



# MITRA SHOES

Rautahat District, Nepal

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## Executive Summary

Shoes are a basic human necessity, however the reality is that for many individuals in developing nations owning a pair of shoes is a rarity. Many villagers in Nepal either have no footwear or make do with thongs or sandals as more appropriate shoes are too expensive. The lack of appropriate affordable footwear combined with cold climates and helminths infections are the cause of many health problems for villagers in Nepal. Plastic is the second highest polluter in Nepal with no current systems in place for the collection and recycling of plastic. Our business aims to solve these problems by repurposing the waste into affordable and durable shoes.

The shoe provides water-proof foot-wear that can be used in any season, keeping feet warm during cold months, and comfortable during the warmer months while providing a barrier which will reduce parasite infections for the local villagers. The Mitra Shoes will be produced using predominately repurposed materials, with plastic bags and tyre treads as the primary items. The uniqueness of this product centres on the materials used creating an affordable product through minimal costs for materials. The final sale cost per unit being USD \$3.50 for adults' and \$3.30 for children' shoes.

The pilot will take place within the Rautahat district in the Terai area as the United Nations have identified the people in this district as being among the most vulnerable in Nepal. Our business will address the present lack of local shoe makers' while also providing employment opportunities within the region. The core business staff will be women to counteract the gender-based exclusion and discrimination which are key barriers for women in Rautahat. The UN finding that in 2013 local industry only employed 2.5% of resident women. To further reduce costs as well as providing an incentive for recycling, a 'drop off point' will be created whereby locals can earn a financial rewards for collecting and delivering certain waste products. We anticipated the initial set-up costs to be USD \$6,098.74 with modest projections having profits reaching USD \$3,569.673 in the fifth year of production.

## Problem

In Nepal walking without shoes during winter can be impossible, with many dying from hyperthermia due to the temperature dropping up to 15 degrees below normal. The Nepalese Meteorological Forecasting Division has found 'cold waves' (created from a stagnant mix of smoke and fog) to be a major threat to the lives of locals in the Terai area of Nepal. Going barefoot also brings the risk of puncture wounds, cuts, and scrapes to the feet. If left untreated these injuries can lead to serious infections, amputations and even death. Additional serious health conditions can be absorbed through the feet, such as parasitic diseases that affect 1.4 billion people worldwide. In Nepal the common practice of locals relieving themselves in fields, which are located in and around villagers has led to a high occurrence of these parasitic diseases (hookworms) among locals who do not wear shoes. The parasites are transmitted by eggs present in human faeces and can infect humans who walk barefoot on contaminated soil. The World Health Organisation links heavy helminths infections to a range of symptoms including anaemia due to intestinal bleeding, diarrhoea, weakness, and impaired cognitive and physical development.

The level of pollution in Nepal creates a secondary problem, with no current system for the collection and recycling of plastic waste - the second highest polluter. This has resulted in used plastic bags being dumped on streets, by roads and in water sources. A 2013 survey on Solid Waste Management in Nepal identified great potential for local initiatives that focused on collection of waste as well as the promotion of the three R's - Reduce, Reuse, and Recycle.

**The key to our businesses success is combining these two problems into one sustainable solution – creating shoes by recycling waste in Nepal.**

# Business Plan

## Concept

This business plan aims to recycle waste products found in Nepal into durable shoes that are affordable for the underprivileged in Nepal. The key to the shoes' affordability will be its creation using predominately waste materials (plastic, tyre treads and rags). This will also have the added benefit of being an environmentally sustainable product that helps Nepal build an effective recycling industry. The business will provide opportunities for village women who will make up the employee base - lifting the 2.5% rate of local female employment. Impoverished locals will also be provided an opportunity to earn supplementary funds by collecting and delivering the waste materials for production. The final component of the business will be the development of a teaching program focused on hygiene and recycling to commence during the second year of production.

## Product

The Mitra Shoes will be produced using predominately repurposed materials, with plastic bags and tyre treads as the primary items. Additional materials used in their construction are rubber matting, heavy-duty thread, rubber cement and old rags. The uniqueness of this product centres on the materials used, the fused plastic providing weatherproof barrier, the tyre treads a durable base and the use of recycling creating an affordable product through minimal costs for materials. The final sale cost per unit being \$3.50 for adults' and \$3.30 for childrens' shoes.



Figure 1: Shoe Design

The main elements are made of fused plastic and "out-stitched," meaning that the stitches joining the two pieces are visible around the shoe, this also means that there is no rubbing on the foot from internal seams. The inner soling will be created using rubber mats, the outer soling from tyre treads and the laces from recycled fabric. The final product constructed of six main pieces - the Inner Sole which is the part your foot stands on; the 'Outer Sole' that covers the bottom of the shoe and connects with the ground; the 'Heel and Side' section, which encloses the foot; the 'Vamp' which is the upper front part of the shoe; the 'Back Cover' designed to provide additional support to the heel; and, the 'Toe Cover' designed to provide additional support to the toes. By using old-fashioned shoe making techniques minimal equipment is required, consisting of twelve items (Table, Iron, Pliers, Band Saw, Clamp, Utility Knife, Stitching Awl, Eye Needle, Ruler, Scissors, Parchment Paper, Shoe Pattern) at an initial estimated total cost of \$1383.48.

## Manufacturing

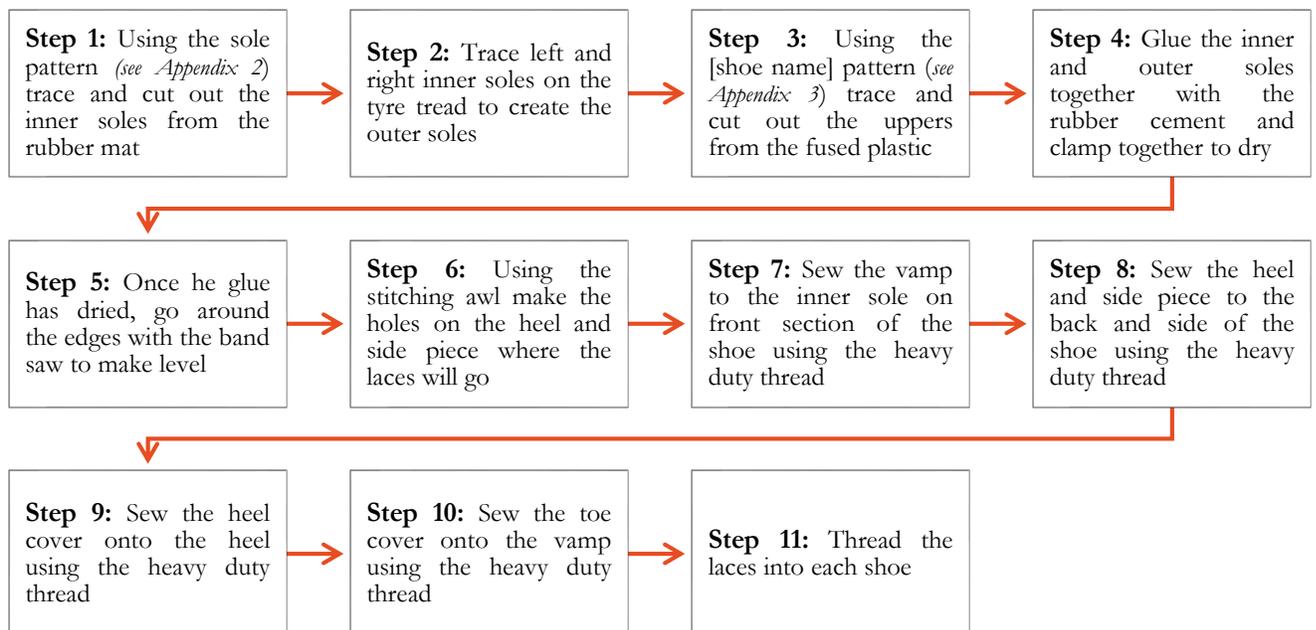
There are three components used to construct the Miltra Shoes that require preparation, the fused plastic bags, the tyre treads and sewn laces.

Fusing the Plastic Bags: Firstly, cut of the bottom seam of the plastic bags with scissors then sort the bags into similar colour and/or patterns. Taking five of the plastic bags at a time, layer them one over the other evenly onto a piece of parchment paper, smoothing the bags out till they are flat. Next, place a piece of parchment paper over the top making sure all the plastic is covered. Turn the iron onto the hottest setting and once it has heated up move it over the top of the parchment paper – never staying still as this will cause the plastic to burn. Note: It is necessary to go a few more times over the edges of the plastic bags to make sure they are completely fused together.

Removing the Tyre Tread: To remove the tyre tread cut one of the tyre side walls off by inserting the blade next to the base of the thread all the way through the rubber. Then cut around the tyre at the base of the thread. You will end up with three pieces (two sides and one large rubber ring). Next the thread needs to be separated from the rest of the tyre. Secure the large rubber ring with pliers and start slicing the thread from the steel belts by scraping off the thread along the steel belts with the blade while holding the two sections apart. The lengths of tread need to be stored flat to make them easier to use when it is time.

Sewing the Laces: Cut long strips of fabric, once inch wide on a bias. Fold the strips in half and iron flat, open the strip back up and fold the edges back in towards the centre points, then iron again. Sew the strip fabric closed along the long edge. Fold each end of the length in towards themselves and sew tightly around the fabric for 2 cm – this creates a stiff end to thread the laces through the shoes.

After these three components have been prepared the Miltra Shoes is constructed as per the following steps;



## Management

The pilot will start with one manager and three employees with an aim of producing 250 units in the first year. The core staff will be women to counteract the gender-based exclusion and discrimination which are key barriers for women in Rautahat. The manager will initially be brought in as an expert to manage the production process and supervise the employees. During the five years of the pilot program an internal training program will be instigated to educate the initial employees regarding the production and business aspects with the aim of transferring ownership at the completion of the pilot.

In addition to the core production business, a recyclable material drop off will be set-up at the production base. Local residents will be encouraged to collect and deliver recyclable materials from waste facilities, garages and even throughout the streets by receiving cash on delivery.

## Market Analysis

### Target Market

The pilot will take place in the Terai area specifically within the Rautahat district in the Central Development Region. The United Nations identify the people in this district as among the most vulnerable in Nepal. Rautahat experiences both intense heat in the summer months, and intense cold during the winter months. The seasonal changes combined with the level of poverty in this area has meant that many simply go without footwear. This is an issue since 70% of the region consists of land suitable for farming.



Figure 2: Rautahat District

The pilot will start production in the Gaur Municipality, the capital of the Rautahat district with a population in 2011 of approximately 35,000. This will be used as the base to move into the more remote village development committees (VDC) in the district. We believe our product will be well received in this area. In 2014, Nepal's PCI was \$712 (UNDP Report 2014) and the Gini Index was 32.8 (UNDP Report 2013), demonstrating Nepal is a poor country with high income inequality. As our product is both durable and affordable, we believe it will be well received by the villagers in this area.

### Competition

In Nepal the most common footwear worn in villages are sandals and thongs. However while these are affordable they are not durable and long-lasting and do not provide protection from the elements during winter. Kaymu are a key distributor of shoes in Nepal and as such would be our largest domestic competition. However their similar footwear options range from \$10.75 to \$36.42 which is beyond the price range of our target market.

There are international shoe options, however this creates additional costs for delivery beyond what most village locals could afford these options do not address the need for recycling and therefore will not directly address the issue of plastic waste in Nepal.

### Risks and Barriers

There are five key risks and barriers that our business may face;

- Government interference with public enterprises historically having strong links to political leaders in Nepal which may affect the management of our business.
- Lack of finance due to the difficulties commonly found in obtaining bank loans, with the majority of banks insisting on feasibility studies to accompany loan proposals.
- The existence of small markets with limited access can lead to increased production costs which then creates difficulties competing with cheaper imports from China and India.
- With the majority of locals being farmers or unskilled workers this can create a lack of management skills.
- Lack of available infrastructure, such as transport, communication and electricity.

### Value Adding

#### Economy

Our businesses main economic benefit will occur through the creation of jobs aimed at local Rautahat women. In addition to providing employment our business will educate these women through internal training with the aim of facilitating their future management of the business. Another economic benefit will be the standard rate paid as

an incentive to the general population for collecting and delivering waste such as plastic bags and tyres. In this way our business will provide an opportunity for individuals to supplement their incomes. This will also assist with gaining credibility and status within the community.

### **Environment**

We intend to promote waste collection and recycling through recycling as many materials as possible. Plastic is currently one of the biggest environmental problems being faced in the urban and semi urban areas of Nepal, with some versions of the plastic bag being recently banned in Kathmandu. By repurposing these materials, particularly plastic bags we can begin to reverse the detrimental impacts that are being seen throughout the Nepalese environment.



*Figure 3: Plastic Bags dredged from the Bagmati River*

### **Society**

As there is currently no district approach for management of sanitation and hygiene, a core component of the business will be aimed at giving back to the community through education. This will concentrate on two areas; firstly, the importance of hygiene with a focus on reducing the commonly accepted practice of open defecation; secondly, the benefits of recycling to protect the environment for future generations.

## **Business Strategy**

### **Growth**

In the second year of the pilot a training program will be established in the district of Rautahat aimed at sanitation, the importance of footwear and recycling. At the five year mark when profits have repaid the loan the business will be expanded into other regions of Nepal, starting in village districts located in the greater Kailali district north of Rautahat. The weather in this region is comparable to that of Rautahat and also has the largest infestations of hookworm with 67% of residents affected. Before each further period of growth, a process of evaluation will occur to identify the sustainability for that village district.

### **Diversification**

Once the employees have mastered the manufacturing process for the Mitra Shoes they will have the skills to develop more personalised footwear, providing options for diversification.

### **Marketing**

Our marketing strategy is to launch the product through existing channels (word of mouth, community leaders, schools, local radios) to promote the product to our consumers.

The first part of the launch focuses on using the existing channels to tell a “story” about the product. The story will send a clear message on the values and benefits consumers can expect to enjoy if they use the product. The aim here is to get people excited and anxious about seeing and knowing more about the product.

The second part of the launch requires the creation of public relations events to present the product in its physical form at local community centres, schools, and using door to door campaigns. During these events, we will interact with our potential buyers and answer any questions they may have. We especially believe that by using community centres and schools to promote the product we will more effectively reach our two key age groups Children (<14) and Adults (>14).

After the launch stage, we will focus on going above and beyond in our customer service with the aim of reaching additional buyers via word of mouth. We believe that the most effective avenue for ongoing marketing in the local Rautahat community will be through positive customer feedback, reach more and more potential buyers through the existing channels across the District.

## Financial Analysis

### Overview

We aim to offer a high quality, low cost shoes.

The financial analysis is based on following assumptions:

- We will charge \$3.50 (358.01 Nepalese Rupee) for one adults' pair of shoe and \$3.30 (337.10 Nepalese Rupee), almost 70% lower than similar types of shoes available in Nepal.
- Total cost of material is \$0.8626 per unit (one pair of adult's shoes) and \$0.6038 per unit (one pair of children shoes)
- Total cost of equipment is \$1,383.48. The same equipment will be bought at 3<sup>rd</sup> and 5<sup>th</sup> year to accommodate more workers to produce more shoes.
- One manager is employed and paid \$ 615 (66,296.65 Nepal Rupee) per year and 2 female workers are employed and paid \$610 each per year (65,172.98 Nepal Rupee), which is above the minimal wage in Nepal. It is calculated that two workers with manager supervision a produce 1000 units a year; therefore, when the demand is increased, new workers will be employed accordingly.
- Transportation is calculated from cost of renting a van and gas for a day when delivering materials. One loaded van with materials is calculated to be enough for 500 units.
- People who will deliver recycled materials to us will be paid at the following rate: 25 plastic bags for \$0.4 and one car tyre for \$0.3.

In order to finance our start-up cost and the beginning of our business cycle, we will approach Nepal Bank Limited with our business proposal and borrow \$7,985.00 and repay the loan over 5 years, with an annual interest at 9%.

### Loan Financing

Loan Amount	\$7,985.00
Interest Rate	9%
Loan Period	5 years
Total Annual Repayments	\$1,878.42

*All figures are in US Dollars*

Please see Appendix 1 for Sales and Expense Forecasts.

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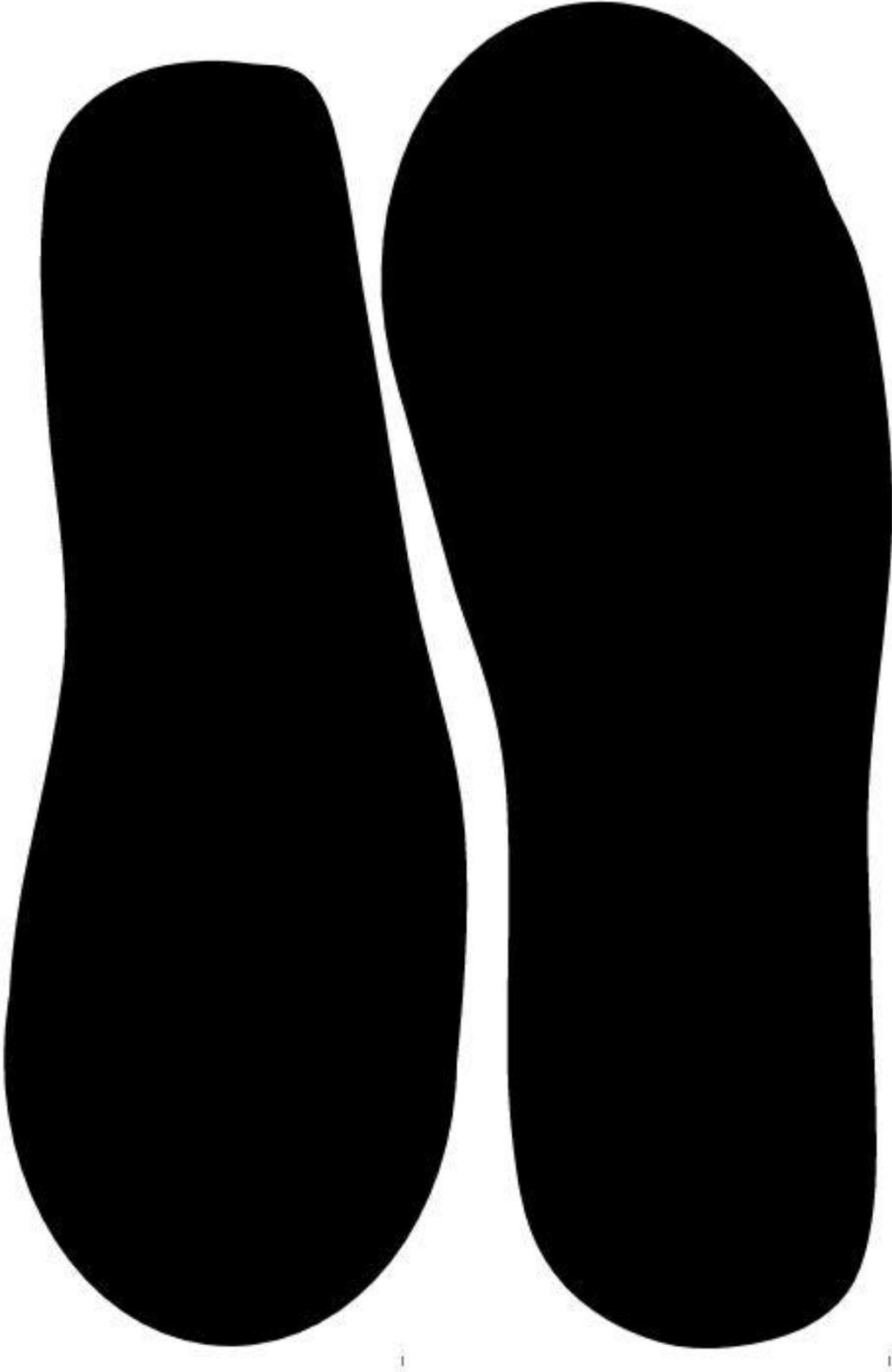
## Appendix 1: Sales/Expenses Forecast

	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Revenue</b>					
# of units Sold(adult shoes)	150	300	800	1600	2500
# of units Sold(children shoes)	100	220	700	1400	2200
Unit price per adult's pair	\$3.50	\$3.50	\$3.50	\$3.50	\$3.50
Unit price per children' pair	\$3.30	\$3.30	\$3.30	\$3.30	\$3.30
<b>Net Sales</b>	<b><u>\$855.00</u></b>	<b><u>\$1,776.00</u></b>	<b><u>5,110.00</u></b>	<b><u>\$10,220.00</u></b>	<b><u>\$16,010.00</u></b>
<b>Expenses</b>					
Material	\$189.77	\$383.86	\$1,112.75	\$2,225.51	\$3,484.91
Equipment	\$1,383.48	\$1,383.48	\$2,766.96	\$2,766.96	\$4,150.44
Wages production	\$1,925.00	\$1,925.00	\$2,563.00	\$2563.00	\$2,882.00
Wages picking up waste material	\$28.60	\$84.90	\$165.00	\$330.00	\$495.00
Transport	\$40.00	\$40.00	\$120.00	\$240.00	\$360.00
Building Lease	\$1,000.00	\$1,000.00	\$1,000.00	\$1,000.00	\$2,000.00
Bank Loan	\$1,878.42	\$1,878.42	\$1,878.42	\$1,878.42	\$1,878.42
<b>Total Expenses</b>	<b><u>\$6,355.27</u></b>	<b><u>\$7,613.42</u></b>	<b><u>\$8,861.17</u></b>	<b><u>\$10,563.93</u></b>	<b><u>\$12,413.33</u></b>
<b>Total Profit (Net Sales – Expenses).</b>	<b><u>-\$5,500.271</u></b>	<b><u>-\$4,837.419</u></b>	<b><u>-\$3,751.175</u></b>	<b><u>\$-343.930</u></b>	<b><u>\$3,596.673</u></b>

All figures in US Dollars

**Appendix 2: Inner Sole Pattern**

**Pattern Not To Scale**



**Appendix 3: Mitra Shoes Pattern**

Patterns Not to Scale

