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CARIBBEAN COUNCIL FOR SCIENCE AND TECHNOLOGY



AN ANALYSIS OF SCIENCE AND TECHNOLOGY PROJECTS/PROGRAMMES  
SUPPORTED BY AGENCIES IN THE CARIBBEAN

Paper presented to the  
CARICOM Meeting of the Interim Co-ordinating Committee  
for Science and Technology  
Bridgetown, Barbados  
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## BACKGROUND

At the First Meeting of Agencies which sponsor regional activities in Science and Technology (Jamaica, 2 November 1982) it was decided that a document should be prepared which itemised all the activities of the various Agencies within the region together with their specific interests.

Dr. Dennis Irvine, the UNESCO Regional Consultant on Science was asked to undertake the assignment.

Questionnaires were sent to all Agencies with regional interests in Science and Technology and the analysis of the responses are contained in the Consultant's Report. The document was discussed at the Second Meeting of Agencies (Netherlands Antilles, 26 July 1983) and it was recommended that work should continue on increasing and updating the information.



AN ANALYSIS OF SCIENCE AND TECHNOLOGY PROJECTS/PROGRAMMES  
SUPPORTED BY AGENCIES IN THE CARIBBEAN

At the first meeting of Agencies which sponsored regional activities in Science and Technology in the Caribbean, held in Kingston, Jamaica on 2 November 1982, it was agreed that an analysis of Agency-supported Science and Technology projects/programmes in the Caribbean should be undertaken as the first phase of a CCST/Agency collaborative programme. Responses to a request for information on sponsored projects/programmes were received from UNFSSTD, CADEC, IDRC, OAS, CSC, CARICOM, OLADE, CDB/TEU (US. AID), EDF, UNDP and FAO. Only projects of a regional nature, or if national with possible regional implications, were included in the survey. The list of projects in Annex 1 have been grouped together in the following five categories and have been further subdivided to reflect areas and disciplines as follows:-

Category I - Science and Technology Policy and Planning

- (a) General
- (b) Energy
- (c) Agriculture/Agro-Industry

Category II - Research and Development (R+D)

- (a) Energy
- (b) Agriculture/Agro-Industry
- (c) Mineral Resources/Mineral Processing
- (d) Fishery/Aquaculture
- (e) Natural Resources (other than mineral resources)

Category III - Science and Technology (Information)

- (a) General
- (b) Technical

Category IV

No subdivision needed

Category V - Institution Building and Training

- (a) Energy
- (b) Agriculture/Agro-Industry
- (c) Other
- (d) Other S+T Programmes/Projects

The survey shows that the overwhelming majority of Agency-supported projects is in the area of Research and Development. If the project in the Dominican Republic is excluded, the only significant work on Policy is the Caribbean Technology Policy Studies Project now in its second phase. The OAS and UNESCO have both made contributions in this area, but there is no evidence of a systematic and continuing approach. In light of the accepted view that a national Science and Technology Policy is crucial to national scientific and technological development, there is clearly room for more agency support in this area.

A similar observation may be made about Science and Technology information which, by comparison with Research and Development, is relatively neglected. Yet, the singular importance of Science and Technology information is fully recognized and accepted, and the meeting of CARICOM Ministers responsible for Science and Technology accorded it the highest priority. Not much appears under Transfer of Technology as such, although it may be argued that much of the Research and Development work, by their very nature, contain elements of technology transfer.

In view of the concerns voiced from time to time about duplication of effort, it is interesting to note that, with the exception of the energy sector, the amount of duplication is quite small. There are however sufficient instances of serious duplication in the energy sector to suggest a need for greater co-ordination. Duplication occurs in Policy, Research and Development, and Training, and in each case substantial financial resources are involved.

Within the Research and Development sector, as mentioned earlier, there is considerable activity both in the fields of energy and agro-industry. However the Research and Development activity does not appear to be guided by clearly defined policy objectives, so that although there are an impressive number of projects, one is left to wonder how much impact they will really have in both short and long term. Perhaps in the future more consideration might be given to emphasising depth rather than breadth of projects.

When considering the list of projects as a whole and the monies involved, what emerges is that the financial support for Science and Technology in the Caribbean is not insubstantial. However, the support is spread widely, and

possibly too much is being attempted all at once. There is clearly a need to identify manageable priorities, but this is not easy in the absence of national and regional policies. This is something that agencies could address collectively, and might be a useful starting point for CCST/Agency collaboration.





CATEGORY ISCIENCE AND TECHNOLOGY POLICY AND PLANNING(a) GENERAL

<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. dollars)
(i) UNFSSTD	Strengthening of National planning capacity for Science and Technology (Dominican Republic).	Dominican Republic	503,050
(ii) IDRC	Caribbean Technology Policy Studies project (I and II).	UWI/UG	500,000
(iii) CCST	Assessment of national Science and Technology capabilities ( <u>REGIONAL</u> ).	CCST	30,000
(iv) CCST	A Science and Technology Policy for the Caribbean		in planning stage
(v) CCST	The potential and limitations of newly emerging technologies for developing countries.		in planning stage
(vi) OAS	Support of National Councils and Planning Agencies in organizational aspects, and in other activities such as surveys and/or directories, and training.		n.a.
(vii) UNESCO (cf vi)	Advisory services, consultancies, training, surveys and directories.		n.a
(viii) CSC	Study on the structure and function of National Science Research Councils.		projected for fiscal year 1983/84
(ix) CSC	Study on science and technology indicators.		projected for fiscal year 1983/84
(x) CSC	Import of genetic engineering on primary commodity production.		Study projected for 1983/84

I SCIENCE AND TECHNOLOGY POLICY AND PLANNING

(b) ENERGY

<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. dollars)
(i) CARICOM (U.S. AID)	Alternative Energy Systems	CARICOM	n.a.
(ii) OLADE (cf i)	Regional programme of energy balances.		190,000
(iii) OLADE	Energy pricing policies in Latin America		160,000
(iv) OLADE	Analysis of the Latin America and World energy situations		40,000
(v) OLADE (cf i)	National Energy Plans		65,000
(vi) CCST	Study on the consequences of the development of energy crops on food supplies in the region.	CARIBBEAN CONSULTANT	5,000
(vii) IDRC (cf i)	Energy systems for small countries (CTPS - II)	UWI/UG	In sum shown under (ii) Science and Technology Policy and Planning (a) General

I SCIENCE AND TECHNOLOGY POLICY AND PLANNING

(c) AGRICULTURE/  
AGRO-INDUSTRY

<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. dollars)
(i) CCST	Development of Agro-Industries and employment opportunities at the rural level.	planned	
(ii) CCST	Study on the consequences of the development of energy crops on food supplies in the region.	Caribbean Consultant	
(iii) IDRC	Dutch Party on Agro-Industry (CTPS - II)	UWI/UG	In sum shown under (ii) Science and Technology Policy and Planning (a) General

CATEGORY II  
RESEARCH AND DEVELOPMENT

(a) ENERGY

<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. dollars)
(i) CDB/TEU (U.S. AID)	Solar-powered photo-voltaic pumping system in irrigation (ANTIGUA).	CARDI	45,624
(ii) CDB/TEU (UNFSSTD)	Wind power demonstration (ANTIGUA).	APUA	271,850
(iii) CDB/TEU (U.S. AID)	Testing of solar collectors (BARBADOS).	BNSI	16,000
(iv) CDB/TEU (U.S. AID)	Red mud plastic bio-digester bags (BARBADOS).	V + B Farms	27,000
(v) "	Peat resource assessment and development (BELIZE).	Mattis Demain and Beckford	6,280
(vi) "	Micro-hydro demonstration (DOMINICA).	Dom. Elec. Services Central Water Authority	101,100
(vii) "	Stream gauging and hydrological assessment (DOMINICA).	CMI	87,300
(viii) "	Solar drying of chilli peppers (GUYANA).	IAST	49,500
(ix) "	Electric power from saw-mill wastes: prefeasibility (GUYANA).	Development Sciences Inc.	18,120
(x) "	Charcoal and fuelwood production and utilization (MONSTERRAT).	Ministry of Agriculture (Monsterrat)	204,800
(xi) "	Wind-powered chill room (ST. LUCIA).	C.P.U., St. Lucia	44,800
(xii) "	Fuel and Feeds from arrowroot processing wastes (ST. VINCENT).	Enerplan Ja. Limited and Biogas Colorado Inc.	46,508

II RESEARCH AND DEVELOPMENT

(a) ENERGY

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(xiii)	CDB/TEU (U.S. AID)	Integrated energy project (ST. VINCENT)	TEU	33,439
(xiv)	"	Wind and solar energy resource assessment (REGIONAL)	CMI	512,420
(xv)	"	Biomass resource analysis and assessment (BARBADOS + LDCs)	University of Puerto Rico/ CEER	113,530
(xvi)	"	Wind energy conversion system at CDB (BARBADOS)	TEU	70,200
(xvii)	"	Renewable Energy Development Station: feasibility study (REGIONAL)	Enerplan Limited	24,050
(xviii)	"	Hotel energy audits (GRENADA)	TEU	
(xix)	OAS (cf vi)	Mini hydro power (DOMINICA, HAITI, JAMAICA, SURINAME)	Min. of Comm. + Works (Dominica)	222,300
(xx)	"	Leucaena as a source of feed, fuel and erosion control (REGIONAL)	UWI	189,000
(xxi)	OLADE (cf vii)	Systematic inventory of Hydroenergy resources		445,000
(xxii)	"	Energy conservation in the industrial sector		50,000
(xxiii)	"	National Biogas Programme of JAMAICA		329,000

II RESEARCH AND DEVELOPMENT

ENERGY (Cont'd)

<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(xxiv) OLADE	Development, promotion and evaluation of biogas (GRENADA, GUYANA, SURINAME)		58,000
(xxv) "	Energy optimization in the sugar mill (GRENADA)		20,000
(xxvi) CARICOM (cf xx)	Energy farms based on Luceana		) Project Planning ) Stage
(xxvii) CARICOM (cf xix ??)	Low-head small-scale hydro generation		
(xxviii) CARICOM (cf various projects above)	Regional Renewable Energy Development Station		
(xxix) EDF	Energy Studies	UWI	) See under V: ) Institutional ) Development ) R + D
(xxx) CSC	Use of bagasse for generation of electricity (GUYANA) (similar study done for Barbados)	NSRC/ IAST	8,000
(xxxi) OAS	Solar Energy	UWI	98,600

II RESEARCH AND DEVELOPMENT

(b) AGRICULTURE/  
AGRO-INDUSTRY

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(i)	CDB/TEU (U/S/ AID)	Solar drying of chilli peppers* (GUYANA)	IAST	49,500
(ii)	"	Banana stem defibering plant (ST. LUCIA)	Beauchamp Estates, St. Lucia	198,000
(iii)	"	Fuel and feed from arrowroot processing wastes* (ST. VINCENT)	Enerplan Ja. Ltd. + Biogas Colorado Inc.	46,508
(iv)	"	Improving Arrowroot starch extraction (ST. VINCENT)	TEU + Consultants	39,600
(v)	"	Promotion of simple domestic solar food driers (LDC)	UWI Extra Mural + WAND	9,592
(vi)	"	Feed and fertilizer from protein wastes (BARBADOS + LDC)	Biodynamics Ltd. + Sincos Consultants Ltd.	48,169
(vii)	"	Coir Fiber Pilot Plant (ST. VINCENT)	Hadley Enterprise Ltd., St. Vincent	52,000 (L) 49,000 (G)
(viii)	"	Utilization of coconut wood (JAMAICA)	Forest Industries Dev. Co. Ltd.	49,300
(ix)	OAS	Leucaena as a source of feed, fuel and erosion control (REGIONAL)*	UWI	189,000
(x)	OAS	Integrated diagnostic approach to post harvest loss reduction (REGIONAL)	CARIRI	55,705
(xi)	OAS	Economic biology of underexploited tropical plants (REGIONAL)	University of Suriname	233,800

\* Also appears under ENERGY

II RESEARCH AND DEVELOPMENT

AGRICULTURE/  
AGRO-INDUSTRY

<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(xii) CCST	Conservation and exchange of germplasm of crop plants	Consultant	4,000
(xiii) CARICOM	Animal feed from cassava leaves and tubers	in planning stage	
(xiv) "	Development of machinery for harvesting tubers and foliage	"	
(xv) "	Upgrading of facilities and rationalisation of activities of PCLs within a regional system	"	
(xvi) "	Wetlands and artificial pond production of Spirulina for human food	"	
(xvii) OAS	Post harvest losses (TRINIDAD)		16,000
(xviii) EDF	Food related studies	UWI	(See under V: INSTITUTIONAL DEVELOPMENT)
(xix) UNDP (See also viii above)	Integrated coconut timber	FAO	123,000
(xx) TCP	Post harvest losses: imported yam storage methods	"	236,110
(xxi) OAS	Food technology	UWI	40,800
"	Sugar Cane by-products	CARIRI	28,700



II RESEARCH AND DEVELOPMENT

(c) MINERAL RESOURCES/  
MINERAL PROCESSING

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(i)	CDB/TEU (U/S/ AID)	Ceramic tile project (JAMAICA)	SRC (Jamaica)	67,500
(ii)	"	Salt production by solar evaporation of sea water (ST. KITTS/ NEVIS)	Salt Ponds Co. Ltd.	117,000
(iii)	UN FSSTD	Mineral processing technologies (CUBA)	Cuban Scientific Institution	52,000
(iv)	"	Upgrading the S + T capabilities of the Jamaican Bauxite Institute (JAMAICA)	JBI	950,800
(v)	"	Building materials and development (NETHERLANDS ANTILLES)	HABITAT	253,000 PROJECTED
(vi)	"	Geological + Mining Services (SURINAME)		451,200 PROJECTED

(d) FISHERY/  
AQUACULTURE

(i)	UNFSSTD	Improvement of fish production (HAITI)	Haitian Government	256,200 PROJECTED
(ii)	OAS	Regional Caribbean Aquaculture	IDAI (Haiti)	57,500

II RESEARCH AND DEVELOPMENT

(e) NATURAL RESOURCES  
(Other than Mineral Resources)

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(i)	CSC	Survey of Medicinal Plants (TRINIDAD + TOBAGO)	UWI	Completed
(ii)	"	Ethnobotany of GUYANA	IAST	3,200
(iii)	"	Ethnobotany of GRENADA	NCST Grenada	1,600
(iv)	"	Wood potential of Caribbean forests (REGIONAL)	IAST/ University of Guyana	3,200
(v)	"	Field survey of plant genetic resources	CCST	To be determined

CATEGORY III

SCIENCE AND TECHNOLOGY INFORMATION

(a) GENERAL

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(i)	CCST	Journal/Magazine of CCST	CCST	10,000
(ii)	CCST	Preparation and exchange of audio visual material on S+T	CCST	10,000
(iii)	CDB/TEU	TEU Newsletter		n.a.
(iv)	CSC (cf iv)	Newsletter on advances in Science and Technology for Development - six (6) issues per year	CSC	Projected for 1983/84

(b) TECHNICAL

(i)	CDB/TEU (USAID)	Selective and rapid dissemination of technology and energy information to the LDC's (Pilot Project)	TEU	70,700
(ii)	OLADE	Editing and dissemination of publications	OLADE	110,000
(iii)	UNESCO	National Information Systems		n.a.

CATEGORY IV

TRANSFER OF TECHNOLOGY

<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(i) IDRC	Transfer of technology (CTPS-II)	UWI/UG	
(ii) CADEC	Caribbean Appropriate Technology Network		
(iii) CDB/TEU	Caribbean Technological Consultancy Network (Pilot Project)		130,700

CATEGORY V

INSTITUTION BUILDING AND TRAINING

(a) ENERGY

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(i)	EDF	Buildings, Equipment training awards (JAMAICA)	UWI	Part of a 9,500 project (see under Agriculture Agro-Industry)
(ii)	UNFSSTD	R + D support for IAST (GUYANA)	IAST	Part of a projected 900,000 project
(iii)	CARICOM	Alternative Energy Systems (REGIONAL)	Regional Institutions	
(iv)	CSC	Workshop on the application of solar heating and cooling techniques to tropical architecture (REGIONAL)	NCST (BARBADOS)	15,000
(v)	CSC	Training workshop on energy information systems (REGIONAL)	Trinidad + Tobago	9,500
(vi)	CSC	Training workshop on energy conservation techniques for industrial application (REGIONAL)	African Workshop with Carribbean participation	24,000
(vii)	CSC	Training workshop on the application of solar cooling for grain storage (REGIONAL)	Australian with Caribbean participation	19,000
(viii)	OLADE	Geothermal training and technical assistance (REGIONAL)		815,000
(ix)	OLADE (cf. R+D vi + ix)	Training in design of small hydropower stations (REGIONAL)		305,000

V INSTITUTION BUILDING AND TRAINING (Cont'd)ENERGY (Cont'd)

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(x)	OLADE (cf iii)	Training in energy planning (REGIONAL)		160,000
(xi)	OLADE	Seminar on financing energy development (REGIONAL)		115,000
(xii)	CDB/TEU (cf iv)	UWI Solar Engineering Seminar (REGIONAL)	UWI Dept. of Mechanical Engineering	15,765
(xiii)	CDB/TEU (cf xi)	Regional seminar on finance for energy development (REGIONAL)	TEU	22,960
(xiv)	CDB/TEU	Promotion of simple domestic solar food driers (REGIONAL)	UWI (E/M) WAND	9,592
 (b) <u>AGRICULTURE/AGRO-INDUSTRY</u>				
(i)	EDF	Food related studies - Agriculture, Entomology, Technical equipment, Energy studies and training awards (REGIONAL)	UWI	9,500,000
(ii)	CSC	Training workshop on techniques for the culture and conversation of micro-organisms		19,000 (projected for 1983/84)
 (c) <u>OTHER</u>				
(i)	EDF	Buildings, equipment (including Nuclear Reactor), training award (REGIONAL)	UWI	3,000,000

V INSTITUTION BUILDING AND TRAINING (Cont'd)

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(ii)	EDF	Industrial Control technicians, road construction and maintenance, business equipment (REGIONAL)	CAST	900,000
(iii)	UNFSSTD	Science and Technology Resource Centre (BELIZE)	Belize Govt.	30,000 (projected)
(iv)	UNFSSTD	R + D support for IAST (GUYANA)	IAST	900,000
(v)	UNFSSTD	Upgrading the S + T Capabilities of the Jamaica Bauxite Institute (JAMAICA + REGIONAL)	JBI	950,800
(vi)	CSC	Training workshop on geological mapping and natural resources evaluation and development (REGIONAL)	Ministry of Energy + Natural Resources GUYANA	11,000
(vii)	CSC	Training workshop on techniques for environmental planning and management (REGIONAL)		32,000 (projected 1983/84)
(viii)	CSC	Workshop on Bulk Measurements (REGIONAL)	Jamaica Bureau of Standards	15,000
(ix)	CSC	Training workshop on Alcoholometry (JAMAICA, ANTIGUA, BARBADOS)	CSC/CARICOM	17,000
(x)	CSC	Training workshop on standards and metrology for industrialization and development of small island states (REGIONAL)		35,000 (projected for 1983/84)

V INSTITUTION BUILDING AND TRAINING (Cont'd)

OTHER

	<u>Sponsoring Agency</u>	<u>Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(xi)	CSC	Training workshop on evaluation methods for national R + D efforts (REGIONAL)		40,000 (projected for 1983/84)
(xii)	IDRC	Technology Policy Training Workshop (REGIONAL)	IDRC	20,000

(d) OTHER S+T PROGRAMMES/ PROJECTS

	<u>Sponsoring Agency</u>	<u>Programme/ Project</u>	<u>Executing Agency</u>	<u>Approved Funds</u> (U.S. Dollars)
(i)	CSC	Project on intercomparison of standards (REGIONAL)		Details being worked out
(ii)	OLADE	Studies and action to promote hydrocarbon prospecting		85,000
(iii)	OLADE	Exploration, production and use of coal as energy		300,000
(iv)	OLADE	Prospecting for geothermal resources		94,000
(v)	OAS	Energy and human settlement		



LIST OF ACRONYMS

BNSI	Barbados National Standards Institute
CADEC	Christian Action for Development in the Caribbean
CARICOM	Caribbean Community Secretariat
CARIRI	Caribbean Research Institute
CAST	College of Applied Science and Technology
CCST	Caribbean Council for Science and Technology
CDB	Caribbean Development Bank
CEER	Centre for Energy and Environment Research
CMI	Caribbean Meteorological Institute
CSC	Commonwealth Science Council
EDF	European Development Fund
FAO	Food and Agricultural Organization
IAST	Institute of Applied Science and Technology
IDAI	Instituto de Desarrollo Agricola Industrial
IDRC	International Development Research Centre
JBI	Jamaica Bauxite Institute
OAS	Organization of American States
OLADE	Organizacion Latinoamericana de Energia
UG	University of Guyana
UNDP	United Nations Development Programme
UNFSTD	United Nations Financing System for Science and Technology in Development
USAID	United States Agency for International Development
UWI	University of the West Indies

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