

PROJECT ASSISTANCE COMPLETION REPORTALTERNATIVE ENERGY (PEAT) PROJECT (695-0103)

(April, 1990)

I. Background

USAID's support to the Government of Burundi's (GRB's) National Office for Peat (ONATOUR) was initiated on a pilot basis in August 1978. Using funding under the Africa Regional Accelerated Impact Alternative Energy Program, the Peat I Project provided \$490,000 to assist ONATOUR in developing Burundi's peat for non-industrial thermal energy requirements. At that time, the beneficiaries of this new source of fuel were identified as the rural majority who would be encouraged to substitute peat for wood in cooking and heating for rural households. Following two years of experience under this activity, it was concluded that, given the inefficiencies of the wood-to-charcoal conversion process, priority attention should be redirected towards consumers of charcoal, who are primarily urban householders. Concurrently, although peat production was proceeding on a number of bog sites, a number of technical questions had surfaced which required additional study and experimentation. ONATOUR experienced growing pains as it began its producer wholesale operation. It was therefore considered appropriate to address these constraints with a longer term-commitment of A.I.D. resources.

The follow-on project, Alternative Energy: Peat II (695-0103), was authorized in August 1980. The project was to be directed towards the goal of maximizing the efficient utilization of Burundi's limited energy resources by developing an underutilized resource: peat. The project had two purposes: (1) to conserve the country's forestry reserves by increasing the availability and acceptability of peat as an alternative energy source and (2) to strengthen the institutional capacity of ONATOUR to carry out planned operations on an efficient basis without the need for significant future financial or technical support.

The underlying project rationale held that by increasing the amount of peat commercially available, and by concurrently stimulating a demand for its use, an increasing share of the solid fuel market could be converted to the use of peat. This would in turn reduce pressure on the forest reserves which were believed to be in the process of being rapidly depleted. It was judged equally important to strengthen ONATOUR, the parastatal institution that had been established under the jurisdiction of the GRB Ministry of Public Works, Energy and Mines. The Development of ONATOUR as an efficiently functioning and financially viable institution was considered a necessary condition for the effective implementation of this project as well as for ONATOUR's expansion into other peat-related activities.

The project was designed with four outputs which would indicate achievement of the project purposes:

- 1) trained ONATOUR staff;
- 2) improved ONATOUR management capability;
- 3) resolution of technical questions concerning production methods and household stove technology; and
- 4) development of six commercial peat bogs with an annual production level of 47,000 MT by the project's completion, at which time approximately 70% of Bujumbura's urban domestic market would be using peat.

During the first four years of project implementation, two formative evaluations were undertaken - one completed December 1982 and the other in September 1987. In those evaluations, implementation progress was examined from various perspectives : institutional, financial, economic (peat marketing program, pricing policy, etc.) and technical (Peat production, reclamation and environment ecology).

In addition to the evaluations, specific implementation-related recommendations, the evaluation teams concluded that the Project Paper should be amended to redefine the project's purpose, outputs and inputs to reflect more accurately what activities were being undertaken and what could be accomplished by the end of the project.

The amended project retained the original project goal to maximize the effective utilization of Burundi's limited energy resources. Goal achievement was to be measured through the increased use of peat as an alternative form of energy, which was to be verified by analyzing peat production and sales statistics.

The purpose of the project was redefined to more explicitly and accurately reflect the direction which the project was taking and could be expected to take during the remaining life of the project. The revised project purpose was: to strengthen ONATOUR's capacity to produce and aggressively market peat as an alternative fuel, considering all possible markets but initially concentrating on those in which peat is most cost-competitive. By the end of the project, the following conditions would indicate that this purpose had been achieved:

- ONATOUR would be fully functional with a trained managerial and technical staff;
- an effective, aggressive peat marketing strategy would have been developed and an initial campaign would have been launched; and
- peat production and reclamation efforts would be continuing smoothly.

II. Project Inputs and Status of Completion of Planned Outputs:

To accomplish the revised goal and purpose, USAID funded the following inputs (in \$000's) :

Technical Assistance	\$ 2,321
Commodities	2,703
Demonstrations (marketing)	228
Training	92
Construction	1,261
Nyamuswaga (Northern bog development)	100
Bog Reclamation	67
Project Support Costs	231
Other costs	<u>1,670</u>
Total	8,673

The uncommitted balance of project funds amounting to \$262,952.58 have been deobligated.

a) Technical Assistance

Technical assistance was the second major AID funded input to the project. Approximately 500 person/months of technical services were employed toward the objective of improving ONATOUR's Management capability, strengthening ONATOUR'S capacity to increase peat production, and establishing an effective marketing program. USAID provided long term advisors in Administration, Financial Management and Marketing.

To direct peat production on the bog sites an arrangement was agreed to between Bord Na Mona (BNM), which is the Irish Peat Board, the GRB and USAID. Under a host country contract financed by the Irish Government and USAID, Bord Na Mona has provided the services of Irish engineers, senior mechanics, and surveyors. For technical problem-solving, both USAID and Bord No Mona have provided short-term services in engineering, consumer marketing, social analysis, stove design, private sector development and evaluation.

One can conclude that the measure of success in attaining project goals can be attributed, to a large extent, on the quantity and high quality of Technical Assistance provided.

All programmed technical assistance has been provided

b. Commodities

Major commodity procurement under the project has been the peat production machines, trucks, utility vehicles, household and office furniture, household appliances and office equipment. In addition, substantial amount of spare parts were procured, and were intended to keep ONATOUR operational for at least two years after the PACD. Virtually all peat equipment was bought in Ireland.

Stove Materials were purchased locally and in Kenya. All vehicles purchased under the project were A.I.D. Geographic Code 935 origin, with Burundi as the source. US source commodities were mainly household appliances.

During the life of project, over 100% of commodity procurement activities were completed.

c) Demonstration (Marketing)

In March 1985, the Peat II Project engaged a stove technician to design appropriate institutional stoves and ovens for a variety of potential new clients that ONATOUR was attempting to reach. This technician designed energy efficient stoves and ovens for peat use. He trained local masonry teams in building new stoves and ovens and in modifying existing installations. Several portable stove prototypes had been developed. To encourage householders to try peat, a free peat stove was offered with each initial purchase of peat.

During an alternative energy exhibition in Bujumbura, ONATOUR set up an impressive exhibit, displaying the first efforts of the stove technician. The exhibit created much interest and generated an initial demand for the services of the newly formed stove construction teams. These teams have been constantly busy since then, with a backlog of orders for stove construction.

ONATOUR has made a significant market penetration in the institutional segment, specifically the military and prisons. Monthly peat sales have been holding more or less steady at about 1,000 metric tons per month as compared to approximately 300 tones per month at the beginning of the project.

However, difficulties in lighting the fire, slow cooking, excessive quantities of ash and the characteristic odor, continue to be marketing problems for ONATOUR.

At the present, market demand for peat is being adequately met from the three southern bogs in Gisozi, Matana and Gitanga.

By the end of project, 100% of marketing activities were completed.

d. Training

On-the-job, third country and U.S. training was provided. Development of ONATOUR staff capability was of prime importance. This component was completed very successfully. Training outputs follow:

<u>Output description</u>	<u>Planned in PP</u>	<u>Actual</u>
Technicians in areas of:		
- Marketing	2	1
- Financial Manager/Analyst	2	2
- Bog Managers	5	6
- Mechanics	8	6
- Lab Technicians	2	2
- General Engineer	1	1

100% of on-the-job and third country training activities were completed

e. Construction

During the life of the project, USAID financed the construction of one office building, peat storage facilities, workshops, and housing and offices at the bog sites.

1) Office Building - The original Project Paper concept was that ONATOUR would make use of the existing main office building to accommodate six staff members. In early 1981, at the preliminary building design stage, ONATOUR expressed the desire to provide office space for all staff members estimated at 41 in a single new office building.

A design was prepared for a building of 950m² which could easily accommodate a staff of 60, based on two staff per 15,8m² office. The director realized that this building may be excessive to ONATOUR'S needs and suggested a building reduced in size to 707m² which could serve 44 staff members. A cost estimate was prepared by the REDSO Engineer at \$520,000.

The study firm TEKHNE was selected late in 1981 to revise and translate the building plan. In July 1982, the construction was advertised in Kenya and in Burundi.

In October 82, the construction firm SHAMUKIGA was selected to undertake the work. The construction was completed in late 1984.

2) Bog-site Housing and offices - In April 1982, ONATOUR submitted to AID a request for the construction of 2 houses at Gisozi and 1 house and office at both Ijenda and Matana. PIL N^o. 19 was issued on 19 May, 1983 authorizing USAID financing for the construction of 2 houses at Gisozi, one house and one office in Ijenda, an office at Matana. The Project Grant Agreement was also amended to allow for this expenditure.

Construction plans and material estimates were drawn and approved by REDSO/ESA. Legal problems concerning land titles significantly delayed plans to initiate construction in 1983. The closure of the Ijenda bog was envisioned due to the low quality of the peat. As a result, the

sites for construction were changed. In September 1984 the construction firm SOCATI was selected to execute the construction of one house in Gisozi, one house and one office at Matana; and one house and one office in Gitanga at a total estimate cost of approximately 35 million Burundi Francs. The construction was completed in 1986. The buildings were never accepted by USAID due to the poor quality of the work. As a result ONATOUR withheld final payment. The issue was still in court as of the finalization of this report.

3) Peat Storage - In accordance with ONATOUR's request and the recommendation of the project evaluation report of December 82, the possibility was explored for use of project funds to support the repairs/construction of peat storage facilities in the industrial quarter in Bujumbura.

AGGLOBU was awarded the contract in March 1985 to carry out the construction. The initial cost estimate was approximately 35,300,000 FBu. In June 1985 USAID approved the contract. In September 1986 the contract was amended to add supplementary construction work. In 1987 the contract was further amended to allow additional peat storage construction at the bog sites. Even though the construction in Bujumbura was completed before the PACD, the final approval did not take place until February 1989.

100% of construction activities were completed during the life of project.

f) Nyamuswaga Development

In June 1983, ONATOUR initiated a comprehensive study with a view to formulating a detailed development plan for the Nyamuswaga Valley. To assist ONATOUR in developing the valley, long-term engineering and other technical services were required. In 1985, field work was done to assess the effect of drainage on papyrus covered areas of the valley, and to investigate the feasibility of integrating peat and agricultural production. The work was performed by a technical team from Bord Na Mona, the Irish peat board, and was financed jointly by the Irish government and USAID.

The study was completed in March 1986.

100% of Nyamuswaga development studies were completed.

g) Bog Reclamation

Bog reclamation activities focused on rehabilitation of the Kivogero, Gishubi, Gisozi and Gitanga bogs. The reclamation was done in two phases: an analytical phase and a revegetation phase. In the analytical phase, a topographical survey of the bog was conducted and then followed by hydrological and geo-technical data collection. Based on an analysis of the survey and the data, a detailed plan, based on sound agricultural and hydrological management for the levelling of the bog was developed. The work

was performed by a technical team from Bord Na Mona, and was financed jointly by the Irish Government and USAID. The final reclamation activity was completed in December 1987.

100% of Bog Reclamation activities completed.

III Project Progress Toward Achievement of Project Purpose

A technical review of the project was conducted in December 1987 by DeLucia & Associates who concluded that:

"The peat projects and ONATOUR have developed a viable, albeit small, peat economy within a relatively short time. This includes viable operating company, a customer base for 12,000 tons/yr., three operational bogs, and a transportation and distribution network which is reasonably reliable, all within the time from that the Irish normally allow to bring a single bog into production. We believe that this is an impressive achievement."

A. The indicators of achieving the project purpose were identified as follows:

1. ONATOUR will be fully functional with a trained managerial and technical staff:

STATUS : The evaluators found that:

"ONATOUR is now fully staffed with qualified and competent senior management personnel who are accorded sufficient leeway to make policy and operational decisions based on sound business practices. The senior management staff is directed by the Director General and two assistant directors, one for administration and finance and the other for technical and commercial services. The managerial staff totals 28, and six of seven department chiefs have university degrees in such fields as economics, mining and engineering, law and ecology. Two senior staff members are presently studying business administration and civil engineering in Ireland. There are also 120 staff employees, including four bog managers, two sub-foremen and four mechanics. A complement of 518 day-workers, primarily employed during production seasons, provides manual labor at the bog sites and at ONATOUR's central peat storage facility in Bujumbura. With this personnel organization plus a fully functional central headquarters (87% financed with AID project funds) and office, storage and maintenance facilities at each of the bog sites, ONATOUR now has the institutional infrastructure to carry out its mandate: the exploration, exploitation and commercialization of peat reserves in Burundi."

2. An effective, aggressive peat marketing strategy would have been developed and an initial campaign would have been launched:

STATUS: Marketing has proved to be one of the most difficult and complex components of the project. An initial marketing campaign was launched with comparatively favorable results.

As a result, peat sales to the military and prison markets grew substantially in 1986 and 1987 and have been holding steady at a current level of about 1000 metric tons per month. Sales to bakeries and small industries were spurred through the development and distribution of special peat burning stoves and small furnances. This market peaked in mid 1987 and has gradually declined to less than 100 metric tons per month. The reasons for the loss of these clients is believed to be a combination of a lack of meaningful follow-up by ONATOUR'S sales force and the financial viability of the businesses themselves. The DeLucia study charged ONATOUR's marketing problems to the lack of an effective "Marketing Strategic Plan". ONATOUR was provided a guideline for development of such a plan which included a recommended strategy. The concept was accepted by ONATOUR and efforts are underway to adopt and implement these recommendations.

3. Peat production and reclamation efforts will be continuing smoothly.

STATUS: With regards to this indicator, the Cooper and Lybrand Management study of Burundi's Peat Industry which was completed in late 1986 concluded that: "ONATOUR has made solid progress in developing and managing output from a variety of bogs, mastering the technology of extraction, organizing a complex transport operation, and penetrating new urban markets as well as consolidating its grip on its major institutional buyers". Peat production steadily increased from 3534 metric tons in 1980 to 17,500 tons in 1987. Sales failed to keep pace with production increases resulting in an exceptionally large inventory. Since 1987 production has been scaled back.

IV. Conclusions:

Although the Burundi Peat industry is still confronted with formidable marketing and technical obstacles to solid economical viability, from the foregoing indicators it can be concluded that the Peat II project successfully accomplished its goal and purpose. This is further evidenced by the fact that a year following the end of the project and AID support to the Burundi Peat industry, ONATOUR appears to be a well established institution making steady progress toward economic viability. In addition to stream lining its peat production and sales position it has developed a small but profitable market in a peat-based fertilizer product and with continuing assistance of the Irish Peat Bord, Bord Na Mona, and the Canadian Government is expanding the production of peat briquettes.

Under the USAID Peat II Project, a viable peat economy has been successfully created in a relatively short time. Peat is now an economically competitive fuel, particularly when compared with petroleum fuels. ONATOUR has a reasonably promising outlook today with good management, an aggressive marketing strategy and adequate support in terms of technical capability. The resources committed already, the consequent problems solved, the growing competence of the organizational structure and personnel have laid the foundation for a solid operating company.

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