

Technical Report
IDRC project 92-0604
Effectiveness of Informatics Policy Instruments in Africa

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1. Given that the report produced by Mr. Peter Browne (Annex II) contains ECA's analysis of the research results of the project, it would be redundant to repeat that in the body of this report. This brief report will detail what ECA has done with the reports to date and what it intends to do to finish the analytic work which was not satisfactorily completed during the project.
2. A list of the reports produced by the project appears as Annex I. This includes the five country studies from each of the language areas (English and French) as well as the synthesis reports produced by Mr. Francisco and Mr. Zwangonbani.
3. The brief analysis of all the reports was presented to the first meeting of the High Level Working Group of Experts on Information and Communication Technologies in Africa, held in Cairo, in November 1995, working to produce the "African Information Society Initiative: an action framework to build African's information and communication infrastructure", which was presented to and adopted by the 22nd session of the ECA Conference of Ministers meeting in Addis Ababa in May 1996. Copies of the synthesis reports produced by Mr. Francisco and Mr. Zwangobani were also sent (electronically) in December 1995 to the members of the High Level working Group to use in their drafting.
4. ECA/PADIS distributed its analysis of the papers under the title "Informatics Policy Instruments in Africa" to the 1996 Conference of Ministers as a Conference Room Paper (CRP series), to accompany the "African Information Society Initiative."
5. ECA/PADIS has posted the individual country studies (which are available in electronic format) on the University of Pennsylvania African Studies World Wide Web site because this site has the highest rate of usage of any WWW site dealing with African development. We are awaiting figures as to how many persons have downloaded these reports, but we expect that it is a significant number as overall several hundred thousand users "visit" the site monthly.
6. ECA/PADIS has prepared the reports available in machine readable format in HTML format for its own ECA WWW site, which has come into use, with local access for Ethiopia only at the present time; however, arrangements are being made with UNEP in Nairobi to mirror the site until such time as Ethiopia has full Internet connectivity with sufficient bandwidth to maintain the WWW site locally.
7. With regard to the tremendous amount of data and information generated

by the project which has been insufficiently analysed by the language co-ordinators, ECA/PADIS has discussed the matter with the Director of the School of Information Science in Africa (SISA). The Director has agreed to suggest this topic as a master's degree thesis to the second year class of SISA, in September 1996. The project leader would serve as external advisor to the student willing to take on this topic for her/her master's degree thesis. The standard of master's degree candidates at SISA is generally regarded as quite high; therefore it is expected that within one year, a full analytic report of the material would be available. As it is, ECA/PADIS will make that material available in both Executive Summary and full text form to the country teams working on the preparation of National Information and Communication Plans in the context of the African Information Society Initiative.

8. In concluding this brief report, a word has to be said about the delays incurred in the completion of the project. In general, the country correspondents did a fairly good job of sticking to the deadlines they were given in producing their reports. However, the language area co-ordinators proved very difficult to deal with. They were sent deadlines, reminded by letters (hand delivered), faxes and telephone calls. In the case of the francophone co-ordinator, it was only when ECA wrote to cancel his contract that he communicated with ECA (for the first time in 1.5 years) and announced that he would indeed produce the report. As Mr. Browne's report indicates, the quality of his analysis, such as it was, falls far below the standard one would have expected of him. In selecting future research project leaders, I would recommend selection of persons whose credentials in the field are internationally regarded, but who are not involved in administrative, private sector or government positions that prevent them from giving sufficient time to the project. I believe it is for this reason that the co-ordinators produced work that is not reflective of their respective positions as leaders (both intellectually and in actions) in the field of informatics policy in Africa.

LIST OF COUNTRY REPORTS

1. Study of the Effectiveness of Informatics Policy Instruments in Africa, by Elliott Zwangobani.
2. Informatics Policy Study in Ethiopia, by Teferi Kebede, Addis Ababa, Ethiopia.
3. Effectiveness of Informatics Policy Instruments in Africa, Country Report for Kenya, by George Okado, Nairobi, Kenya.
4. Informatics Policy Instruments in Nigeria, by Dr. G. A. Alabi, Ibadan, Nigeria.
5. Informatics Policy Studies in Africa, by Howard M. Shila, Arusha, Tanzania.
6. Study of Effectiveness of Informatics Policy Instruments in Zimbabwe, by Hazel Moyo, Harare, Zimbabwe.
7. Etude des Politiques Informatiques en Afrique, sous la coordination de M. Marius T. Francisco.
8. L'efficacité de la politique informatique au Cameroun, par Boyom Sop Flaubert.
9. Etude des instruments de politique informatique en Afrique, Cas de la Côte d'Ivoire, par Mme Safoura Fadiga.
10. Etude prospective sur les instruments de la politique informatique au Congo, Part I, par Ange Nambila.
11. Etude prospective sur les instruments de la politique informatique au Congo, Part II, par Ange Nambila.
12. Inventaire des outils politiques informatiques à Madagascar de 1953 à ce jour, par Roger Andrianasolo.
13. Etudes des Politiques Informatiques en Afrique, le cas du Sénégal, par Moustapha N'Diaye.

FINAL REPORT

92-0604

by Peter Browne

March 1996

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Introduction

This Final Report was drafted by consultant Peter Browne following six days work under the Contract of 12 October 1995 and five days work under the Contract Extension of 11 January 1996.

This report is much less comprehensive than had been hoped for when the project was designed. The general objectives of the project were to help elucidate which instruments of national informatics policies have been implemented successfully in sub-Saharan Africa and which have been unsuccessful, and to illuminate the reasons for success or failure in implementation. The results should have been given in this Final Report and widely disseminated to governments. For reasons set out below, it has not so far been possible to arrive at these results.

Nevertheless, a large amount of data has been collected which has the potential, after proper sorting and analysis, to produce the expected results. A method of carrying out the sorting and analysis has been developed and is described in the recommendations for future work in this Final Report. Not only would a report of value to governments be produced, but a database of project data would be established on the IDRC Web site, accessible to other researchers.

The project methodology specified by what means the expected results should have been obtained. There was to be analysis at three levels which would lead to the Final Report.

Level 1: Description and analysis by country correspondents of the situation in each country, to be presented in Country Reports.

Level 2: Analysis and synthesis of five Country Reports by each language area coordinator, to be presented in the two Language Area Reports.

Level 3: Analysis and synthesis of the two Language Area Reports to be carried out at the Final Meeting in Harare, and presented in the Final Report.

At the Final Meeting in Harare in December 1995, it was found that work at Levels 1 and 2 had not been done in a consistent and adequate manner. Also the length of the Final Meeting was reduced from 5 to 2½ days. Hence Level 3 work could not be done.

The shortcomings of Levels 1 and 2 work were as follows:

Level 1: The data in the Country Reports was arranged in a very unsystematic fashion, making it difficult for the language area coordinators to extract and synthesize it. The Project Summary (PS) stipulated that data were to be obtained in each country on instruments of informatics policy, objectives of these instruments, achievement of these objectives (the principal measure of the effectiveness of the instruments), and reasons for success or failure to do. This data was hard to locate in nearly every report as it was presented mixed with other information not strictly pertinent to the project. Many pages had sometimes to be scanned to locate the data on one instrument. The data was also of very mixed quality, sometimes thorough, sometimes skimpy. Approximately 400 informatics policy instruments were mentioned in the Country Reports, of which somewhere between 100 and 150 had a full set of data.

Level 2. The two Language Area Reports did not present an analysis and synthesis in the form required by the PS. The two Language Area Reports should have described the data collected in the countries and analyzed it to determine which issues had been tackled by the instruments, which factors had contributed to the effectiveness of the instruments, what lessons could be learned, and why integrated informatics policies had not been implemented in the countries. Both reports described the data collected. The English Language Area Report classified the data by sectors, the French Language Area Report by countries. However, the analysis was weak in both. They presented some but not all of the issues tackled by the instruments, in an unsystematic way. There was a superficial treatment in each report of some of the factors contributing to effectiveness of the instruments. There was nothing in either report on lessons to be learned from the data. The English Language Area Report had a good section on why integrated policies have not been implemented, but the other report had nothing on this.

As a result of these deficiencies in the Country and Language Area Reports, part of the Agenda of the Meeting was changed to bring out in the Meeting as much as possible of the missing material. The new Agenda was designed to explore a chain of concepts:

issues giving rise to national informatics policy instruments;

instruments introduced to address these issues;

effectiveness of these instruments;

reasons or factors accounting for success or failure of instruments;

lessons for governments.

For each of the approximately 30 issues identified, each country correspondent was asked to state if the issue existed in the country and if an instrument existed to address the issue. For each issue, a selected correspondent was asked to write up the instrument, its effectiveness, reasons for effectiveness, and lessons to be learned. The effectiveness of the instruments was assessed in various ways, not only according to achievement of objectives of the instrument which was the method recommended in the PS. In this manner, adequate information was collected on some 30 issues and corresponding instruments.

Due to the reduced duration of the Meeting, there was no time to even begin to analyze this material let alone to combine it with the other material scattered through the Country and Language Area Reports. Hence, the Final Report could not be prepared at the Final Meeting.

The Final Report now contains what information could be gleaned in the course of five days from the ten Country Reports, the two Language Area Reports, and the outputs of the Final Meeting in Harare. Because of the shortcomings of the two language area analyses, the varied and unsystematic formats of the Country Reports, and the restricted time, no substantive analysis could be done. Instead the results already available were compiled in this report, and a method was developed for sorting and analyzing the large mass of data which has been collected by the project. A description of this method is included in the recommendations for future work.

This Final Report follows the structure set out in the Project Summary, para 15 (2) relating to Project Output # 2. The first six sections contain conclusions obtained to fulfil specific objectives 3 - 8. The seventh section has a description and critique of the project methodology, and the eighth section contains recommendations for future work.

1. Conclusions re Specific Objective 3

Specific objective 3: To determine by analysis of the data which issues have been tackled by these instruments and which factors have contributed to success and which to failure in the implementation of various informatics policy instruments.

(a) Issues

The following is a list of issues that have been addressed by informatics policy instruments in the sample of Anglo- and Francophone countries. It was derived at the Harare Meeting. Additional issues are described in the Country and Language Area Reports, but have not so far been extracted. This is a task recommended for future work (Section 8).

1. Dissemination (Popularisation) of Information Technology
2. Disorder (chaos) in the field of informatics (market chaos)
3. Poor management of finance
4. Poor management of socio-economic data
5. Need for information management and flow in all sectors
6. Shortage of skilled IT personnel (e.g. due to emigration)
7. Proliferation of computer equipment
8. Lack of standards in systems development [Also suggested: Absence of source code for customized applications in the public sector]
9. Lack of institutional framework to promote application of Information Technology
10. Shortage of foreign currency for Information Technology imports
11. Lack of standards for Information Technology acquisition
12. Need for guidance in face of rapid information technology changes
13. Lack of co-ordination and harmonisation in public and parastatal organizations (to avoid wastage)
14. Inappropriate training of IT personnel
15. Poor remuneration of Information Technology personnel in the public sector
16. High taxation of Information Technology equipment
17. Problem of measuring cost-effectiveness of Information Technology systems
18. Lack of technology transfer by expatriates
19. Need to retain and advance national information technology personnel
20. Inadequate control of donor-driven Information Technology projects (equipment)
21. Lack of technological (industrial) capacity in the IT field

- 22. Problem of unemployment
- 23. Poor telecommunication infrastructure
- 24. Conflicting laws, mandates, authorities and priorities in respect to Information Technology
- 25. Lack of local software industry
- 26. Incompatibility of applications software
- 27. Fear of loss of sovereign control of transborder information flows

(b) Factors contributing to success or failure in the implementation of instruments

A preliminary scan of the ten Country Reports shows that about one third of the approximately 400 instruments mentioned have data on success or failure, and factors contributing to this. Further data on success or failure, and contributing factors, is contained in approximately 25 of the Write-ups of instruments prepared at the Harare Meeting. Considerable further work will be required to extract meaningful results from this diverse mass of data (see Section 8).

2. Conclusions re Specific Objective 4

Specific objective 4: To ascertain what lessons can be learned from the data about the consequences of implementing various informatics policy instruments, to help governments formulate and implement national informatics policies.

Lessons for governments

There was no analysis of this in the Language Area Reports. Some mention of lessons is contained in the Write-ups of instruments from the Harare Meeting. The primary result of the work described in Section 8 will be the lessons for governments.

3. Conclusions re Specific Objective 5

Specific objective 5: To deduce why integrated national informatics policies have not been put in place in sub-Saharan Africa.

Integrated National Informatics Policies

Opinions on this topic were obtained from two sources (a) a debate at the Harare Meeting, (b) the English Language Area Report (2.2 and 2.2.1). These opinions merit analysis and publication, perhaps as a separate paper in a journal such as *Information Technology for Development*.

(a) A Debate at the Harare Meeting

Nambila: In what sense "integrated policy" - a community policy - does this count? (like Central Africa).

Francisco: It means integration into the heart of the national development plan. There is an "informatics section" in the national plan of Senegal, Cote d'Ivoire and there was for some time in Congo.

Okado: Is it really a failure not to have a plan? Governments wanted to leave it to the private sector in many areas. Where they feared abuse, they set up legal instruments. They feared that a plan would not be sufficiently flexible to deal with such a rapidly changing area.

Zwangobani: Maybe we don't need policies because they are not sufficiently flexible to deal with rapid change.

Francisco: But how about prospective studies - that can positively plan to effect change? We should note that informatics is a new phenomenon increasing in importance especially from the 1990s. Since when has informatics policy been implemented as an integrated policy? Some countries which have political stability and have acquired a tradition of establishing a multi-year economic and social development plan have included in it an integrated informatics policy. Other countries which have not had stability, and which have had a turbulent history, and have not been able to clearly understand the future of IT, have undertaken informatics projects without incorporating them into an integrated policy. In most cases planning has been replaced by management by projects and sectoral programmes.

Okado: Kenya didn't see information technology as fitting in with its most basic priorities. Only now is information seen as a factor that creates wealth. Informatics wasn't seen as a factor of production. Integrated policies were only seen as dealing with such issues as eradicate disease, ignorance, poverty.

Andrianasolo: There was a period of transition in Madagascar - no integrated policy was possible in this period. In the next period there was economic instability: no policy was developed then either. Now there is another period in instability, transition: too much changing of Government. This prevented emergence of an integrated national informatics policy.

N'Diaye: Senegal had a well integrated plan. But structural adjustment programmes prevent the continuation of integrated plans. The priorities of these programmes prevent you from planning. Since structural adjustment came you can no longer have integrated plans. The best you can do is to plan by big projects in various sectors. An integrated plan such as how to introduce informatics in education doesn't make any progress in this period.

Shila: In Tanzania there has been emphasis on agriculture since independence. Computers were banned in 1974. The Government could only import them in response to serious need. It took to 1992 to get from the idea of prohibition to that of promotion. An integrated policy might still come: there is new interest now.

Kebede: In Ethiopia there has been no mention of information or informatics in the series of five-year centralized plans. Thus, it was not one of the priorities, or perhaps it could be from lack of awareness. Informatics development is at a very low level in the country: thus not seen as a pressing need. For the last four years the

Science and Technology Commission has been given the mandate for informatics, but there is still no integrated policy.

Moyo: Zimbabwe is a new country. What can you achieve in 15 years? Prior to 1980 there was a trade embargo; computers didn't come in then. The infrastructure was destroyed. Foreign currency restrictions came after independence. IT was at the bottom of the list, in rebuilding infrastructure. It is still way down in priorities. Also, with structural adjustment, the Government is trying to cut expenditures all over and does not see IT promotion as a priority.

Nambila: Congo was a Marxist-Leninist-Socialist state with a propensity for planning. Congo had an informatics plan in the national plan from 1980. The OCI was entrusted with everything related to informatics - training, promotion, etc. An evaluation showed that objectives were only half achieved. The arrival of microcomputers and structural adjustment programmes have killed the OCI approach. But the Ministry of Planning is still concerned with informatics issues.

Boyom Sop: In Cameroon the National Informatics Plan tries to define application of informatics in all sectors, including private sector. He thinks it has succeeded to a good degree; it has been given a fair amount of priority.

Francisco: this doesn't answer the question whether the national informatics plan is integrated into the national plan. Having a sectoral plan is different from being integrated into the national development plan.

Okado: donors won't finance IT as a sector. They will only finance sectors.

Zwangobani: ESAP have played havoc with (emerging or possibility of) national informatics policies. Why should Informatics Plans in African countries be expected to succeed when Development Plans they were supposed to be part of didn't succeed?

(b) The situation in English language area countries by E. Zwangobani

While the Governments of Ethiopia, Kenya, Nigeria, Tanzania and Zimbabwe have not gone the route of formulating integrated national informatics policies their policy activities to-date indicate a keen awareness of the potential of IT in the development of their economies. The lack of integrated policies could be attributed to the political, legal and technical complexities of formulating and implementing them. Evidently Governments feel that they can set up national frameworks for IT development by following less complex approaches. It seems easier to formulate implement and monitor policies in priority sectors, which could bring about increased use of IT in their countries. By taking advantage of existing infrastructures and resources the Government can move quickly from policy to implementation plan.

A number of countries (e.g. Kenya) have evidently given thought to developing as integrated policy framework, but the work had (at the time of the study) not progressed beyond flagging of policy directions. Others such as Ethiopia gave the responsibility for formulating an IT policy to the Science and Technology Commission. Tanzania is in the process of developing its own integrated IT policy.

Zimbabwe has adopted a multi-pronged approach where the S & T body is responsible for aspects of IT policy, and the Committee for Coordinating the Acquisition of Computer Technology is responsible for other aspects. The country, however, has no integrated IT policy. The Kenya Government's sixth development plan (1989-1993) significantly incorporates informatics in the national development plan. The plan analyses the existing IT infrastructures and pointed to the direction in which Government would like to invest in further development in this area. The paper briefly surveys current resources such as the Information Bureaux, Libraries, Archives and National Museums, as well as Scientific and Technological Information Services. The Kenya Government intends to "encourage and facilitate" the production of hardware and software as well as manpower training. The paper does not spell out how this is to be achieved. Furthermore the Kenya Government would like to establish a Development Resource Centre which should establish and maintain databases designed to encourage information sharing between government agencies and private institutions as well as individuals.

The Ethiopian Government Economic policy implemented in 1992 makes no explicit provision of the role of informatics in the National Development. The policy, however, is deemed to have had significant impact on IT development since it opened up the economy and has created an environment enabling the flourishing of this technology. As a result significant investment has occurred in IT.

The same is true of the Government of Zimbabwe. The economic structural adjustment policy (ESAP), now in its sixth year, makes no explicit recognition of information technology. However, the opening up of the economy has had tremendous impact on IT. The country has over 200 companies in the IT sector including hardware, software, consultancy, and training. Of particular significance is that IT is one of the economic sectors in which many indigenous professionals have established businesses - a development which has considerable political importance.

The Nigerian Government has adopted a different approach. The Government has not implemented a national informatics policy as such but has established (in 1989) the National Data Bank (NDB) and Departments of Planning, Research and Statistics (DPRS) in every ministry and departments. The NDB has as its major objective the production of up-to-date and accurate data for national economic planning and performance monitoring. The Data Bank has the role of actively collecting and disseminating national and relevant international statistical data and disseminating the same to end-users. In addition, the NDB processes data used to monitor performance of the economy at federal, state and local levels. The NDB has achieved the following:

- Preliminary survey of the Nigerian statistical system
- Survey of user requirements for statistical data and reports
- Installation of hardware and software for the storage and processing of data
- Selection of seven data sets and their documentation and development of appropriate databases for these. The seven data sets cover the areas of: petroleum, manufacturing, international trade and balance of payments, money and banking, public finance, prices and price indices and national accounts. Data sets on Education, Health, Employment Labour and productivity are being developed.
- Organisation of meetings/conferences
- Provision of in-service training courses and study

In 1988 the Nigerian Government promulgated Decree 43 which decentralised the Nigerian Statistical framework by the establishment of a Department of Planning, Research and Statistics (DPRS) in each ministry and department. This development has had the effect of increasing awareness of statistical data in planning and monitoring of the various economic sectors. Consequently it has fuelled informatics development in Nigeria.

Tanzania has gone through a chequered history in the IT policy area. One of the most notable milestones was the banning of computers by Government in 1974! Subsequently the Government appointed two independent teams to study the effectiveness of informatics in Tanzania. Both teams recommended the formulation of a national policy and the launching of a national training programme for computer technology, and the setting up of a secretariat to oversee all matters relating to informatics in Tanzania. While the Government did not formulate a national policy it established the Ad hoc Computer Advisory Committee to control the importation of computers after the ban.

In 1987, a seminar with the title "Seminar on the Contribution of Informatics to Economic Development" was held at Arusha. This seminar recommended the formulation of a national informatics policy. The Government, however, did not take up this recommendation at the time.

In 1991 the Planning Commission established a project team whose objectives were:

- to review the current information systems (IS) issues within Tanzania.
- to document terms of reference for priority IS projects.

The project team focused on three areas, namely

- National policy issues for IS
- IS education and training, and
- Strategy within the government

The major outcomes of this study were policy and IS projects recommendations which were put before the Government. These are:

- (a) Developing a vision statement for the future national policy on IS.
- (b) Establishing a policy making body and defining its objectives, role responsibilities and procedures.
- (c) Specification of the desired IS standards covering human capital, technical standards and software.
- (d) Defining the industrial IS policy which should be based on supply and demand.
- (e) Defining IS strategy for the government.

The recommendations of this study have been taken up for implementation by the Government. A project was drawn up (June 1992). The project should last 18 month and the outcome should be a draft document on national policy for informatics, which is expected to address the following issues: information goals, priorities, personnel, methodology, standards, industrial policy, institutional framework, and development strategies in government.

Thus Tanzania, with UNDP assistance, is in the process of formulating an integrated national informatics policy.

Observations on the situation in English language area countries by E. Zwangobani

- (1) It is clear from the Country Reports that none of the countries surveyed has formulated and implemented a national integrated informatics policy. It is equally evident that the Governments of these countries are all, to varying degrees, alive to the potential of informatics in their national development programmes.
- (2) The shift from centrally planned and controlled economies to ones where market forces are given free reign has resulted in growth of the IT industry. This development seems driven by the need for increased efficiency in both public and private sector organisations. This growth is not policy driven. It is one of the downstream effects of the structural adjustment policies.
- (3) Furthermore the policy change from centrally planned to open economies has had the effect of making redundant IT policies which were implemented before the turnabout in economic policies. As a result we are now dealing with a new policy era altogether in which the Government role is more promotional rather than regulatory.
- (4) Policies implemented before the structural adjustment programmes are now largely of historical interest, except in so far as they demonstrate the level of Government awareness of the role of IT in their economies during that period. Policies implemented after the introduction of the structural adjustment programmes have been in existence for a short time span. It may therefore be too early to arrive at a realistic assessment of their impact on the economy. It is certainly early to assess the success or failure of the economic structural adjustment programmes themselves.
- (5) All the Governments of the countries surveyed have put in motion mechanisms to formulate and/or implement IT sectoral policies. In the case of Tanzania the Government has taken steps to formulate an integrated national policy.

4. Conclusions re Specific Objective 6

Specific objective 6: To propose indicators of effectiveness of informatics policy instruments and integrated policies which could be monitored in future studies.

Indicators

This list was proposed at the Harare Meeting. The indicators are based on issues rather than instruments because different instruments were used to tackle the same issue in different countries. These indicators would need refinement if applied in future studies of the effectiveness of instruments.

Issue 1: dissemination of IT:

- * no. of computers in the country
- * no. of companies which have computerised
- * no. of students trained in computer science

Issue 2: disorder in the field of information

- * no. of service/consultancy companies (SCSI)

Issue 3: poor management of finance

- * types of application implemented in the public sector
- * number of computers installed in the public sector
- * data available to decision makers (decision support systems)
- * Databases available in the public sector
- * Utilisation rate of computers in the public sector

Issue 4: bad management of socio-economic data

- * accuracy and timeliness of data
- * ability to disseminate IT
- * adoption of MIS by no. of public sector institutions

Issue 5: need for information management and flow

- * status of electronic connectivity
- * database development
- * information storage and processing capacity
- * skilled manpower in this area

Issue 6: shortage of IT skilled personnel

- * no of training institutions for IT in the country

Issue 7: proliferation of computer equipment

- * number of brands, languages used
- * % of machines of same make
- * degree of user satisfaction with machines
- * extent to which this policy was followed

Issue 8: lack of standards in system development

- * % of programme rewritten, recreated following obligatory use of specific languages

Issue 9: lack of institutional framework to promote IT

- * promotion of IT
- * rate of growth of totality of computer equipment/by years
- * business turnover in this field
- * no of persons trained in this field

Issue 10: foreign currency shortage for IT imports
No indicators proposed

Issue 11: lack of standards for IT acquisition

- * varieties of computers
- * generations of computers
- * computer manufacturers supplying the public sector

Issue 12:

- * survey of public sector computers: modern or out of date?
- * age of each computer in the country

Issue 13
No indicators proposed

Issue 14:

- * proportion of students with computer training
- * proportion of graduates which are computer literate

Issue 15: poor remuneration of IT personnel in public sector

- * rate of retention (or of quitting) of IT personnel in government
- * no of personnel recruited after the statute *statut special* for IT personnel, with special salary provision
- * quality indicator: competence of IT personnel in public sector

Issue 16: high taxation of IT equipment

- * price of IT equipment (after payment of taxes) and economic situation

Issue 17: problem of measuring cost effectiveness of IT systems

- * implementation of project
- * number, make and models of computers in the country not covered by the prohibition

Issue 18: lack of technology transfer by expatriates

- * increase in no of African skilled IT personnel
- * Kenyanization of IT work force
- * reduction in no of permanent expatriates in this field
- * improvement of quality of expatriates working in Kenya in this field

Issue 19: need to retain and advance national IT personnel

- * reduced turnover of govt IT personnel
- * degree of which govt was preferred employer

Issue 20: inadequate control of donor-driven IT projects and equipment

- * how much equipment imported for projects is appropriate for the intended job

Issue 21: lack of technological (industrial) capacity in the IT field

- * no of locally based manufacturers in IT area
- * transfer of technology (but how to measure it?)
- * percentage of equipment sold which is locally made - new Institute
- * increase in number, types of IT products exported
- * contribution of micro-electronics to GDP

Issue 22: unemployment problem/creation of employment

- * amount of employment created in IT field
- * no of companies in this field providing employment

Issue 23: poor telecommunication infrastructure

- * increase in the no of companies operating
- * no of companies operating
- * number of services available
- * increase in no. of telephones per 1000 users
- * rate of fulfilment of demand for telephones/period

Issue 24: conflicting laws, mandates, authorities and priorities with respect of IT

- * degree of expertise of the sole agency in this field
- * degree of acquisition of microcomputers relative to demand

Issue 25: lack of local software industry

- * establishment of local software industry
- * successful software products
- * increase in number of local software entrepreneurs
- * contribution of local software industry to GDP

Issue 26: incompatibility of application software

- * existence or not of normalisation procedures
- * degree of compatibility between various systems

Issue 27: fear of loss of sovereign control in trans-border information flow

- * data dissemination in accordance with authorization, authority, right to know, right to access.

5. Conclusions re Specific Objective 7

Specific objective 7: To discover if there are any systematic differences between English- and French-speaking countries in success or otherwise of implementing national informatics policy instruments.

Difference between English- and French-speaking countries

This topic was briefly debated during the Harare Meeting. It was also the subject of a short paper produced by the ECA. There was little enthusiasm for this topic in the face-to-face debate. However, as the ECA analysis shows, there are marked difference between the instruments adopted in French- and English speaking countries. The data collected by the project should be analyzed with this point in view (see Section 8).

(a) A Debate at the Harare Meeting

Why differences [between francophone/anglophone] in success in implementing national informatics policy instruments?

FRANCISCO suggests that date of independence is a factor in this.

BOYOM: it's more the economic/political orientation of the country.

Inference: it is not the language group that makes the big difference.

ZWANGOBANI: maybe you can say there are **differences in approaches** between the two country groupings, rather than differences in success.

FRANCISCO: (1) You can look at things by different parameters: historically, geography, economic/political orientation. (2) Big questions is was there an informatics policy in the country? You can discern differences on this score, in the francophone countries vs the anglophone countries. In francophone countries- stemming from France- there was a great preoccupation with this question. Other questions which divide on language lines: lack of foreign currency not relevant to francophone countries. What are the elements which are common to the countries by language groupings? regardless of language groupings?

SHILA/OKADO: Let's look at differences by country level.

(b) An ECA Analysis

In collaboration with the International Development Research Centre, the Pan African Development Information System of the United Nations Economic Commission for Africa has undertaken a series of country studies in 10 sub-Saharan African countries, 5 of them which use English as a working language and 5 which are francophone. The results of the studies make some key points about the absence or presence of informatics policies and its impact on exploiting the potential of information technology for development.

The working definition that the studies adopted for a national informatics policy was a "plan for the development and optimal utilisation of information technology."

Given this definition, a broad difference was found between the two language groups. None of the anglophone countries studied (Ethiopia, Kenya, Nigeria, Tanzania and Zimbabwe) had elaborated such policies) while most of the francophone had with varying application (Cameroon, Congo, Cote d'Ivoire, Madagascar, and Senegal).

While national promotional policies were largely absent in the first group, the countries, however, had enacted substantial numbers of laws and regulations to govern the area of informatics, many of which became constraints to rather than promoting the optimal utilisation of information technology in the country concerned. Rather than promotional policy, what was found were regulatory policy instruments. In two countries, the importation of computers were actually banned for various periods of time on the grounds that they brought unemployment. In others, high tariffs and complex customs procedures have limited imports. Lack of coordination with

telecommunications development and telecommunication policies was another area that constrained growth in this sector, particularly in telematics. Regulations requiring type approvals of equipment and bans or other limitations on communications equipment (faxes, modems, satellites and satellite dishes) have also prevented bringing information technology utilisation to anywhere near the levels of developing countries elsewhere in the world.

From the 5 anglophone countries, some of the findings included:

1. None of the countries had formulated and implemented an integrated policy on informatics.
2. Economic reform programmes of the last few years have resulted in a new socio-economic environment more conducive to the growth of informatics, with specifically easing of the restrictions and difficulties in importing informatics products.
3. While there is more awareness of the importance of informatics for development, there are no examples of integrated approaches which bring together national perspectives with national resources and institutional capabilities.
4. All of the countries suffered from a shortage of trained manpower in informatics; this was particularly marked in the area of computer networking. This impacts the introduction of IT in the curriculum and has obvious implications for the efficient use of IT potential and equipment maintenance.
5. All had policies and instruments to promote the development of human resources in information technology, but implementation was difficult due to lack of trained manpower and other policy and sectoral constraints on the import of hardware and software.
6. At the policy level (and this is changing in some countries over the last half year), none of the countries saw the policy importance of linking national information systems to external networks; nowhere was there awareness of the importance of regional networking. Only one country had started a database for policy makers (although all had statistical databases).
7. There was a total absence of policies to promote the development of software industries (despite low salary levels and unemployed technical graduates everywhere) and virtually no research programmes in informatics (except as applied to national languages). Nowhere were their policies to promote the use of IT as a private sector development activity.
8. Nowhere was there any attention to software, either in standards or in intellectual property rights.
9. None of the countries surveyed had telecommunications systems that could support a modern IT sector.

The conclusion from these countries was that there has been strong growth in this sector over the last few years, but that public and private sector utilization and exploitation of this medium falls far below world standards and far below the standards of developing countries in other regions of the world as well.

In the 5 francophone countries, most of the countries had elaborated informatics policies. However, almost all of these concerned only the public sector and thus there were no policies to influence national global optimization of the potential of information technology. In some of the countries the elaboration of policy had pre-dated the arrival of microcomputers and had remained relatively unchanged despite the changes in information technology made possible by this phenomenon.

The general pattern found in these 5 countries was the creation of a National Commission to formulate policy, a national office to execute it (although in one country its execution was entrusted to one person!) and the elaboration of a national Informatics Plan. In one country (Senegal), the Plan has been implemented continuously. In another country, (Cote d'Ivoire), two different plans sporadically; in a third one plan implemented for a time, Congo. In the fifth, there was no plan.

The studies found that whenever responsibility for implementing national informatics activities had been entrusted

entirely to one office, resulting in centralization of activities, that had retarded the growth of the sector overall in comparison to national growth rates. In the countries where the policy was in nature promotional- indicative and initiative, rather than controlling, appreciable results had been obtained (the cases of Senegal and Cote d'Ivoire). The general characteristics of policy that emerged were monopoly (Congo) where a single agency (until very recently) had employed all informatics specialists in the country, Although this country had been one of the earliest users of informatics in the Africa region, it had now become marginalized by comparison to others and has a very low overall usage of informatics.

Two other countries had policies of severe control of information technology (Madagascar and Cameroon), and their usage suffered as well. Madagascar, for example, in order to keep costs down, limited imports, insisted on employing only nationals in the area and demanded that all equipment imported be compatible, leading to domination by certain brands. The regime has liberalized in the last several years, but there is still no plan for promotion of IT, no regulation at all (in the important areas of confidentiality, intellectual property rights), no coordination with telecommunications and no quality control on the private sector.

In another country, the lack of national human resource development in IT allowed the country to be at the mercy of foreign contracts and the acquisitions of IT was supply and not needs or demand driven.

The coordinator of the study in the five francophone countries found Senegal to be the example of the best practices in policy, reflecting a situation of policy where it was needed and openness where control was not necessary. The national structure he saw as a necessary organ of reflection, co-ordination, establishment of priorities and policy implementation that has given the country the necessary push towards the realization of the potential for informatics in all areas of government.

6. Conclusions re Specific Objective 8

Specific objective 8: To underline the lessons that the information and informatics communities can learn from the discussions and findings.

Lessons for the information and informatics communities

No progress was made on this topic at the Harare Meeting. It would be an extension to wider audiences of the analysis under Section 2 (lessons to governments), and is discussed in Section 8.

7. Description and critique of the methodology used in the project

This should be summarized in the dissemination documents.

(a) Intended methodology

This description is extracted from the Project Summary, with re-arrangement to bring Specific Objectives into this text.

1. The methodology is based on the fact that national informatics policies have never been implemented fully in sub-Saharan African countries, but rather as an *ad hoc* series of instruments. Each instrument was put in place with certain objectives. The study will attempt to determine: first the instruments used in each country and their objectives; then to what extent each instrument has accomplished its objectives, and reasons for success or failure to do so.
2. The project will be executed by the Pan African Development Information System (PADIS) in conjunction with the Information and Communications Technologies Program of the Information Sciences and Systems Division.
3. ECA/PADIS will recruit two language area coordinators, one for English-speaking Africa and one for French-speaking Africa, as consultants. Each will be an informatics professional familiar with the informatics policy situation in most countries of his language area.
4. They will identify two sample sets, each of five countries, which have put in place some informatics policy instruments and which show receptivity towards and interest in the study, and a national correspondent for each country. It is felt that the individuals selected as correspondents should be as independent as possible, and detached from the government informatics structures.
5. PADIS will write to key government officials (identified by the correspondents) in each participating country about the objectives of the study, introduce the country correspondents and invite government co-operation. The aim to produce concrete results from the study and to help governments increase the effectiveness of informatics policies, will be emphasized.
6. PADIS will organize a two-day meeting with the two co-ordinators and the correspondents in Addis Ababa before field work begins, to finalize planning and to ensure a uniform approach to the research methodology in the two language areas and the various countries.
7. Following this Planning Meeting, the coordinators will visit each of the national correspondents in their own countries to examine and approve the action plans of the correspondents, and to further brief key government officials and other contacts about the study.
8. The correspondent will be responsible for data collection within the country and for providing a summary to the co-ordinator. Arrangements will be made to treat as anonymous any replies received which the source does not wish to have attributed to them or to their organization. Correspondents will aim to see first the government departments, then secondly, people affected by them (e.g. private and public sector organizations, the information sector, computer societies and informed individuals). Some iteration may be necessary as the correspondents may not be aware of all the policy instruments put in place in their country. Information will also be collected on factors which may have been responsible for success or failure of national policies in other sectors.
9. The co-ordinators will specify the data to be collected in each country, design an action check-list,

distribute these to the correspondents, collate their responses, and produce reports for their language area. Each report will describe the data collected and provide conclusions relevant to the following specific objectives for its language area:

specific objective 3: to determine by analysis of the data which issues have been tackled by these instruments and which factors have contributed to success and which to failure in the implementation of various informatics policy instruments;

specific objective 4: to ascertain what lessons can be learned from the data about the consequences of implementing various informatics policy instruments, to help governments formulate and implement national informatics policies;

specific objective 5: to deduce why integrated national informatics policies have not been put in place in sub-Saharan African countries

10. The reports prepared by the language area co-ordinators will be sent to PADIS for translation. They will be distributed to all the correspondents and to the other co-ordinator in their preferred language.

11. There will then be a 5-day meeting in Addis Ababa of representatives of the administering organizations, the co-ordinators and correspondents, an information specialist and a representative of UNESCO's Informatics Programme (IIP). The purpose will be to:

- (a) analyze the two Language Area Reports,
- (b) synthesize the conclusions reached in the two language areas,
- (c) tackle the following specific objectives:

specific objective 6: to propose indicators of effectiveness of informatics policy instruments and integrated policies which could be monitored in future studies.

specific objective 7: to discover if there are any systematic differences between English and French-speaking countries in success or otherwise of implementing national informatics policy instruments;

specific objective 8: to underline the lessons that the information and informatics communities can learn from the discussions and findings;

- (d) compile a chapter of the methodology used for carrying out the study, and
- (e) provide recommendations for future work.

12. The final report will be produced in both French and English and widely disseminated to governments and to informatics and information organizations. In addition, one or more journal articles will be published based on the findings.

(b) Comments on the methodology

Comment by Browne

Paragraph 1 of the methodology was not followed to a large extent since, for the majority of instruments, no data was included in the Country Reports on the objectives, accomplishment of objectives, and reasons for accomplishment or lack of it. Also paragraph 9 was not followed in the Language Area Reports. Consequently, it was impossible to follow paragraphs 11 (a), (b), and (c) during the Harare Meeting. The duration of the Meeting was reduced from 5 to 2½ days, so there was little time available to catch up work on the Final Report. These circumstances resulted in a long list of recommendations for future work (Section 8).

Comments at the Harare Meeting

Okado: The time frame it took is a real problem. It renders the material out of date.

Francisco: The delays encountered were beyond the control of the project. But we have surveyed the problems.

Zwangobani: Reports of country correspondents and co-ordinators are not coherent with report of the workshop. What do we do about this? Country correspondent reports were only draft reports.

Browne: I am working to bring the two together: the reports with the findings of the Conference. How to publish it is ECA's problem.

Shila, Okado want to fix up their reports.

Alabi: Can the co-ordinators sit down and finish the reports? The Country Reports have been overtaken by events.

Nambila: Marius didn't include my second part in his report. This would have helped you.

Hafkin: We need something on what policies/instruments remain valuable. You need to write something on this.

Zwangobani is worried about validating of the report. (He's worried that the country correspondents may have given wrong information here). Send in the material by a certain date.

Hafkin: Anyone who wants to make changes should make them by 31 December. Somebody said that the size of the sample was too small.

Francisco: there is enough in the reports already to give something to the Ministers.

Conclusion: any changes to be made should be made by 31 December.

Comment in English Language Area Report (p. 33)

Zwangobani: The time horizon for most policy activities is rather short. It may not be realistic to expect to see significant results in some policy areas so soon. Economic systems and results of human resource development programmes are not likely to become evident in such a short period.

8. Recommendations for future work

(a) Work required to complete the Project Outputs

Project Outputs are the two Language Area Reports and the Final Report. In addition, one or two journal articles were to be published based on the findings.

As explained in the Introduction, the two Language Area Reports and the Final Report are inadequate to meet the reporting demands of the project. Their shortcomings could be made up by the further work recommended below. This would consist of three stages: (i) preparation of a set of data sheets, (ii) analysis of the data sheets, and (iii) dissemination of results.

(i) Preparation of a set of data sheets

The set of data sheets would consist of one per instrument. They would number approximately 400. About 180 have already been prepared in a draft form. Each would contain all the data relevant to a particular instrument, collected from the various sources (Country Reports, Language Area Reports, Harare Write-ups). Both French and English countries would be represented but, to simplify subsequent analysis and publication, all data would be in English.

Before the data sheets could be completed, it would be necessary to produce a consolidated list of issues. This would be done by identifying in Country and Language Area Reports issues additional to those listed in Section 1 (believed from preliminary scanning to number approximately 25), and combining the two lists. Issues from the consolidated list of about 50 issues would be attributed to each informatics policy instrument on the data sheets.

The sheets would be in a standard format as shown in Appendix 1.

(ii) Analysis of the data sheets

1. Set up classifications by type of issues, instruments, and reasons for success or failure.
2. Prepare tables showing which types of instruments have been used in each country to tackle different types of issues.
3. Prepare tables showing which types of instruments have been successful and which failures in tackling each type of issue.
4. Show which types of issues, instruments, and reasons have been preponderant in each country and in different periods.
5. Analyze results above to get lessons for governments on which types of instruments have been most effective and which least effective for various types of issues, with emphasis on current issues.
6. Extend the analysis in 5 to cover the information and informatics communities, taking account of:
 - What instruments are of particular concern to these communities?
 - Can they pressure governments to formulate or implement policy instruments?
 - Can they take initiatives themselves which will produce or lead to policy instruments?
 - What is the role of the private sector in informatics policy formulation or implementation?
7. Analyze the data sheets to show differences between French- and English-speaking countries in the types of issues, instruments, effectiveness, and reasons for effectiveness.

(iii) Dissemination of results

A Report should be prepared, as a priority measure, under IDRC and ECA aegis, containing the results obtained in step 5, and distributed to governments.

The results obtained in steps 6 and 7, as well as those of Sections 3, 4, and 7, could probably best be disseminated in journal articles.

The set of data sheets could be incorporated into a public domain database, available on the IDRC Web site to other researchers.

(b) Proposals at the Harare Meeting

These proposals are for subsequent research, after this project has finished.

Zwangobani: there have been a number of similar studies. It's a long process of sensitization. Can you take results of such a study and focus on one or two identified areas and look at them in depth.

(i) do users actually use information?

(ii) education and training in informatics.

Francisco/Zwangobani: decision makers don't read reports.

Okado: How about one-day workshops for decision makers?

Hafkin: we're doing it - Special Initiative for Africa, African Networking Initiative.

Appendix 1:

INFORMATICS POLICY INSTRUMENT DATA SHEET

Identification

Code:

Reference file:

Country:

Date:

Issue to resolve

Instrument

Name

Objectives

Effectiveness and Reasons

Success

Reasons for success

Failure

Reasons for failure