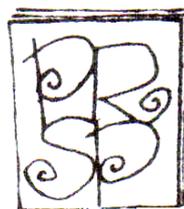


For a
Greenie^{er}

Happier
Healthier
Gambia



Paper
Recycling
Skills
Project

P.O. Box 3219, Serekunda,
The Gambia
Registered Charity No: 556/2001
Tel: (+220) 779 3358 / 770 7090
Email: gambianpaper@yahoo.co.uk

INTRODUCING:

Fuel efficient wood-burning domestic stoves & Compressed bio-mass briquettes

September 2008

Over the last 30 years a number of localised projects have been carried out in The Gambia by various organisations to introduce alternative cooking stoves for the domestic user. Most stoves used in these projects were built to use alternative bio-fuels – agri-residue briquettes, rice husks, groundnut shells to name but a few. Some mud-stoves were and still are being promoted by the US Peace Corps on a very local rural level.

Most of these stoves were introduced into the target communities as “ free samples “ as part of the project – once the retail cost was calculated, most of them turned out as not competitive to any existing wood-burning stove used. Almost all of them were even unsuitable to burn wood – and none of them could compete against the cheapest (free) stove available to any household – the 3 stone fire. Neither did they address the issue of using fuel-wood more efficiently and economically.

Over recent years the situation in The Gambia has drastically changed. On an environmental level, we have witnessed a drastic depletion of our forest cover which is also due to an increased use of charcoal, mainly in the urban and peri-urban areas. These communities have also witnessed a significant economic impact because fuel-wood which has to be bought from street vendors has increased considerably in price. For the rural population the forest depletion means longer journeys and more time spent on gathering fuel-wood for cooking.

Some facts to understand the current situation:

Figures are conservative and rounded for better demonstration.

Economic considerations

- Population of The Gambia approximately 1.5 million of which
- Urban / peri-urban approximately 1/3 = 500,000
- Each member of the community uses 1 kg of fire wood / day @ Dalasi 2.50
- Each person pays Dalasi 75 / month for fire wood
- Each household of 6 people spends D 450 / month for fire wood

Environmental considerations

- Each person uses 365 kg of wood / year for cooking
- All 500,000 people in the urban / peri-urban areas of The Gambia use a staggering 180,000 tonnes of fuel wood / year for cooking

A positive way ahead for all - NOW

We all have heard it – and we all say and live it: -

- “ Old habits are hard to die
- Why change something that has always worked perfectly?
- It has worked for my parents – it works for me!
- Better the devil you know than the one you don’t “

To keep to our traditions is important so we don’t lose our roots. To keep to our habits is human nature the world over – it’s what we know and it’s easier.

But to move forward towards a better and brighter future we also have to embrace the new – without losing sight of the old.

This is why we at PRSP suggest a more holistic approach in tackling our fuel-wood crisis. We accept the fact that wood as our major domestic cooking fuel is here to stay – for the time being. What we can do **NOW** is to try to find a way that is more economical and healthier for the community and more sympathetic towards the environment.

To achieve this we don’t even have to “ re-invent the wheel “.On a global scale over 60 % of people face the same dilemma and many experts have been working for a long time to improve the situation. For the last year we at PRSP have networked and consulted over the internet with many of these experts and we know we have found the “ appropriate technology “ for The Gambia.

Our three main criteria for our approach have been:

1. Any technology has to suit the location and be
 - a – affordable and competitive
 - b – easy and safe to use
 - c – commercially sustainable
2. There has to be a markable economic benefit to the community on a household level.
3. A healthier and more diverse environment makes for a healthier and more sustainable community now and in the future.

To achieve this there are two steps to our programme, both of which can be taken simultaneously.

Step 1: Introduce a more fuel efficient wood burning stove

This type of stove has been developed and refined over the last 30 years. It is designed to use wood and other alternative bio-fuels in briquette format. This particular method of construction allows the harmful gases – which on a normal fire are seen as smoke – to be trapped and heated sufficiently to burn and create a secondary combustion. For the same amount of fuel we generate at least twice as much heat for cooking. Add to that other design features in the stove – better air control, a “ skirt “ around the pot base – and we increase its efficiency by as much as 3 times. In effect we only need one third of the fuel in comparison to an open fire to achieve the same result.



The stove will be custom designed for The Gambia's conditions taking into account the maximum size of a standard domestic cooking pot and dietary requirements. It only comprises of 4 simple parts, its use is easy to learn and safe and it can be manufactured with tooling available on an industrial and local level from new or used steel and parts.

This stove, when fully introduced just into the urban and peri-urban areas where the economic effect is felt more directly at household level will have the following positive impact:

1. Each of the 500,000 people will save Dalasi 50 / month on fuel-wood purchase. This is a staggering 25 million Dalasi / month that won't " go up in smoke " but can contribute towards the economic development of the country in a more productive way.
2. Each average family of 6 people will save Dalasi 300 / month. This alone is a major step towards a more sustainable livelihood and will go a long way in improving nutrition, health, education and the general prosperity of many Gambians.
3. Domestic smoke-related illnesses will be greatly reduced thereby improving the health of mainly the female and juvenile population.
4. The saving of 120,000 tonnes of wood / year will make a major positive impact on our forest environment helping to preserve our traditional natural habitat and bio-diversity in flora and fauna for future generations.



All this is achievable with only one third of the population of The Gambia. Similar improvements can be achieved for the rural communities with the correct dissemination approach and demonstrating the benefits in economic and environmental terms.

Step 2: Introduce bio-fuel briquetting as a viable fuel-wood alternative

Wherever we look in our environment we see waste. Most of it is in the form of man-made litter, some not so obvious in the form of unused natural resources.

As a simple rule, almost anything that grows from the soil can be burned as fuel. This includes man-made products like paper and card-board which have a high content of wood fibres. But in a society based on agriculture like in The Gambia a great amount of our natural resources is lost due to the lack of the " appropriate technology ", knowledge and training. Briquetting of bio-mass could utilise most of these resources. This technology is used on a global scale and always follows the same principle: take lots of small bits and press them into big bits and they will burn in the correct stove – which we just have introduced. The composition of the briquettes will be determined by what is available in any particular location – the equipment used is always the same and the method of compression very similar in principle, depending on the ingredient mix.



This can be any of the following and many more

Paper / cardboard
Sawdust / wood-chips / broken twigs / foliage
Rice / corn-husks and stalks
Grass usually burned by the roadside
Groundnut shells / coconut husks

Processing of these “ waste “ materials can be either centralised for urban areas or village based in rural communities as micro businesses, providing employment whilst using more of our natural resources and at the same time keeping the environment cleaner.



It is harder to quantify the impact of this initiative in terms of fuel-wood saving. However, PRSP is planning to produce a minimum of 150 tonnes of briquettes / year in a facility in Fajikunda using 40 tonnes of waste paper / cardboard and 110 tonnes of sawdust. This alone would reduce wood use by 150 tonnes / year but used in our more efficient stove the saving would be trebled to 450 tonnes / year.

Our production costings show that the briquettes can be produced at a competitive price in relation to fuel-wood giving a real sustainable alternative in urban and rural settings.

The way forward to a better future

This project will be implemented in two stages:

Stage 1: A three months pilot study to:

1. Design and field test the new fuel efficient stove
2. Design and field test the bio-mass briquetting equipment and production techniques
3. Collect and analyse community feedback data on both technologies
4. Design dissemination and training packages for equipment manufacture, stove use and briquetting production techniques
5. Design a marketing package and campaign to successfully launch the new products
6. Establish a partnership framework with all stakeholders for eventual introduction of the new technologies
7. Evaluate all findings

Stage 2: Roll out of new products and technologies

1. Establish manufacturing facilities on an industrial and community level to roll out new equipment and techniques
2. Implement project plan designed in stage 1 to disseminate skills and new technologies

PRSP Project Contact:

George Riegg

General Manager

Mob: +220 770 7090

Email: icecool@ganet.gm