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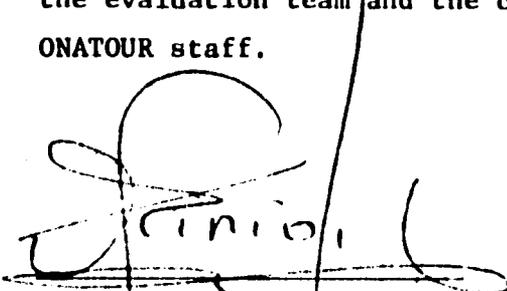
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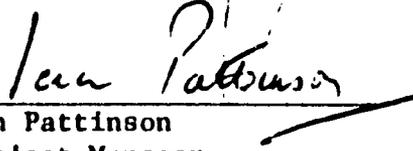
The preliminary evaluation of the Burundi Peat II Project was conducted in November 1981 with the participation of representatives of ONATOURE, Bord na Mona, the Project, AID's Regional Economic Development Support Office and the AAO. The document that follows represents a synthesis of the findings of the evaluation team and the comments provided by members of the ONATOURE staff.



Daniel Kinigi
Director, ONATOURE

25 August 1982

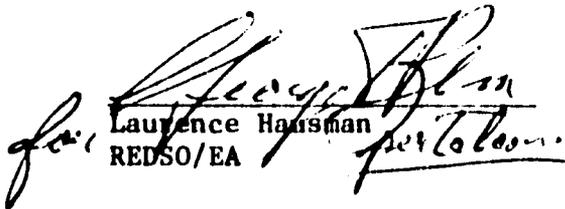
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Ian Pattinson
Project Manager

24 August 1982

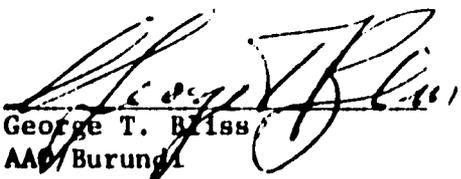
Date



for Laurence Hausman
REDSO/EA

20 August 1982

Date



George T. Bliss
AAO/Burundi

20 August 1982

Date

B U R U N D I

ALTERNATIVE ENERGY - PEAT II

PROVISIONAL EVALUATION

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**Preparation: November 1981 -
February 1982**

AID/Burundi Review: March 1982

Submission to AID/W: July 1982

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I. INTRODUCTION

The objectives of this provisional assessment are threefold; first, to make a recommendation to AID/Burundi on the adequacy of GRB support to this project as required in fulfillment of the conditions precedent in Sections 4.3(a) and (d) of the project agreement; second, to render an opinion on the effectiveness of the semi-automatic macerators (SAMs) before deciding whether to proceed with the procurement of additional machines as required under Section 4.2 of the project agreement; and third, to assess the general state of the project, including implementation steps taken to date and problem areas encountered.

The evaluation team carried out its field work during the period October 26 to November 9, 1981, and consisted of Laurence Hausman (REDSO/EA), Val Martin (Bord na Mona) and John Grindle (Department of Foreign Affairs, Government of Ireland). Assisting the team were Victor Ciza and Daniel Kinigi (ONATOUR), William Egan and Abbe Fessenden (AID/Burundi), and Ian Pattinson and Justin McCarthy (project technical experts). Our thanks are offered to the staff of ONATOUR, and the numerous persons with whom we met to discuss and review the project.

In addition to our many conversations, we had the benefit of reference to numerous documents, including the Peat II Project Identification Document, the Alternative Energy - Peat II Project Paper, the first three Quarterly Status Reports, the report of H. Schnittger of Shamrock Turf Co. (10/22/81), the McCarthy Assessment of Peat Extraction Schemes for Burundi and numerous letters, memoranda and related file documents.

The provisional evaluation is divided into seven additional sections, dealing with the most relevant issues and observations at hand, followed by a section that summarizes the principal findings and recommendations.

II. PROJECT SETTING

Alternative Energy - Peat II is a follow-on project supporting and expanding the efforts of an earlier AIP activity, Peat I. The purpose of Peat I, which was implemented with the assistance of the Catholic Relief Services (CRS), was to help the GRB take the initial steps in developing an energy source that had previously been unutilized. The project provided limited assistance in strengthening the fledgling government institution that was established to undertake the task of exploiting peat. With support from BORD NA MONA and DANIDA, a series of surveys were conducted to determine approximate quantities of peat reserves. In addition, the European Community supported the exploitation of peat to provide fuel to several tea factories which were being rehabilitated under a parallel project.

In June/July 1980, a design team put together the \$8.0 million Peat II Project. Its objectives were to strengthen the institutional capacity of ONATOUR and to increase the availability and acceptability of peat as an alternative energy source. To do so the following major inputs were to be provided: A 9-member technical assistance team, training of ONATOUR staff, commodities, including 45 semi-automatic macerating machines and vehicles, promotion/publicity funds, and construction of ONATOUR offices. The project was authorized and signed in August 1980.

In addition to the U.S. AID funds, agreement was reached with the Government of Ireland to provide technical assistance and training funds valued at over \$1.0 million to the GRB in support of this effort. In turn, the GRB was to contribute the local currency equivalent of approximately \$1.1 million to the project, including a contingent liability to make up any operating shortfall that might result from ONATOUR's operations during the five-year life of the project.

An important condition for the substantial AID support was agreement with the Minister of Energy and Mines that ONATOUR would be operated using sound, business-like principles, with the objective of reaching financial self-sufficiency by the end of the project disbursement period.

III. ONATOUR OPERATIONS

A. Peat Resources

When the Peat II Project Paper was being prepared, the survey of peat deposits had not yet been completed. The PP envisioned an expansion of peat production from the three bogs currently being worked to six bogs with recoverable reserves in excess of one million tons. The final report of the DANIDA prospection project which became available in August 1981, changed many basic assumptions. The principal conclusions of relevance to the Peat II Project were:

1. The two Kitanga bogs (A & B) included in the Peat II PP both have very high ash content - 25% and 30%, respectively - and should be excluded from consideration for the present.
2. The Nyacijima bog, included in Peat II, also has a very high ash content (31%), and is under fairly intensive cultivation; it should, therefore, be excluded for several reasons.
3. The Nyamuswaga bog, which had not been included in the Peat II PP, has estimated recoverable deposits of over 4 million MT with relatively low ash content (17%).

The net result is that the three new bogs that were considered in the Peat II Project (which were to have doubled known reserves), have been ruled out of consideration for the present. However, the Nyamuswaga bog, with its major deposits, has been added. It now appears that exploitable peat reserves in Burundi are in excess of five million MT, as compared with the figure of 1.02 million MT used as the basis for preparing the project.

The implications of these changes have not yet been fully considered, although it is certain that they will have a major impact on the project and on the long-term viability of ONATOUR. What appears likely is that the development of Nyamuswaga will require considerable new investment as well as careful advance planning. The Nyamuswaga valley has already been the object of several investigations. Three teams of experts, including an expert in hydrology, have visited the bog. The evaluation reports presented by these teams propose very divergent methods of drainage. Considering the importance of this bog from the point of view of its peat reserves as well as its agricultural potential, a joint evaluation involving all these experts (USAID, Rural Hydraulic Service/International Association for Rural Development, Peat Project) appears necessary in order to bring their conclusions into agreement, and to approve a single acceptable drainage system. After this necessary clarification, the Nyamuswaga program could be submitted for approval to the Commission for Agricultural Bog Development, of which ONATOUR is a member. This will heighten the Government's awareness of the significance of that area in terms of its dual potential for energy and food production. Given the growing pressures for both, it appears almost inevitable that an integrated development plan for the bog will have to be developed. By accumulating as much relevant data as possible, ONATOUR will strengthen its claim for a major share of that resource.

On a related matter, AID/Burundi was queried about its interest in using this project to support a study of the peat deposits in the Grand Marais. This matter was thoroughly discussed by the evaluation team and, as indicated in a memo on that subject from L. Hausman to G. Blinn (10 Nov. 1981), we believe it is an inappropriate use of project funds. The major reasons are summarized as follows: (1) the objective of the project was to assist the GRB to exploit its existing peat reserves. The proposed support for the development of Nyamuswaga is already stretching the objective; including the Grand Marais would change the objective and also the basis on which the project was authorized; (2) strengthening ONATOUR is a necessary condition for a successful Peat II Project, and is already a major task given the activities at hand. Diverting the time and energy of senior staff to deal with the problems of the Grand Marais could

overload the system and jeopardize Peat II; (3) given the potential costs for developing Nyamuswaga, there may well be insufficient funds to underwrite any participation in the Grand Marais study. The Peat II funds should be reserved to carry out Peat II activities.

B. Peat Production

The production of peat from the three bogs at Ijenda, Kisozi and Matana has increased from approximately 1,500 tons in 1978 to about 3,500 tons in 1980, to an estimated 6,300 tons in 1981. This is an impressive growth figure, all the more so because the increase is attributable almost entirely to greater efficiency and manual productivity. The three semi-automatic peat macerators (SAMs) which were to have been available during the entire April-October 1981 harvesting season were not received and put into production until mid-September. A series of setbacks, principally the inability to get a waiver approval from AID/W for approximately six months, accounted for the delay in ordering and constructing the machines. Consequently, there was insufficient opportunity to judge the effectiveness of the SAMs and no basis for proceeding with the procurement of 17 additional machines for 1982, as contemplated in the PP and in Section 4.2 of the project agreement.

The 6,300 ton production figure to be reached in 1981 does not approach the estimate included in the project paper (12,500 tons). Furthermore, the anticipated production level in 1982 is unlikely to match the 20,400 tons estimate in the PP. This is because mechanization is not proceeding at the pace initially contemplated, i.e. 17 new macerating machines for 1982, 10 for 1983, 7 for 1984, and 8 for 1985. As was acknowledged in the PP, this is an experimental program, particularly in the efforts at production technology transfer and market development. The SAM is a machine that was phased out of production almost 30 years ago. Its latest prototype was developed from old photos and drawings; it is certain to require an initial period in which to work out any mechanical problems. Some of these minor mechanical faults became quickly evident during the two to three weeks of bog tests.

These are detailed in the Quarterly Status Report No. 3, Annex 1, and in the Schnittger report. What is clear, however, is that the certainty that SAMs would be the most appropriate technology for Burundi's bogs has largely disappeared. A decision as to its ultimate usefulness must be withheld.

What is the next step? In the judgment of the evaluation team, the entire 1982 harvesting season should be used as a period in which to test thoroughly three options for mechanical extraction:

- (1) to utilize the three SAMs on the Ijenda and Matana bogs. These machines have not yet been tested in any real sense and their worth can only be assessed after an initial break-in period and a full production season have passed;
- (2) to utilize the soon to arrive FED-supplied Lilliput machine on the Kisozi bog. This is a large, complex, automated machine in the "bagger" family, currently in use by Bord na Mona in Ireland. It is capable of high output (6-8 tons/hour) but requires considerable mechanical nursing. It appears, however, to be the only machine capable of extracting quality peat from Kisozi bog, where mixing the light top stratum and dense bottom strata is essential. Furthermore, the bog has long, straight runs, unbroken by drainage ditches, which will permit easy turning. The outstanding issue is whether FED will be supplying short-term assistance to assemble and provide instruction on machine operation and maintenance. This needs early resolution by ONATOUR and the EEC;
- (3) to purchase a third machine, the Herbat Difco Turf Cutter, for initial trial next season. This machine was only recently developed in Ireland and has a very limited track record. However, it appears to have a number of advantages that neither of the other machines have, thus making it very attractive. The Difco is tractor mounted and mobile (600 kg.). It uses a chain-saw type belt with mini-buckets (spoons) to extract a narrow (40 cm) band of turf to a depth of 1.5 meters. The turf is brought up to a maceration chamber where the peat from various strata are mixed and the fibers chopped up. The mass is then extruded through flexible pipes which

trail the machine. The advantages are discussed in Quarterly Status Report No. 3, Annex 3, and are briefly summarized as follows:

(1) the Difco does not create a facebank - the excavated section is absorbed into the surrounding peat and the strip essentially disappears; (2) drainage is done gradually, greatly minimizing any negative environmental impact; and (3) by being able to utilize a much larger area of bog for drying and spreading it can produce as much as three times the peat per hectare of bog as the Lilliput can. Also, the round shape of the sods should lead to more even drying and less cracking, thus improving the product and simplifying handling. A tractor with a very low gear ratio is required for each machine. The Bord na Mona representative indicated he would pursue the question of identifying the appropriate tractor type and notify AAO/Burundi and REDSO/EA.

After weighing the many potential advantages of the Difco against their relatively small cost, the evaluation team is strongly in agreement that two such machines and appropriate tractors should be procured for use during the 1982 harvest season. The realization of even a small number of the many potential benefits clearly supports this decision. One Difco will be used at Matana. The other will be placed at Ijenda while awaiting the planned development of the Nyamuswaga valley. Indeed, the Difco may be particularly well suited for future exploitation of the Nyamuswaga bog, given its minimal drainage requirements.

In related vein, the team examined the subject of spare parts for macerating machines and concluded that a system should be set up to analyze spare parts requirements and establish ordering and stocking procedures. Presumably this will be a major task of the project mechanics once they are on-board. The subject is here noted for chief of party follow-up action.

The very limited experience with SAMs indicates that once any mechanized extraction process is introduced there must be changes in the distribution of tasks for the labor force. This is a matter that deserves prompt ONATOUR attention. With up to six machines in operation on the bogs in 1982, it is likely that there may be a requirement for additional equipment to help mechanize the movement of peat around the bogs - spreading, drying, footing and loading. The present imprecise methods simply will not suffice once production shifts into high gear. Problems with proper feeding of raw peat to the machines were already in evidence. The number of times individual sods are currently handled is not conducive to a quality end product. Poor handling and loading leads to excessive breakage during transport (and a loss of revenue to ONATOUR). To examine this subject and suggest different or new procedures and/or equipment requires a skill external to the project. While some improvements are possible using common sense, others are likely to require more specialized knowledge. In view of the large number of field workers and the probable requirement for ancillary machinery, the team proposed that a consultant with suitable experience be contracted to study the organization of field workers and disposition of tasks and recommend a workplan to ONATOUR. This should be done during the 1982 harvesting season with a view to implementing the recommendations as soon after as feasible.

The team also noted that a system of weighing peat at the bogs is sorely needed. The present system of stacking piles to unequal size or weight makes it difficult to record stock on hand. Portable scales have been purchased and have been found to be inadequate because of their low capacity. Consideration should be given to installing either permanent or portable truck scales at each peat bog and at the head office in Bujumbura.

The last major points involving peat production are:

- (a) to indicate the team's strong support for the recommendation included in Quarterly Status Report No. 3, that a study of peat briquetting (particularly as it may apply to the Nyamunwaga bog) be undertaken during 1982. The objective of such a study would be to provide ONATOUR and the GRN with a more complete understanding of the alternative open to exploiting this resource and learning about the costs associated therewith;

(b) to alert AAO/Burundi, ONATOUR and the project TA team to the premise in the PP that agricultural waste products (coffee and rice husks) were to be experimented with as additives to macerated peat. The principal rationale behind this premise was that these waste products would both increase the calorific value of sod peat and reduce smoke generation. Experiments were carried out by J. Martin in 1980 using up to 15 percent agricultural waste additives. The GRB agreed to support these objectives in the project agreement by making available coffee and rice husks, as required. The evaluation team believes the original objectives are worthwhile and their feasibility and application to the project should be formally addressed by the project's technical assistance team.

C. Peat Marketing

The structure of the peat market is essentially unchanged from two years ago. Now, as then, the Burundian army is far and away the largest consumer, accounting for more than 70 percent of sales. The remaining 30 percent is still sold to clients that include religious missions, small industrial and commercial users, and artisans. What has changed is the tonnage of peat marketed, i.e. 6,300 tons (est.) in 1981 vs. 2,125 tons in 1979.

The urban domestic market, which was foreseen becoming the principal market has not yet been tapped. The reasons for that are twofold: first, there are no significant unsold stocks on hand - ONATOUR is apparently selling everything they produce. Without further increases in production, there can be no assured supply of peat, and without an assured supply, it is not reasonable to enter into a new market. Second, the project has encountered delays in developing an appropriate cooking stove. Again, without a stove that can be adapted to peat use there is no hope of successfully entering the urban consumer market. This delay is largely the result of difficulties in recruiting a qualified stove designer and sociologist. However, a team with those skills began its field work while the evaluation was in progress and results of their findings and experiments will be eagerly awaited. Also, a carbonization study is underway and the results of that could provide an alternate method of domestic peat use. AAO/Burundi is urged to follow up

on these two efforts and to ensure that a popularly accepted stove(s) or peat charcoal is developed. The time is not too far distant when the existing market will not be able to absorb the large increases in peat production that are forecast and a search for other markets, i.e. urban consumers, will be necessary.

The team notes that other than brief statements included in the Quarterly Status Report, there has been no formal study of the market since the report by Ian Pattinson two years ago for the Peat I project. The team, therefore, recommends that such an analysis be undertaken by ONATOUR in the near future. The analysis ought to explore several scenarios, using different amounts of peat available for sale, and then go on to develop an explicit marketing strategy that lays out near and medium-term sales objectives, discusses peat pricing policy and its relationship to charcoal supply, develops approaches for different kinds of clients, etc. Well prepared, the document should be an extremely effective management and guidance tool. More importantly, this approach, which stresses forward planning and anticipatory decision making, is a critical element of our technical assistance. How a subject like this is dealt with, viz. through advance planning, is as important as the end product itself. The evaluation team recommends broad ONATOUR participation in the development of a marketing plan and careful AID review of the final product.

Since the evaluation review, ONATOUR has noted that its publicity and popularization efforts to date have encountered certain logistic problems. There is a lack of transport and the demonstration costs are very high. Given the vital importance of marketing for the continuation of the project, ONATOUR feels that a portion of the project funds for peat demonstration and use should be devoted to logistic support of its programs. USAID/Burundi will review the programs with ONATOUR and consider how project funds could be most efficiently used.

In a related vein, the subject of ONATOUR transport was frequently discussed. A request was made to AID/Burundi by Mr. Ciza to increase the number of trucks supplied by the project, the rationale being that the cost of transport is such a sizeable component of the "landed" cost of peat that it is effectively distorting prices. The figures provided the team indicate the weighted average cost of transport from the three bogs is 5,308 FBu/ton. The PP previewed that a large (ten ton) truck would be procured in 1983, to act as a replacement vehicle for one of the ONATOUR trucks. The request was to move up procurement of that truck to 1982 and to procure an additional two trucks in 1982-83. The arguments for this additional purchase were as follows:

- ONATOUR must currently compete for hauling capacity since its production season corresponds with that of the coffee harvest. Coffee takes precedence as it provides the bulk of Burundi's export earnings. There is consequently a chronic shortage of trucks and rental prices tend to vary.

- increased hauling capacity would effectively lower ONATOUR's operating costs thus shortening the period of time necessary to achieve economic self sufficiency. This economic viability is one of the major project objectives outlined in the project paper.

- in Burundi, private transporters must purchase the product they wish to transport. They are therefore reluctant to carry peat, which is difficult to resell given the current state of the domestic market.

- sales at worksites have not increased as substantially nor as rapidly as anticipated.

- ONATOUR cannot raise selling cost without jeopardizing their potential clients.

There are, however, some disadvantages to such purchases. A larger fleet could add problems and divert attention from the tasks for which ONATOUR is best qualified - harvesting and selling peat. Also vehicle life expectancy is unusually short in Burundi, a consequence of poor driving conditions and inexperienced drivers. Lastly, based on its observation in November 81, the team hypothesized that costs charged by ONATOUR, a parastatal body, would be similar to those encountered by ONATOUR. However, subsequent studies by ONATOUR

as well as by project technicians, have not shown this to be the case. Based on actual costs of transport (without depreciation) the price of transport by ONATOUR is 6.4 FBU/TK. If depreciation is included, this figure rises to 14.2 FBU/TK. In contrast, OTRABU charges 22 FBU/TK. The net savings over a one year period equal \$137,246, the price of two such 10 ton trucks.

In balance, there may be good reasons for ONATOUR obtaining additional haulage capacity initially and then turning over that function to private haulers once a high level of market penetration has occurred. However, the case has not yet been made.

Consequently, the team believes that ONATOUR should provide a detailed analysis of transportation costs to assist AID in making a decision. (Note: ONATOUR has now provided this analysis and AAO/Burundi agrees with its conclusion that two additional trucks should be purchased.)

Based on discussions with an EEC representative, the team noted the agreement reached with ONATOUR to provide peat to the two tea factories being rehabilitated by the FED at Tora and Ijenda. The agreement calls for ONATOUR to make available 2,300 tons of peat per annum to each factory at the prevailing "on site" (bog) price less a 590 FBU/ton discount to amortize the cost to the FED of its equipment and expenditures related to developing the Kisozi bog. The factories must arrange separately for delivery. One peat boiler has already been ordered for Tora, and two more will eventually be ordered for Ijenda. Once all three boilers are in operation, they are estimated to require up to 5,000 tons of peat per annum. Whether the tea factories will or should continue to be supplied from the Ijenda bog in the future is a question for ONATOUR to resolve, especially given the bog's relative proximity to Bujumbura and the transport cost tradeoffs.

One major piece of information that came to the attention of the team shortly before its departure was news of an agreement ONATOUR had just reached with the Army to raise the price of peat from 6,800 FBu/ton to 9,000 FBu/ton, as of 1 January 1982. The raise is substantial and is the second major price increase in two years. The team applauds the move and sees it as a good sign that the Government is coming to terms with the necessity of bringing peat prices into line with true costs. As it is, the cost/price margin is perceptibly closing. The proposed price appears to cover approximately 70 percent of actual 1981 costs. These figures will, of course, require corroboration and updating once the project's financial expert is in place. The significance of this increase is discussed in the following section.

IV. ONATOUR - THE ORGANIZATION

A. Financial Status

As is often the case with new organizations, ONATOUR has been operating on a deficit basis since its inception in 1977. This was not unexpected at the time the project design team prepared the PP. In July 1980, the team's financial analysis estimated it would take until 1983 before ONATOUR began operating in the black. The GRB and AID agreed during project negotiations that substantial AID support for ONATOUR would be contingent upon ONATOUR functioning along sound, commercial lines, with the objectives that it would be financially self-supporting by the end of the project. This was confirmed in the project agreement and in documents the GRB submitted in satisfaction of conditions precedent. With regard to ONATOUR revenues, both parties acknowledged that there would be an initial subsidy element in prices, but that gradually the subsidy would be removed and market and actual prices would be brought into line. To that end and as part of its contribution, the GRB agreed to provide ONATOUR with budgetary support equal to its estimated operating shortfall until such time as its financial viability was assured. An important element of this evaluation is to confirm the amount and timeliness of the first year's contribution, in satisfaction of one of the conditions precedent to subsequent disbursement (Section 4.3(a) of the project agreement.)

Based upon information received from ONATOUR (Ciza-Bliss letter, 20 November 1981), the GRB contributed the following amounts to ONATOUR in 1980 and 1981:

1980	-	Operating Deficit	US\$ 27,917	Fbu. 2,500,000
		Investment	67,000	6,000,000
			<hr/>	
		Total Contribution	US\$ 94,918	Fbu. 8,500,000
1981	-	Operating Deficit	US\$386,980	Fbu.34,654,031
		Investment	171,367	15,345,969
			<hr/>	
		Total Contribution	US\$558,347	Fbu.50,000,000

ONATOUR exceeded its operating budget in 1981, but covered the deficit through the investment budget, thus maintaining the GRB contribution at Fbu. 50,000,000. The amounts are lower than projected for 1980 and higher than projected for 1981 with the total for the two years being slightly higher than projected.

It is evident that the GRB is adhering to the intent of the project agreement, i.e. that it make up ONATOUR's operating shortfall. The GRB contributions appear to have been made on a timely basis. Therefore, for purposes of Section 4.3(a) of the agreement, the evaluation team believes the conditions have been met and so recommends to AAO/Burundi.

With respect to Section 4.3(d) of the project agreement, which requires ONATOUR to undertake modifications in its operations to assure that it "will become financially and administratively self-sufficient by the end of the project" (underlining supplied), a discussion of the financial steps taken is in order. The GRB has made a strong and persistent effort in this regard. This is evident from the two substantial rises in the price of peat that ONATOUR has negotiated with the Burundian Army: from a price of Fbu. 2,490/ton in 1980 to Fbu. 6,800/ton in early 1981 to Fbu. 90,000/ton as

of 1 January 1982. Although the latter figure is still not in line with ONATOUR's actual costs (12,219 FBu./ton, of which 6,911 FBu./ton is weighted average onsite production costs and 5,308 FBu./ton is average transport costs), the margin is gradually being reduced. The price per ton to ONATOUR's largest customer now covers approximately 74 percent of operating costs.

Based on certain assumptions, it would be reasonable to expect that costs and revenues will be brought further into line in the near future. There are two factors on the cost side which should strongly influence the trend towards a reduction in the wholesale price of peat. The first is the estimated December 1982 date for opening the road currently under construction by the Chinese. This will reduce the distance from the three working bogs in the southern zone to Bujumbura by an unweighted average of 31%. The consequent impact of this on transport costs will be not only quantitative (reduced haulage distances), but qualitative (improved road surface and reduced wear and tear on vehicles). If only a 25% saving is realized (vice 31%), and even assuming a 15% inflationary increase in transport costs, there should still be a net reduction in transport costs from the current 5,308 FBu./ton average to approximately 4,580 FBu./ton.

The second factor is related to the projected increases in production levels which can be expected to reduce directly the fixed cost elements in ONATOUR's average production cost figure, i.e. 6,911 FBu./ton. Variable cost elements are, of course, less likely to be affected and the magnitude of these reductions could not be accurately determined by the team. If on the basis of increased production one assumes a conservative 10% reduction in the average production cost figure, then the cost per ton of marketed peat should average about 10,800 FBu./ton vs. the current 12,220 FBu./ton. Thus, the net effect should be a definite cost reduction.

The evaluation team has one additional series of points to make with regard to the financial aspects of the project. First, it is noted that ONATOUR's financial records have not been audited for 1979, 1980, or 1981. As included in the project agreement, Section 5.1, the GRB has covenanted to arrange for annual audits of ONATOUR financial records by a private, independent accounting firm. The evaluation team understands that ONATOUR has arranged for an audit

to take place in June 1982. This audit report by a private independent accountant will constitute an essential tool for proper management and supervision of this project. In the future, given its importance, the team recommends that annual audits be performed within 90 days after the end of ONATOUR's fiscal year.

Furthermore, it is strongly recommended that once the financial analyst/ advisor position is filled, ONATOUR be requested to provide AID with a more detailed monthly report of the organization's financial status (see discussion in Section VII). To enhance its usefulness, the report should also break out ONATOUR revenues (by source) and expenditures (by application) plus obligations and expenditures of AID funds. To minimize paperwork, this status report should be similar in substance and format to the status report prepared for ONATOUR's management.

B. ONATOUR Staffing

A companion component of Sec. 4.3(d) of the project agreement requires ONATOUR to assure it will modify its operations to become "...administratively self-sufficient by the end of the project...". The intended purpose of this clause was to support a strengthening of the organization by creating a private enterprise-like environment that could attract and retain a talented core management group. This encompassed the concept of quality recruitment and merit promotions, creation of incentive salary schemes, shared decisionmaking, etc.

Toward this end, the GRB has taken several notable steps. ONATOUR has filled every senior vacancy with generally qualified albeit inexperienced personnel. This GRB is also replacing the Director of ONATOUR with the present Deputy Director, Mr. Daniel Kinigi, while the current Director, Mr. Victor Ciza, is off for long-term training. ONATOUR has also submitted its operating principles, which confirms the general approach discussed above. Through these actions the GRB has complied with the essential thrust of Section 4.3(d) of the agreement. Consequently, the evaluation team recommends that AID/Burundi accept the GRB actions in satisfaction of the conditions precedent to subsequent disbursement.

- On related matters, the team notes that in the absence of profits it is not possible for ONATOUR to institute an incentive/bonus scheme. However, the team fully supports introduction of the concept at the appropriate time as a means of retaining its most capable staff or attracting highly qualified personnel.
- On the basis of insufficient evidence the team is unable to comment on the subject of merit promotions. This is a matter that the next evaluation should address once more evidence is available.
- As noted in the Quarterly Status Reports, the questions involving committee make-up and more frequent scheduling of Administrative Council meetings have not been satisfactorily resolved. This was an issue identified in the Part I reports. There is obvious merit in high level staff meetings as a means of airing issues, developing organizational priorities, and exchanging information. With the appointment of a new Director this matter should again be raised and resolved in a manner satisfactory to the project.
- A preliminary recommendation of the team was to support the suggestion of the production engineer that a deputy chef de chantier be appointed at each bog to assume responsibility and authority in the event of frequent absences of the chef de chantier. ONATOUR created and filled these new positions in February 1982.
- One of the drawbacks of an organization with inexperienced middle level managers (like ONATOUR) is that the decision-making process tends to centralize at the Director and Deputy-Director level. It is difficult to devolve any significant degree of responsibility to managers that may only be recent university graduates. Nonetheless, there is no prospect of strengthening the overall management of the organization unless the process of delegating authority is initiated, however cautiously. Clearly, it must be done with understanding and tolerance of error. One of the major responsibilities of the technical

assistance team is to further the decentralization process by encouraging senior management to share responsibility and decision-making with more junior staff. One step in this process would be to develop mid-management roles, i.e. clearly defining tasks and responsibilities. The team is aware that this is a delicate and critical process with possible cultural implications. Still, the team encourages the technical assistance team, wherever possible, to play a catalytic role in gaining acceptance for these management concepts by senior ONATOUR staff.

- The organizational structure of ONATOUR was discussed with the ONATOUR Director and the Director General of Geology and Mines. Among the ideas that evolved from those discussions were the creation of a second Deputy Director position and a possible reordering of responsibilities. The team recognizes the potential merit of some of those ideas but urges caution in carrying out any changes until the full technical assistance team is on board and has had an opportunity to study and comment on the alternatives.

The last and perhaps most significant organizational issue involves the question of what specific role the technical assistance team is to play. As previewed in the Project Paper, the technical experts were to assume full line positions within ONATOUR for approximately two years, during which time they would train counterparts and have regular operating responsibilities; thereafter, for the remaining two years, they would revert to advisors, commenting on and critiquing the work of those Burundians they had trained. Either this concept has been misunderstood, or the GRB and ONATOUR have changed their minds, or the requirements have changed. In any event, the role that each of the technical experts played was confusing and unclear to the evaluation team.

It is the recommendation of the team that the senior technical experts should work at the chef de service level, alongside their counterparts. At the lower level, the bog managers/ production engineer should work with the chef de production and the mechanic(s) should work with the bog managers and chef de chantier.

Therefore, the evaluation team strongly urges AID/Burundi to convene a meeting with ONATOUR and Ministry of Energy and Mines officials to discuss and resolve this uncertain situation, and then to convene a meeting with all parties, including the technical assistance team, to clarify and set forth the understanding reached. To ensure that all parties are in agreement with the role(s) of the technical assistance team, AID/Burundi should issue an implementation letter to that effect, countersigned by ONATOUR and the Ministry of Energy and Mines. In view of the importance of this issue, we urge this be done as soon as practical.

Note: This recommended meeting took place on April 26, 1982. The conclusions reached were that the marketing expert and the financial expert will have the rank of assistant director, and the marketing expert will head the project staff. The administrative officer and the project engineer will have the rank of department heads. Expatriate mechanics will be at the level of the foremen at the production sites.

V. CAPITAL INVESTMENTS

The following is a summary discussion of the capital investments which have been agreed upon in the Project Paper and which were subsequently raised by ONATOUR for AID consideration and financing:

- A. ONATOUR Office Building - Construction was originally planned at the site of the present ONATOUR offices, but topographic samples showed that the soil stability was insufficient to support the structure. The GRB was willing to transfer to ONATOUR other plots located on the Boulevard de l'UPRONA, but AID required that ONATOUR have a property title. Burundi law does not normally permit purchase of vacant lots, but the Minister of Justice made an exception and the contract for the cost-free transfer was signed on April 26, 1982.

Aside from the site and title problem, there have been numerous delays in submission of A and E designs and specifications suitable to meet AID construction regulations. In addition, the more elaborate design will increase the total cost of the building. Consequently, AID's contribution to the new building has been increased to a maximum of \$500,000.

- B. Up-country Housing - Following discussions with the Project Manager, it was agreed that AID would look at the cost of constructing housing for the contract technicians if some were not readily available for leasing (which would be a GRB contribution). Once the requirements for such housing are more firmly established, particularly at Nyamuswaga, a decision by AID/Burundi and REDSO should be reached on the location, scope and cost of construction. The evaluation team saw considerable merit in assuring the project's field technicians be assured of appropriate housing facilities in light of primitive living conditions in the vicinity of the boga.

- C. Office/Storage Facilities - For the same reasons indicated above, the evaluation team supports the provision of appropriate working areas at the boga. Large metal lift vans were considered for both office and storage space, but were eventually rejected because of cost and availability problems. Open sided sheds with a lock-up area were determined to be more practical for equipment storage and these are being constructed.

- D. Radio Equipment - A convincing case has been made for procuring several radio sets to connect each of the boga with ONATOUR/Bujumbura as a means of rationalizing travel and also in the event of an emergency. The evaluation team supports this procurement action.

- E. Trucks - Discussed in Section III.C.

F. Medical Supplies - A store of medical supplies is a requirement for each bog, both for contract technicians and ONATOUR field staff. The team supports this request and urges that these items be procured before the next harvesting season.

V. TECHNICAL ASSISTANCE

A. Recruitment

The long-term technical assistance that was to have been provided to ONATOUR under this project during 1981 (pp. 17-19 of the PP) included a headquarters staff of a marketing specialist, a financial specialist, and a general engineer, plus a field staff of three bog manager and a mechanic. The first two were to have been recruited on a PSC basis, the latter five under a host country institutional contract with Bord na Mona (BNM), the Irish peat parastatal. As a result of lengthy delays in obtaining an AID/W waiver to contract with Bord na Mona (August 1980 to April 1981), only one of the latter five positions was filled at the time of the evaluation.

The current status of recruitment is as follows:

- (1) Mr. Ian Pattinson, a marketing specialist and designated chief of party, arrived in Burundi in February 1981;
- (2) Mr. Justin McCarthy, area bog manager, arrived in Burundi in late September 1981, almost at the close of the 1981 harvest season.
- (3) The financial specialist, Mr. Robert Smith, arrived May 1, 1982.

The desire to staff this position with an American national resulted in the rejection of several Code 935 expatriate candidates. In addition, recruitment for the position was greatly delayed by the shoddy backstopping in APR/DR/CAWAP during the first half of 1981. The most promising American candidate, Murray Sabloff, was not able to pass his physical exam. The delay in hiring this specialist was a major omission and hindered project implementation during the first year.

- (4) The administrative officer, Mr. Daniel Toole, arrived at the end of March 1982.
- (5&6) Two mechanics under the Bord na Mona contract, Mr. Gerry Carroll and Mr. Sean Casey, also arrived at the end of March 1982.
- (7) AAO/Burundi is still trying to recruit a water engineer. The position is considered important and AID should pursue the matter vigorously.

For the 1982 harvest season it has been decided jointly by BNM, ONATOUR, the project manager and AID that these are the only positions required. Provision of additional technical assistance for the 1983 season will depend on this year's experience and the project evaluation scheduled for the end of this production season.

The delays encountered in recruitment are perhaps somewhat unusual. However, they are worth nothing, mainly because they should offer guidance to future design efforts in Burundi as regards allowing for a more realistic time frame in which to get technical assistance on board. The principal constraint remains the recruitment of qualified specialists with good French language skills. More vigorous recruiting efforts are in order, including AID/Burundi taking the lead in seeking out and visiting institutions or individuals with appropriate skills, developing contracts with other resident AID missions in French-speaking ports, using advertisements in U.S. and European newspaper, etc. What appears clear is that it is not sufficient to pass on these personnel requests to AID/W for action; the response lag time is too great and the costs to the project are too high. Unfortunately, it appears that AID/Burundi will have to shoulder more of this responsibility in the future.

B. Skills Mix

The project envisaged only two specialists to assist in the functioning of the headquarters operations, a financial and a marketing expert. It was assumed that production problems were relatively minor and could be solved on site.

After reviewing the operation to date, the evaluation team believes some reordering of priorities is necessary. The obvious problems that exist in financial controls and management accounting will escalate along with increases in sales revenues. This will ensure that a financial expert's services are absolutely critical to the eventual success of the project.

The situation with respect to marketing is somewhat different. Great emphasis was placed on this area at the time the project paper was written. Although no one disagrees that marketing will require major attention in the future, particularly as new markets are developed, the structure of the peat market over the next 18-24 months will likely be more static than anticipated. The Army, other larger commercial users, and ONATOUR's contractual obligations to the two tea factories, will probably account for almost all consumption. Before the more difficult urban consumer market can begin to be tackled, considerable leg work and successful testing and production/distribution of small peat stoves must be accomplished, and that will take, conservatively, an additional year. Given these factors, the need for a marketing expert with the senior skills of the incumbent over the next 12-18 months is debatable.

On the other hand, the evaluation team felt strongly that a senior production specialist is urgently required. The need for this skill is most evident in the area of planning and scheduling. Experience in peat production per se is not necessary for this position as this can be supplied by the BMM technicians in the field or, if need be, from short-term consultants. What is required at this level is training and experience in production planning and scheduling.

and also in management of a large-scale development project. Such skills are presumably readily available in the U.S. and consideration should be given to recruitment through U.S. business or cooperative sources. Apart from the ongoing supervision of production and the establishment of suitable control systems, this person should also have overall responsibility for managing the development of the Nyamuswaga bog. The team recommends that a scope of work be developed as soon as possible with the objective of recruiting an individual by mid-year.

It should be noted that ONATOUR does not agree with this analysis. In ONATOUR's opinion, a marketing expert is indispensable for peat marketing now that production is increasing significantly. With the acquisition of new mechanized equipment the amount to be sold will increase greatly and new outlets must be found. Thus market expansion is a priority concern now and the services of the marketing specialist are definitely required. On the other hand, ONATOUR considers that the production expert is not needed at the present time. Rather, the decision on when to recruit this expert should await the results of the management consultant's study of the organization of the bog sites. It is ONATOUR's judgment that the production expert will not be needed before the opening of the Nyamuswaga bog.

VII. REPORTING REQUIREMENTS

The team noted that the project paper made provision for two regular reports plus an annual audit. Of the two reports only the Quarterly Progress Reports were available to the team. These were generally very well prepared, although the dates they were submitted were not provided. The team found no evidence that regular financial statements are available to either ONATOUR management or to the project manager. Notwithstanding the absence of an expatriate financial expert, an organization the size of ONATOUR, with its substantial revenues and expenditures, needs financial controls or reports to function properly. The team found that neither the technical experts nor the project manager had a firm grasp of ONATOUR's financial status or its budget. The team recommends that some simplified reporting system be developed immediately and maintained until the financial specialist is in place and develops the appropriate controls and reports. At the very least,

the interim reports should provide data on income and expenditure flows by source and application of funds. The potential for financial mismanagement under these circumstances is obvious; the implications for the project would definitely be negative.

The team also recommends that the financial status report be provided to AID/Burundi on a monthly basis. Since much of the information in the report would be included in ONATOUR's regular internal reporting, the burden of the added requirement will be minimal.

The team also strongly endorses the preparation of individual work plans by all technical assistance team members. These should be done on an annual basis, the initial one within 90 days after arrival in country, and then at some anniversary date thereafter.

The value of these reports as a means of enhancing AID's project management should be stressed. They ought to spell out in some detail what tasks each team member has set for himself. Although the reports will entail some "gazing into a crystal ball", they should provide AID with a good indication of the priorities each expert sees, e.g. counterpart training needs in certain skills areas, and the time and attention he would plan to devote to the task. The earlier example provided by Mr. Pattinson is too general to be a useful management tool or yardstick. More detailed targets would assist the project manager in his regular review of project progress.

VIII. PRINCIPAL FINDINGS AND RECOMMENDATIONS

The evaluation team came away impressed with the prospects for the project. Clearly, there are problem areas which need to be addressed and corrected. Some of them are normal teething problems associated with any project, others the result of inordinate delays and lack of backstop support in AID/W (particularly in 1980-81) in obtaining waivers and recruiting project personnel. Some problem areas may be dealt with by ONATOUR and AID personnel agreeing on how responsibilities are best shared. On balance, however, there is a justifiable air of optimism associated with the work of ONATOUR and the likelihood that peat will achieve widespread utilization as an alternative energy source.

To summarize, the team has included a number of findings and recommendations in this provisional evaluation that, if acted upon, should improve the implementation of the project. Principal among these are the following:

1. The team has found that the GRB has taken the necessary financial and administrative steps to satisfy two of the Conditions Precedent to Additional Disbursement, Section 4.3(a) and (d) of the project agreement, and recommends that a Project Implementation Letter be issued to that effect. This leaves only those CPs relating to construction to satisfy all remaining conditions to additional disbursement.

2. As required under Section 4.2 of the Project Agreement, the team has determined that insufficient evidence exists to justify procurement of additional semi-automatic macerating machines at this time. Furthermore, given the availability of new peat extracting technology, i.e. the DIFCO Turf Cutter, the team recommends that the entire 1982 harvesting season be used as a trial period in which to test fully all three peat harvesting technologies. After the season is over a decision should be made on the most appropriate macerating machine and appropriate procurement actions should be initiated.

3. The team recommends that an assessment of the Nyamuswaga bog be carried out as soon as possible. In view of the very significant addition to Burundi's peat resources that Nyamuswaga represents, and in light of reports that limited agricultural cultivation is already taking place on some sections of the bog, a rapid assessment is necessary. The results thereof should provide ONATOUR with additional evidence to strengthen its claim to a significant share of those resources. It is understood that the development of Nyamuswaga requires open and objective cooperation among many partners and will doubtless proceed on an integrated basis. Agreement on appropriate drainage methods should first be reached and accepted by the Commission for the Agricultural Development of Bogs. Thereafter, further analysis will be required to determine the level and timing of additional investment.

4. The team strongly recommends that urgent steps be taken by ONATOUR to carry out audits of ONATOUR's financial records for 1980-82. These should be done by an independent accounting firm, as agreed to in the project agreement. The team also recommends that AID require an interim monthly financial report, reporting on ONATOUR's revenues and expenditures on the basis of source and application of funds, until such time as a financial expert is on board. Thereafter, a format for regular monthly statements should be developed and agreed to by AAO/Burundi.

5. The team believes that the operating status of the technical assistance team members is unclear and requires resolution. The questions of what responsibilities the team members have, to whom they report and whom they supervise are not adequately answered under the present arrangements. These should be resolved through AID/ONATOUR meetings and formally agreed to by an exchange of letters. (See Note, Section IV B.)

6. The team recommends that a study of how peat is handled and how worker tasks are organized on the bogs be undertaken early in the harvesting season. There appear to be numerous inefficiencies in labor use which should be rectified before production shifts into high gear. Some mechanization of handling may also be required.

7. The team recommends that a production specialist be added to the technical assistance team. The need for such an individual appears evident from the absence of planning for future production increases and the probable coming on line of the Nyamuswaga bog. The latter, particularly, with its capital expenditure requirements, will require a more professional production planning and scheduling effort than is evident at present. (See contrary ONATOUR view, Section VI.B.)

8. The team recommends that an updated market analysis be carried out that be used as a basis for a marketing strategy, taking into account production levels, target consumer groups, sales plans, publicity, pricing policy, etc. Note: This is now being done.

9. The team fully supports the studies on carbonization of peat, coffee and rice husks because of their implications for peat sales, particularly to urban consumers.

10. The team recommends that existing efforts and plans for follow-on efforts to improve and popularize peat burning stoves be vigorously pursued. The need to develop a stove that will accommodate peat in whatever form it is eventually marketed is critical to entering the urban consumer market.