

EVALUATION OF

the

GOVERNMENT OF JAMAICA/U.S.A.I.D.

ENERGY SECTOR ASSISTANCE PROJECT

by

Dr. Kenneth Carter

Dr. Trevor Byer

Mr. Henry Santiago (Chairman)

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I. INTRODUCTION

This report presents the results of the first annual evaluation of the joint Government of Jamaica/U.S.A.I.D. Energy Sector Assistance Project.

a. Energy Project - The primary goal of the Energy Assistance Project (EAP) is to assist Jamaica to reduce its dependence on imported petroleum through promotion of conservation and development of its indigenous resources.

The achievement of this goal will be through the implementation of specific energy programs, primarily solar water heating and conservation, and, most importantly, the development of institutional structures, both governmental and private, to evaluate, manage, and implement those energy opportunities that are or would become available to Jamaica. Implicit in the latter element is the ability to identify and analyze current and prospective energy policies for consideration and adoption by the political leadership of Jamaica.

The project was officially initiated September 1981, but numerous organizational and staffing problems were encountered in the early months resulting in an effective delay of about 8 months. Since then, however, the Project has been proceeding at a relatively accelerated pace and there is the expectation that much of this lost time will be recovered.

b. Energy Evaluation Team - The evaluation team consisted of Dr. Kenneth Carter, Lecturer at the University of the West Indies and Management Consultant; Dr. Trevor Byer, Regional Energy Advisor to

the Caribbean Development Bank/CARICOM Secretariat with the USAID Caribbean Alternative Energy Systems Project; and Mr. Henry Santiago (Chairman), Senior Analyst in the Office of International Affairs, U.S. Dept. of Energy. The evaluation team began its review of the Energy Project on Monday April 20, 1983 and concluded its efforts on Friday, May 13, 1983.

The team focussed its review on four major areas of concern:

- o Progress and Problems in Institution Building
- o Progress in the development of the capability to identify, analyze and pursue energy policy issues
- o Management and administration of the Public Sector Conservation and Alternative Energy programs (Phase I)
- o Quality and performance of the long term energy consultants and the role of this function within the overall project.

The Terms of Reference for the evaluation team are at Exhibit 1.

The evaluation team conducted its review and evaluation through the use of extensive interviews and review of the documentation developed under the project as well as other related documents. The schedule of interviews are at Exhibit 2.

II. CONCLUSIONS & RECOMMENDATIONS

1. The Energy Division of the MME is responsible for the development and implementation of a National Energy Policy for Jamaica. To achieve its objectives it uses not only its own resources, but also coordinates related activities of other governmental, statutory and other private organizations.
2. With the technical and funding assistance of USAID, the Energy Division is currently involved in a major project of Energy Sector Assistance, the main purpose of which is to strengthen Jamaica's institutional capabilities to plan and manage energy programmes, particularly in the Energy Conservation and Alternative Energy Resources.
3. An evaluation of the Project performance to date, reveals that the Energy Division, including the PIU, while experiencing difficulties at the inception of the Project has made progress in resolving these difficulties. However, a number of micro and macro issues still exist which, if not resolved, could adversely affect the attainment of the Project goals. These issues are discussed under the heading of Institution Building, Policy Development, Consultant Assistance, Conservation and Alternative Energy Development.

INSTITUTION BUILDING

4. Neither the Energy Division nor the Project Implementation Unit are at their full personnel complement and there is little hope that they will even achieve a condition of full staffing with the quality of personnel desired to accomplish the goal of a strong, viable institution able to analyze and develop coherent policies and programs. The reasons for this state are a combination of pay and organizational problems.

This is the most important problem uncovered by the evaluation team and its resolution is imperative if the goals of the Energy Project are to be achieved.

5. The key inhibiting causal factors giving rise to this staffing problem are:

a) The inability of the Energy Division and the PIU to attract and retain the required complement of professional staff at current approved rates of salary (see Exhibit III). Consequently:

- i) recruitment and retention of skilled and experienced personnel are drastically inhibited;
- ii) the high staff turnover prevents continuity in energy development planning and implementation of programs and projects, since the Division is always starting over and programs are permanently trapped in the initial stages. Consequently there is no retained body of experience to act as guide or catalyst to, or for new endeavours.

6. There is a lack of career path and opportunities for personal growth and development. Within the Scientific and Technical Groups, almost all the jobs are of the same horizontal and junior level giving little vertical scope for advancement within the discipline or the area of interest. (See Exhibit IV). Advancement, therefore, is seen as a function of outward mobility with the consequence that -

- i) almost 50% of the professional and technical staff has resigned in the last year and indications are that a significant number may leave within the next six months if there are no changes in wage structures and career opportunities. (See Exhibit V).

ii) Under existing circumstances, professional and technical personnel perceived their jobs at the Ministry as being mere vantage points from which to view the landscape of outside job possibilities.

iii) With respect to delegation of authority within the division itself, there is the ironic situation in which authority is not delegated because of the inexperience and lack of maturity of judgement on the part of the Middle Management of the Energy Division, yet the middle management feels that lack of this delegation inhibits their professional development.

iv) Another ironic situation exists with respect to morale. There is a strong dedication to achieve the technical goals of the energy project particularly in the PIU. Thus morale is high and team work is enhanced. On the other hand, the lack of cooperation and assistance from the administrative elements of MME outside of the Energy Division is a major hindrance to the implementation of the project and leads to a loss of morale, isolating the ED from the rest of MME. Examples of this problem are numerous. Two, however, which highlight this problem are the difficulties of the managers in the ED and PIU in signing and approving various contracts to obtain critical services, authority which they should have already but are not allowed to exercise, and the failure to date to finalize the contract for the services of the PIU Director.

- v) The structural relationship between the Energy Division and the PIU is not fully defined. A dichotomous situation exists in that some of the project components are being implemented within the Energy Division but outside of the PIU and remunerations are not reflected in the work done outside of the PIU.
- vi) The hectic pace of activity and the tendency towards crisis management particularly outside the PIU have not allowed for periodic critical evaluation.
- vii) There are repeated frictions about overlapping authority both inter and intra department. All these problems reflect quantitative and qualitative manpower deficiencies.

7. It is recommended: (1) that USAID should consider providing additional funds in the form of a Grant to allow for the topping-up of salaries in the Energy Division to provide equality of remuneration between the PIU and the remainder of the Energy Division. A precedent for this exists in the USAID Caribbean Alternative Energy Systems Project, in which USAID underwrote the salaries during the initial three-year phase of the Project, for the staff in the executing agencies.

8. The present level of topping-up in the PIU still reflects a significant competitive disadvantage vis-a-vis the Private Sector, statutory bodies or other Government enterprises. It is therefore, further recommended that the present level of topping-up be reviewed with the view to reducing this competitive disadvantage.

9. Along with this improvement and expansion of pay the Government of Jamaica should enhance the organizational structure of the Energy Division by giving it departmental status. Such a status will allow it to contain all of the administrative functions necessary to implement its programs including the GOJ/USAID Energy Project.

10. Other organizational approaches to promoting the institutional structure of the Energy Division are:

- establishing it as a separate Statutory Body. Because the Macro Energy Policy and Planning Function need to be performed from an objective national perspective, it would, of necessity, need to be independent of any operational energy institution, as the Ministry now is;
- promoting the development of a "Ministry of Excellence". Such a Ministry would set an example to the other Ministries of the Government as to the level of competence to which they could aspire. Precedent for this exists in USAID assistance in other sectors and countries.

The resource requirements to implement the latter two options would be at a higher level than that required for the first option.

The last two approaches are not necessarily alternatives to upgrading the Energy Division to a Department. Upgrading to a Department could be viewed as an interim measure while a final solution, such as the establishment of a statutory body, can proceed at a deliberate pace. In this way the temporary assistance provided by USAID to top-up salaries will be given a permanent status through the establishment of a permanent body not inhibited by the current low pay allowed to Jamaica's Civil Service.

11. In any case and from any point of view there is urgency in the need for a resolution of existing intra-ministry conflicts; a valid solution could be found in a decision to give the Energy Division exclusive jurisdiction in the award of contracts both for staff and outside work contracts. There is need for direct discussions with USAID and the Prime Minister to review this situation.

12. A key component of the USAID is institutional strengthening by way of skill and management development and knowledge enhancement. There is a structural defect, however, in the mechanism for the delivery of training and there is an admitted lack of competence in the person who is presently charged with the responsibility for training. There is no coherence in the training function, the choice of trainees is haphazard and there is no observed logical pattern of procedures for the determination of training needs. This has deleterious effects on the development of a career path for the Division and contributes further to the instability and outward mobility of the staff, thus detracting from the Division's ability to perform as required by the Project Document.

13. It is recommended therefore that a Human Resource and Development Function be established in the Division at an appropriately senior level to create and maintain appropriate mechanisms and procedures for:

- (1) Career Path and Skill Development
- (2) Strategies for Training by Objectives so as to facilitate the acquisition, development, retention and psychological maintenance of staff.

14. There is need to ensure that members of staff understand clearly, accept and internalize the objectives and modus operandi of the Division in general and the PIU in particular as there seems to be at present conceptual confusion and performance anxieties.

The non-acceptance of the Energy Policy and Planning role in the Energy Division by some of the other Energy Institutions and by elements within the Ministry itself hinders the development of the institution building capability of the Division and hence may negatively affect the attainment of the major Project objectives.

15. It is therefore recommended that along with the upgrading of the Energy Division to a Department, it be clearly laid down what its role is, particularly its policy making, coordination and implementation functions, and its relationships to other units within and outside the Ministry which are engaged in energy related activities.

16. There is an inordinately wide span of direct control at the top caused by the lack of experienced middle management. This inhibits tendencies towards self-directed activities and personal growth in junior staff. Consequently, in the absence of the Director, the work pauses or throttles indefinitely.

17. It is therefore recommended that the post of Deputy Director of Energy be created whose portfolio of responsibilities would be derived from components of the responsibilities of the Director of Energy. This position should be filled as quickly as possible as a matter of urgency. The Evaluation Team considers that a suitable candidate is not available in the Division at this time. Such an appointment would relieve the Director of the necessity of having to become involved in operational details thus freeing himself for higher priority activities.

18. Contract Procedures - Procedures on contract control appear to be well managed. A total of 96 contracts have been awarded to date of which 44 were awarded within the last three months. The time frame from inception of proposal to contract award is six weeks, an impressive record. However, the use of NDA to award large contracts is imposing delays of four to six months due to the intrusion of NDA's bureaucracy in the contract system.

19. Financial Management - Although an overall budget is defined, it is not subdivided into major components of the Project. Thus the individual Project Directors are not aware of the expenditure they should plan for. While an Accounting System exists which defines expenditure, commitments and general budget level, a structure beyond this does not exist, i.e., a cash flow management system does not exist.

For purposes of Budget Management there is a further need for a more discriminating recording system to allow for budgetary, variance and over-run analysis. It is recommended that such statements and analyses be provided to all Directors and USAID on a specified periodic basis. This additional capability is required to perform the reporting obligations of the project.

POLICY

20. The primary functions of the Energy Planning Branch (EPD) of the Energy Division listed on Page III - 3 of the Project Document does not cover major areas of overall Energy Sector Policies which need to be addressed if the function of such Policy is to be effectively discharged. These areas not covered explicitly include:

- (a) A review and assessment, in conjunction with NPA, of the macro economic effects of energy prices (power and petroleum) on the productive and consumptive sectors of the economy and analysis of resource mobilization in the Energy Sector;

- (b) Review, in conjunction with NPA of Energy Sector investments across the Supply and Demand Sectors of the economy and determination of whether these are in conformity with priorities that satisfy national energy objectives.

21. The resources of the EPD are primarily devoted at present to data collection exercises particularly completion of the sectoral energy demand surveys needed to establish a National Energy Accounting System and monitoring of the structure of petroleum prices from ex-refinery to the retail level in the economy. The establishment of the National Energy Accounting System (NEAS) is a step towards the development of a national macroeconomic input/output energy model being put in place with the assistance of Argonne National Laboratory.* These efforts appear to be proceeding well and when the model is in place it should put the Energy Division in a better position to effectively analyze the many Macro Energy Policy issues in a quantitative manner.

22. It is essential that the work of the EPB acquire a more analytical thrust. To achieve this, more experienced staff are needed. Such calibre staff are also required if the EPB is to be put in a position to address, with credibility, the types of issues outlined above. So as to reflect its true function, even if it does not currently have the capability of fulfilling this role, the name of the EPB should be changed to Energy Planning, Economic and Programme Analysis Branch.

* The Evaluation Team did not make any in-depth appraisal of the Model being developed for use by the Energy Division.

23. The Project Document envisages some six man-months of short-term consultants support of which about one-half of this would have been used in getting the Energy Model in place. Over the next three years, this Branch would require considerably more short term consultants support (at least double) and a re-allocation of the total amount from short term consultants available should be considered in order to fulfill this need.

24. The Project Document envisages (Page III - 3) that the Long Term Energy Generalist interacts with this Branch on a variety of tasks, as well as being an adviser to the Energy Director. A review of the Job Description of the Energy Generalist reveals that the Energy Policy Function is not covered. As such, this needs to be reviewed. (This issue is discussed further below in the section under the consultants).

25. Although formal linkages exist between the Ministry and the major operational and other policy agencies in the Public Sector which either implement or formulate energy policy (PCJ, JPS, NPA and the Ministry of Public Utilities) the effectiveness of some of these linkages is stymied due to severe institutional and personality frictions and rivalry that exist between some of them. There is a lack of will to share information in a spirit of cooperation. This makes it increasingly difficult for a consensus to be developed on major policy proposals. A manifestation of these institutional frictions has been the inability to address significant issues within the area of petroleum pricing. For example, the problem of fuel prices between the JPS and PCJ.

26. Added to these problems is the nonacceptance by some of the operational institutions of the Energy Division discharging its policy formulation and planning functions as defined above. This nonacceptance tends to increase the difficulty of building the Energy Division's required institutional capability; however, this cannot be allowed to stymie efforts to develop this capability if the Project is to be successful in this important goal. In this context, it must be stressed that the key issue is that of the Energy Division acquiring stature and credibility based on the quality of its analyses of the major policy issues. High quality work addressing such issues in the Energy Sector cannot be ignored indefinitely by decision makers - except at their own peril - especially if the results of the analyses indicate that significant modifications need to be made in existing investment priorities and resource mobilization in the Energy Sector. It is essentially the absence of this level of work that frustrates current efforts at formulating an effective Energy Policy which grapples with the big issues. The Project is well placed to enable this quality of analysis to be achieved and through this, to develop the required institutional capability.

27. The other institutional linkages associated with the implementation of specific components of the Project, such as with SRC, UWI, CAST and NDA, appear to be functioning effectively in getting these elements implemented.

28. There is a critical need for the establishment of priorities in both the Alternative Energy and Conservation components of the Project both within the Project scope as well as from the overall national perspective. This prioritization has not been performed, resulting in a dissipation of resources among all the opportunities available. This

absence of priorities manifests itself especially in the scenario of weak oil prices at present. It is necessary that such a prioritization be urgently established so as to utilize available resources and to evaluate the consequences of current lower oil prices on the alternative energy projects now under consideration. The scope of this prioritization should cover projects both within and outside of the Project Document.

29. The reactivation of the National Energy Commission should be considered at such a point in time when the capability of the Ministry to effectively analyse and evaluate the major issues of Energy Policy exists. Prior to the establishment of such a capability it is not certain what value the National Energy Commission would serve.

CONSULTANTS

30. At present, two Long Term Consultants are in place. The third position remains vacant, pending the selection of a suitable candidate. Arrangements are in place contractually for extensive use of the short term consultants throughout the Five-Year life of the Project, and for all facets of the Project. Specific conclusions are:

- (a) The Long Term Conservation Consultant appears to be a good selection. The individual has shown knowledge of the operational environment and has gained the respect of his counterparts. He is working effectively with the Energy Division and the PIU staff, identifying problem areas, proposing solutions and facilitating implementation of these solutions.

31. The Long Term Energy Generalist currently in place does not appear qualified to perform at the level to which this position is evolving. He lacks broad engineering experience, Senior Project Management, Project Engineering Management and does not have experience in broad Energy Policy Development, although this last capability is not called for in the Job Description. The Energy Generalist was expected to provide considerable support to EPB as well as being an adviser to the Director of Energy as set out in the Project Document. His Energy knowledge stems primarily from regional experience in the US Department of Energy and his role as Adviser in Costa Rica in the establishment of a Renewable Energy Center. These weaknesses relative to the job that is now to be fulfilled have resulted in his inability to gain the required acceptance and credibility with the staff of the Energy Division. This Job Description should be revised to include and emphasize the need for a senior level Energy Generalist with a solid energy project background (Energy Engineering/Economic Analysis), culminating in the analysis and development of Energy Policy. He requires an understanding of the economic interplay of the various energy options, knowledge of what is needed to analyse and implement energy projects from inception to implementation, as well as an understanding of the factors involved in integrating new initiatives into the existing energy structure. This experience should include a background in the Petroleum and Power Sectors. It is recommended that the Job Description be modified to reflect the required experience described above and that a new Energy Generalist be selected who possesses the required experience.

32. The Long Term Alternative Energy Adviser is not in place but this provides an opportunity to review the need for that person and the qualifications for that position. The emphasis on solar technology in the current Job Description may not be appropriate. The PIU, through the Energy Project already has this area under extensive development. It is unclear, how much more this individual can contribute other than short term advice. Consideration should be given to reviewing this position to reflect alternative energy opportunities that the Energy Division staff may feel are more in line with their needs and the new priorities which are identified as a result of the analysis previously recommended. Consideration should be given also to eliminating this position and using the funds released to increase the use of short term consultants.

CONSERVATION

33. Overall, energy conservation efforts are proceeding at a remarkably good rate although delays were encountered in getting the programme started primarily associated in getting PIU staffed. Problem areas exist and need to be addressed as follows:

- (a) Because the Conservation Component of the Project did not spend its authorized level in the Jamaican Fiscal Year ending March 1983, the carry over was returned to the Ministry of Finance. Funds for the new Fiscal Year were not at the level requested but at a reduced level based on the prior years' performance. This short-fall in funds needs to be recovered, otherwise the programme will be delayed. This same issue applies to the Alternative Energy Component of the Project.
- (b) The Public Education Programme (PEP) Utilization Plan needs to be updated. The PEP appears to be a loose structure of

various educational opportunities. It needs more structured management attention.

- (c) The Public Sector Energy Coordination Program needs to be reinvigorated. Results to date do not appear to be significant.
- (d) There is no equipment list for Conservation other than that identified for the PEP. Consideration should be given to augmenting the current equipment list to include the additional needs of the Conservation Programme.
- (e) Preheaters for sugar factories were procured under a previous World Bank Programme but three of these preheaters were not installed. The Conservation staff, assisted by the Conservation Consultant have analysed the pay-back as being one crop season and are looking into the status of the equipment. Consideration should be given to obtaining the necessary funds for installation.

34. In executing the Energy Audits both in the Public Sector and Private Sector an analysis of the financial status of the entities audited should form an integral part of this exercise. The absence of incorporating such a financial analysis within the auditing exercise could result in the identification of economically viable energy conservation opportunities, which, however, could be negated by the financial non-viability of the entity receiving the installation.

35. Other elements of the Conservation Programme are all actively underway and no problems were identified.

ALTERNATIVE ENERGY

36. As with Conservation, this Component of the Energy Project appears well thought out and carefully managed. Initial delays were encountered but the pace of activity is increasing allowing for some recovery of lost time. Problem areas exist and need to be addressed as follows:

- (a) The Project Engineer is scheduled to leave at the end of June 1983 for one year of training at the University of Pennsylvania and no replacement has yet been obtained or identified. Unless a suitable replacement is found either through the placement of a Long Term Adviser or through a special contract with a local Adviser having adequate knowledge of the Project and its institutional interactions and procedures, there is a danger that the current momentum will be lost and delays occur.
- (b) The Long Term Adviser is not yet in place. The Job Description for this position should be further reviewed and consideration given to revising it. (This issue was discussed in conclusions under Consultant Contract).
- (c) The tax on Solar Water Heating has not yet been removed. This is a Condition Precedent before Phase II can begin. The total cost for this element will be about J\$1.4 million. The priority of this element needs to be reconsidered in terms of a Cost/Benefit Analysis. If the tax on solar is removed the investment incentive to those householders consuming hot water would be quite significant. It is only in the event of financing not being currently available to householders to undertake such investments, that commitment of these funds is necessary.

37. A significant opportunity for oil replacement exists in the Sugar Industry which currently consumes 200,000 barrels per year of oil. Greater and more efficient use of bagasse should allow for a complete backout of oil use and make the sugar factories oil independent. This opportunity should be considered for early implementation. Extension of this opportunity through the use of energy cane should be given longer term consideration.

38. Other elements of the Alternative Energy Programme such as the Public Sector Solar Water Installation, Development of Standards, Training, Establishment of the Alternative Energy Demonstration Center, Solar Energy Institute, Solar Water Installers Course at CAST, the Forestry Programme and assessment of other indigenous Energy Resources, are all actively underway and no serious problems were identified.

III. EVALUATION OF ENERGY PROJECT

A. INSTITUTION BUILDING

1. An evaluation of the ED of the MME with special reference to its capacity to benefit fully from the developmental opportunities available to it through the USAID Project, strongly suggests that under its present wage structure and intra-ministry relationships the Division is unlikely to benefit substantially from the developmental opportunities contemplated in the AID Project. Critical institutional prerequisites are not in place. Specifically, the following points have significant implications:

WAGE STRUCTURE

2. The wage structure of the various categories of professional skills within the Division and, especially the PIU, is one which has a range which is, on the average, 63% below that which is paid by Private Sector and Statutory Organizations, such as PCJ, SRC, JBI, JPS and JBM. Consequently, the salaries which are now being paid to the Division's professional staff who are at the top of their salary ranges are ones which are well below the minimum salaries which new inexperienced recruits are now willing to accept.

3. To illustrate the point, the following example is useful: at a recent interview given to applicants for positions within the PIU, applicants demanded, as a starting salary, amounts which were well above that which were being paid to the senior and most experienced member of that particular Unit. This member of staff, incidentally, was a member of the interviewing team. His reaction to the situation was one which clearly conveyed the attitude that if this applicant was appointed at the salary requested, he would resign. This anomalous situation

clearly indicates, therefore, why it is almost impossible to attract, appoint and retain senior and experienced personnel.

4. A pathetic but enlightening example of this anomalous situation is one which involves the Director of Energy. His immediate counterparts who head some of the statutory organizations of which he is often a Director or the Chairman are paid salaries which are on the average in excess of 300% above that which he is receiving as Director of Energy - a position in which he is the chief influencer of policies which directly or indirectly affect these statutory organizations. An immediate consequence of this enormous salary disparity is the fact that at the inter-agency level, he loses status and influencing authority since his low salary is often mischievously perceived by his peers (PCJ, SRC, JBI, JPS, JBM) to be a clear indication of a junior officer who ought not to be taken seriously.

5. Additionally, the great disparity in the salary structure has not only resulted in a "skeletonised" vertical staff structure which renders the staff excessively susceptible to a miscellany of dissatisfaction but has also threatened to prematurely abort the project itself. To support this observation, it is useful to underscore the fact that in a previous recent study over 83% of the professional staff indicated their intention to resign within the next six months if there was no meaningful improvement in their pay.

6. And again, in the same study it was revealed that almost 90% of all those persons who have benefited or are benefiting from training under the Project have indicated their intention to resign.

7. Another consequence of this discrepant wage situation is the fact that it has created a circuitous situation, one in which positions are not filled, Middle Level Management capability is conspicuously missing and therefore staff development through delegation and job enrichment cannot be effectively practiced for obvious reasons.

8. It is estimated that any serious attempt to correct these wage anomalies as discussed above would involve an additional yearly salary enhancement (top-up) of J\$380,000, an amount which is less than 1½% of the Project's outlay.

9. It is of critical importance to realize that the Government of Jamaica could not underwrite this sum not only because of its present economic situation but also, and more importantly, because this intervention would create anomalies and chaos throughout the entire Civil Service. This argues quite eloquently, therefore, for the creation of mechanisms and identification of fund sources needed to address the situation. A direct grant from the USAID Project to top-up existing salaries in the Energy Division could be an extremely expeditious action at this time.

10. It is observed that relationships between the PIU and the rest of the Division are strained and at times inhospitable, since there is a feeling among the other units in the Division that the 25% top-up which the PIU enjoys is inequitable since they also are engaged in activities or are expected to be engaged in activities which the PIU now pursues.

11. It is also interesting to note that the 25% differential which is enjoyed by the PIU staff who are on secondment has very marginal impact on their salaries and the competitive ability of the Unit to attract and

retain staff. The differential nonetheless is enough to create substantial intra-divisional dissatisfaction and jealousies.

DEPUTY DIRECTOR OF ENERGY

12. It is noted that the Director of Energy, Dr. Henry Lowe, is involved in a multiplicity of necessary but complex local and international interactions. There are competing claims on his time and technical competencies. Additionally, as Personal Adviser to the Prime Minister on Energy, he is constantly bombarded, if not surprised, by random requests from Jamaica House. The generic nature of his job, therefore, makes him extremely mobile and polyfocal and consequently incapable of dealing effectively with details and one-to-one management styles. His inability to practice management by presence is not neutral in its consequences on the morale of the staff. This creates a problematic situation, one which must be addressed as a matter of urgency. The position of a Deputy Director of Energy is a possibility which deserves immediate study.

TRAINING AND DEVELOPMENT

13. It is conspicuously ironic that although one of the main objectives of the Project is the development of the human factor, the Energy Division as presently constituted and as contemplated in the AID Document, is not functionally designed to respond positively to the developmental and motivational needs of members of staff. There is no management capability in handling the utilization, development and psychological conservation of human resources. A practical result of this is the finding that individuals have been and are being sent on training courses,

not on the basis of training needs assessment and planned strategies for the acquisition and development of individual skills and the enhancement of departmental capability but merely on the basis of ad hoc and cosmetic considerations. There is evidence which shows that individuals who have decided to seek or have already procured jobs elsewhere have used and continue to use the Ministry's training resources to facilitate their own outside mobility to the detriment of the Ministry's operational capability.

14. A consequence of the Division's lack of ability to plan and manage human resources is the constant high turnover and almost constant depletion of highly skilled and strategically located manpower. Under these circumstances, regardless of any structural modification in the organization, the Division will never develop the capability to achieve its stated objectives.

ADMINISTRATION AND STRUCTURE

15. Administrative relationships between the Energy Division (the PIU in particular) and the PAD/Monitoring and Advisory Unit of the Permanent Secretary's Office are or are perceived to be frustrating and disruptive. A concrete example of this is a situation of reported interference by the PAD in the appointment contract of the Project Director. It is perceived that these interferences are not sanctioned by any formal structural arrangement between the Permanent Secretary's Office and the Energy Division but rather are perceived by key members of staff to be random and mischievous in nature. We are not in a position to impute or verify motivations but operationally, the Project has and is suffering from these disruptive organizational and interpersonal ill-defined games. Key members of staff are being affected as they become casualties in the cross-fire of activities or inactivities.

16. The present organizational characteristics of the ED vis-a-vis the MME need to be studied with a view to achieving not only corrective but preventive solutions. Any study of this nature, however, should consider the validity in the observation that the ED has outgrown its present divisional status both in staff levels and administrative activities and has now reached a point where it should be given Departmental status.

17. In any case and from any point of view, there is urgency in the need for a resolution of existing intra-ministry conflicts; a valid solution could be found in a decision to give the Energy Division exclusive jurisdiction in the award of contracts both for staff and outside work contracts. There is need for direct discussions with USAID and the Prime Minister to review this situation.

B. BACKGROUND AND PROBLEMS IN ENERGY POLICY AREA

1. The Project Document (PD) highlights the responsibilities of the Energy Division (ED) which are: "to plan and develop the energy strategy for the country to determine priorities and resource allocations, to organize and co-ordinate activities and to monitor and evaluate all energy activities." The ED is the central planning office for energy (with the exception of oil exploration efforts which come under the responsibility of the Petroleum Corporation of Jamaica), and the focal point of the Government's efforts to deal with the "energy problem" (see P.D. page III-2).

2. Though the P.D. gives high importance and prominence to the issues of institutional building and developing the capability to address and formulate energy policy issues, there is little in the P.D. indicating how these objectives are to be achieved - unlike the case of the more physical components of the project such as solar water heating, energy auditing and retrofitting. In this context, the P.D. reflects a fundamental imbalance between the goals to be achieved and the resources and actions needed to achieve these goals.

3. One of the major problems facing the ED is its lack of stature and credibility vis-a-vis the operational energy entities. The view has been expressed that the ED does not have the capability to substantially comment on the major energy policy issues; there is no need to seek their input on such issues. Indeed, unless dramatic and urgent action is taken to enable the ED to acquire the stature and capability to deal with the major energy policy issues, this major component of the project will not be achieved. The consequences of failure in this area would be onerous for energy development in Jamaica.

4. The intense institutional friction between PCJ and the ED cannot, in the judgement of the Evaluation Team, be resolved easily over the short-term. Apart from the personality components of this friction, much of it is due to the belief that the ED "should not interfere" in the work of PCJ. Much of this stems from a lack of professional respect for the work emanating from the ED on policy issues. In view of the significant discrepancy between the calibre of the human resources available to these two institutions, it is not surprising that such an attitude of almost disdain should prevail.

5. To address this problem the ED's staff quality has to be up-graded urgently. The Project provides an excellent vehicle for achieving this through the appropriate use of qualified consultants and measures to rectify the structure of the ED and the remuneration levels of staff. Once these are in place, high quality work on the major energy issues will begin to emerge - thereby forcing professional respect from the operating energy entities. High quality work addressing the "big energy issues" cannot be indefinitely ignored by either operating institutions or decision makers - except at their own peril. This is especially the case if such analyses indicate that significant changes be made in existing investment priorities, resource mobilization, etc. in the energy sector as a whole.

6. Currently energy programmes lack quantified investment priorities between different energy sub-sectors or within sub-sectors. An energy plan and strategy lacks credibility and usefulness if it does not address the issues of resource mobilization through the price mechanism and priorities for investment allocation. Lacking these elements it just becomes another piece of paper of marginal utility.

7. An example of macro-energy policy issues in Jamaica which have not been analysed from an overall national perspective would serve to indicate some of the reasons why the type of capability referred to above needs to be put in place in the policy institution - the ED.

8. There is the historic issue of the pricing of residual fuel oil from the local refinery to the JPS, cement company and other users outside of the bauxite/alumina sector. Since the mid-1970's up to the present, fuel oil prices to these "local" consumers supplied from the refinery have been above the import-parity (border) price of fuel oil. This arose because the economics of local refining vis-a-vis direct product imports from the large Southern Caribbean refineries deteriorated to the point where in order to enable the local refinery to make a profit, its ex-refinery product prices had to be above import parity prices for the same products. These consumer subsidies allowed ESSO to keep operating the refinery and avoid losses. With time and increasing crude oil prices, these "small refinery differentials" (SRD's), to use a euphemism, increased up to the point where in the case of residual fuel oil (which represents over 40% of the refinery yield) the ex-refinery price and the billing price to JPS and other "local" consumers is about US\$6-7/bbl (or 25% above its border price). Fuel oil is not taxed by the Government so that this overpricing represents a resource transfer from consumers to the refinery owner, formerly ESSO, now PCJ. As a result of this subsidy to the refinery operator, in 1982 the cost to the JPS for residual fuel oil purchases was some J\$29 million more than if this fuel was priced at import-parity.

In 1981, the incremental burden to JPS was roughly of the same order (around J\$32 million). When this is compared to JPS' financial performance in 1981 and 1982, shown below, the impact of such pricing policy on the power company is clear - massive resource transfers to the refinery owner resulting in significant losses by the JPS.

TABLE

JPS 1981 and 1982 Revenue and Expenses (J\$ millions)

	<u>1981</u>	<u>1982</u>
Operating Revenue	259.9	295.2
Operating Expenses	- 276.6	- 296.6
Operating Income	- 16.6	- 1.5
Other Income	3.8	6.6
Income Before Interest	- 12.8	5.2
Interest Charges	- 27.1	- 27.2
Dividends	- 0.2	- 0.2
Net Revenue after Dividends and Interest	- 40.1	- 22.2
<u>Over Pricing of Fuel Oil by Refinery</u>	32.0	29.0
Net Revenue after Interest and Dividends if Residual Fuel Oil was priced at border price	- 8.10	+ 6.80

What this table shows is that quite apart from the JPS' other operational problems, its bad financial performance is in large part due to having to pay exorbitant prices for fuel oil.

8. A further effect of this residual fuel oil price subsidy to the refinery gives rise to the JPS having to pass through to the productive sectors of the economy this cost impact in its power tariffs. What effect does this have on manufacturers competitiveness in the export market? What effect is this residual fuel oil pricing policy having on the JPS' ability to finance part of its investment programme? What are the investment priorities for local J\$ resources for JPS' expansion programme versus that of PCJ? Are J\$ resources being efficiently mobilized by these current residual fuel oil pricing policies? Are such resources being accumulated in the supply sub-sectors where they are most needed and does such a mechanism of resource mobilization reflect the investment requirements and the priorities for such investments in the major supply sub-sectors?
9. These issues must be addressed from a macro-energy economic perspective. A properly structured and staffed ED, along with the NPA, are the agencies where responsibility rests to discharge these vital functions to better inform decision makers of the consequences of existing and future pricing policies.
10. A final point should be noted here and this is that by operating the refinery, access is gained to the Ven-Mex oil facility which provides credits on soft terms for crude oil purchased. The short-to-medium term benefit to Jamaica is quite considerable in foreign exchange terms.

C. ENERGY CONSERVATION IN PUBLIC SECTOR

1. Overall, the energy conservation efforts are proceeding at a remarkably good rate, although delays were encountered in getting the program started, primarily associated with getting the PIU organized and staffed.

The long term energy conservation advisor was brought on board in early February and appears to be working effectively with the PIU and ED staff.

2. Auditing and Retrofitting - A detailed plan has been prepared for the public sector auditing for the current Jamaican fiscal year and a similar plan was developed for the fiscal year which ended in March 1983. These plans are presented at Exhibit 4. Although delays were encountered in getting started, some 23 audit contracts have been let with 18 completed and evaluated. In addition, 6 contracts for retrofitting have been let. The schedule for the current fiscal year calls for auditing 46 additional establishments.

3. The auditing program is building a cadre of locally competent auditors whose numbers will be expanded through classroom training at CAST and on-the-job training.

4. Careful attention is being given to the quality of auditing performed by the auditors. After graduating from the CAST auditing course, an examination is given which must be passed. For those passing the Audit Training course, a one day contract is awarded to audit a facility. The conservation engineer accompanied by the advisor then reviews the audit results on site, to determine whether performance was satisfactory. If satisfactory, the auditor is allowed to compete for more extensive contracts.

This degree of attention insures that the energy conservation opportunities (ECO's) in that facility are effectively identified and analyzed.

The form for auditing is being reviewed and revised to insure that the proper information is obtained and to provide for uniform, comparable, cost/benefit analysis.

5. One area, however, that needs further consideration is a review of the financial status of the activity being audited, to insure that any cost effective energy retrofits are made to facilities likely to remain in business. An example of this situation is the work done at the Daily News. An audit was performed, ECO's were identified and some retrofits installed. Shortly thereafter the paper went out of business completely negating the value of the work done. While such a financial review will be more difficult to conduct for a public facility, some effort should be made to determine the future status of that facility.

6. Another area of concern is the funding status of this program. Because of the delays encountered in the early part of 1982, the program was not able to spend to its authorized level. As a result, the funds remaining at the end of the fiscal year (March 1983) were returned to the Ministry of Finance rather than being carried over. Additionally, the budget for the new fiscal year was not approved at the level requested but was reduced to reflect the funding performance of the previous year. The total shortfall amounts to over 1.5 million dollar (J) including all facets of the program, not just the conservation element. Unless this shortfall is restored in a timely manner, the overall energy project will be unable to recover the time lost and further delays could ensue.

7. One facet of this funding issue is the manner of handling the U.S.AID contribution. These funds are provided in the form of critical foreign exchange and comprise 40% of the total budget. Clearly not each and every contract requires a 40% foreign exchange component, but some will require greater than that. This will require careful management. Flexibility in apportioning this foreign exchange component must be the rule.

8. Equipment - In reviewing the conservation program, it was noted by the conservation advisor that an equipment list for conservation was not contained in Table B-1 of the Project document, other than that required for the Public Education Program (PEP), although such a list was prepared when the advisor assisted in the preparation of the Project document. Such an equipment list should be developed and reviewed to insure maximum performance of the conservation effort.

9. Public Education program - The PEP utilization plan has been developed but is out of date due to delays. It is to be updated. The vehicle has been purchased but delivery is delayed due to lack of a diesel engine for it. Consideration should be given to lifting this diesel engine requirement and allow installation of a gasoline engine to facilitate delivery. Other equipment is on order. There may be a need for further equipment and the PIU staff in conjunction with the conservation advisor are reviewing their requirements. The media specialist position is still vacant. Delays in getting an offer out appears to have caused the loss of suitable candidates.

The PEP is a potpourri of various efforts; public school program, TV and radio spots, billboards, mobile unit for rural areas, etc.

Management attention is needed to insure that it is suitably integrated. Dr. Haberman of UWI is conducting a study to determine the most effective mechanisms for presenting the conservation message to the general public. Completion of this study should provide important inputs to the proper organization of this effort.

11. Energy Coordinators - Selection of energy coordinators in various facilities was made to promote conservation practices at these facilities. This effort was begun before the energy project was initiated but now forms an integral part of the overall conservation program. This effort has received marginal attention and the results are accordingly insignificant; yet the potential value is high relative to the resources that the ED would commit to it. Many of the coordinators selected are untrained and unaware of the conservation opportunities available in the facility and they are unmotivated.

This program needs to be reviewed and re-invigorated to insure useful results.

12. Other - The National Advisory Council on Conservation (NACC) is in place and is evaluating a number of possible initiatives.

Mr. Douglas Fletcher is the Chairman and the head of the Public Education Unit; Ms. Chevares is the secretary of the MACC. The Council meets quarterly while an executive committee meets monthly. This is a condition precedent which appears to be complied with, however, the evaluation team did not have the opportunity to evaluate the performance of the Council or its influence on the overall conservation program. The Council is presently being reorganized.

13. A draft of the Energy Conservation manual for the construction industry has been prepared by Dubin-Bloome Associates of New York and forwarded to Jamaica for consideration. A seminar is being scheduled for May 17-18, 1983 with local architects and members of the building industry to review and revise the draft as necessary.

The conservation staff estimates that the final draft should be available for publication by early summer. The evaluation team did not review the draft but noted that the conservation staff and the advisor were relatively pleased with it.

14. The development of a National Energy Conservation plan has begun. A speech has been prepared for the Energy Director describing a model conservation plan and program. From this speech, the conservation staff guided by the advisor are developing a plan. The schedule for availability of a final draft is the end of 1983.

15. During the discussions with the conservation staff and the conservation advisor, it was noted that in 1978 the World Bank evaluated conservation opportunities in the Sugar Industry. As a result of this evaluation, the World Bank procured a set of preheaters to be installed in their facilities. However, three of these preheaters (Long Pond, MonyMusk and Frome) were never installed due to shortage of funds. An analysis has been made indicating that the payback period is one crop season, if these preheaters were installed and operating effectively. The preheaters are being checked out to determine what deterioration, if any, has occurred. Efforts should be made on a high priority basis to get these preheaters installed.

D. ALTERNATIVE ENERGY IN THE PUBLIC SECTOR

1. The alternative energy segment of the Energy Project is a collection of many sub-elements including institution building within and outside of the Ministry of Mining and Energy (Energy Division), training, data collection, implementation of selected alternative energy initiatives, and development of a viable private sector for alternative energy implementation.

The bulk of the funding needs, however, are oriented to implementation of solar water heaters in government institutions (Phase I) at this time.

2. As with Conservation, the Alternative Energy Program is in general well thought out and managed. Delays were encountered in the early stages due to staffing problems but the pace of activity is increasing allowing recovery of lost time. Detailed plans have been developed for the design and installation of SWH units for the previous and current fiscal years, satisfying the condition precedent for this element of the program. To date, four SWH units have been installed or renovated and 15 new units or renovations are now under contract. Most of the units will replace electrical heaters, however, some involve installation in hospitals which otherwise had no hot water systems.

As each installation is completed, it is checked out by the solar engineer for quality and operational efficiency. At this time two companies are now considered qualified to design and install SW heaters and a third is being qualified.

3. Other companies are training solar designers and installers at the CAST solar installers course and there is every expectation that more will be qualified to compete for contracts in the near future. The growing interest of Jamaica's private sector in participating in this program indicates that achievement of this goal is proceeding well.
4. The 2-week solar systems installers course at CAST has to date trained 20 individuals. The course is being expanded to three weeks and candidates for the next course, scheduled in early summer, are already being lined up. A three-day solar designers course for working engineers (not college students) has been developed and will be given in June to about 15 engineers currently employed in industry.
5. One area of concern of the Evaluation team is that the solar engineer in the PIU is scheduled to go off for one-year graduate training at the University of Pennsylvania in July 1983. As yet, no replacement has been obtained. Unless a suitable replacement is found quickly, the current momentum will be lost and delays likely. Project personnel have indicated that although attractive candidates have come forward, the low pay even with the topping up increment, have discouraged them from accepting any offer. Consideration will need to be given to use of special contract arrangements to obtain such candidates. Use of such contracts are within the scope and authority of the project, but their actual use has been hindered by the administrative and other non-energy offices of the Ministry. Such hindrances do not appear to stem from valid concerns and should not be tolerated if the energy project is not to be delayed. This issue was discussed in more detail in the institution-building sector and recommendations have been made for its resolution.

One alternative which would resolve this problem quickly is to use the current long term alternative energy advisor vacancy to bring some one in to fill the gap on a limited term basis.

6. As noted above, the long term advisor on alternative energy is not yet in place. The opportunities created by the existence of the vacancy has already been discussed.

7. The tax on solar water heating systems has not yet been removed by the Government of Jamaica. This is a condition precedent before Phase II can begin. This tax represents 37% of the cost of a water heater. Removal of this tax represents an interesting opportunity which should be explored further. At present, there are about 20,000 electric water heaters installed in the residential sector in Jamaica, and the Energy Project under Phase II will commit \$1.4 million(J) for loans to residential owners at market rates for installation of solar water heaters. Removal of the tax will effectively reduce the cost of SWH by 37% providing a powerful inducement to residential owners to replace current electric heaters or installing SWH in new homes in lieu of electric heaters. Provided the banking system is otherwise prepared to put forward the necessary loans for the installation of these units, is there any further need to underwrite this effort with a "soft" (low interest) loan to the banks? It may be more useful to reprogram part or all of these funds to some other new energy initiatives rather than to residential SWH where the necessary inducement will already be in place. This, of course, is predicated on the assumption that Jamaica's banks will otherwise provide the loans. The Evaluation Team does not question the value of the residential SWH program since it will represent the major industrial development activity under the Energy Project. Thus every effort should be made to promote it for this reason alone.

8. Among other things, the Evaluation team was charged with exploring and advising on other alternative energy opportunities which may exist but do not as yet fall within the Energy Project. One significant opportunity identified is in the use of oil in the sugar industry, particularly the state-owned enterprises. At present, this industry consumes 200,000 barrels/yr. of oil. From discussions with ED and other personnel, as well as the personal knowledge of members of the evaluation team, greater and more efficient use of bagasse should allow for complete backout of oil use and make the sugar processing factories independent of oil use. The value of this opportunity for oil use reduction and foreign exchange reduction warrants high priority consideration and implementation. Further opportunities for energy development in the sugar industry such as biogas development and energy cane application should be deferred to a later period after more careful analysis and planning.

9. Other elements of the Alternative Energy program such as development of standards, establishment of the Alternative Energy Demonstration Center and the Solar Energy Institute, the Forestry program and the assessment of other indigenous energy resources, are all actively underway and no serious problems were identified.

E. CONSULTANTS

1. The evaluation team conducted extensive interviews of the two long term consultants currently in place; the energy generalist and the conservation specialist. The team also interviewed a short term consultant, Mr. Charles Lawes, who returned to the U.S. shortly after the interview. Finally, the evaluation team held a lengthy discussion with the President of META, Dr. Russell DeLucia.

2. The interviews and discussions, review of the job descriptions for the consultants, and most importantly, our assessment of the progress and emerging needs of the Energy Project, form the basis for our conclusions and recommendations on this matter, and there is little more to add here. However, it is interesting to note that during the discussions with Dr. DeLucia, he showed us the last page of META's quarterly report which stated that the qualifications of the energy generalist and alternative energy specialist need to be reviewed in light of the developing needs of ED in implementing the Energy Project. This suggests that the META team have drawn conclusions similar to the evaluation team.