



Sustainable Manufacturing and
Environmental Pollution



GD Labs & Research

For sustainable lifestyle



About Us



Green Decision Labs and Research (GD Labs)

- A research and innovation lab.
- Urban sustainability in Nepal's cities.
- Establishing and partnering with innovative Green and Social Ventures.

What we do?

Promote sustainable urban lifestyles through themes: **air**, **waste**, **mobility**, and **livelihood**.



Present Situation

- Plastic waste - a global issue.
- Nepal - entrenched in social behaviour.



Fig: Plastic dumped hazardly



Fig: Polyfloss Machine



Fig: Polyfloss

Introduction

- Nepal is one of the most climate vulnerable country.
- Extreme weather events are becoming more frequent.
- Created unfavorable housing conditions.
- The primary method of heating is firewood.
- Insulation in himalayas is non-existent.
- Put further stress on the forest resources.
- Polluting the pristine.



Fig: Homestays



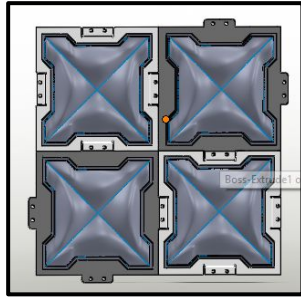
Fig: Roofing with no underlying layering

Introduction to शितल छाना (Cozy Roof)

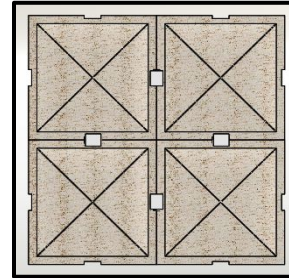
- Improve thermal insulation temperature upto 5 °C.
- Discarded Polypropylene plastic (PP) converted into **plastic wool** by the **polyfloss machine**.
- The **floss(wool)** is then **felted and compressed** with a **cold press machine**.
- Our insulation product comes in a roll making it easy for installation and transportation.



Prototype Journey



3D rendered insulation panel



Insulation panel



Insulation Roll



Insulation mat



Felt device



Floss roll

EXPERIMENTING OTHER TANGENTS



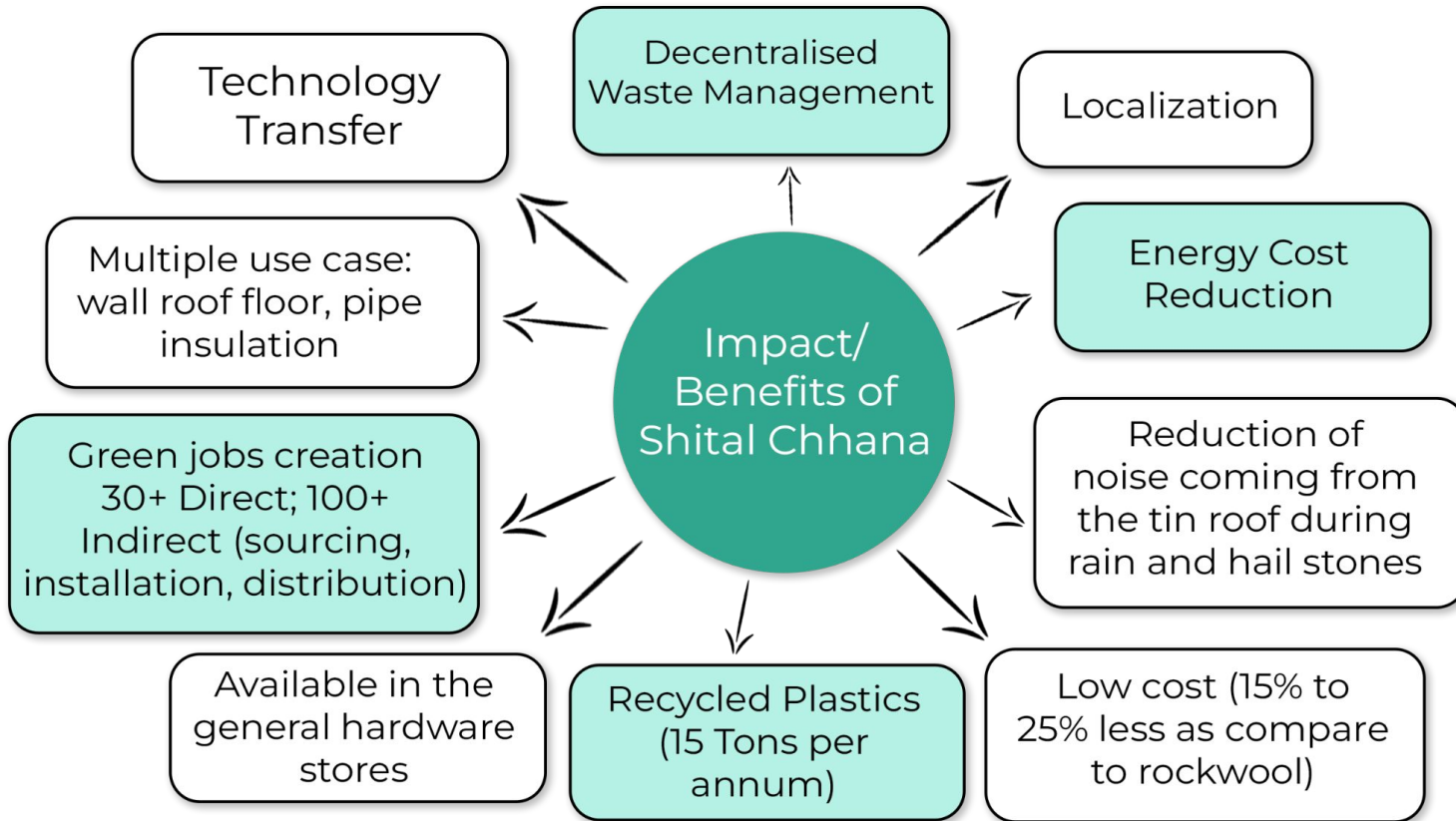
Rice straw sandwiched in
between floss

Value Proposition



- Heat and sound insulation with versatile use (walls, floor, pipe, roof).
- Reduce the total energy required for heating and cooling the homestays.
- Making the stay more comfortable to their visitors.
- Low cost and long life.
- Make their community more attractive to visitors with engraved flavor of innovation.





Target Market

Homestays

- Regular cash flow of homestays capable to purchase the product.
- Saves cost and energy of room heating: saves money.
- Improved service value--Sound proofing (rain and adjacent rooms), improved privacy and sound sleep.
- Improved customer experience and increase brand value.



Bhalamchaur, Lamjung



Ghalegaun, Lamjung

Target Market

Other available markets



Restaurants



Offices



Schools



Hotels and
Resorts



Post disaster
shelters



Recording
studios



Temporary labour
camps

Cost and Revenue

Cost

For 1 homestay (75 kg*Rs
145)
= **NRs. 10875**

Total production cost for
200 Homestays
= **NRs. 2,175,000**

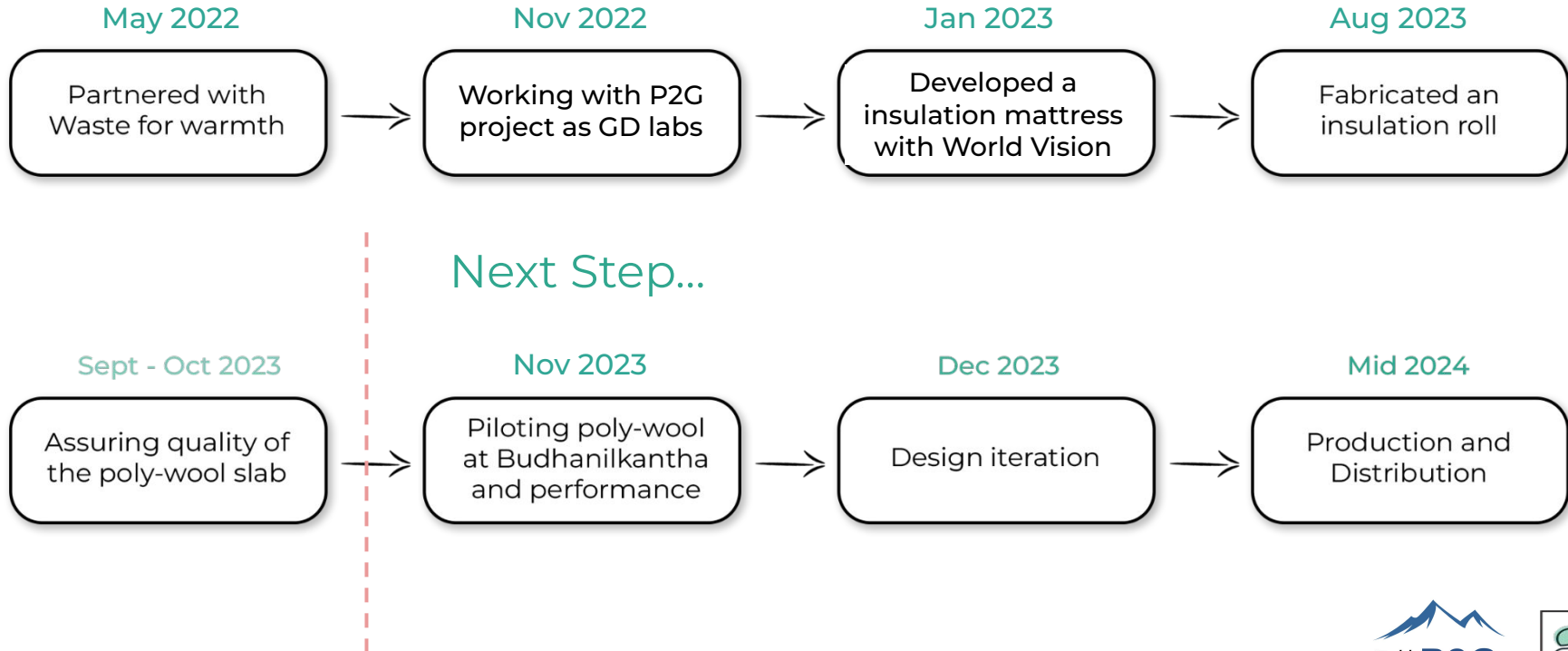
Revenue

Selling floss @ NRs.
200/kg

Total Revenue
= **NRs 3,000,000**

Gross Profit
= **NRs 825,000**

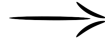
Timeline of the Prototype Development



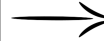
The Past Project Experience



Recycled 1.2 tons of polypropylene plastics



Decentralized waste management



Upcycle 1106 kg of plastics to polyfloss



Provides cozy environment to 500 + Students yearly



Installed polyfloss in 12 classrooms



Created 22+ jobs

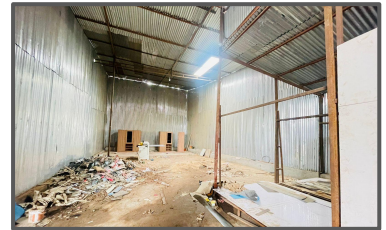
The Bigger Picture

Kathmandu

- GD Labs into ecosystem building in Kathmandu.
- Partnered with Benchen Monastery for pelletization.
- Better supply chain, better quality products.
- Collaboration with private waste management company.
- Upgrade to recycle PET as well.
- Testing PET floss for insulation.

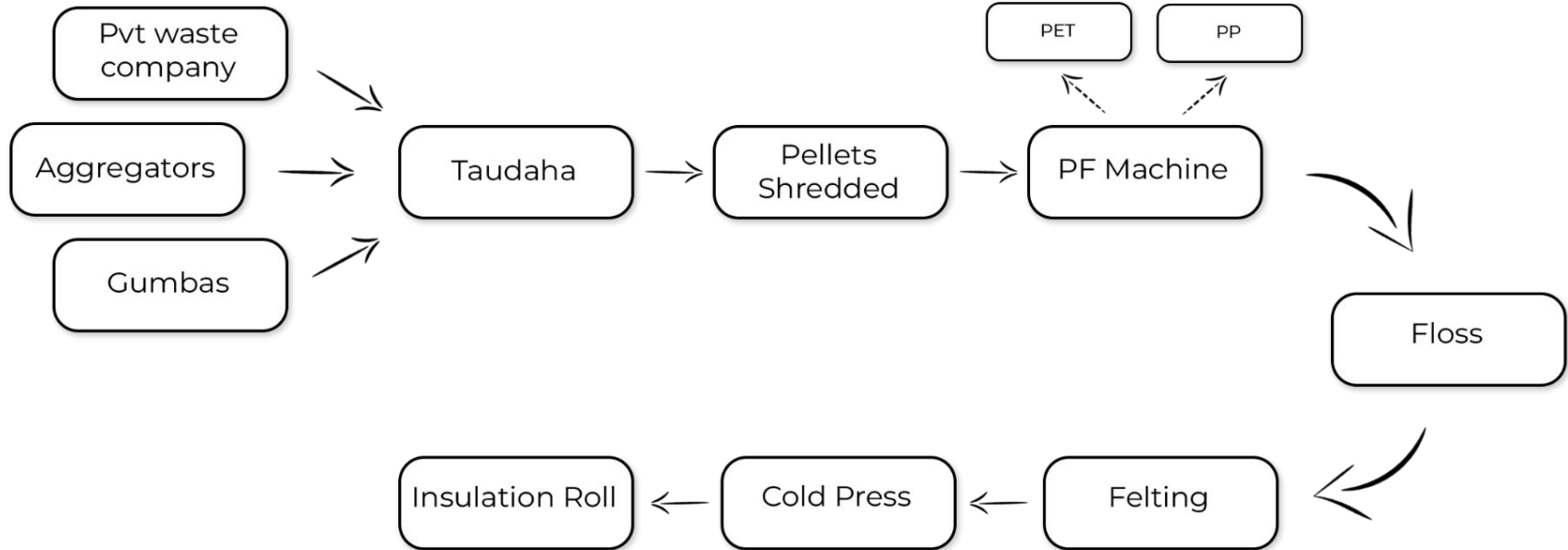


Pelletizing company



Private Waste
Management Company

Flow of the Product



The Bigger Picture

Gandaki



GRWM facility

Partnered with Green Road Waste Management for sourcing raw materials for the polyfloss machine.

Currently the supply chain in Pokhara is broken due to recent transfer of landfill sites.



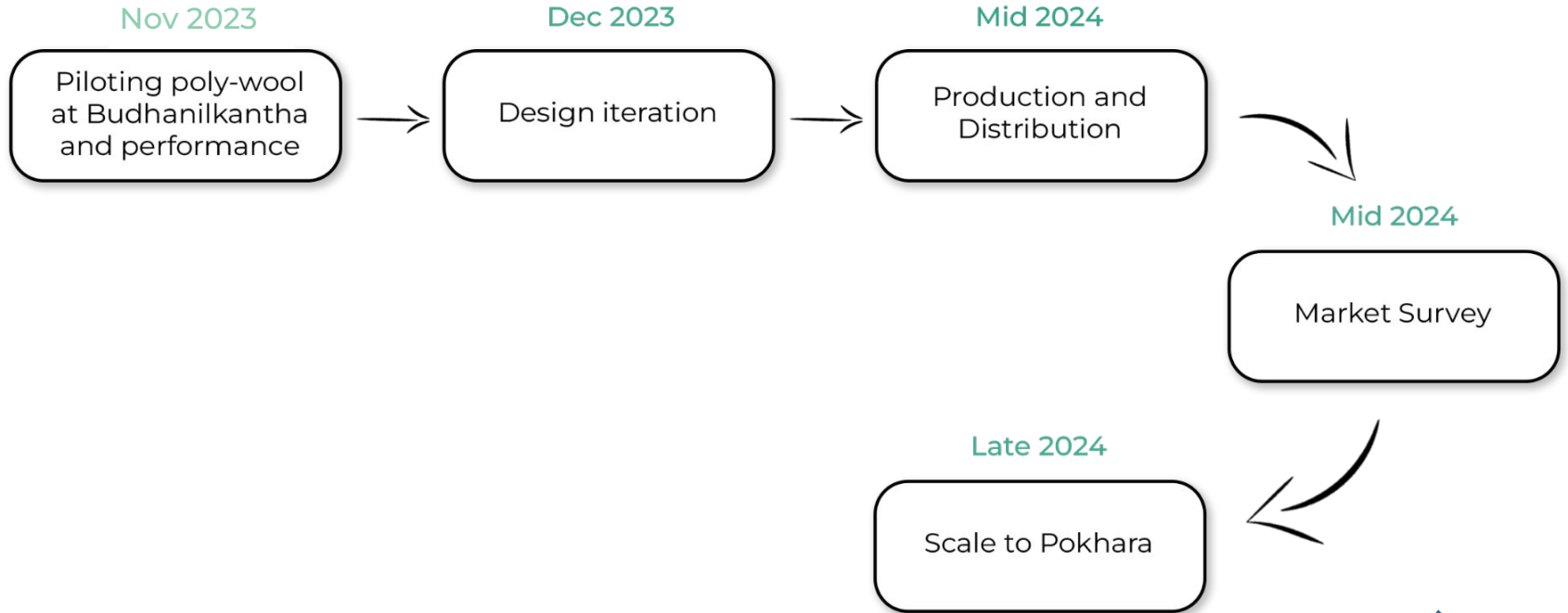
Relocation of Pokhara landfill site



Marshyangdi RM MRF

Potential areas of intervention have been identified: Besishahar M. and Marshyangdi RM. -Potential partnership is being developed

Timeline in the Broader Scheme of Things



Challenges



- **Product quality (improves with)**
 - Supply chain
 - PET
- **Market pull**
 - Noble Product
 - Insulation as a whole is not popular in remoter areas of Nepal



Push Strategies

Target Market

- Homestays
- Restaurants, Lodges, Resort
- Quarters
- Hydropower



International agencies working on climate adaptation.

Ask?

- Heat press machine
- Felt machine
- Weighing machine
- Air quality filtration system setup at the site
- Other equipment - temperature and humidity sensors
- OHS (Occupant health safety) equipment



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Thank You |
धन्यवाद

