the school headmasters or adaptation to the local conditions, to the neglect of local agricultural conditions in the design and allocation of agricultural workshops, to the inadequate consideration of regional balance in the allocation of the schools, to the inappropriate selection of library books and to the deficiencies in the way laboratory and workshop equipment was distributed. Given the Bank and Government emphases at the time, it could not have been expected, however desirable, that serious attention would be given during project appraisal to means of mobilizing local self-help effort with respect to secondary education and combining it with the foreign assistance. But these elements underline the need, in designing large nation-wide projects, for a differentiated approach giving due attention to regional and local conditions.

41. The project has been less successful with regard to its qualitative objectives. The project played a crucial part in spreading throughout the secondary education system a program of practical courses, now carried further by Kenya on its own. But the actual contribution of these practical courses has been constrained by their limited objective -- mainly to break down prejudice against manual work among prospective white-collar workers -- and further reduced by physical cut-backs during implementation. Little progress has been made on the larger qualitative objectives. Examination performance in secondary education has declined. The primary curriculum has been improved, but only minor modifications have been made to the secondary curriculum, and, in actual application, both remain unduly dominated by "watershed" terminal exams that are not well adapted to the Kenyan conditions and curricula; these exams that are used mainly as a screen -- of uncertain validity -- to determine whether a pupil will join a small white-collar elite or whether he will join the many in traditional or small-scale economic activities for which he does not seem to be much better prepared than before he went to school. Vocational school programs have had to be changed substantially from the lines along which they were assisted under the IDA project. It seems that major reasons for the low achievement in meeting the qualitative objectives have been the lack in the project of some amount of carefully selected technical assistance designed to provide Kenya's Curriculum Development Center with the necessary expertise and staff, and also the vagueness with which those objectives were expressed, thus preventing any close follow-up of progress in their fulfillment. Precise and possibly quantifiable qualitative objectives could have been -- and, in future projects, should be -- prepared and aimed at; ongoing research sponsored by the Bank is expected to bring improvements in this matter.

42. The increasingly urgent need for change in the general secondary system and the phenomena that have appeared simultaneously with the project's quantitative success -- increasing numbers of Fourth Form "failures" without corresponding certificate, rising school-leaver unemployment, ballooning costs of education -- raise the question of whether the education and project objectives were in the right direction. In retrospect, it would seem that the Bank could have made a more significant contribution to the development of Kenyan education if it had convinced the Government to plan for a smaller expansion of secondary education along well-established lines in conjunction with some new schemes of secondary schooling integrated with, and responsive to, the communities in which they would be located; for instance, both the objectives of the secondary school practical courses and the need for reforms in the vocational schools could possibly have been met in some pilot comprehensive schools established under the project. The Kenya Education Commission in 1964 had already started thinking along these lines -- for instance with its suggestion (as yet unrealized, at least in IDA schools) that secondary school facilities be used to offer evening classes and other part-time education to local communities. The Bank may have had this direction of development, as well as economy, in the back of its mind, with its emphasis that schools be large and include at least one day-stream. But the actual impracticability of the latter, as demonstrated earlier, shows that the need was for a new approach that would have explicitly confronted basic issues such as district-wide student selection and the fee-structure of secondary education; such an approach could also have led, as an outcome, to projects drawing forth Harambee effort and in turn promoting participation in community schemes and educating students in practical and creative activities useful for future life in the community. The Bank would certainly have been justified in financing the recurrent costs and carrying out by itself the evaluation of such innovative schemes, as a necessary investment in discovery and development of new solutions. Some would likely have failed but others might have succeeded and gained enough popular support to channel education energies along paths both more efficient and more equitable than those now so strongly followed by the Kenyan people. The criteria for education lending used by the Bank in the mid-1960s and considerations of political feasibility explain largely why such a course was not followed in this project; the Bank's new criteria and policies for educational lending make such an approach much more necessary and relevant.

Note on the Methodology Employed

1. The audit of the project's physical execution was carried out through a review of available data and documents in the Bank and in the Project Unit of the Ministry of Education, through interviews with the Project Unit Director and the Bank staff, and through visits to a subset of project schools. The evaluation mission visited 15 general secondary schools, all 9 project technical/vocational schools and 6 primary teacher training colleges.

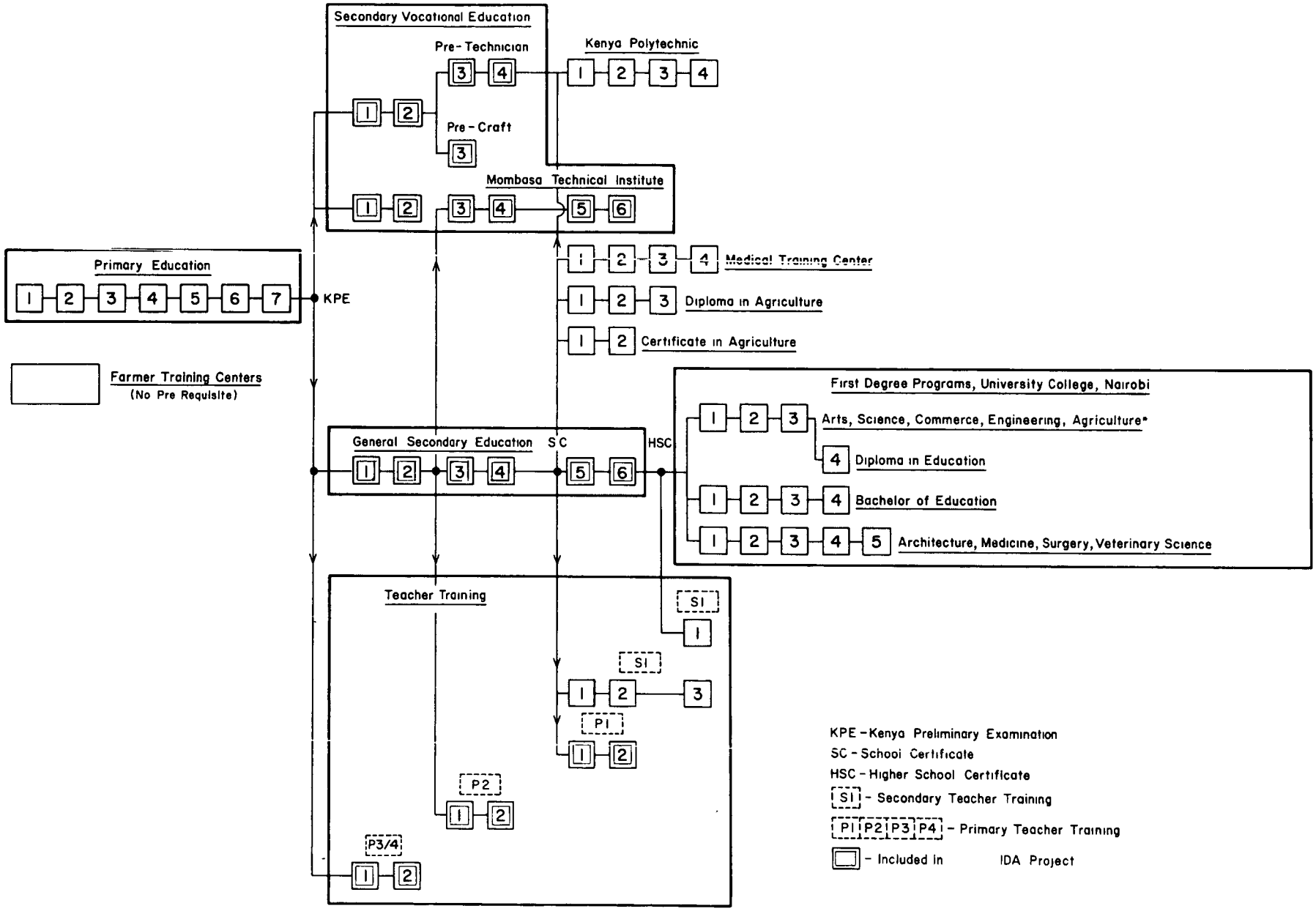
2. In each school visited, the mission reviewed physical facilities and equipment, with special attention to the laboratories and workshops, followed lessons in classrooms, workshops and laboratories and conducted extensive interviews with the principal and some of the sciences and practical courses teachers. The review of physical facilities was complemented by the relevant findings of a 1972 survey of secondary schools' accommodations undertaken under UNESCO auspices. Evaluation of the benefits and effective use of workshop facilities was also based on the answers to a questionnaire eventually filled out by 9 general secondary schools comprising 4 agriculture, 3 industrial arts, 3 domestic science and 1 commerce workshops.

3. Detailed historical data for enrolment per Form and sex, boarders, number and qualification of teachers, and recurrent budget, were extracted for each project school from the individual school files of the Ministry of Education; Examination performances in each project school were obtained from the Examination Section of the Ministry of Education.

4. Reliable manpower data, necessary to assess the success of the manpower main objective of the project, were derived from the Ministry of Finance's 1972 Survey of High and Medium Level Manpower; the 81 occupations used in this survey were aggregated into four broad categories for the purpose of comparison with the 1964 manpower survey which had served as a basis for the appraisal report forecasts. Information on the employability of general secondary school Form IV leavers, and on their socio-economic background, was extracted from "tracer" studies of secondary school leavers which were undertaken in 1971-1972 by the Institute of Development Studies of the University of Nairobi. A preliminary assessment of the internal efficiency and external productivity of the vocational schools in their present condition was based on a "post-school" survey of 120 vocational school graduates undertaken by the mission in the training facilities of the National Industrial and Vocational Training Center of the Ministry of Labor; the survey consisted of two parts: the first, by means of a questionnaire, dealt with the students' socio-economic background, school history and attitudes, and the second part was the collection and analysis of proficiency test results from NIVTC records.

5. Achievements in the modernization of the curricula, textbooks and examinations at secondary level were evaluated by an IIEP-UNESCO consultant mainly through visits to the Kenya Institute of Education and in-depth interviews of its Department of Curriculum Development staff.

KENYA: STRUCTURE OF EDUCATION



CHART

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Structure of Wages of the High and Medium Level Manpower - Private Sector - 1971/72

Earnings (K Shs per month)	Full Primary (Standard VII)	Secondary Form II	Secondary Form IV	Secondary Form VI	University
Average over career	1,320	1,800	2,870	4,870	5,060
Initial (1-2 years experience)	570	1,380	1,600	1,730	3,340
Final (18+ years experience)	2,060	2,750	4,450	6,250	6,270
Average number years training	2.8	2.4	2.5	3.0	4.4 [a/]
Differential from certificate	350	N.S. [b/]	1,100-300 [c/]	N.S.	N.A.
Increment per year of experience	83	76	158	251	163
Structure:					
Initially	100	242	281	304	586
After 18 years of experience	100	134	216	303	304

a/ Average number of years of university.
b/ N.S.: Not significant.
c/ The differential declines from 1,100 at beginning to 300 at end of the career.

Source: Based on the Ministry of Finance's 1972 Survey of High and Medium Level Manpower covering about 1,400 male employees in the private sector at the end of 1971, distributed as follows:

Sample of Wage Employees - Private Sector - 1971/72

Category	A	B	C	D	Total	Total HMLM [a/]
Kenyans (%)	27	63	78	90	62	68
Non-Kenyans (%)	73	37	22	10	38	32
Share in total sample (%)	26	19	50	5	100	
(Distribution of total HMLM [a/]	15	17	47	21		100)

a/ Private Sector

Though it appears that the sample is not truly representative of the total HMLM and is biased in favor of higher categories of occupations and non-Kenyan employees, the results should still give a fair picture of the distribution of earnings among the employees of the private sector (and possibly of all employees insofar as public sector salaries are known to have been generally higher than in the private sector). The determinants scrutinized in the analysis of these wages were: the number of years of education, the number of years of post-school training, the type of training (full-time, part-time, full- and part-time combined), the number of years of experience in the present and previous jobs, and finally whether or not training was successful (ending with a certificate or not).

Annex Table A.2

Socio-Economic Background of Samples of Students

I. Form IV Students in 4 IDA Schools[a] - 1969

Occupation/Education of Father/Guardian	No Schooling	Few Years Primary	Full Primary	Secondary and above	Not Available	Total	
Professionals	-	-	-	4	2	6	Well Off
Businessmen/Large Scale Farmers[b]	5	6	6	2	1	20	
Semi-Professionals/ Technicians	3	2	5	2	6	18	Average
Skilled/Semi-Skilled Workers	5	6	5	2	10	28	
Unskilled Workers and Small Trade Self-Employed	15	7	4	1	7	34	Poor-Very Poor
Small Scale/Subsistence Farmers	69	28	11	1	40	149	
Total	97	49	31	12	66	255	

a/ 1969 IDS tracer study of secondary school leavers - Unpublished. Data available to evaluation mission by permission of Dr. Somerset.

b/ Large-scale farmers were defined as farmers with 25 or more acres of land.

II. Vocational Schools Graduates[c] - 1973

Occupation/Education of Father/Guardian	None	Half Primary	Full Primary	Others	Total
Businessmen/large farmers	-	1	-	-	1
Semi-professionals/technicians	2	-	1	-	3
Skilled/Semi-Skilled Workers	7	1	1	-	9
Unskilled Workers/Small Trade, Self-Employed	3	5	4	-	12
Small/Subsistence Farmers	35	7	4	-	46
Total	47	14	10	-	71
(% of total)	66	20	14	-	100

c/ Evaluation mission survey.

Selected Average Indicators About General Secondary Schools in Kenya, 1966-72

	1966	1967	1968	1969	1970	1971	1972
Unaided Schools							
Enrolment/School	82	117	121	115	108	125	120
% Girls	20	20	22	27	32	33	34
% Boarders	21	18	20	21	20	28	26
Enrolment/Class	35	34	34	34	32	33	34
Teachers/Class	1.52	1.46	1.46	1.50	1.45	1.49	1.44
% Graduates	33	25	25	28	27	28	25
% Qualified[a/]	62	51	48	51	48	47	42
EACE: % Pass		70		72	63		60
% Sch. Certificate		41		31	30		21
Ave. Grade[b/]		0.68		0.43	0.40		0.31
Aided Schools							
Enrolment/School	205	240	244	250	249	245	251
% Girls	29	30	29	28	28	29	29
% Boarders	50	49	55	54	53	59	60
Enrolment/Class	31	33	33	34	35	36	37
Teachers/Class	1.52	1.54	1.57	1.57	1.66	1.65	1.65
% Graduates	62	67	66	61	54	48	47
% Qualified[a/]	93	93	94	95	94	93	97
EACE: % Pass		90		91	88		87
% Sch. Certificate		73		63	64		60
Ave. Grade[b/]		1.37		1.13	1.07		1.01
IDA Schools							
Enrolment/New Sch.		220	315	400	430	460	470
Enrolment/Expanded Sch.		330	395	445	480	505	520
Students/Teacher: New Sch.		26.3	25.6	24.2	24.0	23.9	22.5
Expanded Sch.		24.1	23.6	23.5	23.5	23.4	22.4
% Teachers Graduates: New		45	45	44	41	40	41
Expanded		63	64	62	52	51	52
% Teachers Qualified[a/]: New		86	86	94	92	95	98
Expanded		91	91	96	96	98	99
EACE: % Pass: New					86	88	89
All IDA Sch.					88	88	89
% School Cert.: New					60	59	62
All IDA Sch.					64	62	62
Ave. Grade[b/]: New					0.96	0.94	1.01
All IDA Sch.					1.06	1.02	1.03

a/ Including University Graduates not professionally qualified.
b/ Weighted average of following marks: 3 for Division I, 2 for Division II and 1 for Division III, and 0 for others.

Distribution of F IV Leavers ("C" Level Manpower) 1964-70 - Kenyan Citizens Only

Demand	1964	1965	1966	1967	1968	1969	1970	Total 1964-70
Form V	700	971	1,174	1,480	1,824	2,493	2,797	11,440
T.T.C. P1	158	305	393	550	768	862	1,114	4,150
T.T.C. P2	-	70	195	270	356	410	415	1,716
T.T.C. S1	137	212	237	302	392	492	387	2,159
Agri. Training[a]	100	140	200	225-325	300-600	330-690	400-700	1695-2755
Other Training[b]	40	190	195	413	488-661	686-896	786-1036	2800-3430
Total Training	435	917	1,220	1760-1860	2304-2777	2780-3350	3102-3652	12520-14210
Employment at C Level	3477/4674	3367/4362	4119/4984	4457/5377	5067/6046	5061/6178	6566/7791	32110-39410
Total Demand C	4612/5809	5255/6250	6513/7378	7697/8717	9195/10647	10334/12021	12465/14240	56070/65060
Supply								
Total F IV	3,380	4,410	5,054	8,465	12,506	15,493	17,626	67,034
(O.W. Unaided F.IV)	890	990	950	2,140	2,948	3,670	3,706	15,294
Other C. Output	-	-	94	122	108	155	205	684
Private EACE Candidates	0-277	0-803	0-841	0-1490	0-2745	0-2324	0-3132	0-11612
Total C. Supply	3380/3657	4410/5213	5148/5989	8587/10077	12714/15459	15648/17972	17831/20963	67718-79330
Gross Surplus[c] C	-2429/-955	-1840/-42	-2230/-524	-130/2380	2067/6264	3627/7638	3591/8498	2658-23260

a/ In Embu, AHITI and Egerton.
b/ Government Secretarial Courses, Medical Training, Kenya and Mombasa Polytechnics 1st year full-time intakes.
c/ The gross surplus should be reduced by an amount equivalent to the total of C job holders who have transferred to B level positions thru training in the Polytechnics and other institutions within the labour force; such transfers, and resulting additional job openings for C level manpower, can be estimated for the year 1968, 1969 and 1970 at 1,300, 1,500 and 1,800 respectively.

Distribution of Form II Leavers ("D" Level Manpower) 1964-70 - Kenyan Citizens Only

Demand	1964	1965	1966	1967	1968	1969	1970	1964-1970
Form III Aided	5,470	6,690	9,687	11,588	13,554	15,717	17,640	114,450
Form III Unaided		2,126	4,669	5,965	5,098	7,122	9,123	
T.T.C. P2	531	627	778	813	767	886	738	5,140
Employment D	2,750	2,591	3,222	3,488	3,977	3,953	5,123	25,100
Total Demand D	8,751	12,034	18,356	21,854	23,396	27,678	32,624	144,700
Gross Surplus D	515	588	268	4,546	5,444	6,878	5,708	23,950
Supply								144,700
Total Form II	6,950	10,000	15,948	23,827	26,114	31,701	35,439	149,980
(O.W. Unaided F II)	1,650	3,420	5,970	12,130	12,887	15,972	17,217	69,245)
Other D Output	1944+372	2140+482	2227+449	2243+330	2298+428	2392+463	2426+467	15670+2490
Total D Supply	9,226	12,622	18,624	26,400	28,840	34,556	38,332	168,640

NOTE: Supply figures show those coming out of school in the year shown, while Demand figures show those entering high education or starting employment in the following year. Employment estimates are interpolated from the figures given in Annex Tables A.5 and A.6.

Annex Table A.5

Demand for High and Middle Level Manpower 1964-1971

(Modern non-Agricultural Sector)

Category	Mid-1964 Kenyans	Mid-1964 Total	1964/71 Kenyans Attrition[a/]	End-1971 Kenyans	End-1971 Total	1964/71 Demand[c/] (Kenyans)	Annual Compound Rate of Growth (%) Kenyans	Annual Compound Rate of Growth (%) Total
A -	1,240	5,893	279	3,183	10,137	2,223	13.4	7.5
B -	7,612	10,910	1,713	23,284	28,749	17,385	20.4	17.0
C - Clerks[b/] Est. 1	14,148	32,808	3,183)	30,064	38,654	(19,099	10.6	2.2
Est. 2	4,732	23,398	1,065)			(26,397	28.0	6.9
C - Manual Workers	5,537	10,053	1,246	12,346	14,551	8,057	10.7	4.6
D -	17,284	18,000	3,889	38,679	40,405	25,283	11.3	11.4
Total: Est. 1 -	45,820	77,664	10,310)	107,556	132,496	(72,046	12.0	2.2
Est. 2 -	36,404	68,254	8,192)			(79,345	15.5	9.2

a/ Attrition was estimated at 3% p.a. over 7-1/2 years.

b/ Two estimates were made for 1964, which would be comparable to the 1971 definition of Clerical and Office Workers, excluding and including respectively certain occupations which might have been defined too broadly in 1964 as compared to 1971. Also, this category includes, among the others, the following occupation:

	1964 Kenyans	1964 Total	1971 Kenyans	1971 Total
Managers n.e.c.	405	2,124	5,238	9,189

c/ Demand defined as 1971 Kenyans minus 1964 Kenyans plus Kenyan Attrition. Readjustments were made in both 1964 and 1971 Surveys data to incorporate the teachers with adequate qualifications. The data on HMLM stocks displayed above include teachers as follows:

Category	1964 Kenyans	1964 Total	1971 Kenyans	1971 Total
A	436	1,490	765	3,021
B	1,899	2,369	7,343	8,655
C (Clerks)	673	905	4,176	4,420
D	14,316	14,368	33,588	33,783
Total	17,324	19,132	45,872	49,879

Source:

The above estimates are built up by comparison of the 1964 manpower survey with a survey undertaken by the Ministry of Finance for the situation as of January 3, 1972 (considered here to roughly equivalent to mid-year 1971 insofar as the Tripartite Agreement of December 1970 had a major effect in bringing forward most of the employment increase that would otherwise have occurred later in 1971 and early in 1972). The 81 occupations used in the 1972 survey have been aggregated into the four broad categories A, B, C, and D of the 1964 survey for comparative purposes.

Annex Table A.6

Estimated Demand for High and Middle Level Manpower
1964-71: Modern Private Agriculture

Category	Mid 1964[a] Kenyans	Mid 1964[a] Total	1964/71 Kenyans Attrition	End 1971 Kenyans	End 1971 Total	1964/71 Demand (Kenyans)
A)	460	815	105	250	476	(865
B)				970	1,063	(
C[b]	280	625	63	5,177	5,960	4,960
D	270	330	62	28	35	-180
Total	1,010	1,770	230	6,425	7,534	5,645

a/ Estimated on the basis of a 12% coverage sample.
b/ This category includes, among others, the following occupations:

	1971 Kenyans	1971 Total
Farm managers and Managers n.e.c.	3,993	4,652

Annex Table A.7

Activities of Form IV School Leavers[a/] (Government Aided Schools) 1965-1969

Year of Leaving School	1965		1966		1967		1968		1969	
Number of Schools	14		14		16		22		22	
Size of Sample	525		615		852		1,186		About 1,200	
Year of Activity Activity (%)	1966	1968	1967	1969	1968	1970	1969	1971	1970	1971
Further Education	25	19	27	19	26	11	22)	43	(50	50
Training	20	12	23	14	23	14	23)		(	
Employed[b/]	40	53	39	56	40	55	33	38	17	29
Unemployed	2	0	1	1	1	1	15	9[c/]	16	4[c/]
Others (Untraced)	13	16	10	10	10	19	7	10	16	17
TOTAL	100	100	100	100	100	100	100	100	100	100

a/ IDS Tracer Study - Paper No. 138. University College, Nairobi.

b/ About 2/3 were employed in the public sector. Major occupations of all employed for which the jobs was known were on average as follows:

		Technicians	Untrained Teachers	Clerks
(In % of total known occupation)	1st year after school	18%	16%	57%
	3rd year after school	19%	18%	52%

c/ These reductions in the unemployment rate are mainly due to the December 1970 Tripartite Agreement.

Annex Table A.8

EACE Performance and Activities After Leaving Secondary School[a/]

I. Average Grade of Students Entering Certain Activities (1965-68)

	Form V		Training			Selected Jobs		
Grade Range	Scis.	Arts	Agr.	Teach.	All	Tech.	Clerks	Teach.
Distinction (20-29)	20.8	23.5	-	-	-	-	-	-
Credit (30-39)	-	-	32.2	35.6	33.1	34.1	37.1	-
Pass (40-49)	-	-	-	-	-	-	-	42.0
Fail (50-54)	-	-	-	-	-	-	-	-

II. Share of Leavers Gaining Job (1968)

Grade Range	Immed. 6 Mos.	Delayed 6-18 Mos.	Never (18+ Mos.)	All
Distinction (20-29)	95%	5%	-	100%
Credit (30-39)	77%	14%	9%	100%
Pass (40-49)	66%	13%	21%	100%
Fail (50-54)	51%	9%	40%	100%

a/ IDS Tracer Study - Paper No. 138. University College, Nairobi.

TOTAL KENYA EDUCATION EXPENDITURES

(K£ 000)

Annex Table A.9

	1967	1968	1969	1970[a]	1971
I. Recurrent					
Primary					
Ministry of Education	373.38	350.41	336.30	9,247.97[b]	1,669.0*
Local Authorities	5,312.0*	6,770.0*	7,156.0*	1,435.0*	1,426.0*
Fees[d]	3,213.0	3,820.0	4,024.0	4,754.42[c]	4,962.0*
Secondary					
Ministry of Education	3,157.81	3,736.64	4,109.22	4,483.05	5,080.0*
Fees (Aided Schools)	1,000.0	1,150.0	1,250.0	1,200.0	1,300.0*
Fees (Harambee	n.a.	1,290.0*	1,450.0*	1,620.0*	1,980.0*
Technical					
Ministry of Education	522.46	535.44	574.73	667.34	804.85
Fees	34.91	47.96	72.63	82.56	95.51
Teacher Training					
Ministry of Education	992.48	1,108.20	1,190.56	1,250.16	1,343.36
Higher Education					
Ministry of Education	964.71	1,115.31	1,336.80	2,170.20	3,106.29
Admin./Others					
Ministry of Education	748.66	901.34	1,007.97	1,056.66	1,918.4*
Other Ministries	n.a.	700.0**	800.0	750.0*	800.0**
Teach. Serv. Com.	-	-	45.47	87.92	86.05
Various Fees	149.45	215.50	241.56	241.95	263.0*
Total: Public	12,071.50	15,217.34	16,557.05	21,148.30	26,233.95
Private	4,397.36	6,523.46	7,038.19	7,898.93	8,600.50
Total	16,468.86	21,740.80	23,595.24	29,047.23	34,834.45
II. Capital					
Local Auth. - Primary	635.0*	966.0*	1,012.0*	434.0*	810.0*
Ministry of Education Secondary	229.03	424.09	525.24	655.87	868.85
Teacher	122.46	47.93	31.14	20.59	67.95
Technical	81.55	51.64	66.80	75.66	89.55
IDA Proj.	655.86	1,465.0*	1,224.34	171.88	226.19
Others	209.92	257.83	319.18	486.97	576.63
Harambee:[e] Primary	536.30	620.7	1,045.0	1,003.0	1,273.0
Secondary	309.90	398.2			
Teachers Houses	136.50	193.6	94.0*	120.0*	46.0*
Total: Public	1,933.82	3,212.49	3,178.70	1,844.97	2,639.17
Private	926.90	1,212.50	1,139.0	1,123.0	1,319.0
Total	2,860.72	4,424.99	4,317.7	2,967.97	3,958.17

* - Estimate.
** - Rough Estimate.
a/ MOE took over Primary Education from County Councils.
b/ Includes 8,927.53 for D.E.B.
c/ Includes 520.0 fees from Municipal and City Councils.
d/ Includes fees for three Government primary schools (1967-1969) (60.00 K£ thousands in 67-68 and 50.00 K£ thousands in 1969-70 and 51.5 for 1971).
e/ Only for formal education. It excludes nurseries and youth centers.

Sources: MOE Annual Reports, Economic Surveys 1970, 1971, 1972.

Annex Table A.10

SCHEDULE OF CREDIT DISBURSEMENTS - ACTUAL/FORECAST

Accumulated Disbursements (US$ 000)	1966	1967	1968	1969	1970
Actual	12	642	2656	6213	7000
Forecast	144	2814	6061	7000	7000
Actual Disbursements, as % of forecasts	8.3	22.8	43.8	88.8	100

Comparison of Units Construction Costs for Major Items in Secondary Schools (Forms I-IV)

(in Kℓ)

	Normal Tender	Bulk Tender	Negotiated Tender
Teacher Housing (Pair)			
New Schools	2,557	3,165	3,300
Expanded Schools	3,084	3,169	-
Auxiliary Housing			
New Schools	986	1,045	1,046
Expanded Schools	983	1,031	-
Subordinate Housing			
New Schools	1,219	1,227	1,266
Expanded Schools	1,177	1,280	-
Special Room			
New Schools	1,249	1,091	1,129
Expanded Schools	1,267	1,202	
Classroom			
New Schools	819	793	(832)[a/]
Expanded Schools	865	799	
Dormitories (140 people)[a/]			
New Schools	10,825	9,632	9,824
Expanded Schools	10,294	9,789	
Laboratory (Combined)			
New Schools	4,127	3,901	4,370
Expanded Schools	-	4,161	-
Domestic Science Room (Single)			
New Schools	2,073	1,723	2,350
Expanded Schools	-	1,757	-
Workshop (Single[b/])			
New Schools	-	-	-
Expanded Schools	2,009	2,102	2,297
Agriculture Workshop			
New Schools	2,121	1,977	1,913
Expanded Schools	-	2,027	-

a/ Including lockers.
b/ i.e. Woodwork only, as opposed to 'double' workshops (including metalwork) for which only one cost figure is available.

BREAKDOWN OF FACILITIES BY TYPE OF SCHOOL AND TYPE OF FACILITY - ACTUAL AND FORECAST

Annex Table A.12

	FORECAST										ACTUAL									
	General Secondary Schools				Secondary Technical Schools			Primary Teacher Training Colleges	Total			General Secondary Schools				Secondary Technical Schools			Primary Teacher Training Colleges	Total		
	Lower Secondary (SI-IV)			Upper Secondary (SV-VI)								Lower Secondary (SI-IV)			Upper Secondary (SV-VI)							
	New	Expansion	Total	Expansions	New	Expansion	Total	(Expansion)	New	Expansion	Grand Total	New	Expansion	Total	Expansion	New	Expansion	Total	(Expansion)	New	Expansion	Grand Total
Houses: teachers	150	74	224	30	5	8	13	39	155	151	306	141	70	211	27	6	8	14	39	147	144	291
others	123	73	196	33	5	-	5	5	128	111	239	43	36	85	17	2	-	2	11	45	64	109
Total	273	147	420	63	10	8	18	44	283	262	545	184	106	300	44	8	8	16	50	192	208	400
Dormitories	81	57	138	11	10	11	21	35	91	114	205	21	22	43	11	4	11	15	25	25	69	94
Libraries	16	10	26	10	2	3	5	6	18	29	47	13	13	26	7	2	4	6	3	15	27	42
Classrooms	65	23	88	20	8	12	20	47	73	102	175	70	37	107	13	6	6	12	33	76	89	165
Laboratories	34	16	50	6	4	13	17	13	38	48	86	32	13	45	7	4	8	12	6	36	34	70
Special Rooms	48	42	90	-	-	-	-	-	48	42	90	23	2	47	11	-	-	-	3	23	38	61
Workshops: Agriculture	9	5	14	-	-	-	-	-	9	5	14	9	4	13	-	-	-	-	-	9	4	13
Commerce	3	5	8	-	-	-	-	-	3	5	8	(3)	(5)	(8)[b]	-	-	-	-	-	(3)	(5)	(8)
Domestic Science	6	5	11	-	-	-	-	8	6	13	19	2	4	10	-	-	-	-	2	6	6	12
Industrial	6	8	14	-	7	14	21	10	13	32	45	5	10	15	-	11	31	42[c]	8	16	49	65
Total	24	23	47	-	7	14	21	18	31	55	87	23	23	45	-	11	31	42	10	31	54	85
Others[a]	68	58	126	0	3	1	4	7	71	66	137	45	50	95	3	4	3	7	11	49	57	116

a/ This category includes kitchen, dining hall, dispensary/sick bay, day care room and administrative block.
b/ The 8 Commerce workshops have not been built under the ID, and not, but with the Kenyan Government money
c/ Of which 22 were only conversions of existing buildings.

Annex Table A.12

Practical Courses and Utilization of Workshops in IDA-supported General Secondary Schools

	Agriculture	Domes. Sc.	Indus. Arts.	Commerce
No. of Workshops	13	10	15	8
No. of Specialized Teachers	28	21	29	7[a]
Average No. Classes/Teachers	5-6	4-6	4	9
Forms Taught	I-IV	I-IV	I-III	I-III
Average No. Weekly Periods/Class[b/c]	4-5+[d]	3-6	4-6	2-3+
Attending Students/School[b]	4x95[d]	All Girls	2x110+1x40	2x120+1x40
As % of Total Enrolment[b]	80%	"	90-30%	100-30%

a/ Commerce teachers have been generally scarce, especially specialized ones, since Kenyatta College only began teacher training in this field a few years ago. SIDA has provided major help with regard to Industrial Arts teachers, supplying personnel on an interim basis and helping also to train Kenyan Industrial Arts teachers at KSTC, where an Industrial Arts Department has recently been established.

b/ Based on the surveyed schools, the proportion of enrolment attending practical courses declines after Form II, slightly for Agriculture and Domestic Science but by 2/3 for Industrial Arts and Commerce in which about 1/3 of students, generally regrouped in one class, specialize after Form II selection. Consequently, the number of periods per week delivered to these students increases in Forms III and IV, sometimes substantially in Agriculture and Domestic Science.

c/ In some schools with Agricultural courses, the number of periods per class can reach 12 or 15 periods a week. In some rare schools, Industrial Arts and Commerce courses are taught up to Form IV.

d/ It was expected on the basis of USAID experience that the average attendance in each school would be 200 students during 5 periods per week. There has been a generally widespread interest and satisfaction of students in the practical courses offered in their schools; however, this conclusion might have to be qualified, due to the imposition of these courses upon them. Workshops and courses have been generally adequately staffed with qualified teachers, 2 per workshop in average (except for Commerce); teachers workload has been about 20-25 periods per week, which does not leave much time for preparation of courses.

Annex Table A.14

1972 - Practical Courses in IDA-supported General Secondary Schools

Type of Courses / Subject[a]	A	I	C	D	A+I		I+C		I+D		C+D		I+C+D			Total			
	A	I	C	D	A	I	I	C	I	D	C	D	I	C	D	A	I	C	D
Number of Workshops put by IDA																			
in: Central	4	2				1[c]			2	2	2	1				4	5	2	3
Western	4								1	1	1	1				4	1	1	2
Nyanga	3						1	1			1	1				3	1	2	1
Eastern	1	2									2	1				1	2	2	1
Rift Valley		1		1									1	1	1	-	2	1	2
Coast					1	1										1	1	-	-
Nairobi		2							1	1						-	3	-	1
Total	12	7	-	1	1	2	1	1	4	4	6	4	1	1	1	13	15	8	10
of which in New Schools	8	1	-	1	1	1	-	-	2	2	2	2	1	1	1	9	5	3	6
Additional Workshops put by Government in IDA Schools																			
Total	3[b]	-	1[b]	-	1[c]	-					1	3[d]				4	-	2	3
Teachers: New	17	2	-	3	2	2	-	-	2	2	2	2	1	1	3	19	7	3	10
Expanded	9	14	-	-	-	2	2	1	4	2	3	9[f]	-	-	-	9	22	4	11[f]
Total	26	16	-	3	2	4	2	1	6	4	5	11[f]	1	1	3	28	29	7	21[f]
Highest Form Taught (No. of Workshops) I	1															1			
II		2									2						2	2	
III		5				2	1	1	2		2			1			10	4	
IV	10			1	1				1	2		4	1		1	11	2		8
Total[e]	11	7	-	1	1	2	1	1	3	2	4	4	1	1	1	12	14	6	8
Average Number of Classes per Teacher in IDA Schools																			
New	5.1	3	-	4	6	4.5	-	-	9	12	6	6	12	9	4	5.2	6	7.5	5.3
Expanded	5.1	3	-	-	-	4.5	4.5	9	5.3	6	12	6	-	-	-	5.1	3.7	11	6
Average	5.1	3	-	4	6	4.5	4.5	9	6	8	10	6	12	9	4	5.2	4.2	9.6	5.6
Average Number of Periods per Week per Class in IDA Schools																			
New	4.1	4	-	3.3	3.4	4	-	-	3	2.7	3.2	2.3	3.3	2.3	2	4.1	3.5	2.7	2.6
Expanded	3.8	4.6	-	-	-	3.6	7.5	2.4	3	2.3	2.4	3.8	-	-	2	3.8	4.4	2.4	3.4
Average	4.0	4.5	-	3.3	3.4	3.8	7.5	2.4	3	2.5	2.5	3.4	3.3	2.3	2	4	4.1	2.5	3

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a/ A: Agriculture, I: Industrial Arts, C: Commerce, and D: Domestic Sciences.
b/ In 3-IDA Schools expanded for Form V-VI and which thus did not receive IDA Workshops; also a Commerce workshop was built in one of these 4 schools.
c/ I was from IDA, A from Government in that particular school.
d/ Government put 2D in 2 schools already equipped with C workshops from IDA.
e/ Totals do not coincide to totals above, due to missing knowledge for some schools.
f/ Including 4 teachers in 2 Government Workshops.

IDA GENERAL SECONDARY SCHOOLS - TIME TABLES
(Number of periods/week/stream)

1. Average Over 14 New Schools

Art Subjects	No. of Schools	Form I	Form II	Form III	Form IV
English	14	8.07	8.07	8.07	8.48
History	14	2.78	3	2.57	2.86
Geography	14	2.93	2.93	3.14	3.36
Swahili	14	3.07	3	3.14	3.14
Arts + French	4	2.50	1.75	0.75	1
General Studies	2	1	1	1	1
Total Arts (Average)		17.65	17.64	17.27	18.27
Science Subjects					
Maths	14	6.78	6.78	6.86	6.86
Biology	14	3.07	3.21	3.43	3.57
Physical Sciences	1/6/7	0/0.7/5.6	0/0.7/5.6	0/0.5/6.0	0/3.5/7.0
Physics	1/6/7	3/2.2/0	3/2.2/0	4/3.2/0	4/1.8/0
Chemistry	1/6/7	3/2.2/0	3/2.2/0	3/3.3/0	3/2.3/0
Total Science (Average)		15.26	15.40	16.79	17.69
Practical Subjects					
Agriculture	8	4	3.63	3.5	3.63
Commerce	?	1.5	3	?	0
Industrial Arts	?/?/?	0/3.5/4	0/3.5/4	0/3/3	0/1.5/-
Domestic Science	?/?/?	3.5/3.5/0	3.5/3.5/0	4/3/0	5/2/0
Total Practical (Average)		4.07	4.07	3.71	3.03
Total All Subjects (Average)		36.98	37.11	37.77	38.99

IDA GENERAL SECONDARY SCHOOLS - TIME TABLES
(Number of periods/week/stream)

2. Average Over 24 Expanded Schools

Art Subjects	No. of Schools	Form I	Form II	Form III	Form IV
English	24	8.13	8.04	8.17	8.25
History	24	2.75	2.75	2.88	3.25
Geography	24	2.79	2.83	3.33	3.46
Swahili	24	3	3.08	3.33	3
Arts & French	10 + 3	2.6+3.33	2.6+4	1.3+4.33	1.6+2.33
General Studies	2	0.5	0.5	0.5	0.5
Total Arts (Average)		18.21	18.32	18.83	18.96
Science Subjects					
Maths	24	6.96	6.92	7.21	7.17
Biology	24	3.21	3.21	3.67	3.83
Physical Sciences	14/5/5	0/3.4/5.4	0/3.4/5.6	0/4.8/5.6	0/3.6/5.6
Physics	14/5/5	2.86/2.8/0	2.86/2.8/0	3.64/4/0	3.5/3.6/0
Chemistry	14/5/5	3.07/2.8/0	3.14/2.8/0	3.71/4/0	3.64/3.8/0
Total Science (Average)		16.63	16.67	19.00	18.62
Practical Subjects					
Agriculture	7	4	3.86	3.86	3.14
Commerce	7	1.29	2	3	0.29
Industrial Arts	5/2/5	0/6/6.8	0/6/5.6	0/5/3.6	0/4/1.4
Domestic Science	5/2/5	4/6/0	4.4/6/0	4.6/6/0	4.6/4/0
Total Practical (Average)		4.30	4.29	4.18	2.58
Total All Subjects (Average)		39.14	39.28	42.01	40.16

Annex Table A.16

EACE Performance of Technical Secondary Schools Students

	1967	1968	1969	1970	1971	1972
Percent Failing EACE						
- IDA Schools	9.0	15.5	7.8	22.9	25.7	23.5
- Other (Nakuru)	n.a.	3	13	11	1	12
Average Grade on EACE[a/]						
- IDA Schools	1.24	1.03	1.26	0.82	0.76	0.83
- Other (Nakuru)	n.a.	0	0	1.07	1.75	1.20

EACE Practicals Results[b/]

	1970		1971	1972	
	IDA Schools	Nakuru	IDA Schools	IDA Schools	Nakuru
Mechanical Drawing	1.98	1.80	1.80	1.57	2.70
Building Drawing	1.80	1.33	1.65	1.69	2.34
Engineering Practice	2.03	3.70	1.92	2.11	2.74
Building Practice	2.84	3.13	1.93	2.54	3.84
Surveying	1.38	1.62	0.21	0.96	-
Overall Average	1.97	2.26	1.64	1.73	2.85
(Sigalagala Average	1.37			0.89)	

a/ Counting 3 for Division I, 2 for Division II and 1 for Division III and 0 for others.

b/ Counting 7 for Distinction, 5 for Credit and 2 for Pass. An overall grade of 2 indicates that all candidates on average get a Pass.

VOCATIONAL SCHOOLS

I. INFLUENTIAL IN-SCHOOL PARAMETERS ON EXAMS RESULTS AND TEST RESULTS[a]

1. Pattern of Workshop Practice	Not Enough Teachers	Lack of Raw Materials	Not Enough Practice
Number of trainees (%)	40%	23%	37%
Average test results	54.2	55.3	57.6
Practical exam results	Pass +	Credit -	Credit -

2. Number of Students in Workshop	18-25	26-33	34-41
Number of trainees (%)	68%	26%	6%
Average test results	56.3	51.8	N.S.
Practical exam results	Credit	Pass	N.S.

3. Number of Hours of Practice/week	4-10	11-16	17-22	23+
Number of trainees (%)	26%	58%	12%	4%

No significant influence on test and exam results (except range 4-10)

4. Unit Equipment Budget (Shs/student p.a.)	180-260	260-340	340-420
Number of trainees (%)	59%	15%	26%
Practical exam average result	Pass +	Pass	Credit +

5. Unit General Budget (Shs/student p.a.)[b]	800-900	900-1,000	1,100-1,200
Number of trainees (%)	21%	37%	40%
Practical exam average result	Pass	Pass +	Credit

6. Students per Technical Teacher	30-39	40-49	50-59	70-79
Number of trainees (%)	41%	17%	38%	4%
Practical exam average result	Credit	Credit	Pass	Fail
Average test results	56.7	55.3	54.3	43.7

7. Students per "Academic" Teacher[b]	20-29	30-39	40-49
Number of trainees (%)	46%	41%	13%
Practical exam average result	Credit	Pass	Pass -

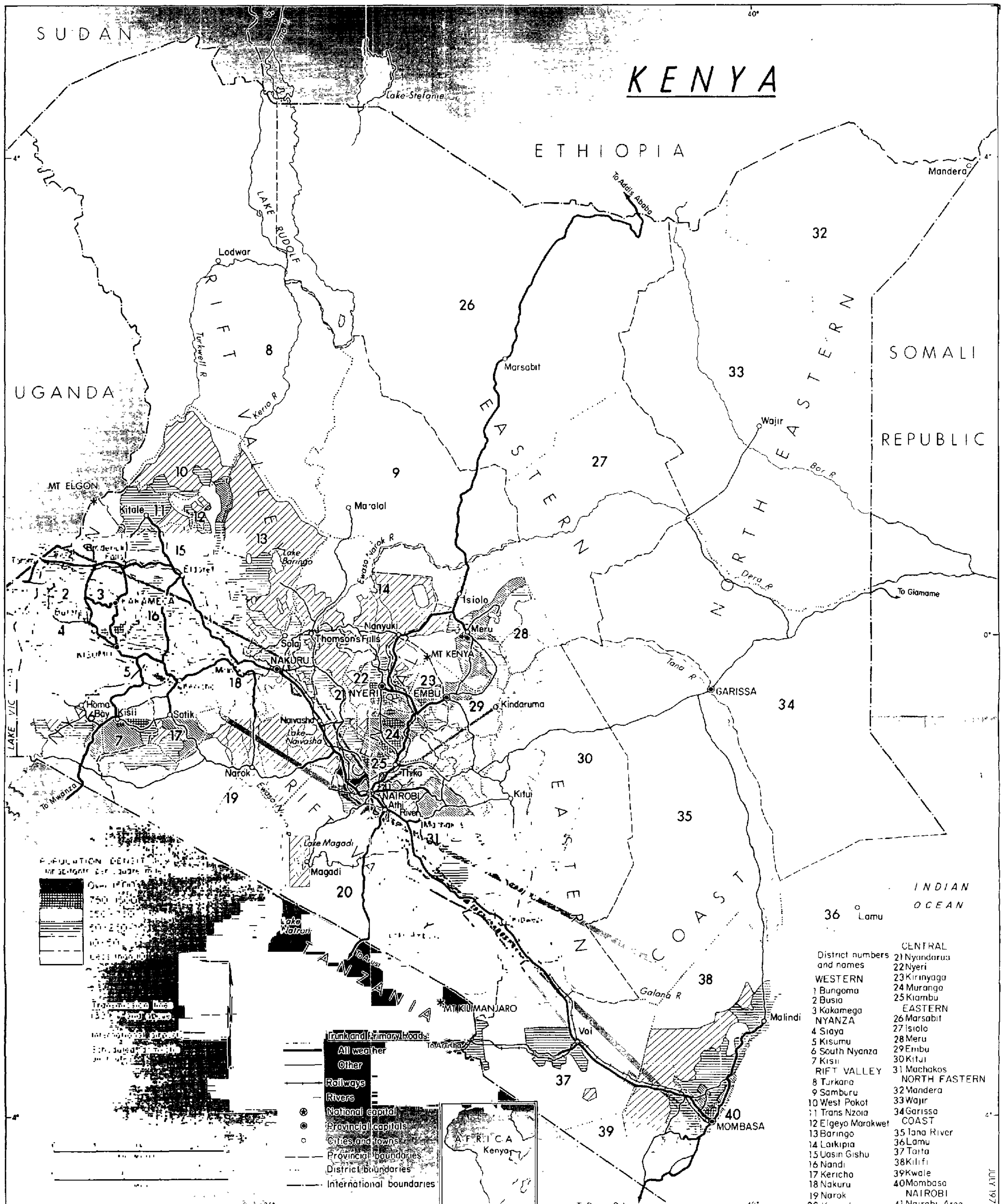
N.S.: Not Significant.

a/ Test Results are graded over the range 0-80; grades below 50 are Failures.
b/ These parameters had no significant influence on test results.

II. TEST RESULTS AND IN-SCHOOL EXAMINATION RESULTS

In-School Exams Test Results	Theoretical				Practical			
	Fail	Pass	Good	Total	Fail	Pass	Good	Total
Fail	17	2	2	21	10	9	1	20
Pass	4	21	11	36	9	10	14	33
Good	1	4	8	13	-	3	10	13
TOTAL	22	27	21	70[a]	19	22	25	66[a]

a/ Totals differ from the number of trainees surveyed because the number of trainees for whom the 1972 in-school examination results were not available are different for the two in-school exams.


KENYA
SUDAN
ETHIOPIA
UGANDA
SOMALI REPUBLIC
TANZANIA
INDIAN OCEAN
Lake Stefanie
LAKE RUDOLF
To Addis Ababa
Mandera
Lodwar
Marsabit
Wajir
Maralal
Isiolo
Meru
MT KENYA
Nanyuki
Thomson's Falls
NAKURU
NYERI
EMBU
Kindaruma
GARISSA
Kitale
Eldoret
KAKAMEGA
Busia
KISUMU
Homa Bay
Kisii
Satik
Narok
Naivasha
Lake Naivasha
Lake Baringo
Thika
NAIROBI
Athi River
Kitui
Lake Magadi
Magadi
Lake Natron
MT KILIMANJARO
To Arusha
Voi
Malindi
MOMBASA
Lamu
To Dar es Salaam
To Mwanza
To Giamame
MT ELGON
LAKE VIC
RIFT VALLEY
EASTERN
NORTH EASTERN
COAST
Turkwell R
Kerio R
Ewaso Ngiro R
Tana R
Galana R
Bor R
Dera R
Trunk and Primary Roads
All weather
Other
Railways
Rivers
National capital
Provincial capitals
Cities and towns
Provincial boundaries
District boundaries
International boundaries
AFRICA
Kenya
District numbers and names
WESTERN
1 Bungoma
2 Busia
3 Kakamega
NYANZA
4 Siaya
5 Kisumu
6 South Nyanza
7 Kisii
RIFT VALLEY
8 Turkana
9 Samburu
10 West Pokot
11 Trans Nzoia
12 Elgeyo Marakwet
13 Baringo
14 Laikipia
15 Uasin Gishu
16 Nandi
17 Kericho
18 Nakuru
19 Narok
20 Kajiado
CENTRAL
21 Nyandarua
22 Nyeri
23 Kirinyaga
24 Murango
25 Kiambu
EASTERN
26 Marsabit
27 Isiolo
28 Meru
29 Embu
30 Kitui
31 Machakos
NORTH EASTERN
32 Mandera
33 Wajir
34 Garissa
COAST
35 Tana River
36 Lamu
37 Taita
38 Kilifi
39 Kwale
40 Mombasa
NAIROBI
41 Nairobi Area
IBRD 10559
JULY 1973