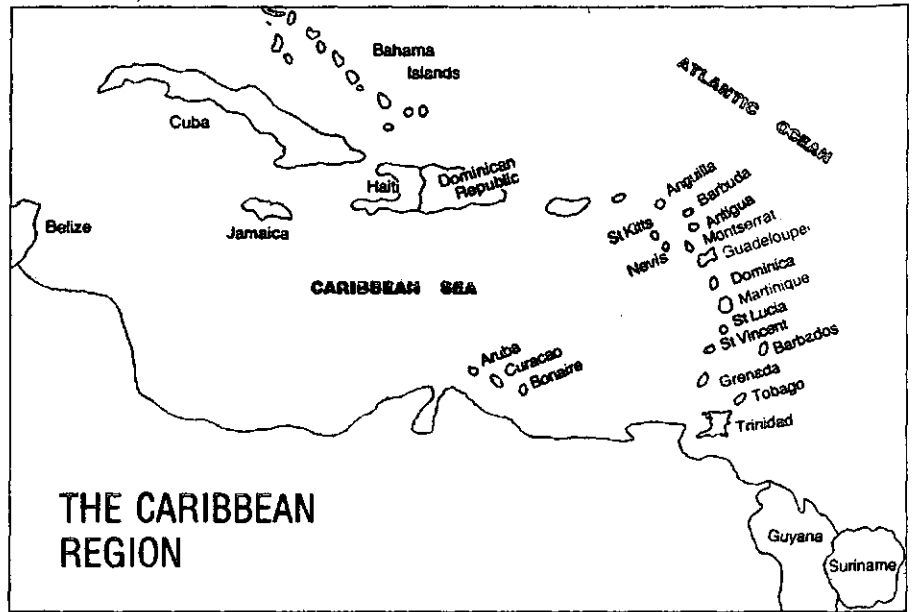


CARIBBEAN
DEVELOPMENT
 AND
CO-OPERATION
COMMITTEE



CDCC/CCST/82/5

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ECONOMIC COMMISSION FOR LATIN AMERICA
 Office for the Caribbean

CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE

CARIBBEAN COUNCIL FOR SCIENCE AND TECHNOLOGY

Second Plenary Session of the Caribbean
 Council for Science and Technology
 3 - 5 November 1982
 Kingston, Jamaica



AN INSTRUMENT FOR THE SENSITISATION OF
 POLICY MAKERS ABOUT THE VALUE OF SCIENCE AND TECHNOLOGY

Prepared by
 Patrick Munroe and Balram Tulsi
 National Science Research Council
 Georgetown, Guyana



UNITED NATIONS

ECONOMIC COMMISSION FOR LATIN AMERICA Office for the Caribbean

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In addition, it is noted that the records should be kept in a secure and accessible location. Regular backups are recommended to prevent data loss in the event of a system failure or disaster.

The second part of the document outlines the procedures for handling discrepancies. It states that any differences between the recorded amounts and the actual amounts should be investigated immediately. The cause of the discrepancy should be identified, and appropriate corrective actions should be taken.

Finally, the document stresses the need for ongoing monitoring and review. Regular audits should be conducted to ensure that the records remain accurate and up-to-date. This helps to identify any potential issues before they become significant problems.

The following table provides a summary of the key points discussed in the document. It is intended to serve as a quick reference for all staff members involved in the record-keeping process.

Topic	Key Points
Record Keeping	Accurate, supported, transparent, secure, accessible, regular backups.
Discrepancies	Investigate immediately, identify cause, take corrective actions.
Monitoring	Regular audits, ongoing review, identify issues early.

It is important to note that these procedures apply to all departments and are not to be circumvented. Any failure to follow these guidelines may result in disciplinary action.

The management team is committed to ensuring the highest standards of accuracy and integrity in all financial reporting. We trust that these procedures will help to achieve that goal.

If you have any questions or need further assistance, please contact the accounting department. We are here to support you in every step of the process.

Thank you for your cooperation and commitment to excellence.

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INTRODUCTION

That science and technology are potent instruments for achieving economic and social development is no longer a matter of debate. The impact of technology on modern life has been profound and its pervasive influence shows no sign of abating. This is not a mere question of sophisticated machinery and complex equipment since today's technology is a comprehensive mixture of social, cultural, intellectual, managerial and political components.

Many items of technology have been introduced in several situations of productive activity in order to increase predictability and control, since it is the general belief that these eventually lead to increased productivity. Although a conclusive relationship between technology, predictability, control and productivity has not always been easily established, nevertheless technology does have a pivotal influence on productive activity both in the vertical and horizontal integration of its operations.

Massive demands are made on the national budgets when providing technological inputs for agriculture, industry and manufacturing. It is therefore essential that technology be given a conspicuous level of priority and be consciously regarded as one of the principal components in the productive as well as planning process.

In most developing countries only a small number of policy makers at national level have science, technology or engineering as their basic discipline. This is responsible in part for the fragmentary and oftentimes superficial integration of a science and technology component into the

decision-making process.

The societal development process is therefore treated simplistically as a pure historical, political economic issue with the result that systematic continuous enhancement of the quality of life has been hampered by the failure to integrate the technological dimension into our total historical understanding.

A historical analysis of the development of both the industrialised and the developing world seems to indicate that many of their present problems can be alleviated with some assistance from technology. This should not be interpreted that technology alone can solve all problems, but only that our problems cannot be solved without proper comprehensive and efficient utilisation of new technology.

Many policy makers are now aware of the several attendant difficulties in expanding productive activities, and are beginning to acknowledge that more rational and systematic approach to the application of technology may provide some of the answers. The purpose of this brief paper is to put this concern in perspective.

The Scenario

For the purpose of this study the scenario will be limited to small size Caribbean type economies whose national systems can be shown as comprising of seven basic components: viz., political, cultural, educational, science and technology, economic, environmental and people as the foundation and main objective of all national development. (Fig. 1). All these constituents are so interlinked that changes in any one of them produce ripple effects in the others. With science and technology as the heart and pivotal component of the national system, these ramifications can be consciously regulated and eventually distributed throughout the entire system so as to engender maximum development for the people.

Generally speaking, in most of these countries, the small market size limits the benefits obtainable from division of labour and they have a constant battle against poverty.

Although many Caribbean Council for Science and Technology (CCST) countries can claim the existence of national Science and Technology Councils. (See Table 1) there is still, by and large, a failure to establish and maintain effective linkages between national planning and productive systems,

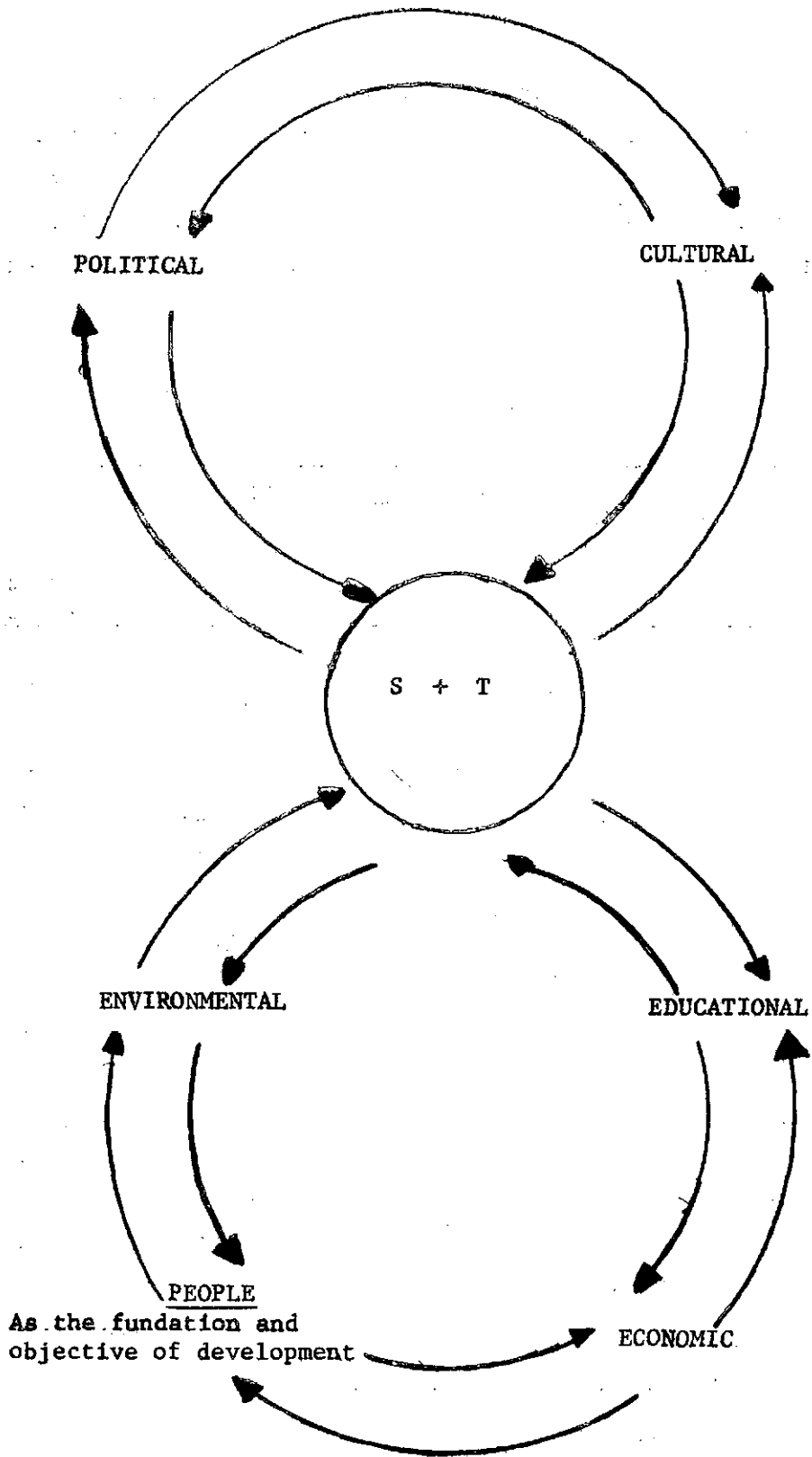


FIG. 1.

because in many instances the programmes identified by the various Councils are not fully integrated into the national development plans and vice versa. In addition the national expenditure on science and technology is so negligible that the political commitment to science and technology is academic since it is NOT sustained by the required synergistic commitment of adequate finance.

Table 1

COUNTRY	National Agency for Science and Technology Policy	*Financial Resources	Evaluation and Technology Supervision of Technology	Technological Adaptation
ANTIGUA	O	1/10	-	-
BARBADOS	C	-	-	-
BELIZE	P	-	-	-
CUBA	C	5/10	E	E
DOMINICA	C	1/10	-	-
GRENADA	C	< 1/10	-	-
GUYANA	C	1/10	-	-
HAITI	P	1/10	-	-
JAMAICA	C.P.	1/10	-	-
MONTSERRAT	P	-	-	-
ST. KITTS/NEVIS	O	-	-	-
ST. LUCIA	O	1/10	-	-
ST. VINCENT	O	< 1/10	-	-
SURINAME	P	< 1/10	-	-
TRINIDAD AND TOBAGO	C	1/10	-	-

KEY TO TABLE

National Agency for Science and Technology Policy

- C - Science and Technology Council
- P - Planning Commission or Ministry
- E - Ministry or Department of Education
- O - Other Type of Agency
- - No information available

Financial Resources - The Financial Resources presently devoted to Science and Technology in the different countries are estimated on a scale of $1/10$ to $10/10$. The value of $10/10$ would be the minimum adequate financial level for an endogenous scientific and technological "Take-Off" ($\leq 1/\text{GNP}$) in other columns "X" or "E" signify that there exists instrumentalities, institutions or activities in these areas.

A UNESCO study entitled "An Introduction to Policy Analysis in Science and Technology" has identified the following activities as basic to any national activities in Science and Technology:

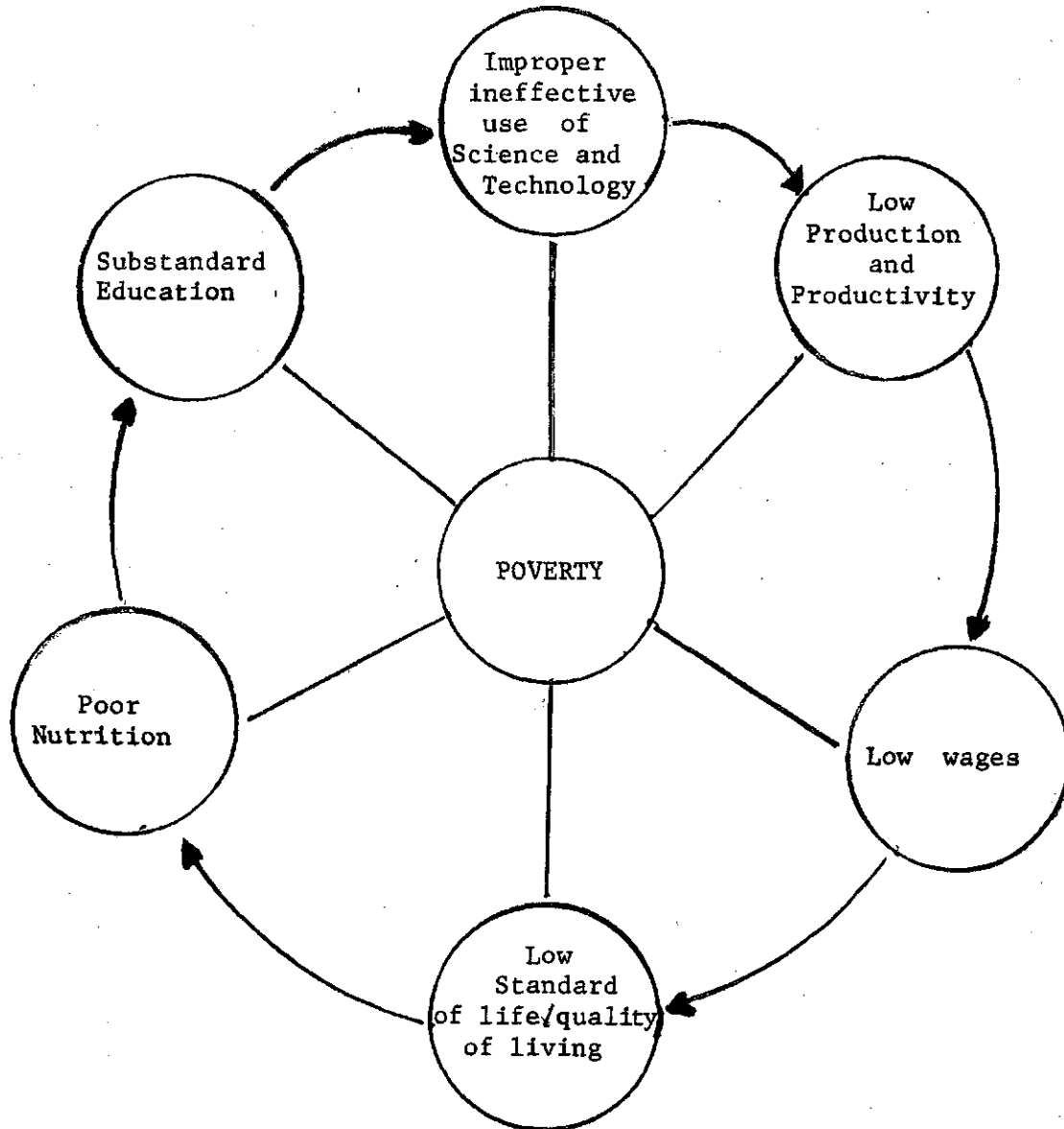
- i) Scientific and Technological Research (R)
- ii) Experimental Development (D)
- iii) Scientific and Technological services to collect, collate, store and disseminate all national data on science and technology which would be required for the practical and beneficial application of science and technology to the development programme.
- iv) Innovation, or the development of new products or processes. Innovation also includes the transfer of technology and deliberate attempts to promote the diffusion and propagation of innovation throughout the productive sector of the economy.

The experience of many developing countries suggests that policy makers devote an excessive amount of time and energy addressing the symptoms of underdevelopment rather than the root cause. The major root cause is the failure to appreciate the potential of science and technology as powerful weapons in the struggle for self-reliance and self-sufficiency. The aetiology of poverty on a national level is amply demonstrated in Fig. 2 from which it is evident that a successful course of treatment cannot be realised by just providing relief but rather in increasing the capacity of the poor to meet their own needs through widespread as well as efficient application of Science and Technology.

The Instrument

For the application of this instrument, it is essential that:

- 1) the decision makers should fully comprehend the pivotal position occupied by science and technology in the process



SCIENCE AND TECHNOLOGY - POVERTY RELATIONSHIP

Figure 2

of national development. With increasing comprehension should come a reappraisal and realignment of priorities. The obvious result of all this could be to narrow the gap between the planning concept and the realities as well as successes of implementation.

- ii) The people, mainly the rural poor which comprise at least 80 percent of the regional population should be brought rapidly into more meaningful participation in development decisions as well as being involved in the implementation and benefits of the decisions. For this to be achieved the people must be encouraged to contribute to national, political and economic policies by:
 - a) articulating their views precisely; and
 - b) mobilising their own resources in self-help action.

Aids to Science and Technology Policy Formulation

Among the general characteristics associated with small size economies are:

- i) very little value is added to the endogenous raw material which they export; and
- ii) their horizontal integration mainly facilitates operations in industrialised countries.

Now any product, Y, is a function of land, labour, capital and personal enterprise, all of which reflect some level of technology.

$$Y = f (\text{Land, Labour, Capital, Personal Enterprise}) = f (\text{Technology})$$

so that any improvement in the production process must be in direct correlation greater and more effective use of technology. Now Land as a function of production remains relatively constant, whilst Personal Enterprise is usually associated with such inherent qualities as acumen, ambition and skill so that Labour and Capital remain as the

two important variables which policy makers can manipulate at national level in the production process.

POLICY MAKERS SHOULD FULLY COMPREHEND THE CHARACTERISTICS OF SCIENCE AND TECHNOLOGY AND, PARTICULARLY AT A PRIMARY LEVEL, SHOULD ALSO BE CAPABLE OF ASSESSING THOSE CHARACTERISTICS. This would promote systematic analysis, forecasting and evaluation of the various ways in which science and technology can impact on development.

Many policy makers do not intuitively recognise the existence of a close correlation between decision-making and the availability, quantity and accuracy of information. It follows logically that the successful integration of technology into the development process required the policy maker to have at his disposal the latest and most precise technological information. This implies an effective national information system, capable not only of retrieving but also of assessing critically all available information. It further implies a need for research, since the information needed in the circumstances of a country's particular resource endowments may not always be available.

In summary then, policy makers must adopt a more rational and systematic approach to the application of science and technology for development. This can only be achieved within the framework of a national policy on science and technology and through strengthening of the Science and Technology infrastructure to facilitate its implementation.



