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KENYA EDUCATION SECTOR ANALYSIS

A Report Prepared by the
Kenya Education Sector Analysis
Project for the Director, CBS

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This document summarizes a series of activities which have been undertaken at the Central Bureau of Statistics during the past eighteen months to improve the collection, processing and analysis of the Annual Census of Primary and Secondary Schools.

The major improvements which are discussed more thoroughly in the first section of the paper consist of: expanded scope of the information which is now collected, giving the Ministry of Education more comprehensive data; increased disaggregation of the data, permitting examination of the educational system from national to sublocational levels, and even, through the new School Directory making it possible to retrieve information about individual schools; improved processing in terms of accuracy, speed and efficiency; and new outputs which include analytical and methodological documents, as well as the more comprehensive tabulations and the School Directory, mentioned above.

The second section of the paper identifies the needs which presently exist for closer collaboration between the Ministries of Education and the CBS to further improve the efficiency of the Annual Census, the accuracy of the data, and the awareness and utilization of the outputs.

INTRODUCTION

Basic information about the education sector has been collected routinely by the Ministry of Education since independence through the Annual Census of all primary and secondary schools. This is a major, but by no means the only, Ministry data-gathering exercise and has been the collaborative undertaking of the Ministry (now Ministries) and the Central Bureau of Statistics (CBS) since 1974, when the census first was computerized.

The CBS assumes responsibility for processing the census through the work of its staff who are seconded to the Education Statistics Unit in the Ministry (at present, one Statistical Officer and 20 clerks) and of

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the systems analysts/programmers in the CBS who are assigned to the exercise. The statistics calculated from the school censuses have been used especially for planning, and to a lesser extent, for administration, analysis and research. They form the bulk of the contents of the Ministry's annual reports and also contribute to other analyses of national development published by the CBS such as the Economic Survey and the Statistical Abstracts.

Since 1979, the CBS has systematically improved the collection, processing and analysis of educational data, with the assistance of REDSO/USAID and the Rockefeller Foundation, through a project known as the Kenya Education Sector Analysis. The purpose of this paper is to summarize these recent activities and the major outputs which are now, or shortly will be, available in order to initiate CBS-Ministry dialogue concerning present needs and future possibilities.

PART ONE. IMPROVEMENTS

Expanded Scope

As can be seen from the appended lists of the information which has been collected since 1974 and will be included next year, since 1979 the Annual Census has expanded considerably in scope and detail (Annex 1). The intention has been to develop the survey to meet the basic information needs of all Ministry departments and also the needs for comprehensive analysis and assessment of the education sector. The enlarged coverage of the Annual Census responds to the Ministries' concern to eliminate multiple, and often duplicating, surveys emanating from different sections which in the past have burdened the district officers and school heads. It also provides data which can be used to analyze the policy issues of the access, efficiency, and in combination with other surveys, relevance of the education system (see Analytical Documents).

In contrast to the three-year period prior to 1979, the census questionnaire now is reviewed and revised annually. Although the process requires strengthening and greater systematization, a point to be taken up later, the Planning Unit (now Units) has sought to incorporate other Ministry surveys into the annual census and to channel

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requests from all Ministry departments into its contents.

The 1974-1978 Censuses looked primarily at enrolments and the provision of teaching and non-teaching staff, with a glance at the provision of teaching aids. The subsequent censuses yield information on many other aspects of provision, costs, teachers and students. Buildings, classrooms, facilities, equipment, available texts (for primary) and subjects taught (for secondary) and a breakdown of all fees are all covered in the newer censuses. Teachers are considered in greater detail than previously, with information now obtained on each teacher's age, sex, experience, qualifications, specialization, subjects and citizenship. The basic facts on the age-sex composition of each primary and secondary class is now supplemented with information on student attainment, repetition and migration.

Increased Disaggregation

The data collected between 1974 and 1979 can be disaggregated by province and district. Beginning with the 1980 Census, as a result of a new system of school coding, it will be possible to disaggregate all data to the entire range of administrative units, from the national to the sublocational levels. This permits an intensive examination of all aspects of education within any administrative unit, from a province to a sub-location, and also comparisons between administrative units at all levels.

There is increasing interest within the Ministry in the differences in educational provision and attainment by school type. In addition to the previous disaggregation of data by school management and attendance basis, it will be possible to make comparisons by secondary school grade (since 1980) and primary school classification (since 1981).

As a result of these changes, the annual census is now a rich and flexible source of information, providing answers to questions about the major aspects of education, such as enrolment (and to some extent repetition and dropouts), teachers, staff, the provision of facilities and equipment (and their cost), and pupil attainment. These can be looked at nationally, at any administrative level and/or by various school categories. It is also possible to examine relationships with significant policy implications, such as between provision and costs, or provision and attainment, or provision

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and repetition (or dropouts), as well as to look at differences between regions and schools.

Until now, when there have been questions about individual schools it has been necessary to find the specific questionnaire, or else to make contact with the field. Beginning with the coming year information about individual schools will be readily available in the School Directory. A master file stored for computerized access will list every primary and secondary school in Kenya which has been identified through the Census by name, postal address and administrative location (sub-location, location, division, district and province), as well as all other basic information about the school. The final step in processing each Annual Census will hereafter be the updating of the directory, making any needed changes in names and addresses, and identifying schools which were opened and closed during the year.

The School Directory will be a data bank about virtually all schools in Kenya, providing quickly retrievable information about any school and also the swift identification of all schools in a given category. In the future, it will be possible, for example, to generate lists (by school name, address and location) of schools of a particular type (such as all boarding schools, or all girls boarding schools, or all boarding schools in a particular region), or schools above or below a certain size, or cost. The School Directory will enable the Ministry to know not only the numbers, but the actual names and addresses of the schools in the country which are "overcrowded" or "understaffed". Should there be need for follow-up, the computer can prepare the address labels for mailing, eliminating the need for secretarial time and the possibility of error.

Improved Processing

An entirely new system for processing the Annual Census more rapidly, accurately and efficiently has been designed, tried out, further developed and documented in the past eighteen months. All operations from the receipt of the forms from the District Offices through final validation have been amended and routinized to eliminate sources of error (such as the double coding of a form or the loss of forms) and to expedite output. A more stringent system of range and consistency checks has been instituted,

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and the entire validation process redesigned and simplified. In contrast to the past, when validation was an exercise requiring months, it now is possible to obtain final tabulations within a week after receipt of all census returns. The new system also makes less use of computer time, important in terms of the cost to the government as well as the convenience of the users.

The new procedures have been used to produce revalidated and hence more accurate tabulations for all primary school censuses since 1974. The process has yet to be applied to the secondary school censuses of 1974, 1975, 1976 and 1977.

About to be instituted are procedures to encourage more careful and accurate reporting by the schools themselves. The extent of inconsistencies in the returns (such as, for example, between total enrolment and the sum of the enrolments in all standards or forms) suggests that the census is somewhat carelessly completed, school records are badly maintained, or both. From the beginning of next year, reports will be sent to all District Education Officers of the numbers of schools in their districts which had identifiable errors on the previous census. A small survey will be undertaken to ascertain the ambiguities in terminology which may be contributing to reporting errors and, if necessary, a set of instructions will be prepared for the school heads.

As an additional quality control measure, two surveys which complement the Annual Census, have been undertaken in the past eighteen months. The Post Census Survey provides data on the margin of error and misreporting in the Annual Census and allows estimation of seasonal variations in enrolment during the school year. It also gives information on the quality of school records, as assessed by the interviewers. The End-of-Year Enrolment Survey will allow more accurate assessment of the loss in enrolments over the entire duration of a school year.

The analysis of the Post-Census Survey has just been completed; the 1980 End-of-Year Enrolment Survey will occur in November. Due to difficulty in securing the desired response rate (see below) the 1979 End-of-Year Enrolment Survey has been used to identify problems in data collection and processing, rather than for analysis.

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New Outputs

The statistics computed from the Annual Census returns are made available to users in two ways: through a set of "basic tables" which have been requested by the Planning Units as standardized outputs and through additional tabulations required by authorized personnel. The basic tables are published the Annual Reports, and copies are also sent routinely to the Ministries' Planning Units, Statistics Unit, Facilities Unit, the Inspectorate and the National Examinations Council (see Appendix 2 for the present contents of the basic tables). Copies of all additional tables brought off in response to special requests are kept on file in the CBS for consultation by other possible users.

In addition, it is anticipated that each District Education Officer will receive summaries of the status of education within the district. This measure is viewed as a major contribution to the government's efforts to strengthen the information-flow to the districts in order to decentralize planning and decision-making. It coincides with and will make a major contribution to the establishment of District Information and Documentation Centres.

One of the major objectives of the Education Sector Analysis has been to make possible more comprehensive analyses of education in Kenya, especially of the progress towards universal primary education, inefficiencies related to repetition and dropouts, and the relevance of education in promoting national development objectives. A series of analytical documents are in process of preparation for use by policy-makers and planners. Researchers from the Bureau of Educational Research at Kenyatta University College, the Institute for Development Studies and the Department of Sociology at the University of Nairobi, the Kenya National Examinations Council and the CBS are involved in the current analysis (see Appendix 3). It is hoped that the documents will be available early next year, and it is anticipated that the findings will be presented to the Ministries at a special conference.

Two documents already have been published by the CBS. Methodological Document 1 outlines a framework for a comprehensive analysis of the educational system. It charts the major lines of investigation (termed tasks) and the specific studies (sub-tasks) which would comprise a systematic analysis of the access, efficiency and relevance of the educational sector.

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Although mainly directed to researchers, the document also speaks to those who administer education: it highlights the areas which must be examined to assess the nation's progress toward the goal of universal primary education, the imperatives of efficient and equitable provision, and the entailments of relevant instruction. It also makes clear the effort and time required for a serious examination of these questions.

The second document, Trends in Education 1973-1977, lays the foundation for the analysis of the Kenyan education system by looking in detail at questions of access, specifically the effects of reduced primary school fees and the growth of the Harambee secondary schools in recent years.

PART TWO. NEEDS AND POSSIBILITIES

This impressive list of accomplishments would not have been possible without the significant support which the Ministries of Education have provided in numerous ways. However, both the census exercise and the Ministry users could benefit from increased support and involvement. These needs and possibilities are the subject of this part of the discussion.

Improved Efficiency

Most immediate and pressing are matters of logistical support, which have important bearings on the efficiency of the census operation: greater administrative back-up for timely completion of the census forms, increased space for the Education Statistics Unit and the provision of transport.

Administrative Back-Up. The value of the Annual Census, and the related End-of-Year Enrolment Survey, drops in proportion to the rate of non-response and the time which elapses before the tabulations are available. Strong administrative support, extending from the highest levels of the Ministries to the District Education Officers is the precondition for an acceptable response rate within the allocated time-span. This support has not always been available when needed, as suggested by the following comparisons:

1979 - Primary School Census
Deadline for returns - 21st February 1979
Response rate sufficient for tabulations - June 1980

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1979 - Secondary School Census
Deadline for returns - May 1979
Response rate sufficient for tabulations - September 1980

1979 - End-of-Year Enrolment Survey
Deadline for returns - December 1979
Final response rate of 83.8 for primary and 42.6 for secondary;
considered inadequate for tabulations

1980 - Primary School Census
Deadline for returns - 21st February 1980
Response rate sufficient for tabulations - November 1980

1980 - Secondary School Census
Deadline for returns - 30 May 1980
Response rate of 47 percent not yet adequate for processing

Since the return of the forms to the CBS depends upon Ministried of Education personnel, the CBS seeks their cooperation in devising a system which communicates strong direction for timely and careful completion of the Annual Censuses, and includes provision for the regular reporting of progress (or more importantly lack of progress) to a senior official who can mobilize the District Education Officers.

Accommodation. The present accommodation for the Education Statistics Unit consists of one clerical pool and four small offices. The Statistical Officer must share an office with his typist, as must the Assistant Statistical Officer. Fourteen clerks are crowded into the pool; some have to share desks. The remaining six clerks use the two other offices. There is no space to store the returns, which are to be found on the windows and floors.

These working conditions are inadequate for almost any type of undertaking, especially one which requires the care and precision of coding and validation. They contribute to delays in processing, both directly through inaccuracies which necessitate correction and indirectly through loss of motivation and morale. It is hoped that a firm commitment can be given to the provision of at least two clerical pools, three offices for the Statistical Officer, Assistant Statistical Officer and typists, respectively, and storage facilities when the Ministry of Lands and Settlements vacates Jogoo House.

Transport. Throughout the period under consideration the vehicles required for the Annual Censuses (field training and follow-up) have been provided by the CBS. There is need to review the Ministries' provision.

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Beyond these matters, needs merge with possibilities. The needs, as seen by the CBS, for more accurate reporting and greater awareness and utilization of the census data are, from the Ministries' point of view, opportunities to improve recordkeeping, information flow and the use of data in decision-making.

Improved Accuracy

As mentioned earlier, the CBS will begin in the coming year to provide feedback to the District Education Officers on the incidence of errors which can be identified because of inconsistencies in the reported information. There also is need to institute a system of spot-checks of some schools each year to identify and discourage the errors which cannot be detected statistically. Of equal, if not greater importance, there are needs to improve the quality of the records kept by the schools and also the flow of information, especially concerning changes in schools' status, from the schools, to the district officers, and thence to the headquarters.

Through the Annual Census and the Post-Census Survey it will be possible, to some extent, to identify districts (and even schools) where the status of recordkeeping and information flow is less than optimum. Mention already has been made of the fact that the Post-Census Survey has gathered interviewers' appraisals of the records in the sampled schools. In addition, it soon will be possible to identify the districts where records of existing schools are incomplete. However, if improvements are perceived by the District Officers and school heads as of concern only to the CBS, results will be minimal.

The CBS recommends that the Ministries exploit the opportunity provided by the Annual Census to press for a variety of improvements. It would, for example, be worthwhile to review the contents of the school records which are at present undervalued and under-utilized foundations of the education information edifice. It might even be necessary to institute changes in the School Registries. It also would be valuable to review the reporting of the changes in schools' status and to institute procedures which ensure timely notification of new schools, school closings

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and changes in name and address, to the districts, headquarters and within headquarters to relevant sections of the Ministries. The CBS has available information which can help to pinpoint problems and build-in self-correcting mechanisms, and would be glad to provide technical assistance for these activities.

Awareness and Utilization of Data

It is a matter of considerable concern to the CBS, as well as to the Ministries, that the avalanche of data which now can pour from the computers be used in planning and decision-making. To promote this objective, the CBS recommends a thorough review of a number of decisions made early in the life of the project. This review, which would need to be initiated at the Ministries' highest levels and then implemented by all sections within the Ministries, would serve the double purpose of creating an awareness of what is available and of how it can be utilized in relation to officers' tasks and responsibilities.

One aspect of the recommended review would be to explore with every section the possibility of using the Annual Census for their own needs. As mentioned, the Planning Units have encouraged other sections to replace their own separately conceived, executed and often less carefully designed and implemented surveys by the Annual Census. However, not all sections of the Ministries are fully aware of this option, and even fewer are aware of the total range of information which is now already available to them. The participation of the sections which have helped to develop the 1980 and 1981 questionnaires has tended to reflect the interest of individuals and has not been based on a systematic appraisal of the information needs of the represented section.

Another aspect of the recommended review concerns the tabulations which should be routinely produced. The basic tables which now are brought off still deal only with the information which had been collected prior to 1979 and give no indication of the availability of comprehensive information on provision, teachers, costs and students. It would seem advisable at this point to

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develop specifications of "basic tables" for each section, containing information most pertinent to their work. This issue extends also to the information which is to be sent to the districts. Although the CBS has agreed to produce tabulations for the District Education Officers, no one in the Ministries has yet indicated what information, and at what levels of disaggregation, would be most useful for them to receive.

Closely related is the question of the information to be included in the School Directory, a decision which to date has been left entirely to the CBS. There is need to weigh the comparative advantages and disadvantages of completeness and complexity. If the information about each school which is held on file in the School Directory is minimal, only a few records will need yearly amendment. With greater detail in the School Directory, the yearly update process becomes more complex.

A final issue which should be addressed in the proposed review concerns the possibility of collecting some information yearly, and some at longer intervals. The census returns are already very long and cannot be greatly expanded without endangering the accuracy of response and rate of completion. It would be possible to collect the type of information which changes very little at periodic intervals instead of annually. An alternative would be to collect the information only on a sample basis. The division of the questionnaire into information which must be collected annually and information which can be collected less frequently, or from fewer schools, would make possible the annual addition of modules to look in more detail at particular aspects of the education system on a rotating basis.

From the point of view of the CBS these questions are important because they contribute to the utility and hence the utilization of the data. From the point of view of the Ministries the review would have the additional benefit of promoting a "data consciousness" among those who are responsible for guiding, shaping and managing Kenya's education system.

APPENDIX 2

CONTENTS OF BASIC TABLES

The following tables are produced annually for the Annual Reports and for the Planning Units, Statistics Unit, Facilities Unit, the Inspectorate and the Kenya National Examinations Council. Their contents are largely confined to the information which was collected prior to 1979.

Primary Schooling

- . Number of primary schools, by management type, district and province
- . Enrolment in primary schools by standard, sex, district and province
- . Enrolment in primary schools by age, sex and standard
- . Enrolment in primary schools by citizenship, sex, district and province
- . Enrolment in primary schools by standard
- . Number of classes in primary schools per standard, and ratios and types, by district and province
- . Repeaters by standard, district and province
- . Pupils per teacher, teachers per class and enrolment per class ratio
- . Teachers in primary schools by qualification, district and province
- . Primary school teachers by qualification and citizenship

Secondary Schooling

- . Number of secondary schools by category, district and province
- . Enrolment in maintained secondary schools by form, sex, district and province
- . Classes in maintained secondary schools by form, district and province
- . Enrolment in assisted secondary schools by form, district and province
- . Enrolment in unaided secondary schools by form, district and province
- . Classes in unaided secondary schools by form, district and province
- . Classes in all secondary schools by form, district and province
- . Enrolment in all secondary schools by attendance basis
- . Teachers by citizenship, district and province
- . Enrolment in all secondary schools by form
- . Teachers by qualification, citizenship, sex, district and province (unaided schools)
- . Teachers by qualification, citizenship, sex, district and province (maintained schools)
- . Teachers by qualification, citizenship, sex, district and province (assisted schools)
- . Teachers by qualification, citizenship, sex, district and province (all secondary schools)

APPENDIX 3

ANALYTICAL DOCUMENTS FOR THE KENYA EDUCATION SECTOR ANALYSIS

AID Funding to the Bureau of Educational Research

- . Science and Mathematics Education at Primary School Level - Dr. G. Eshiwani
- . The Cost of Primary Education - Dr. G. M. Nguru
- . Primary School Staffing: Analysis of the Efficiency of Teacher Allocation and Teaching Loads and Major Constraints on Effective Teaching - Dr. J.S. Maranga
- . The Issue of the Cost of Primary Education to the Kenyan Parent - Dr. J. Olembo

Rockefeller Funding

- . Analysis of District Level Continuation Rates to Secondary Schools - Dr. R. Mutua (Kenyatta University College)
- . Analysis of the Ability of Primary Boarding Schools to Increase Enrolments and Improve School Retention in Arid Areas of Kenya - Dr. J. Nkinyangi (IDS)
- . An Analysis of the Distribution of Pre-School Facilities in Kenya And Implications for Access to Primary School - Mr. O.N. Gakuru (University of Nairobi)
- . Equity in Primary Education: A Case Study of Nairobi - Dr. K. Kinyanjui (IBS) - jointly funded with USAID

AID Sponsored

- . District Level Measurements of Access and Coverage in Primary Schooling - Dr. A. Smock
- . Distribution of Facilities and Teachers on a District Basis and the Relationship to Equity, Flows and Efficiency - Dr. A. Smock
- . The Relationship Between Educational Attainment and Fertility Behaviour in Rural and Urban Environments - Dr. A. Smock
- . An Analysis of Sex Differences in Access in Student Flows - Dr. A. Smock and Mrs. A. Krystall
- . The Relationship Between Parental Educational Attainment and Child Mortality - Dr. A. Smock
- . Analysis of Discrepancies in Educational Data: Problems in Assessing the Accuracy of Enrolments and Age Distributions - Dr. A. Smock
- . The Use of a Post-Census Survey as a Quality Control Instrument - Mr. A. Saalfeld
- . Uses, Contents and Programmes to Establish and Update a School Directory - Mrs. H. Reid
- . Computer System for Processing Census of Schools and Teachers - Mrs. H. Reid
- . Manual for Computer Systems for Census of Schools and Teachers - Mrs. H. Reid, on the Wang
- . Factors Determining Student Flows - Mr. Alan Saalfeld
- . The Relationship Between Educational Attainment and Rural Economic Roles and Agricultural Productivity - Mrs. H. Soos
- . Access to Nonformal Education - Mrs. A. Krystall