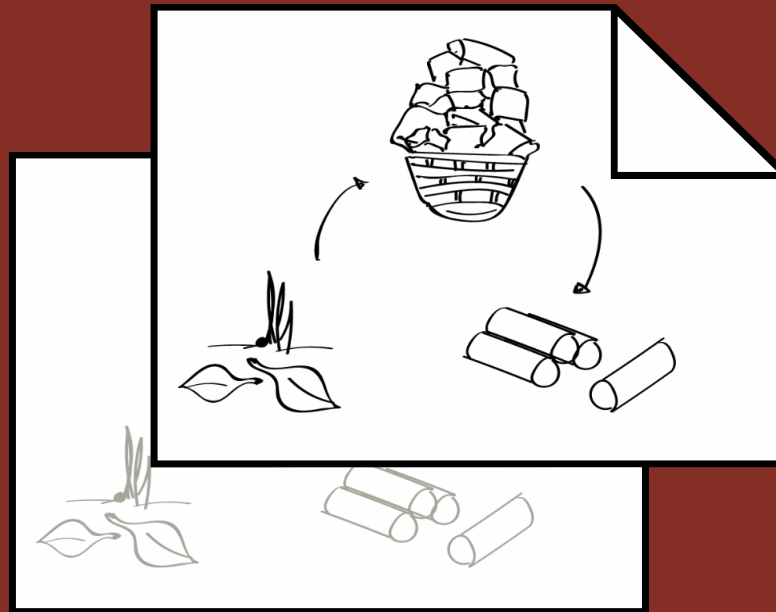


# Briquettes from Biomass

## Replicator Workbook Preview



# What's it all about?

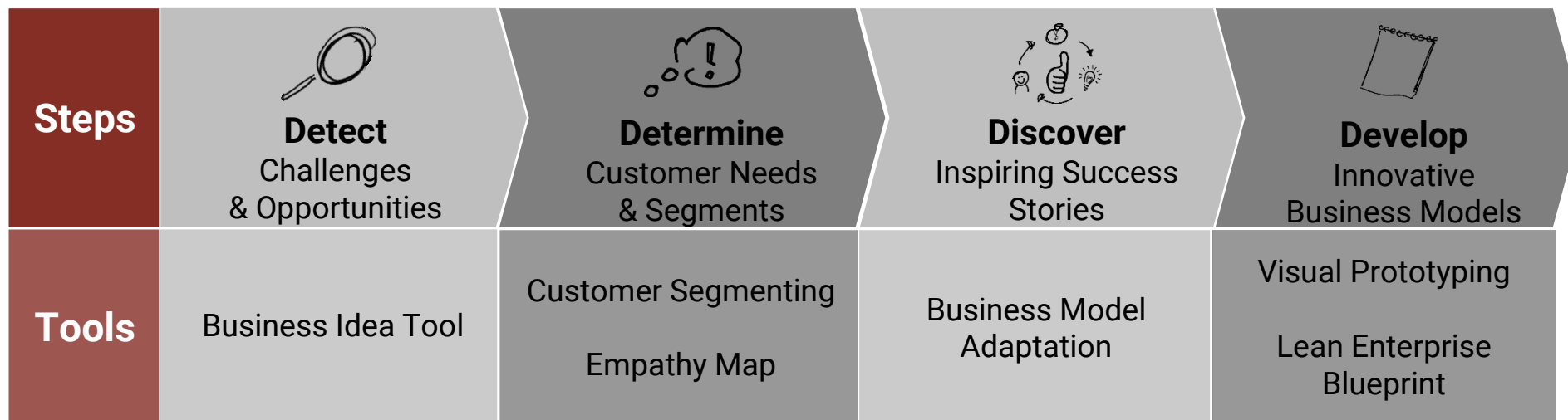


**Do you want to learn from proven business models from eco-inclusive enterprises around the world to tackle some of the key challenges your country is facing?**

Various entrepreneurs have already developed innovative business models that turned out to be successful and create relevant social, economic and environmental impacts. Replicating solutions that work can offer a fast and effective way to contribute to sustainable development and improve people's livelihoods.

## **The Replicator Workbook guides the process**

We developed our SEED Replicator Workbooks to guide you through the process of transferring a business model to another geographic location. Our workbooks identify best practices and shed light on conditions under which eco-inclusive enterprises in your sector operate. They include exercises that will guide you to explore your market and adapt business models to your context.



# How to use the Replicator Workbook?



In this workbook preview, click on **INSIGHTS** or **TOOLS** to discover more  
Or simply scroll to the next page



## Insights

into success stories & challenges of established eco-inclusive enterprises

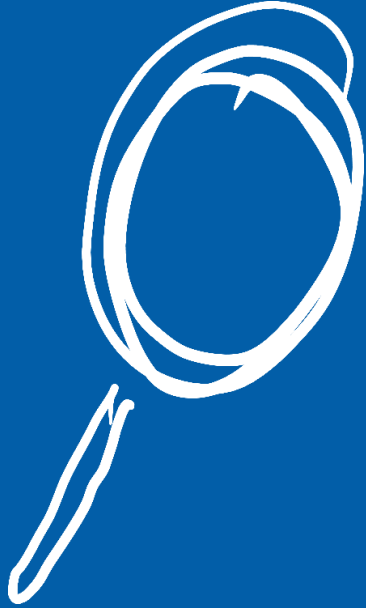
In our workbook, we include various **READINGS** on **proven models of eco-inclusive enterprises** around the globe, complemented by sets of best practices and explanations of conditions under which eco-inclusive enterprises operate. These readings are based on experiences of entrepreneurs active in the field of **briquettes from biomass**.



## Tools

to guide you step-by-step as you develop your own eco-inclusive enterprise

Each **TOOL** provides step-by-step guidance to arrive at key outcomes. The first page of each tool offers a short overview of **when** to use the tool, **what** you do in the tool, **how** the tool is best used and which **key outcomes** are expected. The workbooks explains in detail what to do and which questions to ask yourself at each step while using worksheets for you to document your outputs.



Detect sustainability challenges in your country and brainstorm solutions to tackle them. Learn about the potential of briquettes from biomass and social, environmental and economic impacts you could achieve.



## Converting biowaste...

Ideal biomass raw material (also known as feedstock) should be easily and adequately available, have low moisture and ash content and contain good flow characteristics (i.e. granular and uniform). There are three main categories of input options for briquettes:

- **Farm residues:** Biomass waste generated on agricultural farms, e.g. cotton stalks, mustard stalks, maize stalks, coconut husks and shells, amongst others.
- **Processing residues:** Biomass waste generated in industries which process agricultural output, e.g. sawdust, bagasse from sugar cane, coffee husks, groundnut shells, rice husks, coir dust and furniture waste, amongst others.
- **Binders:** Additional ingredients which might be needed to hold the biomass particles together, e.g. water mixtures, cassava flour, molasses, wheat flour, fine clay and red soil, amongst others.

## ... into energy sources

Briquetting is a way to convert loose and low-density biomass residues into high-density solid blocks that can be used as fuel for cooking, heating and industrial processes in lieu of traditional fuels.

### Carbonised briquettes



- Carbonised briquettes are made by burning biomass in special carbonising units and thereby producing biochar. The biochar is then pressed into one of two typical briquette forms. Honeycomb briquettes possess multiple shafts for air circulation and heat development, which extend the burning duration to up to 9 hours. Stick briquettes are either dense or have one central shaft. They have the burning capacity of up to 4 hours and are almost smokeless.
- Briquettes can be sourced from either one raw material (**single-source briquettes**) or various materials (**mixed-source briquettes**). Single-source briquettes have a more **consistent burning performance** while mixed-source briquettes allow for more **diverse sourcing**.

### Non-carbonised briquettes



- Non-carbonised briquettes are produced from biomass that has been partially decomposed, shredded and often mixed with binders and water. The slurry is then fed into a press and formed into briquette shape. The briquettes are then dried, either in the sunshine for two to six days, or in special drying units over multiple hours. Non-carbonised briquettes are easier to produce compared to carbonised briquettes, but have a lower burning performance and duration.
- Briquettes can be used in households to replace fossil **cooking or heating fuels**, or in institutional and industrial appliances to **power machinery**, via various add-on technologies.

### Add-on technology



- The briquettes produced from organic waste and biomass can additionally be turned into other forms of energy via various complementary add-on technologies; e.g. in briquette-to-electricity generators or for heating purposes in water boilers.
- Thus, briquettes from biomass can replace other forms of **energy sources to power add-on machinery or briquette-ready cookstoves** as an alternate form of household equipment.

# From Biowaste to Energy Source



Participate in an upcoming Replicator Workshop  
to discover **more about briquettes from biomass!**



Discover proven business models and adapt them to your local market. Identify key business model features.

# The Originators: KingFire Energy Solutions

Successful examples of eco-inclusive enterprises



**KingFire Energy Solutions** is a Uganda-based eco-inclusive company aiming to provide briquette solutions to various customer groups, such as private households, educational institutions and entire villages. They thereby bring a reliable and sustainable energy source to many different segments of the population. Their products are carbonised mixed-source briquettes based on different types of biowaste, such as maize husks, rice husks and sawdust acquired from local farmers. KingFire Energy Solutions offers two main ranges of charcoal products with different burning capacities—honeycomb briquettes that burn for eight hours and stick briquettes that last three hours. Through this diversification, the company is able to appropriately address the differing needs of public institutions and private households alike, while working with women and youth groups in the production and distribution of these different products. For KingFire Energy Solutions, this constitutes an opportunity to share responsibility and make as many people as possible beneficiaries of their activities. At the same time, local women and youth gain an additional revenue stream and qualifications.

**Value Proposition:** KingFire Energy Solutions offers sustainable briquette solutions to various beneficiaries in need of an effective waste management system and power generation. Through selling mixed-source charcoal briquettes, the company provides private households, public institutions and communities with a sustainable energy source and makes them independent from costly fossil fuels. By involving women and youth groups, KingFire Energy Solutions spreads knowledge about the possibilities of briquettes to even further segments of the population and offers them income and employment.

**Key facts**

**Country of headquarters:** Uganda

**Products:** Carbonised, mixed biowaste-based charcoal briquettes

**Website:** <https://kingfireenergy.com/>



# The Originators: GreenTech

Successful examples of eco-inclusive enterprises



**GreenTech** is a Gambia-based eco-inclusive enterprise aiming to provide briquette solutions to urban and peri-urban customers; thereby bringing a reliable and sustainable energy source to private households and communities. Their main line of products are non-carbonised, groundnut shell-based briquettes targeted at commercial users, as well as add-on equipment such as briquette-ready cookstoves. GreenTech recruits their production, packaging and salesforce from local youth and women, thereby strengthening their representation in the business sector as well as providing them with an additional income source. For the local youths, working for GreenTech on a part-time basis constitutes a second lane of education and formation.

**Value Proposition:** GreenTech targets households and commercial users, such as fish smokers or bakeries, in need of a sustainable energy source in lieu of firewood. Through selling briquettes based on peanut shell biowaste, producing combustion heat for cooking and other powering purposes, the company provides peri-urban and off-grid customers with a sustainable energy alternative to firewood. By engaging youth and women empowerment groups in their production and sales, GreenTech brings more youths and women into the business sector and provides them with a formal income and further education.

## Key Facts

**Country of headquarters:** Gambia

**Founded in:** 2010

**Employee size:** 2 (working in administration and management), 4 (working in production, per day labourers), 4 (packing shells, self employed), 4 (working in outsourced sales)

**Products:** Non-carbonised, groundnut shell-based briquettes

**Website:** <http://www.greentechgambia.com/>

Insights

# The Originators

Successful examples of eco-inclusive enterprises



Participate in an upcoming Replicator Workshop  
to discover **more exemplary eco-inclusive enterprises!**



Determine your target customer and the benefits you want to create for your stakeholders. Map out why your solution is unique and why your customers will love it!

# Your Customer Tool



### When?

To refine your business idea, you need to identify your potential customers. Therefore, this tool is best applied in the elaboration process of your business idea.

### What?

Customers stand in the centre of any business. Even the best idea is worthless if no one buys the product. Most enterprises serve different groups of customers (customer segments) that share certain characteristics. Identifying the different segments in the first step helps you to learn more about each of them. Once you have stepped into your customers' shoes, you can target your product and marketing activities better.

### How?

Sit down to think about which customer groups you would like to serve. Once you have identified the customer segments, it's time to go out and speak with your potential customers to gain a better understanding of their needs.

### Steps?

**Step 1** → Identify Customer Segments

**Step 2** → Understand Your Customers



## Key outcomes

- Get to know potential customer segments for your product
- Set the basis to build a customer-centric business model

# Your Customer Tool



## Step 1

### Identify Customer Segments

The first step is to divide the large pool of potential customers into customer segments. Customer segments are groups of customers who share certain characteristics or behave in a similar way.

- What will influence the preferences of potential customers towards your product or service?
- Will individual buyers have different expectations and needs from small stores? What about government institutions, NGOs or businesses?
- Will grandchildren have different expectations and needs than their grandparents for example? What about men and women, people with different religions, incomes, education levels or professions?
- Will people in rural areas have different expectations and needs from urban citizens? What about people in City X and City Y?
- Will people who have different knowledge about your product or service have different purchasing and usage patterns? Buy it more or less often, use it more or less often or use it in different ways?

Complete the information you gathered in the *Your Customer Segments* WORKSHEET on the following page. We have left space for up to five customer segments; you should identify at least two.

## Step 2

### Understand Your Customers

- Out of the customer segments you identified in Step 1, select the ones that appear most important for you, for example because of their size, because they are most likely to buy your product or because they are the easiest ones for you to reach.
- For each of your key customer segments complete the WORKSHEET *Your Empathy Map*.
- The *Empathy Maps* ask you to step into your customers' shoes: What does he/she think, say, see, do, feel, and hear? You can answer the questions in discussions with your team, through internet research, interviewing or observing potential customers etc.
- It's easier to answer the questions if you imagine one representative person of each segment, and add their name and age in the middle of the *Empathy Map*, in addition to the title of the customer segment.

You will find relevant key questions for your EMPATHY MAP on the next page!

# Your Customer



→ **What does she/he think?**

- What matters most to her/him? What moves her/him? What are her/his dreams? Which may be her/his worries?

→ **What does she/he say?**

- What does she/he tell others? What is his/her attitude? Does she/he influence others?

→ **What does she/he see?**

- What kind of products/services does your customer see in the market? What attempt is being made to influence her/him?

→ **What does she/he do?**

- What is she/he constantly trying to improve? What activities does she/he cherish doing? How does she/he spend their time?

→ **How does she/he feel?**

- What does she/he experience in relation to your product or service domain? This experience can be negative or positive.

→ **What does she/he hear?**

- What do friends say? What do her/his influencers say? What media channels influence her/his opinions on products and services?

- Keeping the following questions in mind will prove useful during the refinement process of your business idea:

- How can you fulfill the needs of your customers, and provide them with more benefits?
- Should the product or service be targeted towards different market segments?
- Is there anything else you still want to learn about your customers?



## WORKSHEET Your Customer Segments

### Step 1


Customer Segments					
Title	Private households	Local businesses	Educational institutions	Villages	
Description	Limited finances for fuel	High energy consumption	High energy consumption	Challenge of access to energy	

# Your Customer



## WORKSHEET Empathy Map

Step 2

<p>What does she/he think?</p> <p>Is there a way to reduce monthly expenses?</p>	<p>What does she/he say?</p> <p>I want my family to be healthy!</p>	<p>What does she/he see?</p> <p>More kids getting ill</p>
<p>What does she/he hear?</p> <p>Fuel is expensive</p> <p>Neighbours want clean energy</p>	 <p>Who is he/she?</p> <p>Salma is a farmer &amp; mother</p>	<p>What does she/he do?</p> <p>Helps on the farm</p> <p>Cares for her children</p>
<p>What does she/he feel?</p> <p>Worries about the health of her family.</p>		
<p>How did you learn about your customer?</p> <p>Asking family members, friends, relatives and interviewing other locals.</p>		



# SEED Replicator Tools

A light gray world map with small flag icons placed on various continents. Thin white lines connect these flags, creating a global network pattern. A large, semi-transparent green banner is overlaid diagonally across the map.

Participate in an upcoming Replicator Workshop  
to discover **more business planning tools!**



Let's replicate the success of **eco-inclusive enterprises** together!

Learn more about the SEED Replicator and how to apply to an upcoming workshop near you:

- ✉ [replicator@seed.uno](mailto:replicator@seed.uno)
- 🌐 [seed.uno](http://seed.uno)
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