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INTRODUCTION

As part of its Action Plan for the Caribbean, the UNESCO Division of the General Information Programme has undertaken the production of regional subject bibliographies. This is one of three bibliographies which the United Nations Economic Commission for Latin America, Sub-regional Office for the Caribbean has agreed to prepare on the following topics: Alternative Sources of Energy, Transport and the Methodologies and Techniques of Development Planning in the Caribbean. These three areas were selected in relation to a set of priorities identified by the member governments of the Caribbean Development and Co-operation Committee (CDCC) as being crucial to economic development.

It became self-evident that such a venture would have to be co-operative effort of the participating centres in the Caribbean Information System for Socio-Economic Planning (CARISPLAN) which encompasses those member states of the CDCC. The focal points in the respective countries were therefore requested to send bibliographic details of the relevant documents which were produced in or about the Caribbean from 1970 onwards from their collections. Where possible abstracts were to be completed along with the bibliographic details in any of the four languages of the sub-region - Dutch, English, French and Spanish. The entries in the bibliography reflect this variance.

It is hoped that this bibliography on Alternative Sources of Energy within the Caribbean will provide planners, researchers, policy and decision-makers with access to what presently exists in the region and thereby avoid duplication of effort.

Finally, as part of its programme UNESCO hopes to evaluate the value of these bibliographies, hence there is a detachable questionnaire at the end of each copy of the bibliography and your assistance in completing the questionnaire is requested. Kindly return the very concise evaluation form to the following address:

U.N. Economic Commission for Latin America
Caribbean Documentation Centre
P.O. Box 1113
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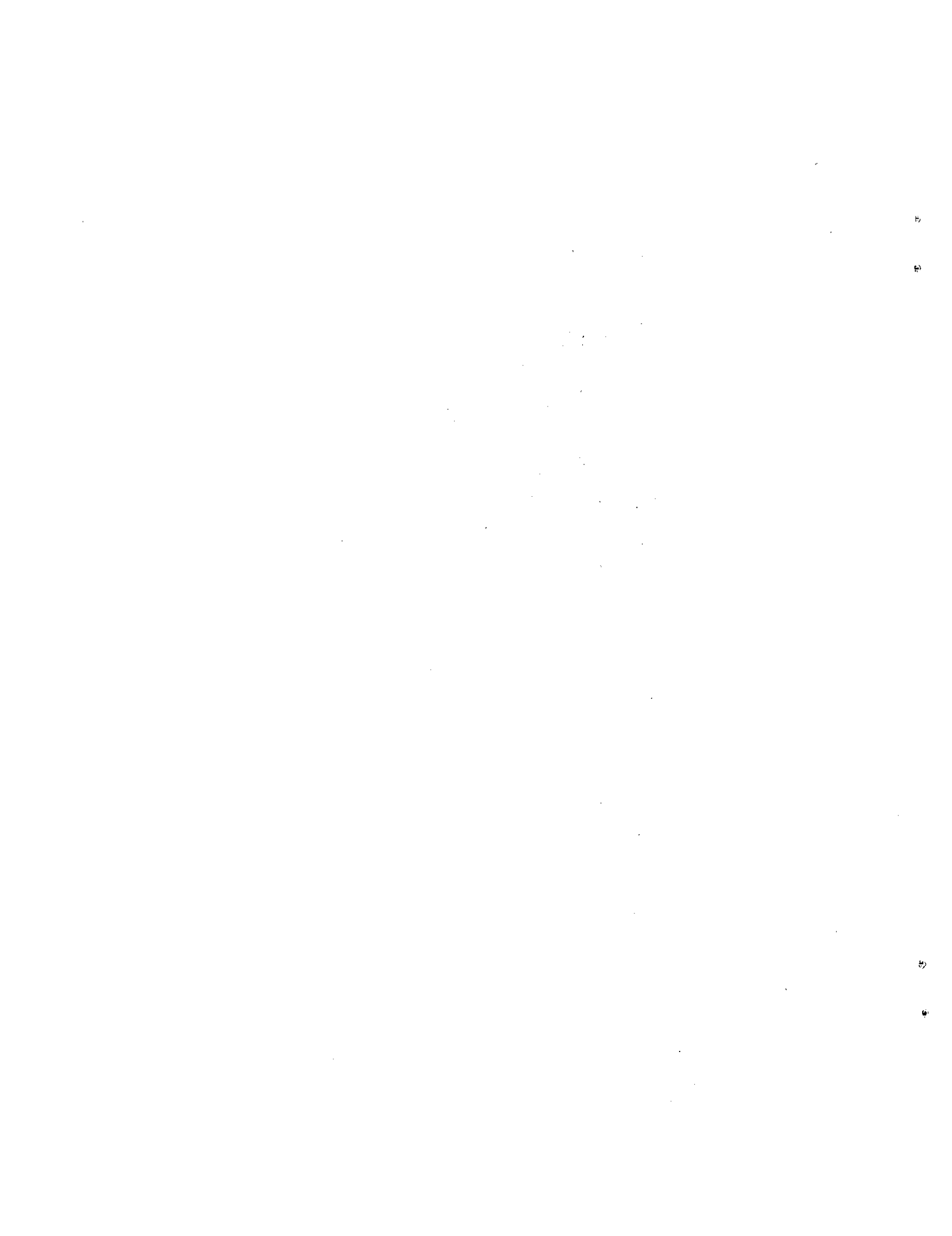
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	Entry No.	Location of Document	
	041	CDB	Title
Personal Author	Ashby, W.R.		
Imprint	A survey of alternative energy possibilities in Jamaica. Kingston, Petroleum Corporation of Jamaica, 1980. 40p.		Pagination

Abstract

Attempts to summarize what has been done so far in assessing the potential of energy alternatives. Discusses peat, hydro, solar thermal, wood and charcoal, hiogas, alcohol, refuse, wind and other alternatives whose potential application require longer lead times such as photovoltaics, ocean thermal, geothermal and biomass. Reference is also made to the importance of energy conservation, including such specific projects as the recovery of waste lubricating oil, as well as institutional requirements for carrying out a programme in alternative energy and the whole planning context in which such an effort must be cast; namely an effort to secure a less energy intensive economy.

SAMPLE ENTRY



BIBLIOGRAPHIES

001

CDC, CDB

Caribbean Development Bank.

Alcohol fuels for the Caribbean: a regionally oriented review and annotated bibliography of alcohol fuels production and utilization. Barbados, C.D.B., 1981. 50p.

Presents an overview of alcohol fuel concepts including recent progress in production of feedstocks, fermentation and distillation techniques and use of alcohol as a fuel. Annotated bibliographic information on the most informative references is also provided.

002

CDC, CDB, MSDU

Caribbean Development Bank.

Biogas for the Caribbean: a regionally oriented review and annotated bibliography of biogas production and utilization. Barbados, C.D.B., 1981. 29p.

Presents an overview of biogas concepts including sections on various digester designs and common problems to be considered in the design of any system. It then provides annotated bibliographic information on the most informative references.

003

CDC

Caribbean Small Islands Water Resources Assessment Development Management.

A first bibliography of geology, hydrogeology and water resources / prepared by Peter Hadwen. Bridgetown, SOWRADAM, 1980. 59p. (SOWRADAM Overview, CAR/79/R01).

Prepared on the basis of information at the time of writing this bibliography lists mainly English language references. The references are listed in date order with location of copies where known and includes published papers in international journals, proceedings of symposia, publications of international and bilateral agencies and a selection of unpublished titles. It covers the more important references on geophysics, geology, geothermics and water resources.

004

CDC

IICA. Centro Interamericano de Documentación e Información Agrícola

Biomasa y otras fuentes no convencionales de energía: bibliografía. San José, Costa Rica, 1980. 267p.

Presents references which were identified by means of a retrospective search of primary and secondary sources at IICA libraries and from contributions by national and international institutions. There are 4777 references as well as indices by keywords, personal and corporate authors and periodical publications, for more efficient retrieval. This data is also stored on magnetic tape for use on a computer in a format compatible with the AGRINTER system. Information is also given with respect to obtaining the documents mentioned.

005

CDC

Méndez de Tirado, Ana Marina

Bibliografía sobre energía y campos afines / compiled by Ana Marina Méndez de Tirado and Miriam J Pequero de Ely. Santo Domingo, Corporación Dominicana de Electricidad, 1981. vii, 76p.

Presents a compilation of references on energy and related fields the documents of which are located in various institutions in the Dominican Republic. Its main aim is to inform the personnel of the Corporación Dominicana de Electricidad and others of the existence of material which would be useful in their research activities.

BIOMASS

006

DOCNPE

Acosta López, Rafael

Estudio de factibilidad para usar la cáscara de coco como combustible. Santo Domingo, Universidad Autónoma de Santo Domingo, Facultad de Ingeniería y Arquitectura, 1976. 77p.

007

CDC

Atchison, Joseph E.

The fuel value of bagasse pith and developments in pith burning at leading bagasse pulp and paper mills and/or sugar mills. In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat Bulletin No. 13, January-March, 1980.

Examines developments which have taken place toward more efficient burning of bagasse pith at the leading bagasse pulp and paper mills and/or at the sugar mills which supply the bagasse. Comments on the present status of pith burning technology, the fuel value of the pith, the problems encountered in burning it and the steps taken by various mills to enable them to burn the pith satisfactorily and efficiently. Includes information on efforts to burn the pith alone or in combination with whole bagasse, fuel oil, natural gas and coal. Describes also the various types of boilers which can be considered for pith burning.

008

CDC

Boodoo, A.

The effect of retention time on biogas production from slurry produced by cattle fed sugar cane. Tropical Animal Production, vol. 4 no. 1, 1979, p.21-25.

Reports results from a study of different retention times employed in the anaerobic fermentation of slurry from cattle kept on slatted floors and fed most sugar cane and its by-products. A Standard 200 litre oil drum with a plastic lining was used as a digester. The treatments were different retention times of 10, 20 and 40 d and there two determinations at each of these times. The digester was filled to the level of the overflow pipe (approximately 190kg) with slurry. Amounts of 18.5, 9.25 and 4.62 kg fresh slurry were added daily for the respective retention times of 10, 20 and 40 d. Daily gas production fell slightly from 53 to 48 litres/d, as retention time was increased from 10 to 40 d. The amounts of gas produced per unit of dry matter and per unit of organic matter entering the digester showed a linear increase with retention time.

009

CDC

Caribbean Agricultural Research and Development Institute (CARDI)

Biomass for the Caribbean: draft outline proposal: a paper presented at the U.N. Conference on New and Renewable Sources of Energy, Nairobi, August 1981. CARDI, 1981. 10p.

Puts forward a program which will evaluate species and develop production and harvesting systems for industrial scale biomass production. It also evaluates and demonstrates farm woodlots. The programme is estimated to cost US\$1,985,000 over a six year period.

010

CDB

Caribbean Development Bank

Survey on industrial molasses and alcohol utilization in CDB member countries / H.K. Naidu. 1978. 18p.

Presents the findings of a survey on the existing pattern of industrial molasses utilization with the objective of identifying alternative industrial uses such as single cell protein production for animal and human consumption, pharmaceutical, basic chemicals and power alcohol in CDB member countries. The survey includes Barbados, Belize, Guyana, Jamaica, St. Kitts/Nevis/Anguilla and Trinidad and Tobago. The survey shows that the present pattern of raw material use is central around industrial molasses utilization in the fermentation and distillation of potable alcohol for the production of rum. The non-potable sectors are small by comparison whereas production of power alcohol and basic chemicals are non-existent.

011

CDC

Carracedo, R.G.B.

Analysis of tendencies in the production of ethyl alcohol by fermentation. In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat Bulletin, no. 11, July-Sept., 1979. 8p.

Presents an analysis of the development of ethyl alcohol world production. It offers a panoramic view of the evolution of the tendencies in the period 1935-70 in the U.S. France, the United Kingdom and Japan. It also analyses the new tendency since 1973 in Brazil, the Philippines, the U.S. Australia, England, Japan, Thailand, Costa Rica, Hawaii, Zambia and Paraguay. An analysis of the Cuban alcohol industry and a world balance of the ethyl alcohol production by fermentation is presented.

012

CDE-DEC

Días González, Rafael Eduardo.

Estudio de factibilidad técnico-económico para el uso de alcohol etílico como combustible en República Dominicana. Santo Domingo, Universidad Autónoma de Santo Domingo, Facultad de Ingeniería y Arquitectura 197-?. 176p.

013

CDC

Filgueiras, Gabriel

Energetic conception for distilleries of ethylic anhydrous or potable alcohol with simultaneous production of liquid carburant, biofertilizer and electric energy. In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat Bulletin No. 13, Jan-Mar., 1980. 5p.

Examines a new concept of processing which makes better utilization of the energy that exists in sugar cane making it possible to produce the following from one ton of cane - 75 litres of anhydrous alcohol, 110kw of energy and 220k. of biofertilizers (dry material). This new concept utilizes techniques already developed separately but which are now set up jointly to allow distillery operation for the whole year even if the crop is seasonal.

014

CDC

Gajraj, A.M.

Energy self-sufficiency for the Caribbean biofuels. In West Indian Science and Technology, vol. 1, no. 1, 1976. p. 10-12.

015

TTUWI

Gajraj, A.M.

Prospects for biogas systems for the Caribbean. St. Augustine, University of the West Indies, 1976. 14p.

016

CDC

Guzmán, Paulino Lopez and Casanova, Carlos de Armas.

La potencialidad de la caña de azúcar como recurso energético renovable. Boletín Energético OLADE No. 17 Oct-Dec., 1980. p. 50-67.

017

CDC

Henry, D.M.

Is fuel from sugar cane a viable Basin alternative? In Caribbean Basin Economic Survey, vol. 7, no. 1, March 1981.. p. 21-27.

Examines the production process of ethanol from energy crops then analyses the viability of sugar cane as a viable source of ethanol. The pros and cons of ethanol and gasohol as fuels for the Caribbean basin are described along with the projects being undertaken in the region with respect to ethanol production. Concludes that fuel alcohol or gasohol have yet to be proven profitable alternatives and that the outcome depends on 2 exogenous factors world prices of sugar and oil.

018

ISA

Jennings, P. and Ferreiras, B.

Recursos energéticos de bosques secos en la República Dominicana. Santiago, (República Dominicana) Instituto Superior de Agricultura, 1979. 117p.

019

BCRD

Laurie, C. Keith

A process to convert sugar cane biomass to fuel alcohol and high value board products. Presented at the Caribbean Consultation on Energy and Agriculture, Santo Domingo. 28 Nov-1 Dec., 1978.

020

CDC

Leibig, Wilhelm

Basic energy and its utilization in the cane sugar industry / Wilhelm Leibig. (Aurora, Colorado, : Leibig Engineering Inc., 1980). In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat Bulletin No. 13, Jan-Mar., 1980. 12p.

Suggests a need for the reevaluation of energy management and heat economy in the sugar industry. Presupposed is an optimized heat economy and the production of heat with a high energy potential, thus allowing the transformation of more primary energy to mechanical or electrical power, also influencing favourably the following thermal physical processes. Advantages of the application of high pressure steam and rear re-arrangement for power plants are shown to balance out the high demand of mechanical or electrical power with lower process heat consumption, and beyond that, making surplus energy available for unrelated customers.

021

TTUWI

McGaw, D.R.

The potential for biomass as an energy source for the Caribbean. In Proceedings of the Commonwealth Engineers Conference. Trinidad, Nov. 8-13, 1981. Vol. I. ed. by K. Mahadeva and M.W. Chin. p. 72-81.

022

CDC

OLADE

Programa regional de biogas OLADE: estrategias y tecnologías disponibles para implementar programas rurales en biogas en America Latina. Quito, Ecuador, 197-?. 68p.

023

CDC

Pyle, L.

Alternate energy resources from vegetable and organic matter. In Report on the Project Group Meeting on Alternative Energy Resources 18-22 September 1977, Barbados. London, Commonwealth Science Council, 1978. p. 47-70.

024

CLE-DEC

República Dominicana. Consejo Estatal del Azúcar

Estudio para la optimización energética de la industria azucarera y su diversificación. Santo Domingo, ICIDCA, 1979. 2v.

025

CDC

Santana, A.

The production of biogas from cattle slurry: the effects of concentration of total solids and animal diet. In Tropical Animal Production vol. 5, no. 2, p.130-135.

The resulting 8 slurry mixtures from two pairs of young bulls fed contrasting diets based on grass/molasses or chopped sugar cane were used as substrate for eight 200 l drum anaerobic digesters. There was a significant difference in the gas production from the slurries with the sugar cane based diet giving consistently higher yields. Physical conditions of pH and organic solids concentration would appear to favour molasses/grass diet. Suggests that the higher C.N ratio is the reason for the superiority of the sugar cane diet.

026

JMMMNR

Skrinde, R.T.

Biogas as a potential energy source in Jamaica. Kingston, 1980. 30p.

Argues the case for methane as an economical substitute for butane and kerosene as a cooking fuel. Explains how methane is produced. Describes the 2 types of plants and illustrates some designs. Gives rule of thumb figure of 25-35 cu.ft. of gas per day per cow. States that 100 cu.ft. of biogas is equivalent to 2.7 lbs. butane or 1/3 gallon kerosene, which is the amount needed for one day's cooking and heating. Discusses some resolvable storage problems, and reviews biogas success in some Asian countries from which Jamaica can benefit. Suggests that modern farm practices can contribute to methane and still provide fertilizer. Refers to the low cost of units and experiments being done at the Scientific Research Council.

027

CDC

UNIDO. Workshop on Fermentation Alcohol for Use and Fuel and Chemical Feedstock in Developing Countries, Vienna, Austria, 26-30 March, 1979.

Fermentation alcohol in the Commonwealth Caribbean / Desmond A. Ali 1979. 14p. (ID/WG.293/27).

028

CDC

UNIDO. Workshop on Fermentation Alcohol for Use as Fuel and Chemical Feedstock in Developing Countries, Vienna, Austria, 26-30 March 1979.

Perspective of ethanol usage as fuel in the Dominican Republic / A.A. Pena. 1979. 6p. (ID/WG.293/46).

029

CDC

UNIDO. Workshop on Fermentation Alcohol for Use as Fuel and Chemical Feedstock in developing countries, Vienna, Austria, 26-30 March 1979

Potential for fermentation alcohol production in Belize / A.L. Ayuso. 1979. 4p. (ID/WG.293/19).

030

CDC

UNIDO. Workshop on Fermentation Alcohol for Use as Fuel and Chemical Feedstock in Developing Countries, Vienna, Austria, 26-30 March 1979

The potential of sugar cane derived alcohol as a fuel in Jamaica / I. Sangster. 1979. 13p. (ID/WG.293/48).

031

CDC

UNIDO. Workshop on Fermentation Alcohol for Use as Fuel and Chemical Feedstock in Developing Countries, Vienna, Austria, 26-30 March, 1979.

Trends in the production of ethyl alcohol by fermentation / R.G.B. Carracedo 1979. 19p. (ID/WG.293/31).

032

CDC

Vallejo, Eduardo

Ethyl alcohol as a carburetant additive: technical and economical feasibility study. In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat Bulletin No. 8 Oct-Dec., 1978. 3, 23p.

CHARCOAL

033

HTSEP

FAO

Reboisement et lutte contre l'érosion en Haiti. Le charbon de bois combustible renouvelable. Rapport préparé par le Gouvernement de Haiti par l'Organisation des Nations Unies pour

l'Alimentation et l'Agriculture agissant en qualité d'agence d'exécution du programme des Nations Unies pour le développement sur la base des travaux de D.E. Earl en économie forestière. Rome, FAO, 1976. 22p.

Examine les facteurs de production économiques sociaux, énergétiques et écologiques touchant au charbon de bois. Recherche des solutions aux problèmes posés par la fabrication du charbon dans le présent et à l'avenir. Etudie la consommation du charbon et, analyse sa place dans l'économie haïtienne, examine l'aspect financier de l'établissement de plantations forestières pour leur utilisation comme combustible. Propose les recommandations pour assurer aux habitants une source d'énergie accessible, en sauvegardant la forêt.

034

CDC

Ffoulkes, D.

Feasibility of using pressed sugar cane stalk for the production of charcoal / D. Ffoulkes, R. Elliot and T.R. Preston. Tropical Animal Production, vol. 5, no. 2, 1980. p. 125-129.

Describes a simple technique for making charcoal from pressed sugar cane stalk. It was found that a 200 litre oil drum with holes drilled in it would serve as an efficient oven. From 15 kg. of dried stalk 2.34 kg. of charcoal were produced with a calorific value of 7.0 kcal/g. Sun drying of the pressed stalk for 24 hours increased the dry matter of the stalk from 53.4% to 93.5%, this being suitable for charcoal production. With a suitable binder the charcoal can be made into briquettes.

035

MSAG-ED

Volunteers in Technical Assistance (VITA)

Charcoal production in Antigua and Montserrat. Mt. Rainer, Maryland, VITA, 1981. 67p.

For use as a guide for more extensive investigation this report includes findings and recommendations on present and potential uses of charcoal. Recommendations include kiln and stove design testing as well as encouraging hotels and restaurants to consider charcoal as a primary fuel source.

EDUCATION/TRAINING

036

CDB

Development Sciences Incorporated (D.S.I.)

Survey of energy related training capabilities and needs in the Caribbean. Massachusetts, D.S.I., 1980. 50p.

This report reflects findings made by a survey team which visited each CARICOM member state, except St. Vincent and Belize. The purpose of the survey was generally to explore the potential for providing energy-related training in the following areas - 1. energy assessments 2. engineers/designers 3. energy conservation 4. energy economics and 5. alternative energy technologies.

037

TTUWI

George, K.L. and Kreider, J.F.

Solar energy training seminars in the developing world: the Jamaican experience. In Sun: Mankind's Future Source of Energy. Proceedings of the ISES Congress, New Delhi, India, January 1978. Ed. by F. de Winter and M. Cox. Atlas Corp., 1978. 293p.

038

TTUWI

Kochar, G.S.

Education and training in new and renewable energy sources. In Proceedings of the Commonwealth Engineers Conference. Trinidad, Nov 8-13, 1981. Vol. II ed. by K. Mahadeva and M.W. Chin. p. 37-39.

039

CDC

Lalor, G.C.

Role of university in assisting development of alternative energy sources. In Report on the Project Group Meeting on Alternative Energy Resources 18-22 September 1977, Barbados. London, Commonwealth Science Council. p. 75-82.

ENERGY ALTERNATIVES (GENERAL)

040

DOCDE-DEC

Anteproyecto para el desarrollo de fuentes de energía para su utilización en el sector agropecuario. Santo Domingo, Secretaría de Estado de Agricultura - CERESD - Universidad Autónoma de Santo Domingo, 1980. 11p.

041

CDB

Ashby, W.R.

A survey of alternative energy possibilities in Jamaica. Kingston, Petroleum Corporation of Jamaica, 1980. 40p.

Attempts to summarize what has been done so far in assessing the potential of energy alternatives. Discusses peat, hydro, solar thermal, wood and charcoal, biogas, alcohol, refuse, wind and other alternatives whose potential application require longer lead times such as photovoltaics, ocean thermal, geothermal and biomass. Reference is also made to the importance of energy conservation, including such specific projects as the recovery of waste lubricating oil, as well as institutional requirements for carrying out a programme in alternative energy and the whole planning context in which such an effort must be cast; namely an effort to secure a less energy intensive economy.

042

TTMENR

Ashby, W.R.

The prospects for alternative energy sources in Jamaica. In Report on the Project Group Meeting on Alternative Energy Resources 18-22 September 1977, Barbados. London, Commonwealth Science Council. p. 155-166.

043

CDB, CDC [Restricted]

Caribbean Development Bank

Progress report: USAID Caribbean Alternative Energy Systems Project No. 538-0032 and technology component of USAID Employment/

Investment Promotion Project No. 538-0013. Wildey, Barbados, Caribbean Development Bank, 1981. 50p.

Reports on activities and projects which have been completed, are in progress, or are being planned by the Caribbean Development Bank with assistance from USAID. The areas considered are energy needs assessments; field testing; communications and information and studies and technical assistance contracts. Included in the annex are fact sheets on sub-projects funded under the two USAID projects.

044

CDB

Center for Energy and Environment Research. Seminar on wind as an energy alternative for the Caribbean. Bridgetown, Barbados, Dec. 7, 1981

The energy alternatives for the Caribbean. /Juan A. Bonnet. San Juan, University of Puerto Rico, 1981. 28p. (CEER-W-12).

Discusses alternatives to petroleum for energy sources:- geothermal power, hydropower, biomass, bioconversion, winds, solar and ocean thermal energy conversion.

045

CDC

Commonwealth Science Council.

Caribbean alternative energy programme. Report of the workshop on energy accounting for the Caribbean, San Juan, Puerto Rico, 14-18 May, 1979. London, Commonwealth Science Council, 1980. 147p.

046

CDC

Commonwealth Science Council.

Caribbean alternative energy programme - Report on the second meeting of the Steering Committee, Barbados, 19-21 February, 1979. London, November 1979. 54p.

047

TIMENR

Commonwealth Science Council

Report on the Project Group Meeting on Alternative Energy Resources, 18-22 September 1977, Barbados. London, Commonwealth Science Council, 1977, 1977. 26p., [CSC(77)AER-1].

048

CDC

David, Eduardo

World technical view: fuel and sugar industry. In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat, Bulletin No. 11 July-Sept. 1979. 4p.

States that ethyl alcohol from molasses or from cane can be considered as a solution of limited possibilities as a total or partial gasoline substitute. Bagasse on the other hand even though its use is being increased has unexploited reserves which are very interesting for underdeveloped countries.

049

DOISA

Dominguez Garabito, P.

Antecedentes nacionales e internacionales sobre la investigación para el aprovechamiento de recursos energéticos no convencionales. Santo Domingo, Colegio Dominicano de Ingenieros Arquitectos y Agrumensores, 1978. 30p.

050

TTMENR

Emtage, C et al.

A study of feasibility of alternative energy sources for a rural Barbadian village. In Report on the Project Group Meeting on Alternative Energy Resources 18-22 September 1977, Barbados. London, Commonwealth Science Council, 1978. p. 25-46.

051

JMMMNR

Energy Systems International (E.S.I.)

Preliminary energy sector assessments of Jamaica. Virginia
ESI, 1980. 5 vols.

052

ANCB

Fundashon Antiyano Pa. Energie

Het gebruik van alternatieve energiebronnen op de
Nederlandse Antillen. Curaçao, Werkgroep Integrale Ontwikkelingsplanning, 1977. 32p.

053

CDC

Gustavo, I

Reflections on the use of steam in sugar mills. In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat Bulletin No. 11, July-Sept., 1979. 14p.

Sets forth briefly the ways in which steam and power are used at present in national sugar mills. Also presents ideas and concepts on the best techniques for the use of caloric power which have been studied, published and verified by recognized authorities. Suggests ways and rules to organize research and establish a thermal balance, which will make it possible to obtain substantial savings on steam.

054

CDC

Guzmán, Paulino López

Energy crisis and sugar cane. In Group of Latin American and Caribbean Sugar Exporting Countries Secretariat Bulletin No. 10 April-June, 1979. 11p.

055

CDC

IBRD

Caribbean energy survey / J. Uwe Richter and Joseph Vardi. Washington, D.C., IBRD, 1979. 42p. (Report No. 2511-CRB).

056

CDC

IBRD

Annex to Caribbean energy survey. Washington, D.C., IBRD, 1979.
61p. (Report No. 2511-CRB).

057

CDC

Laurie, C.K.

A preliminary evaluation of the total energy needs of Orange Hill Estates. Barbados, Sugar Cane Consultants Ltd., 1980.

058

CDC

OAS Seminar on non-conventional energy sources, St. Augustine, Trinidad, November 15-19, 1976.

A note on development of non-conventional sources of energy in developing countries / Ahmad Zia Mian. Kingston, Ministry of Mining and Natural Resources, 1976. 27p.

States that the existence of positive relationship between energy consumption and growth of national income as well as level of industrialization have created a serious interest in the development of indigenous sources of energy to assure long-term supply. Projects that until 1990 at least 40-45% of world energy demand will be met by oil. This view is based on present demand structure as in 1972 oil was supplying about 48% of world energy demand. Predicts that the growth in the demand for oil will have to be restricted in order to make this non-renewable source of energy available for non-substitutable uses only. Subsequently the author looks at the practicality of various non-conventional sources of energy.

059

CDC

OAS. Third Caribbean Seminar on Science and Technology Policy and Planning. Caribbean Task Force.

Identification and assessment of conventional and non-conventional energy resources of Barbados (preliminary version) / T. Fletcher. Washington, D.C. OAS. 1977. Various pagings. (Doc. No. 2).

Examines the energy consumption in Barbados, where 40% of the energy consumed is used for air transportation and 32% for electricity generation. States that conventional energy resources can make little contribution to the energy needs of the country and as far as non-conventional energy sources are concerned states that solar and wind energy have the most potential.

060

CDC

OAS. Third Caribbean Seminar on Science and Technology Policy and Planning. Caribbean Task Force

Identification and assessment of conventional and non-conventional energy resources of Grenada (preliminary version) / T. Fletcher. Washington, D.C. OAS, 1977. Various pagings. (Doc. No. 3).

Examines energy consumption in Grenada where most of the country's needs are satisfied by imported oil. It is estimated, however, that a significant percentage of domestic energy needs are satisfied by indigenous solid fuels such as wood and charcoal. With respect to conventional energy resources states that off-shore surveys for petroleum deposits have been carried out and results look promising, while for non-conventional sources suggests that attention be given to solar, wind and hydraulic energy. Recommends conservation on the importation of petroleum products; the expansion and development of facilities for improved drying of crops using solar energy; the implementation of measuring systems to monitor solar, wind and hydraulic energy.

061

CDC

OAS. Third Caribbean Seminar on Science and Technology Policy and Planning. Caribbean Task Force

Identification and assessment of conventional and non-conventional energy resources of Guyana / T. Fletcher. Washington, D.C.: OAS, 1977. Various pagings. (Doc. No. 4).

Examines energy consumption in Guyana where processing and other industrial purposes account for some 71% of the energy utilized, 15% for electricity generation and 10% for ground transportation. Conventional energy resources appear to contribute very little to the energy needs of Guyana. Non-conventional energy resources are favourable particularly

hydraulic and solar energy and biomass. Recommends increased research and development activity for both small and large scale hydro power facilities, the production of wood charcoal, the use of rice chaff for generating electricity and the application of solar energy for the large-scale drying of agricultural crops.

062

CDC

OAS. Third Caribbean Seminar of Science and Technology Policy and Planning. Caribbean Task Force.

Identification and assessment of conventional and non-conventional energy resources of Haiti (preliminary version) / S. Satcunanathan. Washington, D.C. OAS, 1977. Various pagings. (Doc. No. 5).

Examines energy consumption in Haiti and reveals that commercial energy requirements are met by imported oil and gas and as of 1972 by some indigenous hydroelectricity. Other sources of energy extensively used, firewood, charcoal, bagasse etc. are however not usually classified as commercial energy. With respect to conventional energy, Haiti possesses some lignite deposits the extent and quality of which are unknown; there is some indication that there may be petroleum deposits but no comprehensive data exist. States that non-conventional energy resources of solar, hydro-power and biomass possess some potential.

063

CDC

OAS. Third Caribbean Seminar of Science and Technology Policy and Planning. Caribbean Task Force

Identification and assessment of conventional and non-conventional energy resources of Jamaica (preliminary version) / S. Satcunanathan. Washington, D.C., OAS, 1977. Various pagings (Doc. No. 6).

Describes energy consumption in Jamaica and reveals that the largest consumer of energy is the bauxite industry which accounts for about 50% of total energy consumption. Public electrical energy generation and consumption account for about 15%, transportation 10% and the other sectors, the remainder. With respect to conventional energy sources it would appear that Jamaica's potential is quite low, while for non-conventional sources suggests that future action be devoted to the development of biomass, solar, wind and hydraulic energy. Recommends in the medium-term that surveys be

undertaken with respect to consumption by sector, locality and type and energy resources; and in the long-term that large scale electrical power be generated from solar energy and ocean thermal gradients.

064

CDC

OAS. Third Caribbean Seminar on Science and Technology Policy and Planning. Caribbean Task Force

Identification and assessment of conventional and non-conventional energy resources of Trinidad and Tobago / S. Satcunanathan. Washington, D.C. OAS, 1977. Various pagings (Doc. No. 7).

Analyses the energy consumption pattern in Trinidad and Tobago which has the highest per capita energy consumption in the Caribbean. An assessment of the energy resource data reveals that the country's petroleum industry completely dominates the energy arena, that very little has been done to identify, assess and develop other possible conventional energy resources. In the non-conventional arena, states that solar, wind wave, biomass and municipal waste merit the most attention and recommends in the short-term that surveys be carried out on energy resources, consumption and the development and utilization of these resources.

065

CDB

OAS Workshop on Development Problems of Small States, Grenada, May 7-9, 1981.

Energy problems and renewable energy potential in the Caribbean / Jeffrey W. Dellimore, Barbados, CDB, 1981. 25p.

Reviews briefly the energy situation in Caribbean countries and identifies increased efficiency of energy use, diversification of primary energy to include renewable sources and arrest of deforestation as the major challenges for the region. Opportunities for conservation and for near-term exploitation of hydro energy biomass, wind, solar radiation, wave power, ocean thermal masses, geothermal energy and more efficient use of muscle power are discussed and a possible energy scenario for the 1990's involving development of potential applications of these resources is outlined.

066

ANCB.

Pelser, J en Seus, P.F.

De energievoorziening op de Nederlandse Antillen en mogelijkheden voor toepassing van alternatieve energiebronnen; verslag van een studiereis gemaakt van 14-18 november 1970, 1979. 35p.

067

TTMENR

Rocheford, B.

Data collection for development of alternative energy resources. In Report on the Project Group Meeting on Alternative Energy Resources, 18-22 September, 1977, Barbados. London, Commonwealth Science Council, 1978. p. 13-23.

068

CDC

Satcunanathan, S.

Energy alternatives. In West Indian Science and Technology, vol. 1, no. 1, 1976. p. 3-9.

069

CDC

Satcunanathan, S.

Non-conventional energy resources for the West Indies. OAS. Studies on Scientific and Technological Development no. 28, p. 25-39. / OAS. Second Caribbean Seminar on Science and Technology Policy and Planning P.O.S., Trinidad, Jan 12-16, 1976. /

Examines the several alternate or non-conventional energy resources that may contribute towards meeting the energy requirements of the West Indian territories and indicates the steps that need to be taken to make such contributions possible. Energy resources considered are nuclear, solar, wind, gravitational, biological and geothermal. Information on past and current research work on non-conventional energy resources at the University of the West Indies is presented in an appendix.

070

CDC, TTP

Trinidad and Tobago. Parliament

White paper on natural gas. Port of Spain, Parliament, 1981. 25p.

States that natural gas is the only other significant and commercially exploitable natural resource capable of generating revenues of the required magnitude to offset the decline in gross national revenue as forecasted. The mode of occurrence, extent of reserves, utilization potential, demand, conservation and pricing of natural gas are discussed in detail. The government proposes to introduce legislation if necessary to provide for the development of natural gas resources in the national interest; introduce a Natural Gas Act which would give exclusive rights to the National Energy Corporation to purchase and sell and to the National Gas Transmission Co. of Trinidad and Tobago to transport and distribute natural gas respectively; and to take urgent measures with respect to manpower and technological capability needs.

071

TTMENR

Tudor, José L.

Alternative energy options for Barbados. In Report on the Project Group Meeting on Alternative Energy Resources 18-22 September 1977, Barbados. London, Commonwealth Science Council, 1978. p. 181-185.

072

BBNSI

Tudor, José L.

Institutional infrastructure supporting the search for local energy sources in Barbados. Presented to the Panel on Wind Energy, U.N. Conference on New and Renewable Sources of Energy Geneva, Nov. 12-16, 1979. 10p.

073

CDC

U.N. Conference on New and Renewable Sources of Energy. Nairobi, Kenya, 10-21 August, 1981

National report submitted by Cuba. 1981. (A/CONF.100/NR/26).

074

CDC

U.N. Conference on New and Renewable Sources of Energy. Nairobi, Kenya, 10-21 August, 1981

National report submitted by the Dominican Republic, 1981. (A/CONF.100/NR./6).

075

CDC

U.N. Conference on New and Renewable Sources of Energy. Nairobi, Kenya, 10-21 August, 1981

National report submitted by Guyana. 1981. 9p. (A/CONF.100/NR/44).

076

CDC

U.N. Conference on New and Renewable Sources of Energy. Nairobi, Kenya, 10-21 August, 1981

National report submitted by Jamaica. 1981 17p. (A/CONF.100/NR/16).

077

CDC

U.N. Conference on New and Renewable Sources of Energy. Nairobi, Kenya, 10-21 August, 1981

National report submitted by Suriname. 1981. 22p. (A/CONF.100/NR/69).

078

CDC

UNDP

Requerimientos futuros de fuentes no convencionales de energía en América Latina. Quito, Ecuador, June, 1979. 283p.

079

CDC

U.N. ECLA Subregional Office for the Caribbean. CDCC. Fifth Session. Kingston, Jamaica, 4-10 June 1980.

Energy resources in the CDCC member countries. 1980. [viii] 67p. (E/CEPAL/CDCC/65).

080

CDC

U.N. ECLA Subregional Office for the Caribbean. CDCC. Fifth Session. Kingston, Jamaica, 4-10 June 1980.

The United Nations Conference on New and Renewable Sources of Energy: its relevance for CDCC member states. 1980. 12 [3] p. (E/CEPAL/CDCC/67).

Cites technical information and technological flow within the sub-region and with other regions as the most urgent requirement for the development of new and renewable sources of energy. Mentions three areas necessary for a national approach to developing these new sources of energy - policy formulation, basic studies and development projects, and stresses the need to integrate NSRE policy with the national energy policy. The important aspect of the preparatory process for CDCC states is the opportunity it presents for a unified and well integrated approach for the support of national policies in the area of NSRE, at every level.

081

CDC

U.N. Environment Project et al. Transactions at the Conference on Environmental Management and Economic Growth in the smaller Caribbean Islands. Wildey, St. Michael, Barbados, September 17-21, 1979.

Opportunities for technical co-operation for the Lesser Antilles with respect to development of alternate sources of energy / Juan A. Bonnet. p.130-139.

Presents a brief background of the Lesser Antilles, discussing their dependence on imported petroleum and the consequent economic constraints. The solution of the energy problems is seen as dependent on utilization of their common geographical and ecological situations. Existing natural resources in the region include solar radiation, ocean currents and thermoclines, wind and geothermal formations. New opportunities for technical co-operation are discussed with the recognition that such co-operation be based on well identified common interest areas, with the promise of recognizable results and a large active role for each island.

082

CDC

UNEP/CEPAL. Meeting of Government Nominated Experts to Review the Draft Action Plan for the Wider Caribbean Region. Caracas, Venezuela, 28 January-1 February, 1980.

Overview on energy and environment in the Caribbean area / prepared with the co-operation of UNIDO. 1979. 228p. (E/CEPAL/PROY.3/L/INF.9).

Provides basic information on the present energy situation, the regional resources and trends identified with respect to the future energy scenario of the region and the consequences these might have for the environment. Additionally the report identifies common problems and where possible proposes common strategies to overcome these problems. Recommends that 'hard' technological innovations should be avoided in favour of 'softer' technologies that ensure industrial development in harmony with social development.

083

CDB

UNITAR Conference on Economics and Environmental Effects of Future Energy Sources, Montreal, 26 November-6 December, 1979.

Alternative sources of energy available to Barbados / Winston Cox. 1979. 9p.

Examines the alternatives available to the island and concludes that only the use of bagasse to generate electricity is technologically and economically possible at this stage. The contribution from the source is also likely to be significant in terms of demand for energy. The other sources are either too costly, e.g. in the case of using sugar cane to produce alcohol instead of sugar for export, or are only likely to be viable for individual premises e.g. wind and solar energy. Concludes that the most useful policy for Barbados is energy conservation.

ENERGY ACCOUNTING

084

CDC

OLADE

Energy balances for Latin America, Quito, Ecuador, 1981. 389p.
(OLADE Documents Series: No. 13).

085

CDC

OLADE

OLADE methodology for the elaboration of energy balances.
Quito, Ecuador, [197?] 83p., annexes.

086

CDB

UNITAR Conference on Economics and Environmental Effects of
Future Energy Sources, Montreal, 26 Nov. - 6 Dec., 1979

A system of energy commodity balances for Barbados. / Winston
Cox et al. Barbados, 1979. 17p.

This paper discusses the system of energy commodity balances
for Barbados and is divided into 3 parts. The first section
discusses the data requirements of the planners; Section II
deals with the accounting framework and the final section
addresses the problem of choice of conversion factors.

ENERGY POLICY AND PLANNING

087

CDC, TTUWI

Byer, T et al

Energy development in the Caribbean - options and necessities.
In Energy Policy vol. 8, no. 4, December 1980. p. 331-335.

The energy importing countries of the Caribbean have
experienced substantial increases in the costs of the crude oil

imports on which they largely depend. Their weak position is mainly the result of a meagre resource base. But, the authors argue that Caribbean energy problems have been aggravated by inappropriate policies and institutional constraints. The most immediate way of improving the position is to concentrate on conservation and the substitution of indigenous fuels for imported energy, as far as is economically feasible. Appropriate pricing policies and rational planning are essential if any lasting improvement is to be made. External assistance is also needed to develop the energy resource base, including hydrocarbons, and is available from bilateral and multilateral institutions.

088

TTMENR

Castellon, F.

Energy planning and economic development in the Caribbean. In Report on the Project Group Meeting on Alternative Energy Resources, 18-22 September 1977, Barbados. London, Commonwealth Science Council, 1978. p. 187-201.

089

CDB

CARICOM Workshop on Energy Assessment Needs in the Caribbean, Kingston, Jamaica, May 15-16, 1980.

An approach to energy planning methodology for the Caribbean: the Jamaica model / by W. Ashby. Kingston, / 1980 / . 53p.

Describes the Jamaican experience in energy policy and planning as a possible model for other Caribbean countries. It discusses the administrative structure, pricing policy, the assessment of energy resources, and the approach to energy supply demand management, especially the programme of sectoral energy end-use surveys which is now in progress. It however does not deal exhaustively with the data requirements of energy planning.

090

JMMMNR

CARICOM Workshop on Energy Assessment needs in the Caribbean. Kingston, Jamaica May 15-16, 1980.

Future energy planning and policy needs in the Caribbean / A.Z. Mian. Kingston, 1980. 16p.

Contains 10 tables of data on the energy situation of the world in general and Jamaica; plus lists of topics such as: planning strategy, policy implications, energy priorities, forecasting energy demand and objectives. Tables I-V tell of world energy supply; world energy supply mix and supply growth in percentages; world oil supply; oil price (Arabian light) 1979-1985. Information is projected to the year 2000. Tables VI-X set out Jamaica's consumption by sectors; her energy demand 1972-2000; oil import bill as a percentage of total import costs; total petroleum imports and cost 1975-1979; energy consumption mix 1979-1990. The mix includes petroleum bagasse, hydro, peat, biogas and solar.

091

CDC

Gajraj, A.M.

Energy policy and the Commonwealth Caribbean. St. Augustine, University of the West Indies, Department of Chemical Engineering, 1979. 34p.

092

JMNPA

Jamaica. Ministry of Mining and Energy.

Jamaica's national energy plan. Kingston, Agency for Public Information, 1981. 43p.

Outlines plans to reduce energy consumption through efficient use and the development of indigenous alternative sources while maintaining satisfactory economic growth. Aims at diversifying present energy sources by making use of forms such as solar, hydro, biogas and charcoal. Mentions feasibility study being carried out on peat mining and the many uses of solar and wind energy already in effect. Other experimentation is going on with respect to OTEC, energy from urban wastes, bioenergy and hydro projects. Indicates the establishment of programmes of energy demand management, public education and an energy accounting system.

093

CDC

U.N. ECLA. Subregional Office for the Caribbean. CDCC. Second Meeting of Planning Officials in the Caribbean. Kingston, Jamaica, 29 May-2 June 1980.

Planning the energy sector / by Trevor M.A. Farrell. 1980. 16p. (CDCC/80/PO/WP/80/7).

094

CDC

UNDP

Co-ordination of energy policy in the Caribbean. Preliminary Report / J. Vardi, June, 1981. 129p.

FUELWOOD

095

JMNPA

Thompson, D.

Fuelwood plantation research in Jamaica. Kingston, Ministry of Agriculture, 1981. 8p.

Reports experiments to develop fast-growing trees to supply the increased demand for fuelwood as a substitute for imported fuels. Indicates that *Leucaena leucocephala* does better if seedlings are used, especially on bauxite soil. *Calliandra callothyrsus* also, but this species must be further tested elsewhere.

GASOHOL

096

CUJUCEPLAN

Torres, J.

El gasohol. Havana, Junta Central de Planificación (JUCEPLAN), 1979. 25p.

GEOHERMAL

097

MSDU [Restricted]

Institute of Geological Sciences

Draft report on geothermal investigations in Montserrat.
May 1976. London, Institute of Geological Sciences, 1976. 58p.

Following analyses of previous geothermal reports and investigations during a visit to the island, the mission found evidence of geothermal occurrence but recommends further heat flow studies and shallow temperature gradient drilling to obtain more information on the extent of a deep hydrothermal system. The assumption that the hydrothermal system providing heat to the Soufrières and the coastal region could be a single system could not be proven. The study presents topographical, geological, geophysical and chemical data deduced from other studies, personal observations, shallow drilling and the testing of samples.

098

BBDD

Merz and McLellan

Geothermal prospects at Soufrière. Results of exploratory holes 1-5. Report to Government. St. Lucia. 1976.

099

BBDD

Merz and McLellan

Geothermal prospects at Soufrière. Results of exploratory holes 6-7. Report to Government. St. Lucia. 1976.

100

Robertson, D.P.

Geological and geothermal report, Montserrat / Interregional Adviser on geology and mining, UN/CNRET. 1973.

101

CDC

Tomblin, J.F.

Geothermal power in the West Indies. In West Indian Science and Technology, vol. 1. no, 1, 1976. p. 19-22.

102

CDC

Tomblin, J.

Geothermal power in the West Indies. 1976. 10p. (Presented at the Seminar on Non-conventional Energy Sources, Port of Spain, Trinidad, Nov. 15-19, 1976).

Inflation and lack of fossil fuels are forcing some islands of the Lesser Antilles to consider alternative energy sources of which geothermal energy seems most feasible. The paper briefly outlines the principles of geothermal systems, describes the exploitation which has taken place in Guadeloupe and St. Lucia to date and discusses the prospects for future development.

103

Williamson, K.H.

Tentative model for the Surplus Springs geothermal system, St. Lucia. Institute of Geological Sciences (I.G.S.) London, 1979. Internal report WD/OS/79/2.

104

JMMNR

Wright, R.M.

Geological constraints on Caribbean energy production. Kingston, 1978. 20p. Paper presented at the Caribbean Consultation on Energy and Agriculture, Santo Domingo, Nov. 29-Dec. 1, 1978.

Discusses the potential for oil and gas, geothermal energy and coal in the Caribbean. Outlines the geology and physiography of the Caribbean basin and explains why petroleum is found in certain areas. Parts of Central America and the Lesser Antilles possess geothermal potential but suggests further investigation if it is to become viable. Observes that peat is

of significance in Jamaica and the Dominican Republic. Believes that with accelerated exploration the Caribbean can improve its energy supply in 30 years before technology produces supplies to meet long-term demands.

HYDRO-POWER

105

DOUSAD

Aponte, Santos Máximo.

Determinación del potencial hidroeléctrico, zona de mayor aprovechamiento. Santo Domingo, Universidad Autónoma de Santo Domingo, Facultad de Ingeniería y Arquitectura 1977. 54p.

106

DOINDOTEC

Báez Rodríguez, R. de Js.

Consideraciones sobre la necesidad de ejecución de un programa nacional de desarrollo hidráulico. Santo Domingo, Colegio Dominicano de Ingenieros, Arquitectos y Agrimensores, 1978. 14p.

107

DOISA

Bajer, S.B.

Consideraciones sobre la necesidad de ejecución de un programa nacional de desarrollo hidráulico. Santo Domingo, Colegio Dominicano de Ingenieros, Arquitectos y Agrimensores, 1968. 20p.

108

JMNPA

Bradbury, J.J.C and Seethapathy, A.P.

Evaluation of small hydro-power sites in Jamaica. New York, 1980. 14p.

Assesses the feasibility of proposals to convert excess hydraulic energy in pipelines to electric power. Accepts the possibility of the theory, but feels each proposal should be carefully checked. Finds either reservoirs or hydro-turbine plants as part of the pipeline system, each requiring a different operation. Discovers faulty calculations and conclusions in some of the Scientific Research Council's recommendations. Concludes that three proposals are promising and suggests in-depth study for their implementation. Points to the possibility of insufficient water for hydro-power in dry seasons, hence no electricity to rural areas, and therefore sees the sites as practical only if connected to the Jamaica Public Service Company transmission system. Concludes that the scheme should be pursued in the light of Jamaica's critical position.

109

GYP

Guyana. Ministry of Energy and Natural Resources.

Preliminary report on feasibility study of Upper Mazaruni hydro-electric project / Energoprojekt Engineering and Consulting Company. Georgetown, Ministry of Energy and Natural Resources, 1973. 22p.

110

GYP

Guyana. Upper Mazaruni Development Authority.

Upper Mazaruni hydroelectric project. Final engineering report / SWECO. Georgetown, Upper Mazaruni Development Authority, 1976.

111

GYP

Hydropower and the environment. Proceedings of the International Seminar on Hydropower and the Environment, Georgetown, Guyana, 4-8 October, 1976. Georgetown, Guyana, National Science Research Council, 1978. xv, 280p.

112

BBBDD, DMGL

Jarvis

Report on hydroelectric development in Dominica / North of Scotland Hydroelectric Board. Consultants report. 1975. Vol. 1, 35p. (Vol. 2 diagrams).

113

GYP

Montreal Engineering Company Limited

Hydro electric power survey. Georgetown, UNDP, 1975. 17p.

114

DOISA

Muñoz, A.C.

Cuantificación del potencial hidro-eléctrico bruto superficial de la precipitación en la República Dominicana. Santo Domingo; Universidad Autónoma de Santo Domingo, 1978. 57p.

115

CUJUCEPLAN

Nichola, G.O.

Hydroelectric development in Guyana. Impact of science on society (Paris) 27(3): p. 321-330, 1977.

El artículo describe el programa de desarrollo hidroeléctrico del país, teniendo en cuenta que en Guyana la hidroelectricidad es considerada como la fuente de energía renovable más económica, que facilitaría su proceso de industrialización. Se señala que el plan está lleno de complejidades tanto ecológicas como sociales.

116

UNDIESA

UNDP

Water resources planning: Jamaica: project findings and recommendations. New York, UNDP, 1975. 65p.

Presents findings and recommendations for a water resources planning project in Jamaica. Primary areas of concern include a hydroelectric power survey for the island as a whole and a study for the improvement of the Kingston city water supply. Makes specific recommendations regarding general development planning, organization of governmental infrastructure and technology transfer.

117

CDC.

UNIDO. Second Seminar-Workshop/Study Tour in the Development and application of Technology for Mini-hydro Power Generation (MHG), Hangzhou, China 17 October - 2 November 1980.

Micro-hydro power in Guyana. / Joseph N. O'Lall. Vienna, UNIDO, 1981. 31p. (ID/WG.329/31).

This paper discusses the design and application of water wheels, Banki Turbines and low capacity plants for mini-hydro power generation (MHG) projects in Guyana. Three nearerterm projects are in the pipeline and MHG development is planned for much of the country utilizing local materials for construction and equipment fabrication.

118

CDC.

UNIDO. Second Seminar-Workshop/Study Tour in the Development and Application of Technology for Mini-hydro Power Generation (MHG), Hangzhou, China 17 October - 2 Nov., 1980

Mini-hydro electric generation in Jamaica and other countries of the CARICOM region / Dennis A. Minott. Vienna, 1980. 6p. (ID/WG.329/14).

Outlines the status, prospects and plans for mini-hydro power generation (MHG) in the region. In the case of Jamaica, the present organizational structure for mini-hydro development is described and technical, economic and engineering data is presented on a recent plant built in the parish of St. Andrew. With regard to the techno-economic features of the MHG plants in operation throughout the region, the major costs are curll works so that much of the technological development needed has to do with the design of low-cost impoundments, dams, penstocks, etc. Jamaica has the capability and capacity to manufacture cross flow turbines, switchgear and alternators. Research and development is hampered by financial constraints and there is no systematic training in MHG within the region. However, if and when the proposed regional Renewable Energy Development Station comes into being, work on MHG will be one of its principal functions.

NUCLEAR

119

DOISA

Drescher, H.P.

¿Es la energía atómica una alternativa? Santo Domingo, Colegio Dominicano de Ingenieros Arquitectos y Agrimensores, 1978. 15p.

120

CUJUCEPLAN

Kujarev, N.M.

La construcción de la primera central electronuclear en Cuba. Colaboración, p. 24-25, April 1980.

OCEAN

121

TTUWI

Deane, C.A.W.

Wave climate in the Eastern Caribbean. Proceedings of the International Symposium on Ocean Wave Measurement and Analysis ASCE/New Orleans, September 9-11, 1974. p. 214-232.

122

TTUWI

Kochar, G.S., Smith D., and Seshan, S.

Power from tropical oceans. In Proceedings of the Commonwealth Engineers Conference Trinidad, Nov. 8-13, 1981. Vol. I, ed. by K. Mahadeva and M.W. Chin. p. 101-113.

OCEAN THERMAL ENERGY CONVERSION

123

TTUWI

Smith, D.A.Y.

OTEC research proposal: a Caribbean application (unpublished) 1981. (Prepared for the CDB meeting of October 24, 1981).

124

Walters, H.C.

ANCB

OTEC to general energy from sea. In Antillen Review volume 1, no. 3 April/May 1981. p. 15.

PEAT

125

CDB

Mattis Demain Beckford and Associates Ltd.

Caribbean Development Bank preliminary investigation of peat in Belize. Kingston, Jamaica: Mattis Demain, Beckford and Associates Ltd. 1980.

126

JMNLJ

Robinson, E.

Peat as fuel. Jamaica Journal No. 44, p. 47-51, 1980.

The viability of the use of peat as fuel in Jamaica is explored by a geologist. Included in the paper is a listing of other uses of peat. The peat industry of other countries is examined as a means of showing the potential benefits in establishing such an enterprise in Jamaica. The question of quality of deposits in Jamaica is raised as well as the cost of extraction and its possible effects on the environment. The process is found to be expensive and it may have adverse effects on the ecological balance. The latter may be counteracted by the scientific planning of peat extraction. Concludes that the major deterrent to establishing this industry is the small quantity of peat available.

SOLAR

127

CUJUCEPLAN

Abrahantes, J.B.

La energía solar. Colaboración, 9-18, April 1980.

128

DOCNPE

Acosta, José Ramón

Estimación de la distribución de la radiación solar en la República Dominicana. / José Ramón Acosta. Santo Domingo, Comisión Nacional de la Política Energética, 1980. 24p.

129

TTUWI

Ashby, R.

An outline of solar energy projects for Jamaica. Kingston, Ministry of Mining and National Resources, 1974.

130

CDC

Ashby, W.R.

Solar water heating in Jamaica: is it worth it now? In West Indian Science and Technology, vol. 1, no. 1, 1976. p. 17-18.

131

JMMNR

Ashby, R.

The potential of solar energy for Jamaica. Kingston, 1975. 25p.

Focuses on the use of sunshine where the energy needed can be collected on the roofs of buildings. States that 2000 BTU per sq. ft. per day of radiant energy falls daily along the south coast, which has at least 7-8 hours sunshine per day all year. Argues that solar energy is possible for heating and crop drying and is cheaper than current methods, but also sees its use for bakeries, dry-cleaning and laundries. Suggests fiscal constraints to promote solar water heaters and that government should promote the development of solar technology for making solar ovens, stoves and boilers. Indicates that though solar energy can in theory power air conditioners and refrigerators the technology is not immediately available.

132

CDC

Donovan et al

Caribbean region solar co-operation study. Donovan, Hamester and Rattien, Inc. for the U.S. Department of Energy, 1979.

133

TTUWI

Gandhidasan, P. et al

Buoyancy effects in a solar regenerator. Journal of Solar Energy, vol. 22, no. 1, p. 9-14, 1979.

134

TTUWI

Gandhidasan, P. et al

Heat and mass transfer in a solar regenerator. The Chemical Engineering Journal, vol. 21, p. 59-63, 1981.

135

TTUWI

Gandhidasan, P. et al

Theoretical and experimental investigation of a countercurrent solar regenerator. In Proceedings of the ISES Silver Jubilee Congress, Atlanta, Georgia, May 28-June 1, 1979. New York, Pergamon Press, p. 686-690.

136

TTUWI

Gandhidasan, P. and Robinson, H. Analysis and simulation of forced flow solar collector/regenerator. In Proceedings of the International Passive and Hybrid Cooling Conference, Miami, Florida, Nov. 6-16, 1981.

137

TTUWI

Gandhidasan, P. and Satcunanathan, S.

Energy collection augmentation in tracking flat plate collectors. In Proceedings of the ISES Solar World Forum, Brighton, England, August 23-28, 1981.

138

TTUWI

George, K. et al

Design, construction and installation manual: solar water heating systems in Jamaica and the West Indies. Denver, Colorado, U.S. Energy Research and Development Administration / Jamaica. Ministry of Mining and Natural Resources. 1977.

139

DOISA

Hauser, H.

La energía solar en el suministro de agua. Santo Domingo, Colegio Dominicano de Ingenieros, Arquitectos y Agrimensores, 1978. 26p.

140

CDB, TTUWI

Headley, O and Springer B.

A natural convection solar crop drier. St. Augustine, Trinidad, 1976. 10p.

141

TTUWI

Headley, O. St. C and Springer, B.G.F.

Distilled water from solar stills. Journal of Chemical Education, vol. 48, no. 1, p. 49-51, January 1971.

142

TTUWI

Headley, O. et al

Flat plate collectors for solar driers. Heliotechnique and Development, col. 2, p. 300-306, 1976.

143

CDC

Headley, O.

Potential applications of solar energy in Barbados. In Survey of Science and Technology Development needs in Barbados.

Studies on scientific and technological development, no. 30.
Washington, OAS, 1977. p. 123-126.

Suggests ways in which solar energy may be used to supply a significant fraction of the low grade heat energy currently consumed in Barbados. Areas where it could be implemented at once with no further advances in technology are domestic water heating and crop drying. The main constraints on their widespread use are public acceptance and the development of suitable low-cost manufacturing techniques. Projections are also made in the areas of solar distillation for distilled water production and the use of high temperature flat plate collectors as power sources for absorption and as pre-heaters for boiler feed water.

144

CDC, TTUWI

Headley, Oliver

Power from the sun. In West Indian Science and Technology, vol. 1, no. 1, p. 13-16, 1976.

145

TTUWI

Headley, O and Singh U.

Solar drying of crops. Presented at the Symposium on Technology applied to Solar Energy Systems, Queretaro, Mexico, Jan. 29 - Feb. 3, 1979.

146

CDC

Headley, O. St.C.

Solar energy devices as applications of intermediate technology. OAS Studies on Scientific and Technological Development, no. 28. p. 40-43. /OAS Second Caribbean Seminar on Science and Technology Policy and Planning. Port of Spain, Trinidad. Jan. 12-16, 1976./

147

TTUWI

Headley, O. St.C.

The role of solar energy in Caribbean development. St. Augustine, U.W.I., Department of Chemistry, March 1979. 14p.

148

TTUWI

Headley, O. St.C. and Sweeney, M.

The thermodynamics of vapour transfer in a small gap solar still. In Proceedings of the Fourth International Symposium on Fresh Water from the Sea, Heidelberg, September 9-14, 1973. Vol. 4. p. 493-498, 1973.

149

CDB

Jamaica. Exhibition and Symposium on Renewable Energy applications for the Caribbean, Kingston, Jamaica, July 28-30, 1981

Industrial solar energy; the potential for Jamaica / W.G. Hesse and T.E. Melbourne. 1981. 22p.

Illustrates applications for the E-Systems patented Linear Fresnel lens solar concentrator system for industrial process heat, electric power augmentation and air conditioning. Potential Jamaican applications of such systems are discussed. It also introduces an aggressive plan to stimulate widespread utilization of solar concentrators in Jamaica and discusses the potential to reduce oil imports and create a progressive new industry. Finally, an economic analysis of industrial solar energy application is presented.

150

DOISA

Knoche, I.

El sol como fuente de energía. Santo Domingo. Colegio Dominicano de Ingenieros Arquitectos y Agrimensores, 1978. 9p.

151

CDC

OAS Seminar on the development of non-conventional energy sources, St. Augustine, Trinidad, November 15-19, 1976.

A developmental strategy for the utilization of solar energy in the West Indies / S. Satcunanathan. U.W.I., St. Augustine, Trinidad, 1976. 13p.

On the basis of the existing state of technological development in solar energy utilization and the probable consumption demand pattern in the West Indies, the paper outlines a five-year development and implementation programme for the utilization of solar energy in the West Indies. The three main areas discussed for utilization in research and development work are the conversion of solar energy to heat via flat plate and concentrating collectors; its conversion to electricity via photovoltaic devices and finally its conversion to biomass.

152

CDC, TTUWI

OAS Seminar on the Development of Non-conventional Energy Sources, St. Augustine, Trinidad, November 15-19, 1976

Energy and drying / D.R. McGaw. U.W.I., St. Augustine, Trinidad, 1976. 13p.

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CDC

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Presents an analysis of the performance of the ammonia water absorption refrigeration system for various combinations of temperatures of the heat interacting components of the system. It is shown that for generator temperatures in excess of 200°F(98°C) the co-efficient of performance is comparatively insensitive to variations in absorber and condenser temperatures. For generator temperatures below about 180°F(82°C) the C.O.P. is very sensitive to variations in condenser and absorber temperatures, especially with the latter. The overall C.O.P. of a flat plate solar collector driven ammonia water absorption refrigeration system above a maximum which with decreasing absorber or condenser temperatures, increases in value and shifts to lower generator temperatures.

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Solar space coding with particular reference to the humidification-dehumidification process. International Conference on Solar Building Technology, London, July 1977. 1977. 36p.

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A crop drier utilizing a two-pass solar air heater / S. Satcunanathan. St. Augustine, Trinidad, 1973. 10p.

A crop drier was built based on the two-pass solar air heater with the drier section placed below the collector. This design eliminates insulation of the bottom of the collector and provides for a compact unitary construction. Air is heated by being drawn through the collector and is then passed through the drier. Several types of crops were experimented with and the results proved quite satisfactory.

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UNESCO Conference "The Sun in the Service of Mankind", Paris, July 1973.

An integral solar water heater / S. Satcunanathan. St. Augustine, Trinidad, 1973. 13p.

Describes a novel design of a solar water heater in which the collector and storage tank are constructed as one unit. Tests indicate that the day time collector performance is quite satisfactory while the night time losses are acceptable.

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Wind power in the Caribbean a case study of Antigua. Toronto, Acres Consulting Services Ltd., 1977. 28p.

Aims to demonstrate the potential for wind generated electric power in the Caribbean in the light of the recent quadrupling of oil prices. Argues that on the basis of the results obtained in the study a very convincing case for investment in wind power can be made. Recommends the setting up of prototype installations so that a concurrent program of wind data collection can be undertaken on a regional basis.

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Urban Development Corporation, Kingston Jamaica: wind energy studies at Hellshire. Kingston, 1979. 18p.

Looks at the possibility of incorporating wind power into the electrical system; sets out the options available. Indicates that one wind generator can provide 80,000 kilowatt hours per year - the power needs of 19 households. Explains that wind energy is impractical in densely populated urban areas. Points out that recoverable power depends on size of propellor and wind speed. Suggests that speeds over 8 m.p.h. up to 40-50 m.p.h. are best. Discusses the disadvantages of large windmills re . space required, costs, and lack of technology. Recommends the use of small set generation since technology is proven and equipment available. Includes appendices, and a report on the operation of a large system in the U.S.A.

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The tower windmill for grinding sugar cane. U.S. Virgin Islands, Bureau of Libraries, Museums and Archaeological Service. Occasional Paper 2. 1977. 18p.

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Lamming, Stephen D.

Wind measurement and applications to wind turbine siting.
November 1981. 14p.

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Project Consultants Ltd.

Preliminary study of the feasibility of pumping the Barbados water supply by wind power. Bridgetown, 1980, 25p. (CSTP 48).

Stating the current cost of supplying the population's water demand of 26 million gallons per day to be 62.3¢ per gallon, the report projects a pumping cost \$1.20 within 15 years owing to rising oil prices. Studies of average wind speeds at selected pumping stations during summer and winter are presented and three to five sites are identified as having high potential for wind-powered installations. The windward coast is recommended as the optimum situation for a wind electric system for Barbados and a cost analysis calculated at more than 10% p.a. as a saving to the economy.

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Shellard, H.C.

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A proposal for a wind energy program for Montserrat. Arlington, Virginia. The Republic Group, 1980. 88p.

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support of a pre-investment test and evaluation program for wind energy utilization (3) a topographic analysis of terrain wind speed enhancement (4) a wind driven generating plant for a pre-investment study, test and evaluation program as manufactured by WIG Energy Systems Inc. and (5) specifications for a post-demonstration investment feasibility study of wind energy deployment.

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Executive summary of a comprehensive program to utilize wind energy for electric power generation. Arlington, Virginia, 1980.

(Paper presented to the Government of Barbados, Ministry of Trade and Industry).

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Developing a wind energy program in Barbados.

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ANCB	Netherlands Antilles. Central Bureau for Records, Documents, Filing and Archives
BBCB	Barbados. Central Bank Library
BBDD	Barbados. British Development Division
BBNSI	Barbados. National Standards Institute
CARICOM	Caribbean Community Secretariat
CDB	Caribbean Development Bank
CDC	Caribbean Documentation Centre
CMI	Caribbean Meteorological Institute
CUJUPLAN	Cuba. Junta Central de Planificación. Centro Información Científico Técnica
DMGL	Dominica. Government Library
DOCDE	República Dominicana. Coporación Dominicana de Electricidad
DOCDE-DEC	República Dominicana. Corporación Dominicana de Electricidad. Dirección de Energía No Convencional
DOCNPE	República Dominicana. Comisión de Política Energética
DOINDOTEC	República Dominicana. Instituto Dominicano de Tecnología Industrial
DOISA	República Dominicana. Instituto Superior de Agricultura
DOUSAD	República Dominicana. Universidad Autónoma de Santo Domingo
GYP	Guyana. State Planning Secretariat Library
HTSEP	Haiti. Secrétairerie d'Etat du Plan
JMNPA	Jamaica. National Planning Agency
JMMNRR	Jamaica. Ministry of Mining and Natural Resources
JMNLJ	Jamaica. National Library
MSAG-ED	Montserrat. Attorney General's Department. Energy Desk

MSDU	Montserrat. Development Unit
TTMENR	Trinidad and Tobago. Ministry of Energy and Natural Resources
TTP	Trinidad and Tobago. Parliament Library
TTUWI	University of the West Indies Library. West Indian Collection. St. Augustine Campus
UNDIESA	U.N. Department of International Economic and Social Affairs

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