PN-AAW-375

Energy Initiatives for Africa (EIA) Project

698-0424

GUIDELINES

FOR

PREPARING AND APPROVING EIA ACTIVITIES

Africa Bureau, Office of Regional Affairs (AFR/RA)

Agency for International Development

Washington, D.C. 20523

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I. PROJECT BACKGROUND

Energy Initiatives for Africa (EIA) is a multi-faceted project designed to address energy use problems in sub-Saharan Africa. It is administered by the Office of Regional Affairs of the Africa Bureau (AFR/RA), Agency for International Development (AID), with technical backstopping provided by Energy/Development International (E/DI), the project contractor. E/DI will establish subregional offices in Abidjan and Nairobi to facilitate project operations. The project will operate in all sub-Saharan countries where AID provides assistance. The EIA project is intended to strengthen the institutional capabilities of African governments in the planning and implementation of sound national energy programs and projects, and to demonstrate and disseminate self-sustaining public and private sector initiatives in the areas of reforestation, independence from imported oil, efficient energy use, and development of indigenous energy resources.

The EIA Project has four components:

- Planning, Policy Development and Technology Assessment (PPDTA), including detailed Africa-wide project evaluations in high-potential energy and forestry areas, and provision of energy planning and assessment assistance to host country governments.

- A Subprojects Fund, providing grants for public and private sector activities; project lending by national development banks and other intermediate financial institutions (IFIs); and support to governments for long-term energy planning advisors.

- Training and Institutional Strengthening, providing grants for training and workshops for African energy planners, IFIs, and energy/forestry practitioners.

- Information/Experience Sharing, establishing an informal information/resource-sharing network in Africa drawing heavily on existing information centers.

Sahel posts 1/ are eligible to participate in all four components of the EIA Project. PPDTA, training and information expenses will be covered by AFR/RA out of EIA budget line items. However, Sahel posts wishing to implement subprojects must allocate bilateral funds for this purpose; the Sahel office has established a special project account, 625-0956, to receive these funds. This system will allow Sahel offices to take advantage of the EIA quick-response mechanism for PID-level approval of subprojects. Assistance from E/DI for the design and monitoring of Sahel subprojects will be accorded on the same basis as for other African posts. (See Section III for a detailed description of Subprojects Fund implementation).

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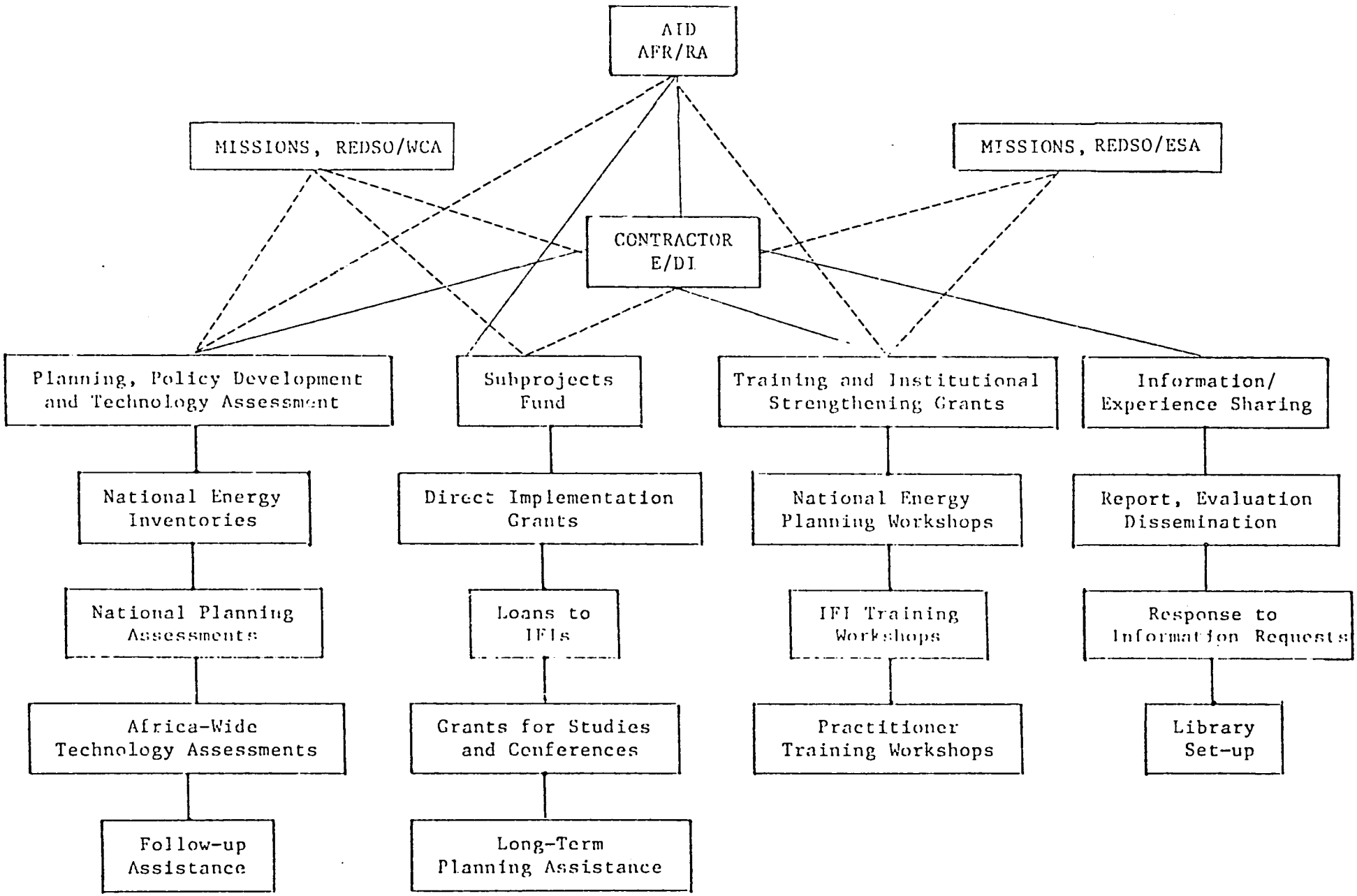
1. Defined as Mauritania, Senegal, Cape Verde, the Gambia, Mali, Upper Volta, Niger, and Chad.

EIA PROJECT ORGANIZATION



——————— Direct responsibility for authorizing disbursement

---------- Approval or advisory input

II. PROJECT COMPONENTS - IMPLEMENTATION

A. PLANNING, POLICY DEVELOPMENT AND TECHNOLOGY ASSESSMENT (PPDTA)

E/DI will administer funds for technology assessments and energy planning services. The two kinds of subactivities break down as follows:

1. Africa-wide technology assessments. These multi-country EIA assessments are not intended to judge individual AID projects or to survey/monitor the status of the numerous energy technologies now being tested in AID or non-AID projects in Africa. Rather, EIA cross-country assessment work will be structured around the following principles: (a) identification of a limited number of energy subsectors, technologies, and interventions which show promise for success and which, if successful, are likely to have the greatest impact on the overall energy system including both traditional and modern fuels; (b) a two-phased approach which stresses collection and analysis of information in the U.S. - including a report on preliminary findings - before proposing any field data collection; (c) where field work is proposed, and USAID missions concur, emphasis will be placed on developing new information rather than on gathering existing data, and (d) soliciting feedback from all interested participants and staging follow-up workshops of involved Africans, USAID officials, and private individuals.

   This two-phase approach will provide missions with useful information that can be applied directly to project design and implementation. Detailed analysis and feedback, rather than a mere gathering of data, will be the focus of the technique.

   The following items have tentatively been identified as priorities for assessment topics.

   - Private enterprise in the energy sector: existing networks linking production and distribution, who controls them, how they operate, how a new product enters the market, etc;
   - Agroforestry;
   - Industrial energy conservation;
   - Charcoal and monetized fuelwood production and distribution; and
   - Energy conservation in the transport sector.

2. National energy inventories and assessments. Existence of a national energy planning base will, in most cases, be a prerequisite to subprojects funding in a given country. As a first step in the EIA project, E/DI has compiled energy inventories of all eligible sub-Saharan countries. They present observations on the status of energy planning and recommendations on possible next steps. Where

warranted and at mission request, E/DI can perform limited-term national energy assessment or planning work. Assessments are to be viewed as preliminary steps to developing information on national energy supply and consumption, identifying major energy issues such as conservation in the industrial, transportation and fuelwood sectors, and analyzing options and recommendations on action to be taken. Where possible, they will be joint undertakings between AID and host country governments, meant to stimulate follow-on activity. At the same time they will provide the basis on which subproject grant requests will be evaluated.

3. Follow-up assistance. Resources permitting, E/DI can follow up on energy assessment recommendations or in exceptional cases, engage in activities related to AID-funded projects already in progress. Such assistance, usually requiring no more than two-three weeks, must conform to the criteria laid out in Section II.B.1, i.e., must address national energy priorities, be financially and economically viable, resource conserving, etc. Eligible activities may include more detailed development of selected energy policies, pre-design specification and structuring of particular energy projects, or trouble-shooting to resolve implementation bottlenecks in ongoing projects. The completion of national energy assessments will take precedence over any such activity. Requests for assistance should be cabled to AFR/RA.

The Subprojects Fund, administered by AFR/RA, will promote development and dissemination of promising energy technologies and extension approaches in Africa. Three types of assistance may be provided: direct implementation grants of up to $500,000 per subproject ($1 million for CDA energy/forestry countries); loans/grants of up to $500,000 to Intermediate Financial Institutions (IFIs) which will in turn make loans of up to $100,000 each for energy subactivities; and provision of long-term energy advisors to host governments.

Award Criteria. The Subprojects Fund will test a variety of dissemination approaches -- particularly in private enterprise development -- which minimize the need for long-term commitment of scarce government or donor financial, manpower, organizational, or other resources. Activities supported through Subprojects Fund grants or loans should offer the prospect of making a significant contribution to achieving priority national or regional energy objectives. The Subprojects Fund award criteria listed below will form the basis on which subprojects proposals will be evaluated.

Subprojects should:

- Be financially and economically attractive to users, intermediaries and the society as a whole.
- Respond to demonstrated consumer demand for outputs.
- Be consistent with national energy policy and broader development objectives (as reflected in a mission's CDSS).
- Be economical in their dependence on scarce resources such as skilled manpower, capital, foreign exchange, and government institutions.
- Be oriented toward long-term, self-sustaining dissemination. This criterion should take precedence over others such as local production and involvement of the target group if they threaten to obstruct the dissemination process. The Fund will not finance small, discrete projects with no broader application.
- Rely on existing institutional mechanisms such as markets, trade networks, extension services, educational institutions, etc.
- Be within the budgetary and manpower capabilities of the government.

1. Direct Implementation Grants

a. General Requirements

The program will be governed by the following general requirements:

- Eligible Countries: All African countries with AID field offices, and both REDSOs may sponsor EIA subprojects. All proposals must be routed through these offices.

- Proposing Organizations: Eligible proposing organizations include African regional organizations, host country government agencies, parastatals, local government cooperatives or other community-based organizations, and host country and U.S. private voluntary organizations (PVOs). Host country PVOs must be registered with the USAID field office, and U.S. PVOs must have ongoing operations in the country or countries covered by the proposal. No subproject grants will be made to PVO home offices outside Africa. Individuals and private for-profit organizations are not eligible for direct subproject grants but may apply for loans from an IFI (see below). Peace Corps Volunteers may administer subprojects for a grantee, but the Peace Corps itself is not an eligible proposing organization. Missions are encouraged to investigate the possibilities of co-financing subprojects with other donor agencies under normal EIA approval procedures.

- Level of Funding: Grants may be approved up to a level of $500,000 per subproject, or $1 million for CDA energy/forestry countries. For grants to a host country agency, the normal host country contribution requirement applies, unless waived by AID/W for a specific grant to a Relatively Less Developed Country (RLDC). For grants to other eligible organizations, U.S. or foreign, there must be a 25 percent non-AID contribution.

- Length of Subproject: Subproject activities are normally expected to be completed within three years. In exceptional cases, such as long-term forestry activities, subprojects with Project Assistance Completion Dates (PACD's) of up to five years after project start-up may be approved.

- Eligible Activities: Grants may support energy development, conversion, or utilization technologies, or extension/ dissemination approaches. "Energy" specifically includes fossil fuels (oil, gas, coal, lignite), peat, fuelwood (including forestry or agroforestry projects producing fuelwood as a major output), other biomass, hydropower, solar/wind power, energy conservation, and such other energy sources as AID may deem appropriate.

- Consistency with National Priorities: The proposed subproject must be consistent with national energy and development priorities, as reflected in the mission CDSS, national energy plans, and similar documents.

- Use of Subproject Funds: EIA subproject grant funds may be used for the purchase of materials and equipment, including related freight and transport costs, and costs of short-term consultants (up to six months per person). Funds may support long-term technical assistance in exceptional cases. Local government labor costs will normally be paid from the host country or non-AID contribution.

- Procurement: Each Subproject Paper will stipulate procurement arrangements to be used for that subproject. For all subproject grants except those to PVOs, the normal AID procurement source, origin, and nationality rules apply -- i.e., the source, origin, and nationality of goods and services will be Code 000 for all countries, except for the Relatively Less Developed Countries (RLDCs), where Code 941 will apply.

  Local cost financing rules are those in AID Handbook 1, Supplement B, Chapter 18. For shelf items having their origin in Code 899 countries but not in Code 941 countries, the limitation is a unit cost of $5,000 per commodity. The total may not exceed $25,000 or 10% of total local cost financing, whichever is higher.

  For PVOs receiving EIA subproject grants with a procurement element of $250,000 or less, the order of preference established in AID Handbook 1. Supplement B, Chapter 16B1c(4) is applicable -- i.e. U.S., host country or Code 941, and Code 935. For PVO grants with a procurement element in excess of $250,000, the usual source, origin, and nationality rules apply, as described earlier.

b. Approval Procedures - The SPARC

The first step in approving an EIA subproject is the Subproject Approval Request Cable or SPARC, submitted by the USAID field office to AFR/RA. 3/ It constitutes the PID-level document and should be developed jointly by the proposer and local USAID officials. E/DI may be called upon at this stage to assist in drafting the cable and in doing preliminary design work.

The SPARC should contain the following information:

- brief description of proposed activity;
- duration of activity;
- proposer and grantee (or loan recipient if IFI sub-loan);
- what is to be achieved (outputs);
- proposed beneficiaries (who are they, where do they live, how many?);

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3. For subprojects over $500,000, a PID must be written. E/DI will be available to missions to assist in PID preparation.

- procurement arrangements and waiver requests. If procurement research is required, the SPARC should include a brief description of the proposed technology and the closest possible approximation of specifications for materials and equipment;

- budget totals (U.S., host country, other donor contributions);

- Initial Environmental Examination (IEE). The IEE may be sent by separate cable or included as part of the SPARC. If not a part of the SPARC, it must be submitted to AID/W at the time of Subproject Paper preparation;

- capacity of mission to manage subproject and possible follow-on activities (for IFI's, capacity of IFI to continue lending and sub-loan recipient to manage follow-on activities);

- extent to which proposed subproject fits with Mission CDSS and country energy priorities and what plans, if any, exist for follow-on activities;

- opportunities for replication; and

- requirements for contractor assistance in preparing the Subproject Paper, including skills required and estimated duration.

AID/W will evaluate the SPARC and cable approval or rejection to the mission within three weeks of receipt. Approval means that funds have been reserved in AID/W and is also the go-ahead for Subproject Paper preparation. Any issues requiring elaboration will be identified in the approval cable. (See Annex III for a sample SPARC).

c. The Subproject Paper

The Subproject Paper is an abbreviated Project Paper of 6-10 typed, single-spaced pages laid out in the following format (See Annex IV for a sample Subproject Paper):

TITLE PAGE: Project title and number (EIA 698-0424), subproject title, proposing Mission, grantee, duration of project and amounts of AID funding requested and host-country or non-AID contribution. Include a one-paragraph description of what the subproject will achieve and how.

(1) Subproject Description

(a) Brief History of events leading up to submission of the Subproject Paper.

(b) Problem(s) addressed by the subproject and why they are a priority energy problem for that particular country.

(c) Beneficiaries. Who are the beneficiaries, where do they live, how many will benefit and what is their relationship to the subproject?

(d) Relation to Other Activities. Identify briefly other activities addressing the same or closely related problems, lessons learned from them, and ways, if any, to relate these lessons to the subproject.

(e) Evaluation Indicators. Where possible provide numerical indicators of output (e.g., number of cookstoves, hectares of trees planted, kWh/year produced).

(2) Technical Analysis

(a) Specifications for Devices/Techniques. Where appropriate, attach sketches, plans/drawings, or photos to the Subproject Paper. Provide specifications for any equipment to be purchased.

(b) Alternative Devices/Techniques. Alternative options for dealing with the identified problem and reasons for choosing the options proposed.

(c) Technical assistance requirements. Need for and nature of consulting services, if any, from E/DI or others and of what duration.

(3) Economic and Institutional Analysis

(a) Benefits and Costs. The Subproject Paper should contain information on the following project benefits and costs: investment cost; annual costs for labor, raw materials (including energy), spare parts and maintenance, and any other recurrent costs; annual revenues, with breakdown of quantity and price of output(s); life of investment; and annual cash flow (revenues vs. costs). These should be presented both in terms of the benefits/costs to the investor or project (financial perspective) and in terms of the benefits/costs to the economy as a whole. Include a short discussion of impact on employment, income generation, income distribution, credit use, and the subproject's effect on existing economic activity that may be displaced.

(b) How Self-Replication Will Be Achieved. Describe how activities initiated/expanded through subproject will continue to expand once EIA support terminates. Address role of private sector in such expansion. What obstacles to expansion exist and how may they be overcome?

(c) Project Management. Qualifications of individuals and institutions responsible for carrying out subproject and role each party will play.

(4) Social Considerations

Address issues such as compatibility with local patterns of decision-making, family relationships, sex roles, mores and taboos, social organization, etc.

(5) Environmental Considerations.

Attach Initial Environmental Examination (IEE) in annex.

(6) Work Plan

Provide schedule of what tasks will be completed, when, and by whom, including dates for submission of quarterly progress reports prepared by the grantee. A quarterly progress report form is provided in Annex I.

(7) Budget

(a) AID Contribution. Prepare a budget of estimated expenditures. For each commodity, list quantity, unit and unit price, source (e.g. U.S., local), estimated freight charges and total cost. For all personnel costs, describe position(s), identify whether local or expatriate and how secured (short-term consultant, local hire contract, U.S. personal services contract, etc.), weekly/monthly cost, person-weeks/months, and total cost. Long-term experts or use of AID funds for local personnel costs require AID/W approval, if not already approved at the SPARC stage.

(b) Local Contribution:

- Government/private support, in cash or kind, including logistic support, buildings and site use, and personnel (salaries).

- Beneficiary support, including cash or in-kind contributions such as labor and logistic support.

The local contribution (which includes government/private and beneficiary support) must contribute 25% of the total project cost; that is, 25% of the sum of the AID and local contributions. To calculate this figure, divide the amount requested from AID by 0.75 to find the total project cost. Then subtract the AID request from this total to get the non-AID contribution:

Example:

Divide: $\frac{\$375,000 \text{ (AID request)}}{0.75}$ = $500,000 (total subproject cost)

Subtract:
$500,000
-375,000
$125,000 - (non-AID contribution)

Missions will be responsible for reviewing completed Subproject Papers, both for substance and to assure that all statutory and regulatory requirements are met (e.g., 611(a) and 611(e)). E/DI personnel will be available upon request to assist in design, review and modification of Subproject Papers. Missions are encouraged to use E/DI for Subproject Paper development.

IEE's must be approved by AID/W except if the grantee is a PVO. In these cases the Mission Director may approve the IEE. 5/ All Subproject Papers will be approved at the mission or REDSO levels according to AID Delegations of Authority (Nos. 140) as revised 6/9/82. Following approval, funds will then be allotted to the mission, which will draft and execute a Limited Scope Grant Agreement (LSGA) or other authorized form of grant agreement with the sponsoring agency/private organization.

Once the LSGA or other form of grant agreement is signed, the mission should pouch to AFR/RA a copy of the agreement and a complete authorization package containing:

- the Subproject Paper;
- the Project Data facesheet, signed by the Mission Director and dated; and
- the Project Authorization and authorization memo, including activity number (assigned by AFR/RA following SPARC approval), life of project costs, and any covenants cited in the LSGA.

d. Reporting and Evaluation of Subprojects

Proposers of subprojects will be asked to prepare quarterly progress reports (See Annex 1 for the sample form.) Reports are to be submitted to the in-country USAID, with copies to the appropriate E/DI office (either Abidjan or Nairobi) and AFR/RA according to the schedule designated in the Work Plan (Section (e) of the Subproject Paper). These grantee progress reports will form the backbone of the quarterly contractor reports submitted to AID.

E/DI will make semi-annual visits while the subproject is being implemented, in order to: 1) monitor progress, 2) assist in resolving implementation problems, and 3) relay information to others working in similar fields.

Finally, missions will be asked to prepare annual, PES-level evaluations of subproject grants. AFR/RA strongly encourages USAIDs to call upon E/DI for assistance in this phase, as the contractor will be the instrument through which "lessons learned" will be transmitted to other practitioners and planners. Issues to be addressed in the evaluations will be effectiveness of approach; technical, economic, sociocultural and

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5. See AID Regulation 16, Section 216.4, revised version, October 23, 1980.

administrative/institutional aspects; and environmental resource management.

2. IFI Loans/Grants

The Subprojects Fund may be tapped for loans/grants to intermediate financial institutions (IFIs) in Africa, which will then lend to indigenous entrepreneurs or organizations for energy or forestry projects. IFIs may include national or subregional development banks, host government agencies with established facilities for lending to the private sector, or private voluntary organizations (PVOs) with on-going private enterprise development programs.

Loans/grants to IFIs are intended first as a vehicle for on-lending for relatively small-scale private sector and forestry activities. In addition, they will test the approach of using IFIs for energy lending activities. As the Africa Bureau has found with several existing on-lending programs, use of the IFIs has great potential for reaching local entrepreneurs that AID cannot reach directly. The purpose of IFI loans and grants under EIA is to draw upon and demonstrate use of the best IFIs, not to strengthen weak or marginal examples. For this reason, EIA awards will be highly selective, based on a thorough evaluation of each IFI candidate's institutional capacity and lending history.

Loans will be the general rule in transactions between AID and IFIs. Grants will be allowed only when clearly justified and upon recommendation of the USAID and E/DI. For transactions between IFIs and small entrepreneurs, loans will be the only allowable arrangement.

a. General Requirements (where indicated, see Direct Implementation Grants (DIG), Section II.B.2.a, p. 6)

- Eligible Countries: (See DIG)

- Proposing Organizations: (See DIG) Also includes national and subregional development banks or other lending institutions which are wholly or partially owned by one or more host country governments. In addition, organizations which qualify in other respects for subproject grants are eligible for IFI loans/grants only if they already have on-going, well-established lending operations.

- Level of Funding: Loans/grants may be approved up to a level of $500,000 per IFI. Following the EIA mid-term evaluation, AID/W may elect to increase this ceiling for selected IFIs which have demonstrated successful management of their initial EIA funds.

- Project Assistance Completion Date: Loan/grant funds to IFIs are to be lent for in-country energy subactivities and subsequently re-lent to additional subactivities after initial borrower repayment. A loan/grant to an IFI will normally run for five years. Individual sub-loans by the IFI are expected

to run for three years or less but may, with USAID field office approval, be extended to five years.

- Eligible Activities: (See DIG)

- Use of Subproject Funds: (See DIG)

- Procurement Source and Nationality Rules: (See DIG)

b. IFI Activity Approvals

AID will award loans/grants of up to $500,000 each to IFIs. Proposals will specify individual subactivities representing approximately 50% of the loan/grant request. IFIs must also comply with the 25% non-AID contribution requirement; this may be made up of 25% contributions from the sub-loans. Any IFI sub-loan over $100,000 must be approved by the USAID field office. AID may elect, based on favorable initial lending experience, to award additional EIA loans/grants to an IFI, up to an aggregrate funding limit of $1 milion per institution. All sub-loans will be evaluated in terms of the criteria in Section II.B.1, p. 5.

The following sequence will apply when making awards:

- A USAID field office interested in making an EIA loan/grant to an IFI will request, through the appropriate contractor field office, a contractor check of that IFI's experience and references.

- If a reference/experience check indicates that an IFI is qualified, the USAID field office will request on-site contractor assistance to help prepare a SPARC.

- The USAID field office will submit the SPARC to AFR/RA for AID/W review and approval.

- If the SPARC is approved by AID/W, the USAID field office will prepare a Subproject Paper with contractor assistance as needed.

SPARCs. SPARCs should be patterned after the description in the Direct Implementation Grant Section (II.B.2.b.i, p. 9) and after the sample SPARC in Annex III. The IFI must submit a SPARC for its proposed lending program composed of two-paragraph descriptions of sub-loans accounting for 50% of the total EIA request. These descriptions should contain the information listed in the first eight points on pages 7 and 8.

Subproject papers for IFIs will be submitted to the USAID field office for approval. They will include the following sections:

- Summary of E/DI IFI assessment:

  - how the IFI identifies/selects projects including requirements for prefeasibility studies and proposals;

- load/administrative capability and prior lending and loan repayment experience;

- qualifications of loan program staff;

- need for and IFI ability to provide technical assistance to borrowers; and

- relationship of proposed interest rate to established IFI and host country lending practices.

The IFI will be asked to furnish a model sub-loan contract, including interest rate, repayment terms and other conditions (e.g., collateral or other security). It will also establish a separate account and books for this lending program as a Condition Precedent to the loan/grant agreement with AID.

- Description of sub-loans accounting for approximately 50% of the IFI loan amount requested from AID. To simplify the procedure, an elaboration on the SPARC format may be used for each sub-loan.

- A monitoring plan drawn up by the IFI with contractor assistance and approved by the USAID (see below).

c. Monitoring of Sub-Loans

IFI loans will be disbursed on an incremental basis according to a schedule established by the loan agreement. E/DI will employ a short-term expert in financial management to assist the IFI in tracking loan repayment and other performance indicators. At least annually, but more often if necessary, the short-term expert will visit the IFI, examine progress reports, and prepare an assessment for AID detailing:

- Disbursement of sub-loans, including quality of proposals and prefeasibility studies.

- Aggregate actual vs. target loan repayments.

- General health of the IFI lending program.

d. Re-lending

The separate account established by the IFI will also house the revolving loan fund, which will be used for on-lending to other activities in the energy/forestry field. The USAID will be asked to concur in new sub-loans over $100,000; smaller loans will not require AID approval. Information copies of any new sub-loans should, however, be sent to the supervising USAID or REDSO and to the appropriate regional E/DI office.

At the time of initial loan or grant negotiation, AID and the IFI will agree on the spread between the sub-loan interest rate and the interest rate at which the IFI will reimburse the revolving loan fund. As part of

the loan or grant agreement, the IFI will also agree to maintain the revolving loan fund for a specified number of years and to report to AID yearly on use of the funds, following termination of the grant LOP. If the IFI has established an exemplary repayment record with the USAID, the mission may elect to relend to the IFI on a continuing basis.

3. Long-Term Planning Assistance

In special circumstances, the Subprojects Fund will support energy planning advisors to host country governments 6/, provided that certain pre-conditions are met. These include: existence of a preliminary national energy assessment 7/; access to short-term consulting assistance (available through E/DI); identification of a host government counterpart; non-duplication of IBRD or other energy assistance programs; and placement of the advisor in the appropriate institution, i.e., one that has received the energy planning mandate for the government. EIA will not support energy advisors to USAID missions.

The procedure for requesting long-term planning assistance will be as follows:

SPARC: A subproject approval request cable should be sent to AFR/RA containing the following information:

- Justification of need for a long-term energy planning advisor based on results of previous energy assessments.
- Assurance of counterpart availability.
- Institution in which the advisor will be working.
- Length of time advisor will be required.
- Scope of work (missions are encouraged to call on E/DI for assistance in developing the SOW).
- Type of hiring arrangement desired (e.g., personal services contract, host country contract, etc.).

Following SPARC approval, the mission should negotiate a grant agreement with the host country; no subproject paper is necessary. AFR/RA will encourage missions to call on E/DI for assistance, at either the SPARC or grant agreement stage.

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6. EIA will coordinate its activities in this sector with the AID ST/Energy project for Energy Policy Development and Conservation (936-5728).

7. If no assessment work has been done, E/DI can perform this service under its EIA contract.

C. TRAINING AND INSTITUTIONAL STRENGTHENING GRANTS

All training will take place in Africa and will be short-term, unless exceptions are specifically approved by AFR/RA. E/DI through its Abidjan and Nairobi offices, will assist REDSOs, missions, and national governments to identify training needs, assess various African institutions' capabilities to meet such needs, and design appropriate training activities. Training will be developed and administered by E/DI subject to concurrence by the local USAID field office. Missions and local institutions wishing to initiate training activities should contact E/DI through the appropriate REDSO of AFR/RA.

1. Types of Assistance

The project will fund activities of up to $50,000 each for the following types of training:

a. Short-term informal training sessions and workshops conducted in Africa for national energy planners or for energy planning staffs of sub-regional organizations such as ECOWAS or CILSS. The emphasis will be on exchange of information, experience, and insights among the participants.

b. Training/workshops for IFIs supported, or likely to be supported under the Subprojects Fund. Sessions will focus on energy and forestry project identification, analysis, and preparation; project financing; and post-financing assistance to help assure projects' continued viability. They will be coordinated with, and where appropriate, co-sponsored by, the African Development Bank, which currently conducts training and workshop programs for national development banks throughout Africa.

c. Practitioner-oriented training will include in-country tradesman and technician training, national or subregional "hands-on" workshops among practitioners in particular areas (e.g., rural woodlots, artisan-made cookstoves, charcoal production, or commercial and industrial energy efficiency), or provision of an African and/or expatriate practitioner team to provide on-the-job training support to particular projects. Major purposes of such training will be to upgrade regional capabilities in areas such as agroforestry or improved cookstoves, to foster interaction among present or prospective projects funded under the subprojects component, and to help develop the technical assistance capability of participating on-lending institutions.

2. Award Criteria

Training award decisions will be based on the following criteria:

- Priority of Area of Activity: The training must address an area of energy or forestry activity which is of high priority to the country or countries involved as reflected in national energy plans, CDSSs or other documents.

- Purpose and Expected Benefits of Training: Priority will be given to training which is expected to lead to practical improvements in energy or forestry project design or implementation. Proposed training recipients--whether national energy planners, financial institutions, entrepreneurs, artisans, etc.--must be in a position to put the results of such training into actual practice.

- Relation to Other EIA Subactivities: Priority will be given to well-conceived training activities which complement other EIA subprojects. Examples include energy planner or practitioner workshops to discuss and disseminate EIA technology assessment results, and workshops for a number of EIA subproject proposers working in a similar area.

- Proposed Training Institutions: The contractor will assess the capabilities and experience of the proposed training institution.

3. Memorandum of Understanding

Individual training subactivities will be authorized by means of a memorandum of understanding signed by E/DI, the participating government(s), and the sponsoring host country institution. The memorandum of understanding must be approved by the local USAID or REDSO Director. AID/W approval is not required.

Training funds may be used in support of the implementing institution to cover the costs of conference room rental, translation, report preparation, materials, etc. Travel and per diem may be covered for participants from outside the staging country. In-country travel will be picked up by the host government. 8/ E/DI can assist with support of training experts.

The memorandum of understanding will provide the following information:

a. Substance - brief description of activity

b. Participants - description of types of invitees by specialty and position; minimum/maximum number of participants

c. Sponsor - name of host institution(s); responsible individual; site of training

d. Trainers - number of trainers, their qualifications, and whether procured by E/DI

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8. In exceptional cases training funds may be used for in-country travel and per diem, with the approval of the Mission Director.

e. Timetable - schedule for preparation of training materials; designation of who will be responsible for which materials; date(s) of training; length of activity; preparation of reports

f. Evaluation - what evaluation of the training session, if any, will be made and by whom

g. Logistic Details - responsibility for invitations; hotels; transportation; field trips; clerical support; rosters; audio-visual equipment, etc.

h. Follow-up - responsibility for next stages including follow-up seminar or course; long-term training; regional activities; incorporation of course into regular curriculum; discrete environmental activities; etc.

i. Contribution of Local Institution(s) - description of staff time; facilities; transport, and other contributions from local institutions

j. Financial Arrangements - agreement on who will provide payment and in what manner, including who will prepare accounting and reports for particular disbursements

k. Expected Benefits - both of the immediate training subactivity and of planned follow-up work.

D. INFORMATION/EXPERIENCE SHARING

E/DI will respond to requests for information from grantees, missions, host-country governments and other individuals and organizations involved in energy planning and implementation. E/DI will also disseminate technology assessments and subproject evaluations, screen incoming material for its relevance to the energy sector and refer requestors to appropriate information centers. The intent of this approach is to avoid duplication of services and to furnish requestors with directly relevant, application-oriented information, rather than general references that may not address the requestor's problem. E/DI will set up information libraries at its Nairobi and Abidjan offices to service the information sharing network which will include computerized information retrieval capabilities.

III. CONTRACTOR'S ROLE

A strong contractor presence in Africa is critical to the effective functioning of EIA. Through its offices in Abidjan and Nairobi, E/DI will play a key role in the implementation of all four EIA components.

In summary, the contractor's functions include:

- Stimulation of New EIA Subactivities. E/DI will make regular visits to Africa missions interested in participating in EIA to foster generation and development of subprojects and training activities. E/DI will also initiate and maintain contact with potential local users of EIA project services, such as indigenous and U.S. PVOs, private entrepreneurs, host government agencies, Peace Corps, etc.

- Design-Phase Technical Assistance in identifying and structuring national energy assessments, subprojects, and training activities.

- Implementation-Phase Responsibilities such as carrying out multi-country technology and national energy planning assessments; obtaining commodity specifications and documents; designing and assisting in performance of subproject evaluations; drafting training memoranda of understanding; and general subproject monitoring. Involvement of E/DI in these tasks should help relieve management burdens on limited USAID staffs and contribute to the more timely achievement of subactivity objectives.

- Coordination and Overall Monitoring of EIA Field Activities. E/DI will make field visits to follow up with host countries and missions on progress in implementing planning and policy recommendations and to share information on what other countries are doing in similar fields, etc. E/DI will monitor all subactivities, detailing their progress in quarterly reports to AFR/RA.

Annex I

QUARTERLY PROGRESS REPORT

Subproject name and number: _____

Subproject location: _____

AID funds requested: _____ non-AID contributions _____

Proposer/grantee: _____

Date agreement signed: _____ PACD: _____

1. List evaluation indicators (Subproject Paper Section (a)(6)) and give level of progress towards each.

   a.

   b.

   c.

   d.

   e.

   f.

Do these levels coincide with the Work Plan Schedule (Subproject Paper, Section (e)?

2. What major obstacle(s) have you encountered in implementation? How do you plan to overcome it/them?

3. What items did you procure in the last quarter? Were the procurement arrangements satisfactory?

4. Do you currently need or do you anticipate the need for outside technical assistance? Of what sort and for how long?

5. Who has participated in the subproject during the last quarter, and in what capacity?

6. Are you having any budgetary problems? If so, discuss.

7. Other comments.

ANNEX II

PVO Registration Form

FOREIGN PRIVATE AND VOLUNTARY ORGANIZATION

SUMMARY DESCRIPTION

Date Application Received: _____

Name of PVO: _____

Mailing Address: _____

_____

President of Organization: _____
(Name) (Title)

A.I.D. Action Officer: _____

* * * * * * * * * *

Fiscal Year: _____ Income: _____ Expenditures: _____

Status Relating to A.I.D. Resources:

A. Receiving: _____ B. Seeking: _____

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1. Is the organization a legal entity within the country in which it is domiciled? Describe the purpose, noting whether the organization is philanthropic and/or public service oriented and nonprofit, nongovernmental, nonpolitical.

2. What types of governmental approvals, licenses, etc., and/or Articles of Incorporation, Bylaws affirm the legal status, purpose and nonprofit, nongovernmental, nonpolitical nature.

3. Describe the method of operation, nature of normal functions, areas of expertise; constituency; years in operation; size of staff; and programs and budget projected for its next fiscal year.

4. Are the activities the organization is engaged in voluntary charitable or development assistance operational in nature of a type consistent with the FAA or PL 480?: Yes_____; No_____. Are the operations consistent with the purposes described in the application and supporting documents submitted to A.I.D.?: Yes_____; No_____.

5. Describe the activities expected to be conducted with A.I.D. funding. Are these other than religious in nature?: Yes_____; No_____. Discuss any pertinent aspects, as necessary.

6. If the organization is tax exempt, what is the effective date and duration of the exempt status, the nature of the authorizing entity, and the key factors in the determination.

7. If the organization is not currently engaged in voluntary charitable or development assistance operations, does it have the potential for becoming so engaged?: Yes_____; No_____. Summarize the indicators supporting the conclusion.

8. What reviews of financial accounts have taken place? For example: Are financial statements rendered by chartered accountants in accordance with generally accepted accounting principles? What conclusions can be drawn regarding the financial viability of the organization?

9. Summarize grounds for concluding whether or not the organization has financial resources and demonstrated management capability of sufficient substance to enable it to perform its normal functions in the absence of A.I.D. support.

10. How are the operations of the organization controlled? Describe the nature, authorities and obligations of the governing body, the functions it performs, actions it takes, number and regularity of meetings, presence/absence of quorum - and other factors relevant to the question of the effectiveness of the policy and administrative control of the governing body.

11. Summarize the evidence submitted/available relative to whether or not the organization establishes its own priorities and programs. Does the organization obtain, expend and distribute funds and resources in conformity with accepted ethical standards in the country or countries in which it operates? Yes_____; No_____. Describe the essential standards in the context of the host country.

12. Note costs for promotion, publicity, fund raising and administration. In registering U.S. organizations, the cost of fund raising is figured as a percentage of cash and in-kind contributions - 20% or above being sufficient to warrant seeking explanatory information. Administrative costs (including fund raising costs) are reviewed on a case-by-case basis; where program expenditures are less than 50% of total expenditures, the situation is explored to identify the contributing factors.

ANNEX III

SAMPLE SPARC

FROM: USAID/Zogbwe

TO: AFR/RA

SUBJECT: Proposed EIA Subproject (698-0424)
Improved Charcoal Stove Manufacture
Agbasu Prefecture

1. Description of Project: The proposed subproject will train 10 potters at national pottery institute for period of 3 months in operation of ceramics equipment and production of fuel-efficient, charcoal-burning, clay stoves. The potters, members of the Cooperative des potiers d'Agbasu, will then establish their own cooperative stovemaking venture for Agbasu Region under the direction of Bernard Akaba, a Zogbwean national and instructor at pottery institute. A production plant will be built, machinery purchased and installed, and a management scheme set up. Stoves will be sold according to a marketing study and plan to be drawn up by a subproject-funded consultant. At full production levels, plant should produce 300 stoves per week for sale on local and eventually national market.

2. Duration of Activity: 24 months

3. Proposer/Grantee: Cooperative des potiers d'Agbasu.

4. Outputs: The subproject will (A) rehabilitate pottery industry of Agbasu, (B) produce 300 fuel-efficient, charcoal-burning, clay stoves per week, (C) market a stove that will use 1/2 the charcoal of the traditional metal stove and thereby reduce stress on local environment and (D) save consumers money overall by reducing amount of charcoal they must buy.

5. Beneficiaries: Beneficiaries will be the 10 trainee potters and the 110,000 residents of Agbasu City who will constitute initial market for stoves. Market will expand to eventually cover entire country.

6. Procurement: 1, 1-ton Toyota pick-up at dols 15,000 plus dols 3,000 in spare parts for a total of dols 18,000. Two sets of clay processing equipment including 2 clay preparation plants at dols 16,039 each, 2 horizontal pug mills with electric starters at dols 810 each, and 2 brick-lined ball mills with porcelain ball grinding charge at dols 23,353 each. Above items will all require procurement waivers. Proposer desires to employ a procurement agent for the ceramic equipment.

A workshop will be built using local materials and labor for dols 2,108. Training will be provided in-country for 10 potters at dols 7,300 and in a third country in Africa for a management trainee at dols 3,890.

A market survey, lasting 4 work weeks will be provided by an expatriate consultant under a personal services contract, total of dols 6,320.

7. Budget Totals: AID Contribution: dols 175,700. Local Contribution: dols 59,200. Total subproject cost: dols 234,900.

8. IEE: Will be submitted with Subproject Paper.

9. USAID Management: Mission strongly supports subproject and has designated as Project Manager a direct hire staffer whose workload will permit quarter-time management/monitoring of subproject.

10. CDSS: Fuelwood conservation and aid to small industry are both priority items in the USAID/Zogbwe CDSS which in turn reflects GOZ development priorities.

11. Replication: The mission regards this subproject as a viable model for other areas of the country. Much the same conditions exist elsewhere and other groups are watching this experiment before setting up their own operations.

12. Contractor Assistance: Request E/DI provide one consultant to assist in preparing Subproject Paper and in particular economic analysis, environmental examination and procurement waiver. Proposed TDY dates are June 10-25. Also request E/DI home office identify marketing consultant and procurement agent. Please advise.

ANNEX IV

SAMPLE SUBPROJECT PAPER

(This Subproject Paper, while fictitious, is illustrative of a possible subproject design. Budget and production figures are illustrative only and do not reflect actual prices in any given country.)

ENERGY INITIATIVES FOR AFRICA

(698-0424)

IMPROVED CHARCOAL STOVE MANUFACTURE

Agbasu Region, ZOGBWE

USAID/Zogbwe

Proposer/Grantee: Cooperative des potiers d'Agbasu

Duration - 24 months

Under the direction of Mr. Bernard Akaba and the Cooperative des potiers d'Agbasu, the proposed subproject will train 10 potters at the national pottery institute for a period of 3 months in the operation of ceramics equipment and the production of fuel-efficient, charcoal-burning, clay stoves. The potters, who will be cooperative members, will then establish their own stovemaking venture. A workshop will be built, machinery purchased and installed, and a management scheme set up. Anticipated production levels will be based on a marketing study and plan drawn up by a subproject-funded consultant. At full production, the plant hopes to turn out 300 stoves per week for sale on the local, and eventually national, market.

AID funds requested:	$175,700
Local contribution:	$ 59,200
Subproject Total:	$234,900

ENERGY INITIATIVES FOR AFRICA

(1) SUBPROJECT DESCRIPTION

(a) Brief History

This proposed subproject will seek to support energy conservation through support of a commercially viable production activity that will introduce a fuel-efficient, clay cookstove to the Agbasu region of Zogbwe. These stoves of the Thai model are expected to consume half the fuel of the traditional metal jiko, and can be ideally manufactured by potters.

The subproject will be sponsored by the "Coopérative des potiers d'Agbasu", a USAID-registered PVO founded by Mr. Bernard Akaba, a professional potter and instructor at the national pottery school. Much of the organization's history thus far, has been spent devising and implementing a plan to ressucitate the local pottery industry. Under Mr. Akaba's direction, it was decided to set up a cooperative production plant in Agbasu city, employing 10 potters and relying on electrically-powered machinery to deliver a more consistent and durable product than the traditional hand-worked clay pot, and at the same time, achieve some economies of scale. Akaba recommended, as the initial product, a charcoal-burning clay stove he had seen in Thailand during his travels. Available evidence indicates the stoves to be twice as fuel-efficient as metal charcoal stoves. Akaba carried out exhaustive testing at the pottery school laboratory and, when convinced that the product was viable, sought the help of donor agencies to fund the endeavor.

Potters will be trained for 3 months by Mr. Akaba at the national pottery institute where they will learn how to work with the new equipment and how to manufacture clay stoves. Mr. Akaba has arranged for the training to take place during the yearly 3-month holiday, at which time the school is normally empty. The cooperative potters will receive a reduced tuition rate, paid for out of grant funds, but will supply their own meals as part of the beneficiary contribution.

It became clear, after several attempts, that further study was needed before financing could be obtained. The USAID mission in Zogbwe suggested to Mr. Akaba that he prepare a proposal for a prefeasibility study to be performed under the EIA project. In response to a mission request, the EIA Project office in Abidjan sent a consultant on a 3-week trip to study the market for the stoves and perform an economic analysis of the subproject as conceived by the co-op.

The Subproject Paper has incorporated the recommendations of the consultant study, in particular, that a more thorough marketing study be performed and detailed plan drawn up. The consultant has established that there is a market. What remains is to determine the characteristics of that market and the best way to maximize sales.

(b) Problems Addressed

The proposed subproject will address two problems simultaneously: 1) the inefficient use of charcoal in traditional metal jikos or cookstoves and the related problems of fuelwood scarcity, high price and environmental degradation, and 2) the disappearance of the pottery craft in the Agbasu region of Zogbwe because of outmoded techniques, inadequate equipment and the encroachment of imported goods.

Agbasu is a densely populated region which, because of its mineral wealth, has become the target of much in-migration from poorer areas. Most of these immigrants have settled in or around Agbasu city and its satellite communities. The current count is 110,000 in this area alone. Eighty-five percent of these people use charcoal as their primary fuel source and cook over metal stoves or jikos. This accounts for slightly less than 12,660 tonnes of charcoal per year of household consumption (based on 18,700 households). Given the inefficient nature of charcoal production, this represents 117.1 thousand tonnes of wood.

Metal stoves are only 10 percent efficient and waste most of the heat energy produced. As a result, areas surrounding towns have become denuded and infertile because of forest destruction. This has led to a rise in the price of charcoal and agricultural products alike and has placed an excessive burden on household budgets. The most recent figures available for (1978), indicate that the average family spent US$75/year on charcoal and this figure is constantly on the rise. The average income was $250/year in the same year. The Government has identified this as a major problem because of its impact on the environment, the future income-earning potential of those who depend on forest resources, and the cost of living for town, and eventually rural, dwellers as wood resources become increasingly depleted.

The Cooperative was founded by Mr. Bernard Akaba, a professional potter, in response to declining pottery sales. Potters have traditionally produced cooking vessels or storage jars. Their methods have changed little over the centuries. It is a casted trade with techniques and designs passed down from father to son or through apprentices. Cheap, imported products are gradually threatening the livelihood of the potters by offering an alternative to the somewhat fragile clay pot. Changes in production techniques could, however, improve the quality of local pottery and at the same time pave the way for the introduction of new products.

(c) Beneficiaries

The direct beneficiaries of this subproject will fall into 2 categories; the cooperative members who will produce clay stoves and the local residents who will purchase them.

Ten potters will be trained and employed by the cooperative. These potters will be selected for the quality of their work and their willingness to become involved in a cooperative venture. Zogbwe potters usually work in individual or family workshops, at times assisted by apprentices. This work situation has given rise to an independent entrepreneurial spirit. Many

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potters have, however, suffered substantial losses in their revenues and risk losing their businesses altogether. It is therefore felt that there will be a more than adequate number of candidates to staff a cooperative workshop of ten Mr. Akaba is very familiar with the local pottery industry through informal advising to artisans.

Potters will be paid on the basis of production. The cooperative will not be a profit-making organization but will divide revenues among members, reinvest in the business and set up a fund to provide emergency financial assistance.

The activities of the subproject will benefit the charcoal consumers of Agbasu as well. An estimated 18,700 households currently use charcoal in metal jikos. As the clay stove will be slightly more expensive than its metal counterpart, this will limit the market somewhat during project start-up. As consumers become aware of the savings in charcoal and the short time needed to recoup the prive of the stove, this effect is expected to diminish. The initial consumer beneficiary group in Agbasu city is expected to ultimately expand to the rest of Agbasu (population 600,000) and finally the country (population 7 million).

(d) Relation to Other Activities

The proposed subproject will complement a government project to introduce the use of improved charcoal kilns to local producers. This project has also focussed on the Agbasu region because of the alarming rate of deforestation and the high proportion of the population using charcoal as a primary cooking fuel.

The new kilns will be of the retort variety involving a low capital investment and a fairly straightforward process. The government has found that producers are reluctant to invest in the new technology because of the up-front capital outlay per individual. Although this should be well within the financial ability of the producers, no investment assistance or other incentive program has been created to counter the natural risk aversion of the small entrepreneur. In an effort to avoid the same difficulties, the proposers of this subproject have chosen a cooperative structure to distribute liability, as well as income, among members. Once initial training and start-up activities have been completed, the venture is expected to be financially self-sustaining.

The proposers and the Government feel that only if these projects are both successful and work in tandem can any progress be made to slow the overexploitation of wood resources.

(e) Evaluation Indicators

- 10 potters trained at the national pottery school in production methods and manufacture of charcoal-burning, clay stoves.
- Construction of one cooperative workshop.

- Purchase and installation of electrical equipment for a production plant.

- Purchase of a 1-ton Toyota pick-up.

- Management training for 1 person, and establishment of bookkeeping procedures.

- Full production output of 5 stoves per potter per day, or 300 per week.

(2) TECHNICAL ANALYSIS

(a) Specifications for Devices/Techniques

The improved cookstove that will serve as the model for this project is one used widely in Thailand. It consists of an outer bucket of tin sheets (optional), a middle layer of unburnt ash/clay filling, and a burnt clay stove. It uses 1/2 the charcoal of the traditional metal stove and, in testing, boils water up to 3 times faster than the metal stove. (Openshaw, "Energy Requirements for Household Cooking in Africa with Existing and Improved Cooking Stoves", p. 6). A sketch of the stove and a more detailed description can be found in Attachment A.

Mr. Akaba recommends the following equipment because it is capable of handling small-medium batchloads and is easy to repair, operate and install. This equipment is the minimum required to prepare clay to the specifications needed for fired materials. Because the clay is being used for stoves, it will be constantly exposed to high temperatures and must therefore, be free of bubbles and impurities that will weaken the structure. It is also the type equipment used at the pottery school and will enable potters to undergo training while awaiting arrival of imported equipment.

- A clay preparation plant with a capacity of 250 kgs pressed clay per 2-3 hour pressing cycle. Components parts will be a blunger, magnetic sifter, agitator, deadweight pump, filter press, and set of filter cloths.

- One horizontal pug mill with an output of approximately 70 kgs clay per hour.

- One brick-lined bail mill 4'6" x 4', with a grinding capacity of 500 kgs of dry clay.

The subproject also intends to purchase a small pick-up truck to transport clay and other supplies for the plant.

More detailed specifications may be found in Attachment B.

(b) Alternative Devices/Techniques

For his previous activities, Mr. Akaba adapted machinery from India. This worked reasonably well but imposed limitations on quality. He feels that

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what can be built in Zogbwe is not capable of properly testing clay and producing a final product to the specifications he desires. The magnetic sifter is needed to extract impurities from the clay, the filter press helps to promote even drying, and the pug mill removes trapped air bubbles that can cause clay to explode while being fired. Without careful preparation of the clay, fired products will not perform reliably and without a sound product the cooperative will lose the clientele it needs to succeed.

The equipment that has been chosen will run on 220 cycle volts AC, 60 Hz. Consideration was given to using mechanical equipment. Electric power is not completely reliable in Agbasu and outages are common, although not usually of long duration. When weighing the advantages, however, it became clear that the increase in the quality and quantity of production made possible through the use of electrically-powered machinery, warranted the higher initial and recurrent costs.

(c) Technical Assistance Requirements

The proposer will need assistance in procuring materials and equipment for the subproject. The EIA contractor has already assisted in identifying suppliers of the required items. As the proposer is not familiar with AID procurement or shipping regulations nor with suppliers, it is thought preferable to designate a procurement agent. Their fee has been included in the budget.

To the proposer's knowledge, there is no U.S. supplier of the above equipment. If this proves to be the case, a procurement waiver will be necessary. It is also desirable to use European-manufactured equipment from the standpoint of voltage cycle compatibility and ease of obtaining spare parts.

The proposer has been informed by the USAID that a waiver will be needed for the purchase of a 1-ton Toyota pick-up. It is the mission's policy to use locally-available vehicles because of the lack of maintenance facilities and spare parts for American makes. 1/

In accordance with the findings of the marketing study and economic analysis, the proposer will require 4 weeks of consulting time, to be paid for out of the subproject budget, to perform an in-depth investigation of market characteristics to draw up a marketing plan for the stoves. The consultant should be a marketing expert, but should also be familiar with Zogbwe and have a basic understanding of ceramics.

(3) ECONOMIC AND INSTITUTIONAL ANALYSIS

(a) Benefits and Costs

Changes in economic/employment patterns. The new Thai stove model is intended to replace the traditional metal jiko. The fuel-efficiency of the

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1/ A sample procurement waiver for this item has been included in Attachment 4 as an illustration. Normally a waiver would also be necessary for the clay processing equipment, but has not been included here.

PROJECT FINANCIAL ANALYSIS

1. Total capital outlay less training costs and import duties — $200,177

AID funds	164,513
Government/private support	29,980
Beneficiary support	5,684

2. Estimated life of machinery and equipment: 10 years

3. Annual sales of stoves: 15,000 units

4. Sales revenue minus recurrent cost: $2.20 per stove

5. Discount rate: 10%

6. Annual Cash Flows

Year	0	1	2	3	4	5	6	7	8	9
Investment	200,177		0	0	0	0	0	0	0	0
Revenue less cost*	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000
Net revenue	-167,177	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000	33,000

* Multiply Item 3 by Item 4

improved stove makes this a desirable goal, but it will cause a certain amount of displacement in the marketplace. The most obvious of these displacements will be among jiko producers. In this case, however, traditional stoves are not manufactured in Zogbwe, but imported from a neighboring country. The GOZ prefers to foster a local industry. As the introduction of substitute stoves will occur initially only in Agbasu, the changeover will be a gradual one, giving metal stove producers time to adjust.

Jiko sellers may also suffer a setback if the co-op chooses to market its own products. Past distribution patterns have demonstrated, however, that market women are very sensitive to the introduction of new products and are likely to become distributors themselves. Market exposure would almost certainly increase the pace at which new stoves are accepted. Potters have used these outlets in the past for other of their products with success. It must also be realized that market women rarely handle a single product, which will cushion any period of adaptation. These factors will all be taken into consideration when the marketing plan is drawn up.

The final disruption may occur among charcoal producers and intermediaries. The new stove model is designed to reduce charcoal consumption which will reduce income to charcoal producers over the short term. However, with the introduction of the Government-sponsored 'Improved Charcoal Kiln Project', producers are expected to recoup their losses through greater efficiency. This is, in fact, the kind of incentive the Government is seeking and the proposer has their full support. There will be some lag time before the charcoal industry recovers (depending on the clay stove's popularity), but the Government project directors consider this an acceptable tradeoff.

Financial/Economic Viability. Outside of training costs and real investment for land, labor and equipment amount to a little over $200,000, while annual revenues are expected to be approximately $33,000. The venture therefore appears to be financially attractive generating $333,000 in revenues over 10 years. From an economic standpoint, the project will generate external benefits in the form of reduced environmental degradation, leading to improved fertility, stabilization of agricultural lands and a number of related benefits. Although they have not been quantified here, these benefits merely add to what is an already profitable enterprise.

Project viability strongly hinges on the level of actual product demand, which the market study should closely examine. Capital costs assumed here are thought to be generous relative to likely levels in future replications of this effort.

(b) How Self-Replication Achieved

At least five of the other provinces in Zogbwe--with a combined population of three million--face similar problems of deforestation. Moreover, potters throughout Zogbwe are undergoing much the same experience as their counterparts in Agbasu. It is therefore felt that this experiment will be widely replicable if stoves are in fact produced at a price that is

cost-effective for consumers, and if the Agbasu venture is commercially successful enough to attract other producers to emulate. Mr. Akaba's reputation is national and, through the school, he has been in touch with potters in other regions. They have expressed interest, but are reluctant to launch a new venture until it has been proven. Mr. Akaba's contacts in the government feel much the same. He has, however, interested the national development bank in providing loan funds for similar cooperatives based on the Agbasu results.

(c) Project Management

For many years, Mr. Akaba had been informally advising area potters on product lines, clay quality, firing, etc. His expertise, gained from training in Great Britain and teaching at the national pottery institute, and his willingness to provide free services has made him the accepted leader of the potters of Agbasu. When it became apparent that sales were declining to a dangerous level, a delegation of 6 potters went to Akaba to seek his advice. He suggested the formation of a cooperative, and was asked to research funding opportunities, product lines, production facilities, etc. Through his efforts he was able to obtain support for economic and market studies to establish the viability of the undertaking. Based on the positive results of these studies, it was decided to go ahead with the cooperative venture.

Project management will be supplied by Mr. Akaba. He will oversee writing of procurement specifications, construction of the workshop, equipment installation, start-up, potter training at the national school and initial plant management. The school has granted Akaba a 1-year sabbatical. If the cooperative idea works, they intend to use the approach to market their own products.

Mr. Mamadou Sidibe, a member chosen by the cooperative, will undergo small enterprise and financial management training. He will eventually take over the day-to-day operations of the workshop as well as marketing of the finished product.

Mr. Akaba's salary will be paid with subproject funds. The USAID has granted an exception for payment of local, long-term technical assistance in this case because Mr. Akaba must forego his regular salary to work on the subproject. When the workshop becomes operational, the permanent manager, Mr. Sidibe, will be paid a percentage of the proceeds from stove sales, as will other members of the co-op.

The original 6 potters will form the core membership of the co-op and will, with Mr. Akaba, make up the steering committee. They will be part of all policy decisions. As new members enter, they will automatically be included in this body so that the cooperative will be governed entirely by its membership.

(4) SOCIAL CONSIDERATIONS

There is a substantial number of potters in and around the Agbasu city area to staff the workshop. This will hopefully make it unnecessary for

participants to relocate their families. They may however, undertake to do so at their own expense.

The establishment of a potter's co-op will change the way in which the trade has been conducted. This will inevitably disrupt the father-son pattern through which skills have been passed down. Provision will be made however, to allow potters to bring apprentices into the workshop to learn skills as they work. This is a commonly accepted practice and should increase the output of individual potters and the co-op alike. Potters will compensate their apprentices from their personal earnings in the traditional fashion.

Women have recently entered ceramics in Zogbwe through programs at the national pottery school. Co-op members have expressed an interest to admit qualified women.

(5) ENVIRONMENTAL CONSIDERATIONS (See Annex)

(6) WORK PLAN

Task	Responsible Party	Time Frame
1. Set up books	Akaba	Week 1
2. Issue PIO/C for procurement of commodities	USAID	Week 1
3. Design curriculum for training program	Akaba/potters	Weeks 2-4
4. Select management training program for Sidibe	Akaba/potters	Week 2
5. Select 10 potters	Akaba/potters	Weeks 5-6
6. Place Sidibe in training	Sidibe	Week 6
7. Begin training	Akaba/potters	Week 7
8. Progress report	Akaba	Week 13
9. Market characteristics survey and marketing plan.	Consultant	Weeks 15-19
10. Complete training program	Akaba/potters	Week 19
11. Evaluation of training program	Akaba/potters E/DI	Week 20
12. Procure local materials	USAID/Akaba	Week 21
13. Construction of workshop building	Akaba/potters local contractor	Weeks 22-26

Task	Responsible Party	Time Frame
14. Progress report, E/DI monitoring visit	Akaba/E/DI	Week 26
15. Investigate clay deposits	Akaba	Weeks 27-28
16. Test clays in laboratory	Akaba	Weeks 29-31
17. Select clays and make arrangements for land rental	Akaba	Week 32
18. Sidibe returns	Sidibe	Week 31
19. Receive delivery of equipment	Akaba/potters	Week 32
20. Install equipment	Akaba/potters	Weeks 32-33
21. Start-up of commercial operations (6 months experimental production)	Akaba/potters	Week 34
22. Progress Report	Akaba	Week 39
23. Evaluation of first phase of experimental production	E/DI	Week 78
24. Restructuring of production according to evaluation results	Akaba/potters Sidibe	Week 79
25. Final evaluation	E/DI/USAID	Week 104

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(7)(a)

BUDGET SUMMARY

(AID funds requested in U.S. dollars)

Workshop	$ 2,107.63
Training	11,190.00
Operating Costs	20,916.00
Materials & Equipment	135,169.00
Market Survey	6,320.00
Subtotal	$175,702.63 or $175,700

(7)(b)

NON-AID CONTRIBUTION

(In U.S. Dollars)

Government/Private Support	$ 47,220.00
Beneficiary Support	11,984.00
Subtotal	$ 59,204.00 or $59,200
SUBPROJECT TOTAL	US$234,906.63 or $234,900

WORKSHOP

(11m x 15m, Single-Story Block Construction)

Item	Unit	Quantity	Unit Price	Source	Freight	Total
Cement	50 kg	78	$ 3.28	Shelf		$ 255.84
9" Conc. Blocks		1,160	.48	Local		556.80
6" Conc. Blocks		140	.42	Local		58.80
50x150 S.A.P. Timber	5,6m	12	2.10/m	Shelf		141.12
50x76 S.A.P. Timber	11,6m	8	1.16/m	Shelf		107.65
38x228 S.A.P. Timber	5m	1	2.10/m	Shelf		10.50
38x114 S.A.P. Timber	4,5m	6	1.25/m	Shelf		33.75
Corrugated Roofing Sheets	4,5m	7	3.80/m	Shelf		119.70
Corrugated Roofing Sheets	1,6m	16	3.80/m	Shelf		340.48
8 mm dia. Steel Bar		120		Shelf		39.00
Gumpoles	3m	4	2.00/m	Local		24.00
EiH Window Frame		3	16.00	Shelf		48.00
9" Door Frame		1	28.00	Shelf		28.00
9" Double Door Frame		1	45.00	Shelf		45.00
FIB Doors		3	35.00	Shelf		105.00
Cylinder Locks		3	15.00	Shelf		45.00
Window Panes		6	2.00	Shelf		12.00
Nails		20kg	1.00/kg	Shelf		20.00
Roofing Screws		3 boxes	$ 6.33	Shelf		$ 18.99
P.V.A. Paint	20 l.	2	35.00	Shelf		70.00
Enamel Paint	5 l.	1	18.00	Shelf		18.00
Putty		10kg	1.00/kg	Shelf		10.00
					Subtotal	$2,107.63

TRAINING COSTS

Item	Unit	Qty	Unit Price	Source	Freight	Total
Potter Training						
Akaba salary	Day	60	$ 30	Local		$ 1,800
Tuition	Student	10	500	Local		5,000
Materials fee	Student	10	50			500
						$ 7,300
Management Training (Sidibe)						
Travel	Round trip airfare	1	$ 650	Local		$ 650
Local travel	Round trip taxi	1	35	Local		35
Room & board	Day	183	10	Local		1,830
Tuition	Student	1	1,300	3rd country		1,300
Books & fees			75	Local		75
						$ 3,890
					Subtotal	$11,190

OPERATING COSTS

(2 years)

Item	Unit	Quantity	Unit Price	Source	Freight	Total
Salaries						
Akaba (5 mos. mgmt)	Day	112	$ 30	Local		$ 3,360
1 guard	Week	78	10	Local		780
1 maintenance	Week	78	20	Local		1,560
1 secretary	Week	70	40			2,800
						$ 8,500
Office Supplies						
Stationery	Box	20	10			$ 200
Supplies						300
						$ 500
Clay						
Land Rental	Hectare	20	30/yr			$ 600
Vehicle						
Fuel	Liter	6,640	.65			$ 4,316
Utilities						
Electricity	KwH					$ 5,000
Water	m^3					2,000
						$ 7,000
					Subtotal	$20,916

MATERIALS AND EQUIPMENT

Item	Qty	Price	Source	Total	
Clay Preparation Plant	2	$16,039	GB	$ 32,078	
Horizontal Pug Mill	2	758	GB	1,516	
Electric Starter	2	52	GB	104	
Brick-Lined Ball Mill	2	19,984	GB	39,968	
Porcelain Ball Grinding Charge chge.	2	3,369	GB	6,738	
			F.O.B. Factory	$ 80,404	
F.A.S. Port of Exit (@ F.O.B. + 10%) (includes warehousing, transportation to port, inspection, certification, issuing of packing slips, etc.)				$ 8,404	$ 88,444
Consolidated Freight					22,534
Procurement Fee (@ 7% F.A.S.)					6,191
1-ton Toyota Pick-up	1	$15,000	Shelf	$ 15,000	
Spare parts @ 20%		3,000	Shelf	3,000	
					18,000
				Subtotal	$135,169

MARKET SURVEY*

Item	Unit	Qty	Unit Price	Source	Total
International Travel	RT Airfare	1	$1,200	U.S.	$ 1,200
In-country Travel	Car rental/day	20 500km	$10.20/km	Local	300
Per diem	Day	28	$65	U.S.	1,820
Fee	Day	20	$150	U.S.	3,000
				Subtotal	$ 6,320

* This assignment will be carried out by a U.S.-based consultant under a personal services contract. The daily rate of $150 includes provision for DBAC insurance, etc.

(7)(b)

LOCAL CONTRIBUTION

Government/Private Support

Item	Unit	Qty	Unit Price	Source	Total
Land for Workshop Site	Hectare	3	$9,460	Prefect	$28,380
Laboratory Facilities at Nat'l Pottery School	Day	15	$50	School	750
Import Duties			10% F.O.B.	Nat'l Gov't	8,040
Commodity Transport	km	500	.70	Prefect	350
Tuition Credit	Student	10	$500	School	5,000
Lodging at Pottery School for 10 Students	Day	84	$5	School	4,200
Truck Maintenance		1 Pick-up			500
				Subtotal	$47,220

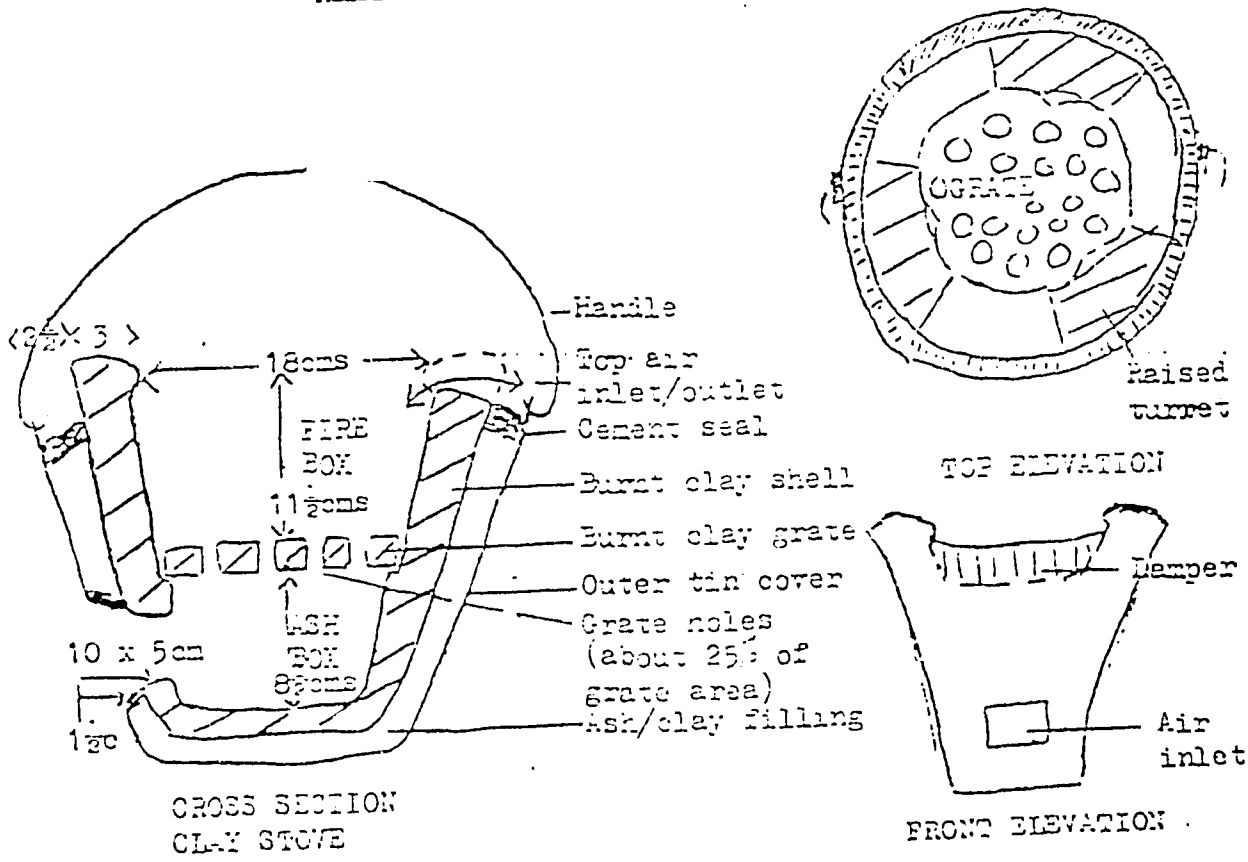
Beneficiary Support

Item	Unit	Qty	Unit Price	Source	Total
Sand & Gravel	m^3	40	$ 42.00	Potters	$ 1,680
Labor (6 men)	Day	20	4.20	Potters	504
Tools	Set	10	350.00	Potters	3,500
Training Meals (10 students)	Day	84	7.50	Potters	6,300
				Subtotal	$11,984

TOTAL LOCAL CONTRIBUTION $59,204

ATTACHMENT A

Thai Charcoal stove.



From: "Energy Requirements for Household Cooking in Africa with Existing and Improved Cooking Stoves" by Keith Openshaw. April 1980, p. 7.

Thai stove--While this is a charcoal-burning stove, the design principles used can be relevant to designers of wood-burning stoves. Keith Openshaw greatly reduced the amount of charcoal used and the amount of time required to prepare a meal on a traditional metal charcoal burner used in Tanzania. To improve this stove, he decided to insulate the sides, make them slope inward, and improve the distribution of air around the charcoal. Openshaw found that a stove manufactured in Thailand met his requirements (see Figure 17).

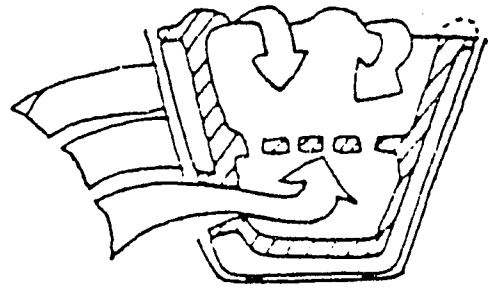


Figure 17

He provides the following description of the stove:

> The clay stove described here originated in Thailand. It usually has three layers, although it may be purchased without the outer metal cover and middle ash layer. It is made almost entirely of local materials--clay and ash. Only the outer metal is paid for in foreign exchange. This outer metal cover is to give the stove more durability. It is generally made from old tin cans such as are used for packing fruit. The middle layer is filled with ash (rice straw ash in this particular case), and has a simple cement seal to contain the ash. The inner layer is made of burnt clay about 3cm thick at the top, tapering to about 1cm at the base. The fire grate is made of the same burnt clay material and secured with cement. If the grate breaks, it can be replaced without the need to buy a new stove. It is usual to buy one or two extra grates at the time of purchase. The air space in the grate is about 25 percent of the total area of the base, as compared to about 10 percent in the metal stove. This could be one of the design features that make this type of stove more efficient. The clay stove has a larger diameter at the top than at the base and this acts as a kind of self-stoking device. It was noticed that unlike the metal stove, the charcoal never had to be moved around to obtain a complete burn, another good design feature. The rim of the stove has three raised platforms which support the pots and pans, and three depressions which allow an inflow of air at the top to supplement the air inflow at the base. The air intake at the base does not have a door, but it may be restricted by using a brick. Again there are various stove sizes, but the dimensions shown in Figure 17 are typical for household use.

In field tests Openshaw found that this Thai stove took half as much charcoal to boil water as the metal equivalent.

From: Wood Conserving Cookstoves: A Design Guide by volunteers in Technical Assistance, Arlington, VA, 1980, pp. 34-35.

Best Available Document

Best Available Document

From: "A Comparison of Metal and Clay Charcoal Cooking Stoves" by Keith Openshaw, n.d., pp. 5-6.

The clay stove described here originated in Thailand. It usually has three layers, although the stoves may be purchased without the outer metal cover and middle ash layer. It is almost entirely made from local materials - clay and ash - with only the outer metal being paid for in foreign exchange. This outer metal cover is to give the stoves more durability. It is generally made from old tin cans such as are used for packing beer and fruit. The middle layer is filled with ash (rice straw ash in this particular case) and has a simple cement seal to contain the ash. The inner layer is made of burnt clay of about 3 cms thick at the top tapering to about 1 cm at the base. The fire grate is made of the same burnt clay material and secured with cement. If the grate breaks it can be replaced without the need to buy a new stove. It is usual to buy one or two extra grates at the time of purchasing the stove. The air space in the grate is about 25% of the basal area, this compares with about 10% in the metal stove and could be one of the design features which makes this type of stove more efficient. The clay stove has a larger diameter at the top than the base and this acts as a kind of self stoking devise. It was noticed that unlike the metal stove the charcoal never had to be moved around to obtain a complete burn, another good design feature. The rim of the stove has three raised platforms which support the pots and pans and three depressions which allow an inflow of air at the top which supplements the air inflow at the base. The basal air intake does not have a door but it may be restricted by using a brick. Again there are various sizes of the stove but the dimensions shown in Figure 2 are typical for household use.

The fire box volume of the two stoves is approximately the same but as can be observed the dimensions are completely different. Although the metal stove has a larger diameter, the clay stove can still accomodate the same pan sizes as the metal stove, namely 27 cms (large), 23 cms (medium) and 17 cms (small) diameter without loss in efficiency and the design enables spherical bottomed frying pans to fit snugly into the well of the fire box, making deep hot frying practical.

A modified metal stove was also used in the experiment. The modifications consisted of: lining the inside of the fire and ash boxes with local clay about 3 cms thick, incorporating into the design three raised platforms of clay as pan supports, and increasing the airspaces in the metal grate to approximately 25% of the area (Figure 1b).

2.2 Method of manufacture of the clay charcoal stove

In Thailand the method of manufacture is briefly as follows: two parts of (delta) clay are mixed one part of (rice straw) ash, plus water and the plastic mixture is then shaped in a mould. The moulded clay stove is then burnt in an open brick kiln for approximately 48 hours using rice straw as the heat source. The fire grate is made in a similar fashion except a 1 to 1 mixture is used, and then cemented into the stove. The outer metal container is made from old tin cans and the burnt clay kiln is placed inside the container and the space between filled with (rice straw) ash and sealed with cement. The method and mixtures differ slightly from place to place and if production started in East Africa the manufacturer would first have to experiment to obtain the correct mixture and firing time. Also a substitute for rice straw (maize stalks?) would have to be found. These problems are to be examined by a student in the Division of Forestry here at Morogoro. He will be looking into the whole question of design, manufacture and adoption of the clay stove.

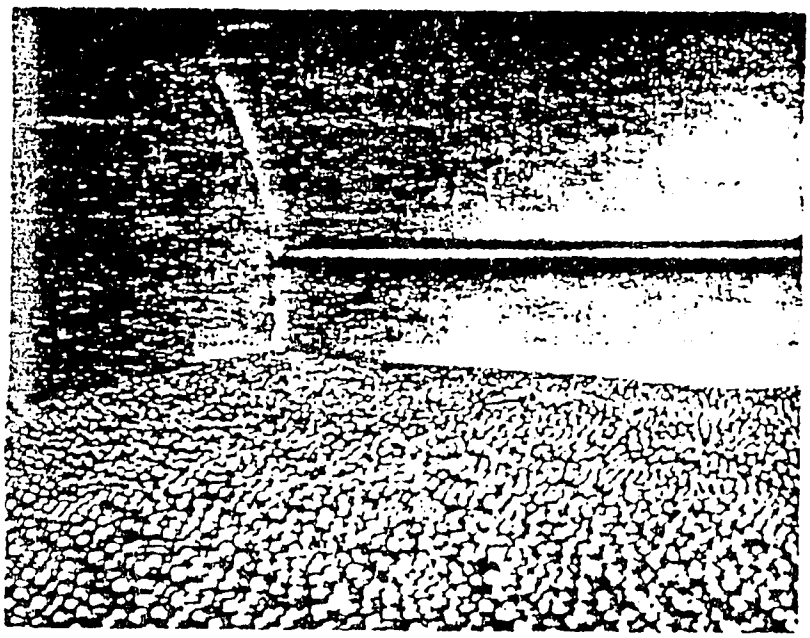
ATTACHMENT B

(These specifications are included for illustrative purposes. They are out-dated and do not represent current prices. Neither AFR/RA nor E/DI wishes to promote a particular manufacturer. This section has been attached as an example of appropriate information to be annexed to the Subproject Paper.)

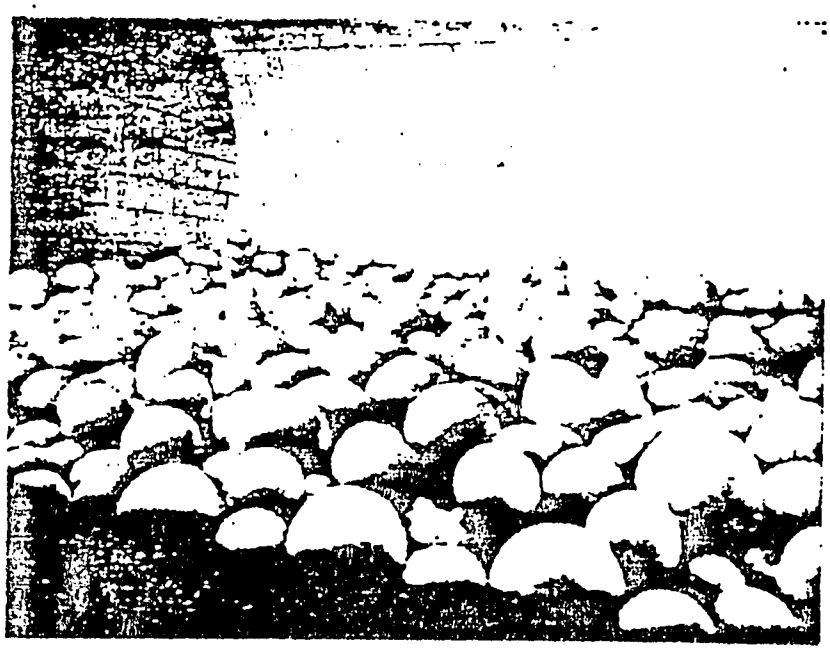
Boulton

BALL & PEBBLE MILLS

For
PARTICLE SIZE
REDUCTION
DISPERSION MIXING



Steel lined jacketed mill with steel grinding media.



Porcelain lined mill with porcelain grinding media.

William Boulton Limited

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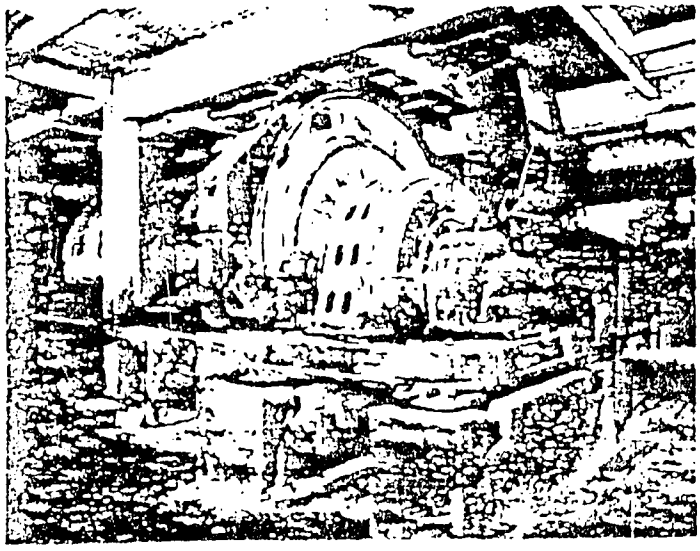
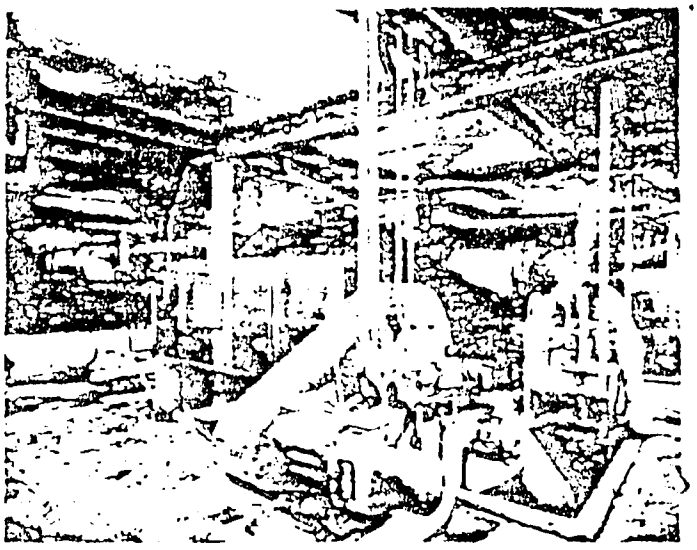
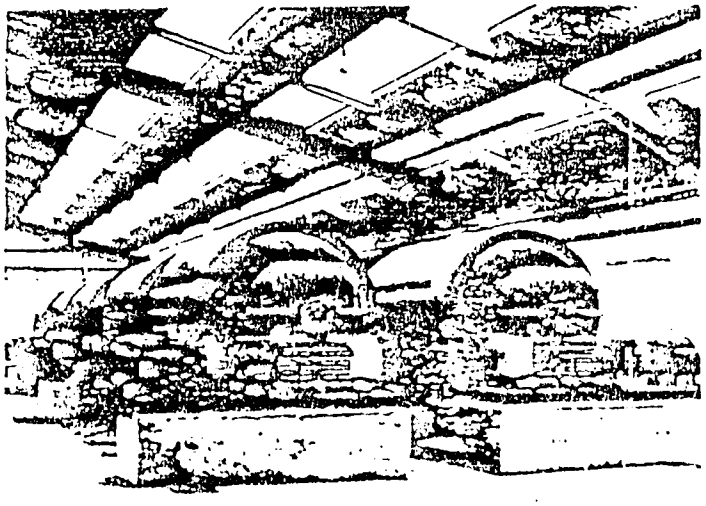


A tube Mill with a grinding Capacity of 8 tons per hour
Driven by a 450 h.p. motor

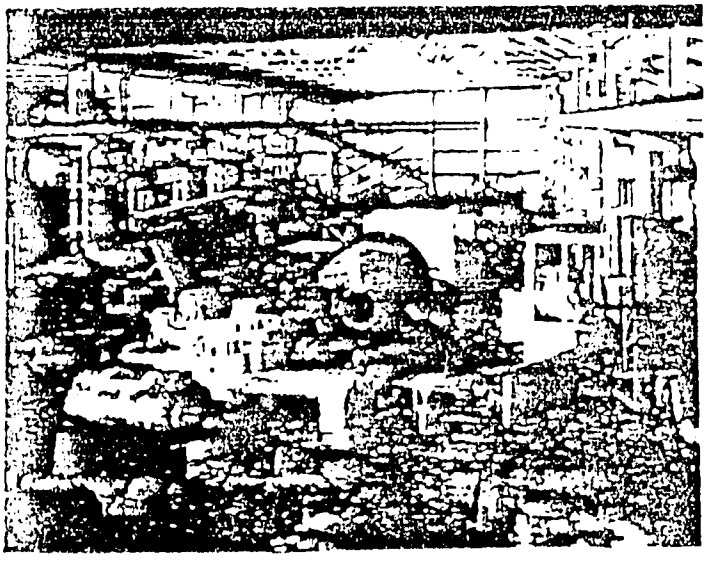


A Conical Mill, Grinding Continuously

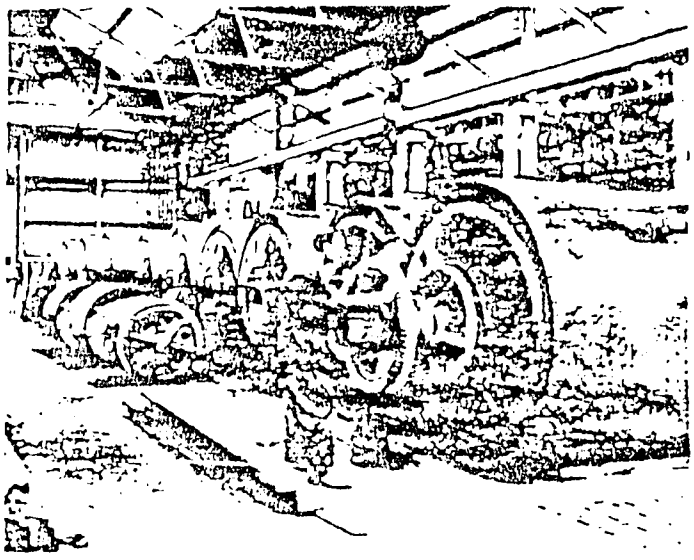


Boulton direct coupled gear box drive Ball Mills

Air swept tube Mill. Showing primary cyclone.



View of assembly shop showing conical Mill
under construction



View of assembly shop, showing 7' x 9' Ball Mill
under construction.

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PROVIDENCE ENGINEERING WORKS BURSLEM
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PORCELAIN-LINED BALL MILLS FOR THE PAINT INDUSTRY

Mill size External (inches)	Total capacity		Operating capacity		Grinding media		H.P.	Speed r.p.m.
	Galls.	Cu.ft.	Wet galls.	Dry (lb)	Balls (lb)	Pebbles (lb)		
24 x 24	18	2.78	9	73	120	140	2	38
24 x 33	27	4.3	14	110	180	210	2	38
30 x 30	36	5.8	18	144	255	300	3	34
30 x 39	52	8.3	26	210	360	420	3	34
36 x 36	73	11.7	37	296	470	550	3	30
36 x 42	88	14.1	44	352	540	580	3	30
36 x 45	97	15.5	50	400	585	635	3	30
42 x 42	126	21.0	63	500	800	920	4	28
42 x 51	160	25.6	80	640	1000	1200	4	28
48 x 48	200	32.0	100	800	1220	1410	5	26
48 x 54	228	36.5	114	920	1390	1610	5	26
54 x 54	290	46.5	145	1200	1760	2010	7½	25
60 x 60	400	64.0	200	1600	2420	2900	10	23
66 x 66	600	96.0	300	2400	3600	4200	15	21
72 x 72	700	118.0	370	2960	4500	5200	25	19
72 x 84	860	138.0	430	3440	5250	6100	25	19
84 x 84	1240	198.0	620	3760	7800	9000	30	16
84 x 108	1590	254.0	797	4834	10028	11600	40	16

Linings and media to suit all applications

PORCELAIN-LINED BALL MILLS FOR THE CERAMIC INDUSTRY

Mill size External (inches)	Total capacity		Operating capacity		Grinding media		H.P.	Speed r.p.m.
	Galls.	Cu.ft.	Wet galls.	Dry (lb)	Balls (lb)	Pebbles (lb)		
24 x 24	18	2.78	9	73	140	160	2	63
24 x 33	27	4.3	14	100	210	240	2	63
30 x 30	36	5.8	18	144	300	340	3	50
30 x 39	52	8.3	26	210	420	470	3	50
36 x 36	73	11.7	37	296	550	620	3	42
36 x 42	88	14.1	44	352	635	710	3	42
36 x 45	97	15.5	50	400	680	760	3	42
42 x 42	126	21.0	63	500	920	1060	4	36
42 x 51	160	25.6	80	640	1200	1350	4	36
48 x 48	200	32.0	100	800	1410	1580	5	31
48 x 54	228	36.5	114	920	1610	1800	5	31
54 x 54	290	46.5	145	1200	2010	2250	7½	30
60 x 60	400	64.0	200	1600	2900	3250	12½	29
60 x 66	440	70.0	220	1760	3100	3470	12½	29
66 x 66	600	96.0	300	2400	4200	4700	20	27
72 x 72	740	118.0	370	2960	5200	5850	25	25
72 x 84	860	138.0	430	3440	6100	6700	25	25

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[illegible] CLAY PREPARATION PLANT

General

Assemble all items generally as shown on the enclosed print. The blunger is situated on the framework above the agitator and tank so that the flow from the blunger, via the magnetic filter, is through the lower [illegible] units may be situated where convenient and to connect it flow by [illegible] pipework. This siting is not included and should be undertaken on site by a competent pipe fitter.

When all units are in position, fill all gearboxes, i.e. Blunger, agitator, pump, with oil to level indicated using good quality oil of SAE 90 grade. The blunger gearbox should be filled to level so that worm is working at oil position. The other gearboxes are provided with oil level sight indicators. The various units should be wired to the electricity supply with individual starters and isolation boxes incorporated in the circuit.

Blunger

On filling the blunger it is preferable to pour in the water first and then add the clay and other materials gradually, with the blunger running. When the mixture is blunged to a consistent slip and is at required pint weight ratio, open flat and let slip flow through the magnet and sifter into the stock arc. Control flow from the blunger so that the slip does not flood the sifter. Experience will indicate how often sieve and magnet should be flushed for clearing. To flush magnet, remove top cover and lift out magnetic core. Flush under hose or strong jet of water.

Agitator

Agitator tank will take three or more blunger loads. Whilst there is material in the agitator tank, the unit should be left running. Never let the level fall below the outlet of the tank otherwise pump will lose its prime and pipework could become blocked.

Pump

Gland rings '2' should be fitted into stuffing box immediately before running, cutting rings diagonally, lift gland and position round ram in stuffing box, replace gland and finger tighten nuts only. Do <u>not</u> allow pump to run dry and gland rings to stick on to ram. To prime pump connect hose to tap situated on back of pump barrel and, with pump running, dip into bucket of water. Keep bucket as low as possible. Close tap on down stroke and keep closed when prime has taken. If tap, to be fitted in pipeline above delivery outlet on pump is closed, pump will hang on its stroke when primed. Add weight to carrier to give required pressure shown on pressure gauge at press. Maximum to be at [illegible] p.s.i.

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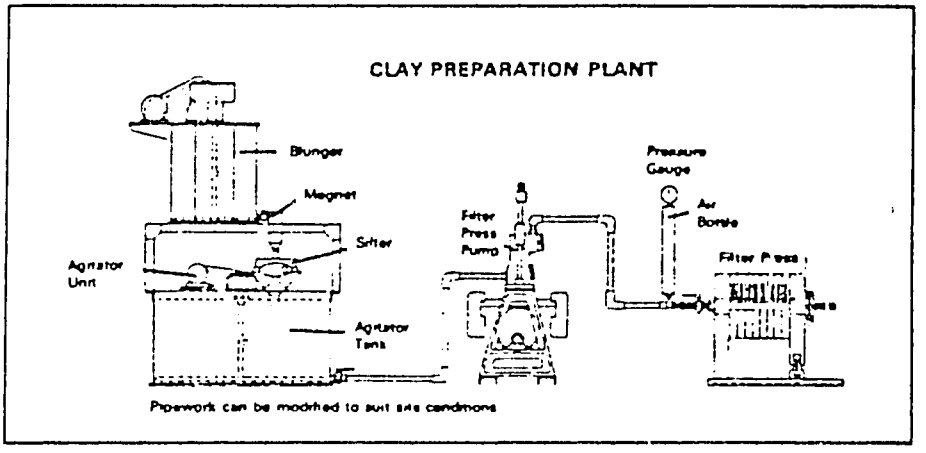
Press

On standard plates, thread cloth through centre hole in plate and tie tapes at top to retain position. [illegible] moving end plate with plain cloth, position by tacking tapes in plugs provided. On fixed end plate, position cloth as above. In addition, remove brass flanges, fit [illegible] unscrew union, replace sleeve with cloth behind [illegible] and reassemble. Linen fit behind cloths. With cloths fitted, tighten plates by means of side wheel nuts making sure to apply even pressure on each side bolt by means of tommy bar supplied. Ensure air vent on bottle is closed and with valve to press open, unit is ready for use.

CLAY PREPARATION PLANTS

A range of Clay Preparation Plants designed to produce 50kg (1cwt) to 250kg (5cwt) of pressed clay suitable for pugging in a 2-3 hour pressing cycle. These plants are made to individual requirements and consist of a Blunger, Magnet, Sifter, Agitator Unit and Tank, Deadweight Pump, Filter Press and set of filter cloths. Connecting pipework can be supplied once the position of the units has been determined. In order to quote we require details of output required and if possible plans of the building where the plant is to be sited. The drawing shows a typical machinery layout of a full plant set up.



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5

Mill size External (inches)	Total capacity		Operating capacity		Grinding media	H.P.	Speed r.p.m.
	Galls.	Cu.ft.	Wet galls.	Dry (lb)	Pebbles (lb)		
24 x 24	16.5	2.65	9	56	140	2	63
24 x 33	23.0	3.64	12	96	210	2	63
30 x 30	26.0	4.15	13	104	[illegible]	3	50
30 x 39	40.0	6.42	20	168	420	3	50
36 x 36	55.0	8.80	28	224	550	3	42
36 x 42	69.0	11.0	35	280	635	3	42
36 x 45	76.0	12.3	38	324	680	3	42
42 x 42	96.0	15.1	50	400	920	4	36
42 x 51	120	19.2	60	480	1200	4	36
48 x 48	150	24.0	75	600	1410	5	31
48 x 54	165	26.4	83	664	1610	5	31
54 x 54	230	36.8	115	1000	2010	7½	30
60 x 60	332	53.0	166	1300	2900	12½	29
60 x 66	360	57.5	180	1450	3100	12½	29
66 x 66	500	80.0	250	2040	4200	20	28
72 x 72	590	94.0	295	2400	5200	25	25
72 x 84	680	108.5	340	2720	6100	25	25
84 x 84	1020	163.0	510	4080	9000	35	22
84 x 108	1300	208.0	656	5800	11600	45	22

Linings and media to suit all applications.

STEEL-LINED BALL MILLS

Mill size External (inches)	Total capacity		Operating capacity		Grinding media	H.P.	Speed r.p.m.
	Galls.	Cu.ft.	Wet galls.	Dry (lb)	Balls (lb)		
24 x 24	24	3.80	12	–	374	3	34
24 x 33	32	5.10	16	–	512	3	34
30 x 30	60	9.70	30	–	960	4	32
30 x 39	82	13.1	41	–	1310	4	32
36 x 36	98	15.6	50	–	1560	5	28
36 x 42	118	18.9	60	–	1890	5	28
36 x 45	127	21.9	65	–	2190	5	28
42 x 42	175	28.0	90	–	2800	7½	24
42 x 51	240	38.5	120	–	3850	7½	24
48 x 48	270	43.5	135	–	4350	10	22
48 x 54	300	48.0	150	–	4800	12½	22
54 x 54	390	62.5	195	–	6250	15	20
60 x 60	540	86.0	270	–	8600	20	18
60 x 66	596	95.5	300	–	9550	25	18
66 x 66	820	131	410	–	13100	30	17
72 x 72	940	150	470	–	15000	40	16
72 x 84	1020	163	610	–	16300	40	16
84 x 84	1480	236	740	–	23600	50	15
84 x 108	1900	300.0	950	–	30342	70	15

VARIES — WITH — MATERIAL

56

ATTACHMENT C

Attachment C

INITIAL ENVIRONMENTAL EXAMINATION

OR

CATEGORICAL EXCLUSION

Project Country: Zogbwe

Project Title and Number: Improved Charcoal Stove Manufacture (EIA 698-0424 -)

Funding: FY(s) 83 - 84 $175,702.63 (AID Funds), $59,204 (Local Contribution), $234,906.63 - Subproject Total

IEE/CE Prepared by: K. Openshaw, B. Akaba

Environmental Action Recommended:

Positive Determination _____
Negative Determination ___X___
or
Categorical Exclusion _____

This activity meets the criteria for Categorical Exclusion in accord with Section 216.2(C)_____ and is excluded from further review becaus

Action Requested by: _____ Date: March 25, 1983
Mission Director

Concurrence: Approved_____
Bureau Environmental Officer

Disapproved_____

Date_____

Clearance: GC/AFR_____ Date_____

I. DESCRIPTION OF PROJECT

The proposed subproject will train 10 potters at the national pottery institute for a period of 3 months in the operation of ceramics equipment and the production of fuel-efficient, charcoal-burning, clay stoves. The potters, members of the Coopérative des potiers d'Agbasu, will then establish their own cooperative stovemaking venture under the direction of Mr. Bernard Akaba. A production plant will be built, machinery purchased and installed, and a management scheme set up. Stoves will be sold according to a marketing study and plan drawn up by a subproject-funded consultant. At full production levels, the plant hopes to produce 300 stoves per week for sale on the local, and eventually national, market.

II. EXAMINATION OF NATURE, SCOPE AND MAGNITUDE OF ENVIRONMENTAL IMPACTS:

(In terms of items on attached Impact Evaluation Form)

It is expected that this proposed subproject will have a very minimal impact on the environment. In accord with the attached form:

A.1.b. Extracting natural resources. Potters must necessarily extract clay from the earth to practice their craft. Deposits are normally passed down through families, but for the purposes of this subproject, a standardized clay source would be advisable. Deposits are normally found in low-lying areas that are currently used for farming. This could prove detrimental to agriculture in a very limited sense (the amount of clay to be extracted is miniscule when compared to total agricultural activity carried out in the region), but Akaba has proposed renting deposits from farmers to compensate them for land taken out of production. When deposits are exhausted, they can be restored to productive agricultural use.

E.I. 'Altering physical symbols'. The stove design will be somewhat different from the traditional metal charcoal stove. It will, however, retain most of the characteristics of its predecessor and will not, therefore, require a great deal of adaptation: uses the same fuel (in lesser quantity), is loaded in the same fashion, has basically the same dimensions, cooks one

pot at a time, and requires no change in cookware. The length of time needed to cook a standard meal may vary with the individual design, but these considerations will be dealt with during the training program.

F.I. Changes in economic/employment patterns. The new Thai stove model is intended to replace the traditional metal jiko. The fuel-efficiency of the improved stove makes this a desirable goal, but it will cause a certain amount of displacement in the marketplace. The most obvious of these displacements will be among jiko producers. In this case, however, traditional stoves are not manufactured in Zogbwe, but imported from a neighboring country. The GOZ prefers to foster a local industry. As the introduction of substitute stoves will occur initially only in Agbasu, the changeover will be a gradual one, giving metal stove producers time to adjust.

Jiko sellers may also suffer a setback if the co-op chooses to market its own products. Past distribution patterns have demonstrated, however, that market women are very sensitive to the introduction of new products and are likely to become distributors themselves. Market exposure would almost certainly increase the pace at which new stoves are accepted. Potters have used these outlets in the past for other of their products with success. It must also be taken into consideration that market women rarely handle a single product, which will cushion any period of adaptation.

The final disruption may occur among charcoal producers and intermediaries. The new stove model is designed to reduce charcoal consumption which will reduce income to charcoal producers over the short term. However, with the introduction of the Government-sponsored 'Improved Charcoal Kiln Project', producers are expected to recoup their losses through greater efficiency. This is, in fact, the kind of incentive the Government is seeking and the proposer has their full support. There will be some lag time before the charcoal industry recovers (depending on the clay stove's popularity), but the Government project directors consider this an acceptable tradeoff.

E.2. Dilution of cultural traditions. The establishment of a potter's co-op will change the way in which the trade has traditionally been

conducted. This will inevitably disrupt the father-son pattern through which skills are passed down. Provision will be made for this, however, by allowing potters to bring apprentices into the workshop to learn skills as they work. This is a commonly accepted practice and should increase the output of individual potters and the co-op alike. Potters will compensate their apprentices from their personal earnings in the traditional fashion.

F.2. Changes in cultural patterns. As alluded to previously (F.1), the proposed subproject may alter very slightly the manner in which food is cooked by shortening the length of time it takes to prepare a meal and the temperature at which it cooks. It is expected that this will be viewed positively in the community.

Potters will be producing a new product with which they have not been historically identified. This change can, however, be easily integrated into normal production/distribution patterns as addressed above.

F.4. Dislocation of local residents. The potters who will be chosen for the cooperative program now work in their own or family-run workshops. Selection will necessitate a full-time work commitment. Potters will therefore, have to either close their shops or turn them over to other family members. Candidates must indicate their willingness to do this before they will be considered.

There is a substantial pool of applicants in and around the Agbasu city area. This will hopefully make it unnecessary for participants to move their families. They may however, undertake to do so at their own expense.

III. RECOMMENDED ENVIRONMENTAL ACTION:

A negative determination is recommended.

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact areas and Sub-areas	Impact Identification and Evaluation
A. LAND USE	
I. Changing the character of the land through:	
a. Increasing the population	N
b. Extracting natural resources	M
c. Land clearing	L
d. Changing soil character	N
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man of his works	N
5. Traffic access	N
6. Land use planning	N
7. Squatter, other development	N
B. WATER QUALITY	
I. Physical state of water	N
2. Chemical and biological states	N
3. Ecological balance	N
C. ATMOSPHERIC	
I. Air additives	N
2. Air pollution	N
3. Noise pollution	N

D. NATURAL RESOURCES

1. Diversion, altered use of water _____ N
2. Irreversible, inefficient commitments _____ N
3. Wildlife _____ N

E. CULTURAL

1. Altering physical symbols _____ L
2. Dilution of cultural traditions _____ M

F. SOCIOECONOMIC

1. Changes in economic/employment patterns _____ M
2. Changes in population _____ N
3. Changes in cultural patterns _____ L
4. Dislocation and relocation of area residents _____ L
5. Support facilities _____ N

G. HEALTH

1. Changing a natural environment _____ N
2. Eliminating an ecosystem element _____ N
3. New pathways for disease vectors _____ N
4. Safety provisions _____ N

H. GENERAL

1. International impacts	N
2. Controversial impacts	N
3. Larger program impacts	M
4. Aesthetics	N

N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

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ATTACHMENT D

Attachment D

PROCUREMENT WAIVER

Problem:

Request for procurement source waiver from geographic code 000 (U.S. only) to geographic code 935 (Special Free World).

a. Cooperating Country:	Zogbwe	
b. Authorizing Document:	Subproject Grant Agreement	
c. Project Name and Number:	698.0424 - EIA Improved Charcoal Stove Manufacture	
d. Description of commodities:	1 ton Toyota pick-up	$15,000
	Spare parts (20%)	3,000
	SUBTOTAL	$18,000
e. Procurement Origin:	Japan	
f. Procurement Source:	Zogbwe	

Discussion:

Section 636(i) of the Foreign Assistance Act of 1961, as amended, prohibits AID from purchasing motor vehicles unless such vehicles are manufactured in the United States. Section 636(i) does provide, however, that "where special circumstances exist, the President is authorized to waive the provision of this act in order to carry out the purpose of this Act".

The EIA subproject will provide start-up capital, a marketing study workshop, equipment, and training to launch a potter's cooperative for the manufacture of charcoal-burning, clay cookstoves. The workshop will be located in Agbasu city, but must obtain clay from the surrounding rural areas. This will require frequent trips and fairly heavy loads. When production achieves expected levels, the cooperative manager will begin marketing operations, which will include transporting the finished stoves to the local market or other distribution point. The proposer has suggested, and the USAID agrees, that a 1-ton pick-up truck best fills these requirements. The Toyota is a common model in Agbasu and can be repaired in the city. Spare parts may

be obtained from local dealerships or from the central warehouse in the capital, if necessary. The vehicle will be the property of the grantee, The Coopérative des potiers d'Agbasu.

Justification:

Experience with U.S.-manufactured vehicles in Zogbwe indicates that neither adequate supplies of spare parts nor competent repair services are available in country given the fact that there are no local representatives of any U.S. firm. The situation is exacerbated as the vehicles age and require continual maintenance. Most age more rapidly than usual because proper maintenance cannot be performed.

For field projects, the Embassy and USAID continue to strongly recommend the purchase of foreign-manufactured vehicles which can be serviced locally. Both the Embassy and the USAID have purchased non-U.S. manufactured vehicles for staff use.

The Embassy and the USAID have determined that for the above reasons and if the AID program in Zogbwe is to be implemented effectively and expeditiously, the purchase of one non-U.S. vehicle for this subproject should be authorized.

Recommendation:

That special circumstances exist which justify the procurement of one non-U.S. manufactured vehicle for the implementation of this subproject and that exclusion of procurement from the origin requested in this waiver would seriously impede attainment of U.S. foreign policy objectives of the Foreign Assistance Act.

APPROVED: _____

DISAPPROVED: _____

DATE: _____