Tambul Leaf Plates

Creating youth employment in Assam while reducing plastic waste

2013 SEED Winner – India

SEED CASE STUDIES: INSIGHTS INTO ENTREPRENEURIAL SOLUTIONS FOR SUSTAINABLE DEVELOPMENT

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The findings, interpretations and conclusions expressed in this publication are those of the authors based on interviews and site visits to the enterprise and do not necessarily reflect the views of SEED or Adelphi Research.

CONTENT

SEED Case Studies Series

Demonstrating Sustainable Development on the Ground Through Locally-driven Eco-entrepreneurship

Social and environmental entrepreneurship, also known as green and inclusive entrepreneurship or eco-entrepreneurship, could play a critical role in achieving a global Green Economy. By embracing the added values of social improvement and wise resource management eco-enterprises that have won a SEED Award are living proof that entrepreneurial partnerships between various stakeholders can create innovative and novel solutions for delivering sustainable development at the grassroots and be economically sustainable.

Over the last ten years, SEED has awarded nearly 180 SEED Awards to eco-enterprises in 37 countries. While the value of eco-entrepreneurship in delivering sustainable development is increasingly recognised and harnessed in the development sphere, there is still very little data available on the triple bottom line impact of these entreprises and their contribution to sustainable development.

The SEED Case Studies are designed to help fill that gap by generating insights for policy and decision-makers on the role of green and inclusive enterprises in achieving sustainable development, and on enabling factors that can help them overcome barriers and reach scale and replicate.

AT A GLANCE

Tamul Leaf Plates has generated employment or additional income for 3,000 rural community members while reducing pollution from plastic and polystyrene foam plates by over 100 tonnes.

Tamul Leaf Plates enables rural youth and women in Northeast India to establish their own production unit enterprises of arecanut leaf plates, creating livelihoods in their communities.

PRODUCTS & SERVICES

Biodegradable disposable plates made from arecanut tree leaves

Low-tech pressing machines for producing plates from arecanut leaves

Training in producing areanut leaf plates

KEY FACTS

- Location: Barpeta, India
- Founded: 2009
- Active: Northeast India
- Employees: 36
- Annual turnover: USD 103,400

TRIPLE BOTTOM LINE

Social impacts

- Trained over 500 male youth and 400 women in plate production
- Created over 35 direct jobs for vulnerable people in an area with high unemployment

» *Provides additional household income to over 2000 sheath collectors, 75% of whom are women*

Environmental impacts

- Replaced 10 million plastic and polystyrene plates with biodegradeble arecanut products
- Reduced over 500 tonnes of CO_2 equivalent emissions

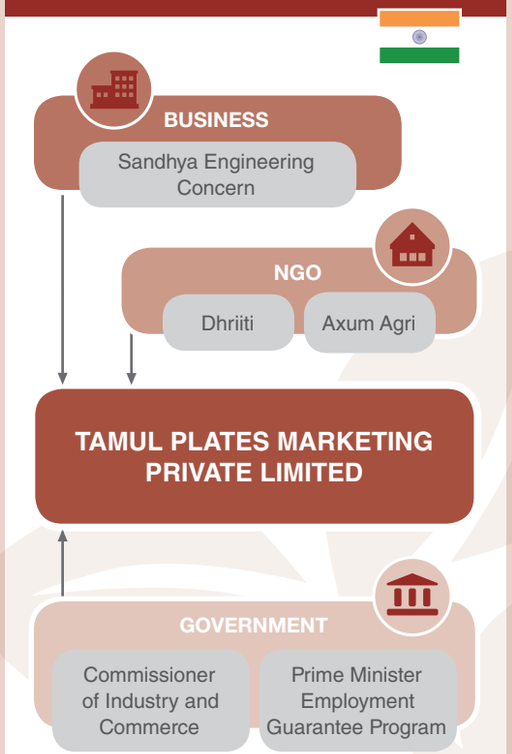
» *Avoids more than 10 tonnes of waste plastic and 60 tonnes of CO_2 equivalent emissions every year*

Economic impacts

- Created 110 community production units, 90% owned and run by young men
- Increased the selling price of arecanut sheaths for collectors by 30%

» *Works with the Assam government to set up 350 women-run household production units across 20 districts of Assam*

TAMBUL LEAF PLATES PARTNERSHIP



1. Partnering for local solutions

1.1 Local challenges

Insurgencies and terrorism in Assam, India

Located south of the Eastern Himalayas lies the Assam province, famous for its tea and silk and one of the richest biodiversity zones in the world with tropical rainforests, abundant wetlands, and riverine grasslands. Yet Assam is also known for its ongoing conflicts. Home to nearly 220 ethnic groups, many of those descendants of old migrations rooting from other parts of Southeast Asia, the Northeast region has been the cauldron of insurgencies for over 50 years, with competing ethnic groups clashing over resources and leadership and several armed groups seeking various forms of autonomy or independence[I]. Over the past 20 years, the conflicts, which involve mainly Bodos and local Muslims, have intensified, peaking in 2012 with possibly India's worst case of mass human displacement. In 2014, Assam was rated the second most volatile state in the region and was the worst-affected state in India that year, with 305 fatalities[II].

Unemployment in Assam

With a fast growing population, now reaching over 31 million, Assam lags behind the Indian average on all Human Development Indicators (HDIs), especially on those relating to per capita income[III]. One of the causes can be attributed to the high unemployment rates, predominently in rural areas, and to the fact that most labourers work in the primary sector. Indeed, the unemployment rate is now reaching about 8% which is the highest in Northeastern India[IV]. In recent years, the situation has deteriorated, affecting predominantly youth who now face a greater risk of unemployment. In turn, the difficult labour market in Northeast India is seen as one of the primary causes for the increasing insurgencies and terrorism which affect the area, with recruits being drawn mainly from unemployed youth[V].

Similarly, women are also affected by the difficult labour market particularly because of the challenges they face in Indian society. While the Indian economy has shown growth over the past 25 years, the female labour force has declined by 23%[VI]. The Gender Inequality Index (GII), introduced by the United Nations Development Programme (UNDP) in 2010, indicates that India now ranks 127th worldwide[VII] relating primarily to low levels of female empowerment, low maternal health standards and low female participation in the labour force.

Plastics and polystyrene foam: the growing waste challenge

Waste management has been an ongoing issue in India for many years, and disposal of plastics and polystyrene foam products is becoming a growing hazard for people as well as for the environment. Produced from mineral oils, every 10,000 standard-size disposable polystyrene foam plates result in more than 500 kg emissions of CO_2 eqivalent greenhouse gases, and produce over 100 kg in non-biodegradable waste that is often not accepted in plastic recycling[VIII]. As a result, polystyrene waste is filling up landfills or ending up in the sea, causing damage and death to marine life. Furthermore polystyrene contains toxins that are considered to be human carcinogens[IX]. Despite that, the production of plastics and polystyrene foam products, including the production of disposable plates, is increasing yearly in India. While India has been actively fighting waste issues for years – for instance in 2000 the government framed a Solid Waste Policy, which required all cities to devise comprehensive waste-management programmes that include household collection of segregated waste, recycling and composting, and in 2012 a ban on plastic bags was introduced – the implementation at the grassroots remains problematic. The failure in implementation can be attributed to various factors: the collection generally relies on the informal sectors and remains uncoordinated[X], waste (especially plastic) is becoming more complex and there is a lack of awareness from the public, of infrastructure and of trust in local authorities[XI].

Fast facts

32,7 % of India`s population lives on less than $ 1,25 per day

In the last 25 years there has been a 23% decline in female labor force participation

Assam province has the highest unemployment rate in Northeast India

Waste disposal is a problem in India where polystyrene foam and plastics are often not recycled

The enterprise and its affiliated production units source arecanut leaves, an abundant type of bio-waste in rural areas, from local collectors, either directly or through agents. The sheaths are then washed, dried, and pressed into disposable plates and bowls of various sizes. Standard products are sold in larger bundles for the mass-market, while higher-quality plates are sold in neat packages of ten to institutional customers such as Barclay's Bank. The product is not only attractive to customers because it is hygienic and microwave-safe, but it also offers benefits above plastic plates such as better stability and heat-resistance.

In its supply chain, the enterprise facilitates the establishment of micro-enterprises across Northeast India which function as village-based plate production units. Tamul provides capacity building as well as technical, financial and marketing support and in turn sources plates from these producers, offering a 100% buy-back guarantee. At the same time, Tamul also trades locally suitable, low-tech machinery for plate production. Training on how to use the machines and produce high-quality plates is provided as a commercial service and under contract, e.g. for governmental skills-development programmes.

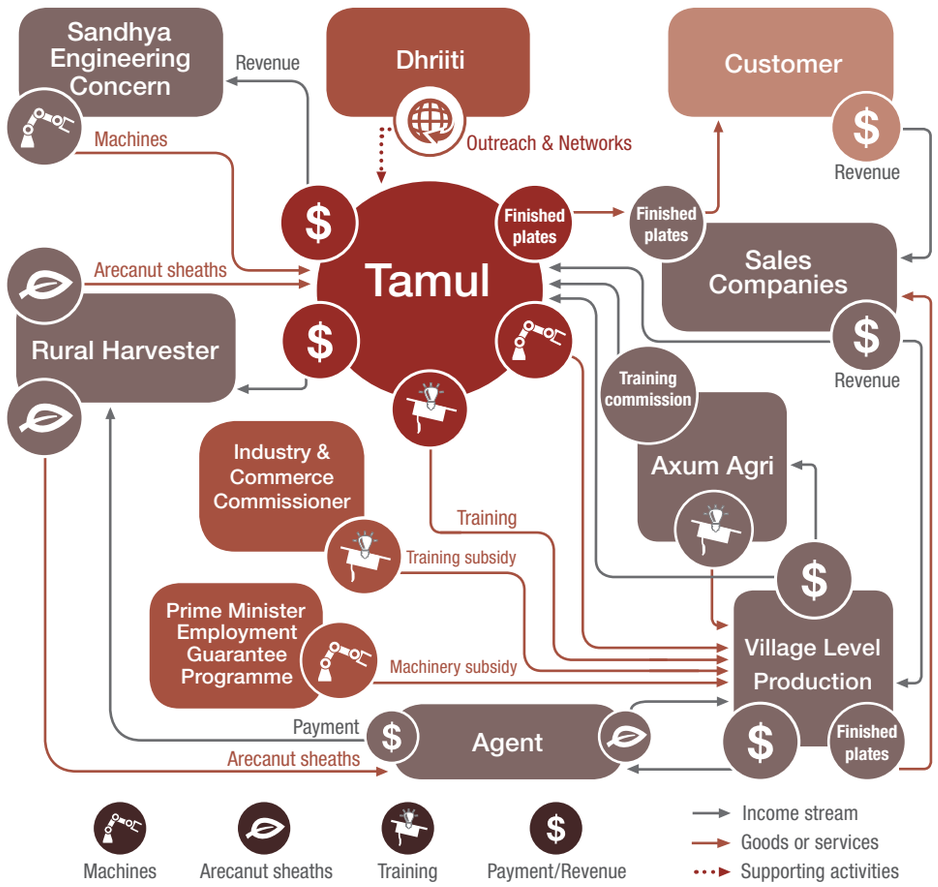
1.2 Creating innovative local solutions

Tamul[1] Plates Marketing Private Limited (TPMPL), which was created in June 2009 under the Arecanut Leaf Plate Initiative of Dhriiti, an Indian NGO, sets up small manufacturing units to produce and market disposable biodegradable dinnerware made from the fallen sheath of the Arecanut plant (Betelnut tree). Through taking out its production processes to local communities, the enterprise has created training and employment opportunities, primarily for rural youth.

1 The business is called Tamul Plates Marketing Private Limited (TPMPL), while the product is named: Tambul Leaf Plates

Pictures: Tambul leaf plates

Business model



1.3 The Power of Partnerships

The partnership

The enterprise relies strongly on a trusted partnership approach, rather than merely on strict contractual arrangements with conventional service providers. Its network of key affiliates consists mainly of outreach, technical and financial partners. These have so far proved to be very successful and stable, and Tamil considers they have been invaluable in growing the enterprise. While several of the partnerships started informally, they have evolved over time and ultimately resulted in formal partnerships, the terms of which are set out in a Memorandum of Understanding (MoU).

Partnership management: Overcoming challenges

While the partnership approach evidently adds value to the process, partnerships are dynamic and not without challenges. Difficulties identified along the way include a difference in quality in the training provided by the various outreach partners, and payment delays from Tamul to Sandhya in times of working capital shortage. From Tamul's experience, the cornerstone of successful and lasting partnerships is not only good communication and transparency, but maybe even more importantly, sensitive and constant management of expectations. In contrast, government relations can be more demanding at times due to cumbersome bureaucracy, which the enterprise has no influence over.

Looking ahead, Tamul is looking to work with additional partners who could support the further development of the enterprise. For instance, Tamul is looking for a technical partner to develop technologically-improved but still environmentally friendly machines, for a design partner to diversify the products, and for a financial partner that could provide better understanding of financial management and access to funding.

The Partners ...

National NGO

Tamul evolved out of a programme initiated by the Indian NGO **Dhriiti**. Once Tamul became an independent enterprise, Dhriiti remained a close partner. Based in Delhi, the NGO supports outreach activities and opens up networking channels, on occasion serving as a Delhi office. In addition the NGO offers the infrastructure to channel grants, for example, to finance training activities.

Business

Sandhya Engineering Concern, manufacturer of low-tech plate production machines and serves as a technical partner for Tamul. Tamul then sells the machines and through a dealership agreement earns 30% commission for each sold machine. In turn, Tamul provides feedback and input on further developments for regionally suitable machines. The relationship goes beyond pure commercial exchanges. The close and trusted nature of the collaboration not only enables both companies to benefit from a larger outreach but also to extend and exchange technical knowledge and to avoid direct competition. More importantly it has allowed Tamul to implement its activites without discontinuity in times when working capital was low, as Sandhya would allow production with only 50% advance payment.

Local NGO

The awareness raising and training of communities across the region is implemented by a number of outreach partners, one of them being the NGO **Axum Agri**. The organisation trains people in leaf plate production and serves as a focal point for the producers in eastern parts of Assam where Tamul has no physical presence. Tamul receives a commission of 10% on the participants' fees for trainings conducted by these partners.

GOVERNMENT

Tamul also considers the **Commissioner of Industry and Commerce** to be an outreach partner. The Commissioner offers skills development trainings, one of them being free intensive training courses on leaf plate production contracted from Tamul. At the same time, the enterprise has won a government tender to provide over 250 machines to the Commissioner.

...

2. Building an inclusive eco-enterprise

It took Dhriiti four years of developing and piloting the concept of arecanut leaf plate production before Tamul Plates Marketing was incorporated in 2009. Soon after, in early 2010, the enterprise was able to start trading the first Tambul Leaf Plates. In 2011, the business expanded and entered machine trading. In its business year 2012/13, Tamul reached a turnover of USD 102,700 and by April 2013, 100 village production units had been established. In the same year, the Tambul Leaf Plates was celebrated as a Winner of the SEED Low Carbon Awards. To date, they have successfully established over 460 units of different sizes across 20 districts of Assam.

2.1 Financial development

Tamul Plates Marketing's starting budget was USD 76,000: USD 15,700[2] from capital investment and USD 60,400 from loans, both obtained from its network of supporters, employees and plate producers. For three consecutive years, the enterprise experienced a growth of about 100% per year. However, in 2014 sales growth declined and, despite a turnover of USD 98,900, the enterprise incurred a loss of USD 7,900.

This was partly due to the delay in receiving a major grant of USD 62,800 which arose because of changes in regulations. The lack of collateral meant that Tamul was unable to apply for a bank loan instead and the enterprise struggled to secure the working capital to pre-finance input materials. As a result, the enterprise missed its intended business targets for the year in terms of turnover and investment funds raised. Indeed, one of the main challenges Tamul is experiencing revolves around the lack of working capital that limits the purchase of raw materials, their own production of plates, and their ability to purchase plates from affiliated producers.

Fortunately, Tamul was able to receive a government grant of USD 2,400 towards salary costs in 2014. While the enterprise is evidently still highly reliant on grants, it is expected that Tamul will be able to increase annual sales to USD 470,700 for 2015 and thus become profitable. This growth will be mainly supported by revenues from a government contract worth USD 204,000 to provide 256 machines. To help to stabilise finances, Tamul is looking for an investor and plans to increase financial management expertise of the management team.

2.2 Employment situation

In 2015, Tamul Plates Marketing has 36 direct employees including three managers/directors. While men are significantly better represented than women, one of the three managers is female and women's earnings are reportedly at the same level as men's. The average annual salary of USD 2,400 compares well to the Indian GDP per capita of USD 1,600[xii].

Tamul works to provide its employees with development perspectives and increase their skills, sending its administrative staff to external trainings and planning to enhance the training skills of its senior employees so as to improve on-the-job training of the overall team.

Beyond direct employment, the business model generates far-reaching indirect job creation by stimulating the creation of external start-ups for the production of plates. So far they successfully established 110 village units and 350 additional household-level units are currently being set up. Additionally, about 2,000 rural families around these units are earning additional income by collecting the raw material and selling it to agents or the producer units.

Fast Employment Facts

Employees	Avg. Salary per Year	Female Workforce
40	$ 2,400	48%
Fulltime Employees	Parttime Employees	Temporary Employees
9	7	20

2 Financial figures converted to USD from INR, using average exchange rates of the respective year

2.3 Business Development

Looking ahead, Tamul pursues the goal of bringing 100 million plates to market by 2025 through its own operations and units set up through the support by its partners. To stabilize operations on a growing path towards this goal, the enterprise wants to seize new opportunities: from diversification of the products, to increased marketing and greening of the production processes:

- Tamul has secured a government contract for plate pressing machines that will be distributed to rural households, actively supporting the spread of arecanut plate production in the area.
- In terms of marketing of the plates, the company plans to increase the number of outreach partners by 10 in 2015 so as to be able to tap into new regional markets. A marketing pilot involving the dissemination of free samples to potential target clients has proven effective, and could be replicated, provided further capital is found.
- Tamul is also working to increase the share of premium quality products that can be sold to corporate clients in bulk.
- To create new attractive products such as custom-branded plates, which are of particular interest to home-delivery providers, new dyes will be developed and applied.
- As regards the trading of production machines, Tamul plans to co-develop and offer innovative biomass-heated plating machines that do not rely on electricity or LPG for heating.

3. Reaching impact

Tamul aims to become financially sustainable and to make a profit. As an inclusive eco-enterprise, it equally strives to generate environmental, economic and social benefits for the local communities.

3.1 Beneficiaries

Tamul Plates Marketing focuses on income and employment creation. There are beneficiaries along the entire value chain:

- **Sourcing**: families and individuals collecting the arecanut leaves for 1-2 hours per day receive income by selling the raw materials to agents or producers,
- **Village plate production**: local youth, particularly young men (90%), are trained to become local entrepreneurs and producers of arecanut leaf plates and are supported in setting up village production units,
- **Household plate production**: household heads, particularly women (90%), are trained to become local producers of arecanut leaf plates,
- **Consumers**: benefit from good quality products
- **Communities** (urban): benefit from a reduced burden of plastic and polystyrene foam waste

3.2 Social impacts

Social impact is created as a result of employment and additional income that is secured along the value chain. As of 2014, around 2,000 arecanut leaf collectors were earning an income of up to USD 160 per month (seasonal). For many, this was the only source of cash income complementing subsistence farming. In 2014, Tamul raised sheath procurement prices by 30%, increasing income at the first step of the value chain. As 75% of those collectors are women, income is spent largely on improved diets and children's education.

Local youth are provided with skills training which enables them to find employment with plate production units, or even to set up their own unit. Each of the 110 established village unit consists of 4-5 people. 90% of the units are run by men. While Tamul initially concentrated mainly on training and employing young men in the production of plates, it is now also fostering women's empowerment, encouraging women to set up smaller household-level production units and to become entrepreneurs. With support from its governmental partners, 350 of these smaller units are currently being established, 90% of them run by women. Thus by and large, around 500 young men and 400 women are working in the external production units and have received training on the job or in formal training programmes.

In addition, the participatory nature of Tamul's approach strengthens the overall community structure; the whole communities are introduced to the concept, and it is only upon their collective appeal that the units are introduced.

> "The quality of food I can afford has improved since I work together with Tamul – we now regularly have eggs, fish and meat. And my children go to a good school now." *Arecanut sheath agent*

3.3 Economic impacts

The economic aspects of the Triple Bottom Line include the internal economic performance (section 2) as well as external economic development. Beyond its own financial and business growth, the model of Tamul Plate Marketing stimulates much-needed economic development in the secondary sector in rural communities that mainly rely on subsistence farming. Tamul and its partners have developed and established a new value chain which takes an abundant natural (waste) resource and converts it into a valuable product. Relying on manual labour, this niche industry provides income and employment to unskilled community members, so strengthening purchasing power in the region as well as political stability arising from youth employment opportunities.

> "I can stay in my village with a respected manufacturing job and did not have to move to a larger city like Guwahati just for day labourer work - and I would even have higher cost of living there." *Tamul employee*

3.4 Environmental impacts

Tamul Leaves Plates has created a green business model which exploits the conversion of fallen arecanut leaves into a product that completely decomposes into soil within 50 – 60 days, as opposed to hundreds of years for plastic and polystyrene. The enterprise and its partners have so far replaced almost 10 million plastic or polystyrene foam disposable plates, corresponding to saving approximately 100 tonnes of plastic waste and in turn reducing CO_2 equivalent emissions by over 500 tonnes since the outset[VIII]. Targeting further expansion, the enterprise aims to sell enough to replace 5,000 tonnes of plastic plates over the next 10 years, which would also save a corresponding 25,000 tonnes of CO_2 equivalent emissions.

The value chain is built around upcycling an abundant biowaste used as raw material. Tamul Leave Plates works hard to reduce environmental impact also in its production process, for example reusing water from sheath washing in a closed loop. Plastic foil for packaging is currently the only potentially polluting material used, and the enterprise is looking at diversifying packaging methods to replace part of the plastic with jute materials. While the pressing machines still rely on limited amounts of electricity or natural gas for heating, Tamul aims to develop an innovative plating machine that would only rely on biomass heat.

In addition, employees and so far almost 900 trained youth and women have developed a sense of waste recycling and understanding for biodegradable materials. Marketing campaigns have also increased the environmental awareness of the target and wider audiences. Tamul also has an indirect impact on forests: the alternative income opportunities Tamul is providing to the rural communities replace illegal logging or wildlife poaching.

3.5 Policy impact

Tamul is partnering successfully with government agencies such as the Commission on Industry and Commerce. Therefore, leaf plate production found its way into their skills development programme for rural communities with government-sponsored, free training opportunities. Tamul was also successful in convincing the Prime Minister Employment Guarantee Program of its approach, which is providing key support to the wide-spread implementation cross Assam by sponsoring and distributing machines for household-level production units.

4. Charting green and inclusive growth

IMPACTS

Green and inclusive value chain

Diversifying the rural economy, Tamul has developed a green industry niche and successfully designed and set up a value chain reaching from rural arecanut sheath collectors via village manufacturing units to urban customers. By producing disposable and biodegradable dinnerware from arecanut leaves, Tamul has found an innovative business model that not only offers positive social impact through job and income creation and skills development, but it also addresses local insecurities by reducing the likelihood of young men joining insurgent groups. The model also reduces pollution from plastic and polystyrene foam disposable products by creating alternative eco-friendly dinnerware from an abundant local resource that was formerly considered a mere biowaste.

CHALLENGES

Access to finance

After successful proof of concept, the enterprise has experienced barriers with scaling up, predominantly relating to financing. Lack of working capital has led to missing production targets and therefore sales targets. As a result the enterprise was not always able to pay out salaries or other contractual obligations on time. The consequences of a venture capital grant being delayed by over a year due to regulatory changes show the political and regulatory risks related to this kind of financial reliance. At the same time, the enterprise has not been able to secure business finance in the form of either debt or equity capital, except from its network of friends and supporters in its early days. Like many other regions, financing opportunities for start-up social and environmental entrepreneurs appear to be insufficient and difficult to access in Northeast India.

SUCCESS FACTORS

Valuable partnerships and community engagement

Tamul Plates Marketing Ltd. has overcome many of the other challenges by establishing valuable partnerships. The business was originally a derivative of a local NGO working on entrepreneurship. This enabled the research and piloting of the innovative production of arecanut leaves with limited business risk. Teaming up with a range of outreach partners then led to a replication of the arecanut plate production in other parts of the region without own investment. Furthermore community engagement in the decision-making process has proven to be paramount in the set up of village units. Looking forward, the enterprise's well-established cooperation with governmental agencies working on rural employment may well prove to be the key enabling factor for business development in this early phase of the company. Finally, upcoming government contracts promise to bring the enterprise into a profitable revenue zone.

FUTURE NEEDS

Welcoming investors, outreach and technical partners

The enterprise has had a good start bringing its innovative products to the market and now needs to tackle its financing challenges so as to stabilise and expand production and sales. To achieve this, Tamul is mainly looking for an investor interested in supporting its scale-up and for a partner that could bring additional financial expertise to the management team. To implement promising new developments in the product portfolio, the enterprise is also looking to establish new partnerships that can bring in relevant technical expertise at affordable costs. Tamul also aims to expand its regional impact and welcomes new outreach partners in adjacent communities.

Acknowledgements

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About SEED

SEED strengthens the capacity of small grassroots enterprises in developing countries to enhance their social, environmental, and economic benefits, builds bridges between entrepreneurs and policy makers and stimulates exchange and partnership building.

SEED was founded by the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP) and IUCN (International Union for Conservation of Nature) at the 2002 World Summit on Sustainable Development in Johannesburg and is hosted by Adelphi Research gGmbH, based in Berlin, Germany.

Adelphi Research (AR) is a leading think-and-do tank for policy analysis and strategy consulting. The institution offers creative solutions and services regarding global environment and development challenges for policy, business, and civil society communities.

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Magdalena Kloibhofer – Magdalena Kloibhofer is a Project Manager at Adelphi Research and has worked for SEED since 2011. Her focus lies on fostering sustainability entrepreneurship and inclusive green business models in developing countries and emerging economies, with specific experience in socio-economic research and capacity building to help enterprises develop socially and ecologically sustainable business models.

Helen Marquard – Helen Marquard has been Executive Director of SEED since 2007. Prior to that she was a senior official in the UK government, responsible for various aspects of environment and sustainable development policy at the EU and international level. Helen holds a PhD from Manchester University.

Notes

This case study is mainly based on interviews and site visits to the enterprise in late 2014 / early 2015, as well as internal documents such as the enterprise's business plan. Additional resources are listed below.

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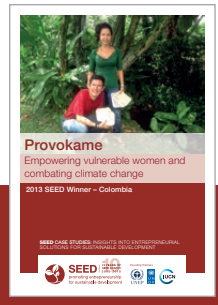

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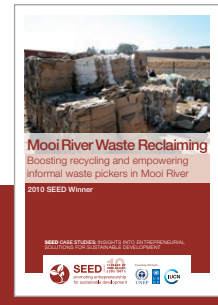

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