



A TRAINER'S GUIDE FOR MAKING FUEL BRIQUETTES



The Wet-Low Pressure Method

FUEL BRIQUETTES TRAINING PROGRAM

Successful training takes 6-8 weeks in order to be able to produce a smokeless fuel briquette. This manual summarizes, in point form, information from the main Manual of Trainers of Trainers (TOTs).

INTRODUCTION

Sustainable sources of wood fuel have diminished. Many poor families' household budgets suffer from domestic energy expenses. Deforestation has become a worldwide epidemic due to poverty, poor management policies, pressures of population growth, greed, and so on. Therefore, success in fuel briquetting depends on understanding its benefits for the community.

Benefits of Fuel Briquettes

- Protects the environment
- Generates income and employment
- Saves time
- Saves energy
- Saves lives

PROGRAM OBJECTIVES

- Create a sustainable supply and production of fuel briquettes
- Create micro-enterprises of qualified individuals/groups to generate income
- Reduce the risks of carbon generating fuels in the kitchen
- Save our environment

Specific Objectives

- Identify suitable biomass for fuel briquettes making
- Demonstrate how fuel briquettes work
- Become fuel briquettes producers and users

TRAINING

Expectations

At the end of the training, trainees are expected to:

- Have mastered the concept of fuel briquettes making and as a viable enterprise
- Have gained a new technology for application in their areas
- Have learnt how to improve production and work as a team
- Have become experts in recycling biomass waste for profit
- Make innovations in quality and new briquettes related products

Training Period

Training involves six site visits during 6 to 8 calendar weeks.

- Visits 1 to 3 are preparatory over a four week period; timing will be determined by the trainees.
- Visit 4 involves four to five days of intensive technical training onsite.
- Visits 5 and 6 involve follow-ups, which are usually half-day to full-day events. The schedule varies based on site location, weather, resources, and the trainees' availability and skills. In addition to motivating and encouraging trainees, marketing strategies are developed.

FIRST SITE VISIT (Length: 1 Day)

This is to:

- Determine a fuel briquettes producer group
- Draw up a program and select a planning committee
- Conduct a feasibility study and contextual analysis

Contextual Analysis

Requires the following considerations:

- The difficulty of firewood access and other sources for cooking energy sources
 - If firewood is difficult to access, then conduct a briquettes production project. If cheap, there is no need.
- The local policies related to fuel wood consumption
 - Get an overview on policies in favor of or against collection of firewood.
- The limitations to using alternative fuels and restrictions on marketing
 - Find space in the market
 - Can charcoal sellers be integrated?
- The proximity to the local market for sale of fuel briquettes
 - If demand is there, pool resources together and transport the fuel briquettes
- The experience of the group with entrepreneurial self-reliance and sustainable activity
 - Group must be innovative, interested, and creative in order to survive
 - Make briquettes production a business, not an activity
- The availability and applicability of published baseline information on fuel wood/rural energy consumption for eventual impact assessment of the project/enterprise
 - *Key data*: Population size, household sizes and expenditure on cooking fuel (e.g. kerosene, charcoal and similar); electricity, gas (LPG), rate of deforestation and plans for reforestation, and types of woodlots

- The availability of water supplies
 - 200-300 liters of water are needed daily for commercial fuel briquettes making
 - 10 liters of clean drinking water for producers (daily)
 - Trap and recycle used water during fuel briquettes pressing process
- Whether there is sufficient space for the production activity
 - Enough space, room or ground is needed
 - Storage space must be dry and well aerated
 - Space for decomposing a good number of rows of raw materials
- Whether there are sufficient resources for production
 - Raw materials for fuel briquettes production
 - Funds
 - Time
 - Hot weather
 - Human labor
 - Equipment (e.g. press machine and chopper/thresher)
- The commitment of the group/trainees
 - Preparedness to source materials, invest their time and energy
 - Regular production
 - Self-monitoring and evaluation
 - Consultations and meet consultancy expenses
 - Assess financial feasibility during this first visit

SECOND SITE VISIT (Length: 1 Day)

Involves a full day of meetings in order to:

- Refine the Selection Process of Trainees to ensure success of the activity, and ascertain whether trainees are ready and willing. Find out if:
 - There are interested groups; venue is available and any deterrent factor?
 - The community is aware of alternative sources of cooking energy?
 - Any perception of wood fuel availability and environmental impact?
 - There are any other suggestions
- Demonstrate Fuel Briquettes Making and Cooking
 - **Briquette Making**
Successful demonstration needs:
 - Equipment for briquetting
 - Raw materials (readily decomposed)
 - Water
 - Labor
 - **Cooking Demonstration**
Involves:
 - Stoves
 - Food to be cooked
 - Some dry briquettes
 - Eating the cooked food
 - Allaying any fears
 - Grasping briquettes lighting and replacement during burning process
 - Comments from trainees

THIRD SITE VISIT (Length: ½ Day)

This involves assessing materials, collecting, sorting, chopping, processing, pounding and decomposing at the same time.

FOURTH SITE VISIT (Length: 4 to 5 Days)

Involves:

- Intensive training at groups' sites
- Providing core information and experience with fuel briquettes technology
- Requiring 6 to 18 people

Day 1

- Training starts with a review on the impacts of fuel briquettes:
 - Protects the environment
 - Generates income
 - Saves labor
- Learn to develop a system for constant fuel briquettes making, which include:
 - Community participation in production and material supplies
 - Participation of school children in production off class work
 - Contracting individuals to deliver raw materials for a fee

Day 2

- Preparation of Materials for Decomposition
 - Requires practice, practice, practice and testing, testing, testing until briquettes makers get the sense right of the best blends;
 - Dry materials then chop (manually/mechanically)
 - Hand thresh/mill
 - Use mechanized shredder or hammer mill
- Decomposing
 - Use usual decomposing procedures but do not add soil
 - The material should not decompose into compost fertilizer, about 4 weeks maximum
 - Make successive heaps of 50cm high x 1metre wide x 5metres long rows to avoid missing what to briquette
 - Dry decomposed material and store safely to save pounding time and trouble
- Mixing/Blending the Materials after Decomposing
 - Suitably decomposed material can be blended
 - Pound in mortar, adding water in bits
 - Conduct three hand tests which apply to materials that require chopping/milling:
 - Ooze test – Scoop some materials into your fist then squeeze; if it oozes through your fingers, it is too ripe
 - Spring back test – If the material expands when squeezed in your hand, it is not ready
 - Shake test – Material well decomposed, when squeezed in your hand and then shaken vertically, never falls apart

Day 3

- The Press and Briquette Making
 - Prepare material for press making using available measurements from the trainer
 - The press machine compresses fuel briquettes into uniform shapes and sizes better than bare hands
 - When decomposed material is ready, start fuel briquetting. Let different groups produce different blends
 - Six people can produce 750 –1000 fuel briquettes per 8 hrs, daily
 - Holey briquettes dry faster and burn effectively

- Follow procedures for quality fuel briquettes making (e.g., right blending and ingredients measure, pressing, drying, storage, protection from wetness, etc.)
- Handle wet fuel briquettes with care and dry them in direct hot sun for 3–6 days, electricity/solar dryer or in a dark well-aerated place – but this takes time
- Press Maintenance
 - Ensure care to lengthen its lifespan
 - Do not dry it in the sun to avoid cracking
 - Preserve it with waterproof paints
 - Oil or grease the nuts
 - Keep under shade or cover it when not in use
- Work Organization

Involves:

 - Timely materials collection and decomposing, briquetting, work distribution
 - Record keeping of major activities: date when material is composted, number of fuel briquettes produced and quantities sold, price and total cash, balances in stock; handing/taking over, etc.

Fuel briquettes sample record

Date	Qty Made	Qty Sold	Total Cash (Kshs)	Stock Balance	Remarks	Signature
Totals						

Days 4 – 5

- Business Costing/Pilot Marketing
 - A famous business quote says, “*Nothing happens until it is sold.*” As in any other business, making fuel briquettes as a business depends on its sales
 - Sales depend on knowing who your customers are
 - Design a marketing strategy
- Pricing the Fuel Briquettes
 - Determine price of firewood sticks or a kilogram of charcoal, and how much a family uses in a day (morning, lunch and evening). Include special events, ceremonies and weather conditions
 - Calculate consumption per day, per month. Divide it over used quantities to get price per briquette. Then divide used briquettes over one family to get the number a person uses
 - Prices in rural and urban areas may differ due to certain influencing factors like distance
- Marketing of Fuel Briquettes
 - Who to approach and how? There are methods:
 - List prospective consumers (e.g., boarding institutions, restaurants, chips sellers, fish mongers, etc.)
 - Buying large quantities (buying in bulk) can receive discounts or a gift
 - Exchange some fuel briquettes for raw materials delivered
 - Use pro-environmental conservationists
 - Conduct open air cooking demonstrations (e.g., in market centres)
 - Participate in shows and exhibitions

FIFTH SITE VISIT (Length: ½ Day)
Mainly to monitor progress

- The 5th and 6th site visit takes 3 weeks to track progress and discuss emerging issues
- Trainer is not there to offer solutions; rather, group members are to solve problems together
- Group(s) to begin realizing as owners of the enterprise as they wait to graduate

SIXTH AND FINAL SITE VISIT (Length: 1 Day)

- Closing ceremony and evaluation should follow within 1 to 2 weeks of the fifth site visit; to include a wrap up, feed back and evaluation of the training
 - Sponsor can provide budget for graduation ceremony
 - Laminated and beautifully crafted certificates are to be given to graduates by a high-ranking official of government/private sector. Invite donors, media, guests, etc., to include popular foods cooked by briquetting trainees
- Assessment of the Training
 - Use informal opinion surveys and focus on group discussions
 - Obtain baseline information from rural household energy studies to measure impact of the briquettes projects/enterprise
 - Explore other new sites with fuel wood problems by obtaining background information

POST TRAINING PERIOD

The trainer's job is to:

- Obtain production/sales figures of fuel briquettes from the group(s)
- Note changes in other cooking fuels consumption
- Note fuel briquettes sales patterns, types of consumers, reasons and types of use, favored and avoided blends
- Seek information from trainees on the content and organization of the training, and venue

CONCLUSION

- Recycling biomass materials into fuel briquettes contributes to solving rural and urban needs by generating income, providing a new and cheap alternative source of cooking energy, avoiding excess waste disposal on insufficient land, avoiding having to cut down more forests for fuel wood, and ultimately promoting a sound environment.
- Fuel briquettes making is an environmentally friendly technology, which needs adoption and promotion by both rural and urban groups/individuals. After the training each group/individual is required to own a fuel briquettes press to start an enterprise.
- This, therefore, means that fuel briquettes can address the multiple needs of our society and our environment.

RECOVER, RECYCLE, REDUCE, & REUSE TO SUSTAIN LIVES

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