



em[POWER] Energy Group, Inc.

Transforming Waste-Picking Communities through
Renewable Energy from Waste Solutions

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Our Objectives

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- Helping communities living in or dependent on waste using renewable resources and alternative energy
- Merging renewable resource processing and community infrastructure
- Partnering with co-ops of mothers, schools and clinics
- Reducing environmental impact from waste
- Enabling global collaboration and communication

Background

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Pilot Project: The Matuail Landfill

Dhaka, Bangladesh - 12 million people

4000 tons/day of urban garbage collected

50 USD monthly household income for family of 5-7

1200 children of 2,000 trash pickers - adjacent
community of 10,000 households

Limited or no access to electricity, water & clinics



Matuail Landfill and Surrounding Area

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School In the Unregulated Dump

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Living Conditions

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Problems as Evidence

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□ Evidence Based on Data Gathered:

Waste in surface water, failed treatment plant

Grid does not reach most people, grid outages 50% or more

Landlord wont let go home if too dirty

Burns, infections, injuries/deaths from waste or heavy equipment

Loss of work due to sickness (50% time)

1200 children working in dump

Desire of the mother's coop to send their children to school

Worker earning potential is higher with collaboration

No storage allows gathered recyclables to be stolen

Middlemen take recyclables & do not pay or pay on time

Most mothers use cookstoves not operating on gas

□ Existing Involvement with Supportive Stakeholders:

Schools/community operator (feasibility study, interviews, IEE)

Women's coop (collaboration and standardizations)

Student Chapter (service learning)

International labor standardization bodies (SA8000)

Economic sustainability is demonstrated by Waste Concern



Adopting Self-Empowerment

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- Resource Sharing and Peer Learning
- Inducing Demand for Underutilized Resources
- Co-op Development and Vocational Training
- Mutual Community Ownership of Project
- Global Collaboration and Mutual Interaction



Innovation and the Perception of Waste

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- **Family Centric Waste Logistics Design:**
 - Minimize Travel, **Shared Deposit Storage**, Safe Conditions & **Buffered Recycling**
- **Shared Scalable Energy Resources**
 - **Renewable Resource Oriented Development**
 - Thermal electric, biodigestion, fermentation, distribution, storage, generation
- **Hybrid Fair Trade:** Connecting Local & International
 - Upcycling, Composting, Shared co-op & Agriculture
 - Training, Skill Mentoring & Appropriate Technology
- **Renewable Water Access:**
 - Water Capture & **Water Purification to Energy**
- **Partner Collaboration Systems**
 - **Demand/Supply Text Alerts** and Resource Matching
 - Collaborative Supply Chain



A Holistic Solution

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Non-utilized
waste



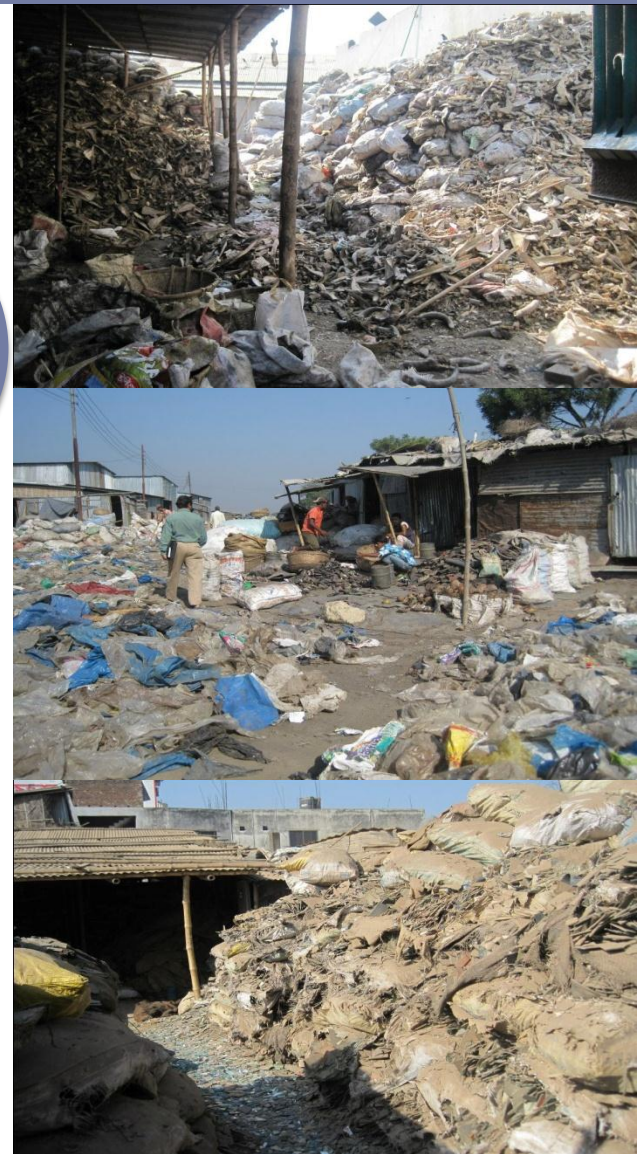
Affordable,
proven
technologies



Our
community-
based
model and
resources

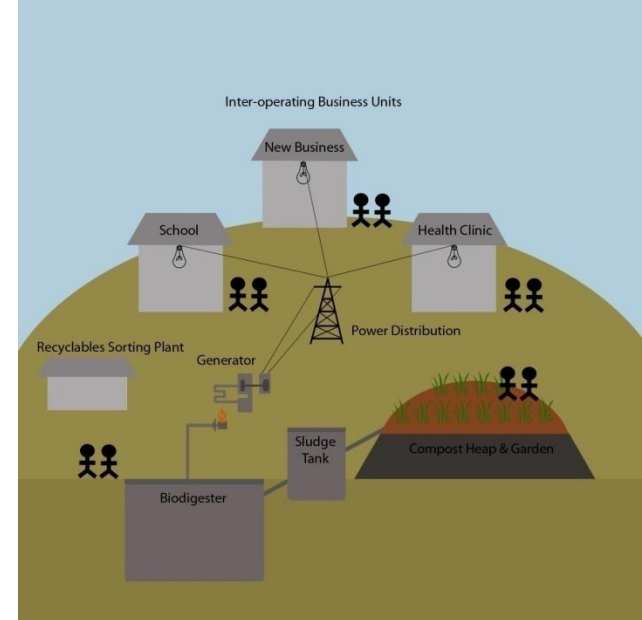
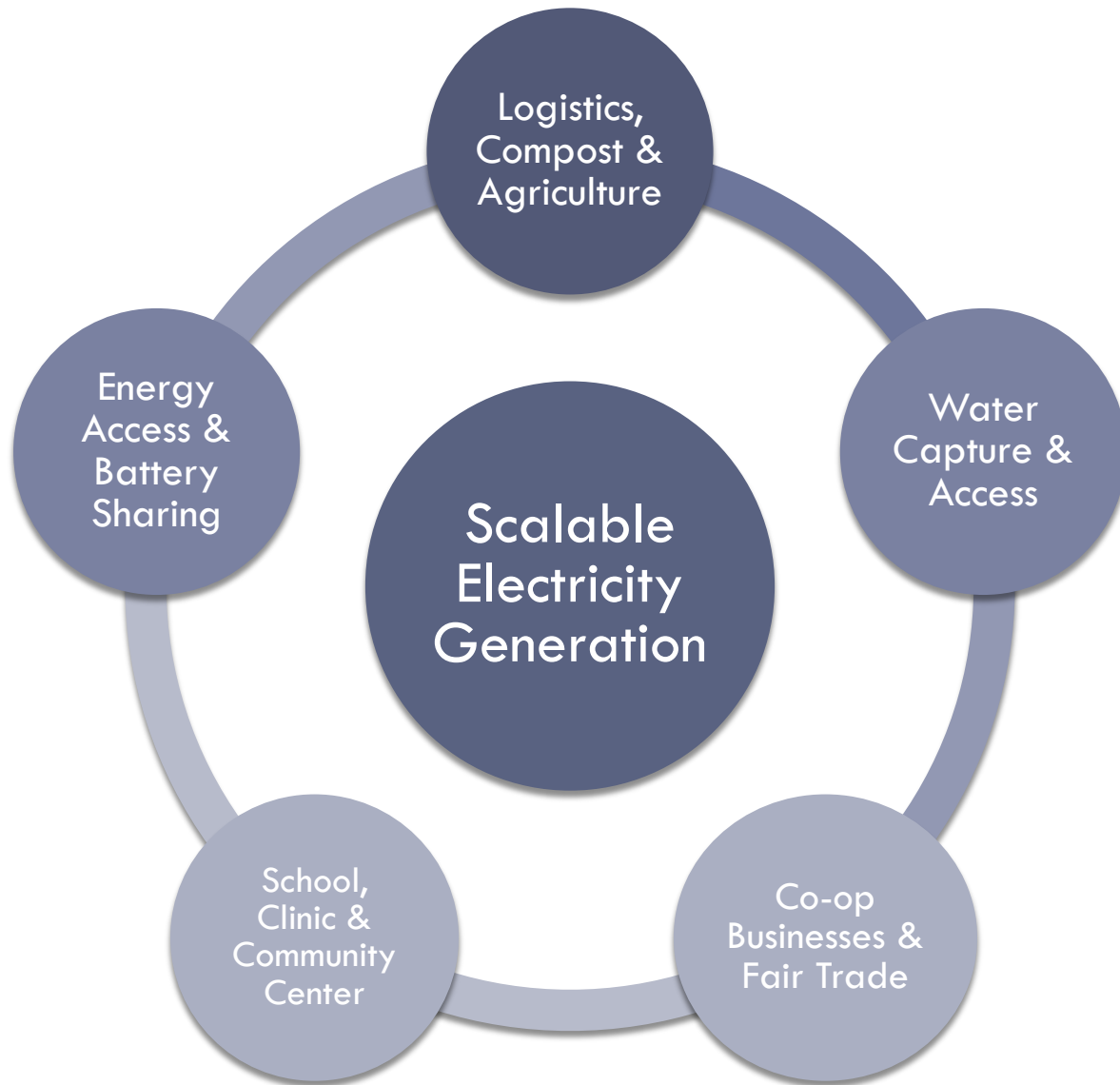


Electricity
and a host
of offshoot
businesses



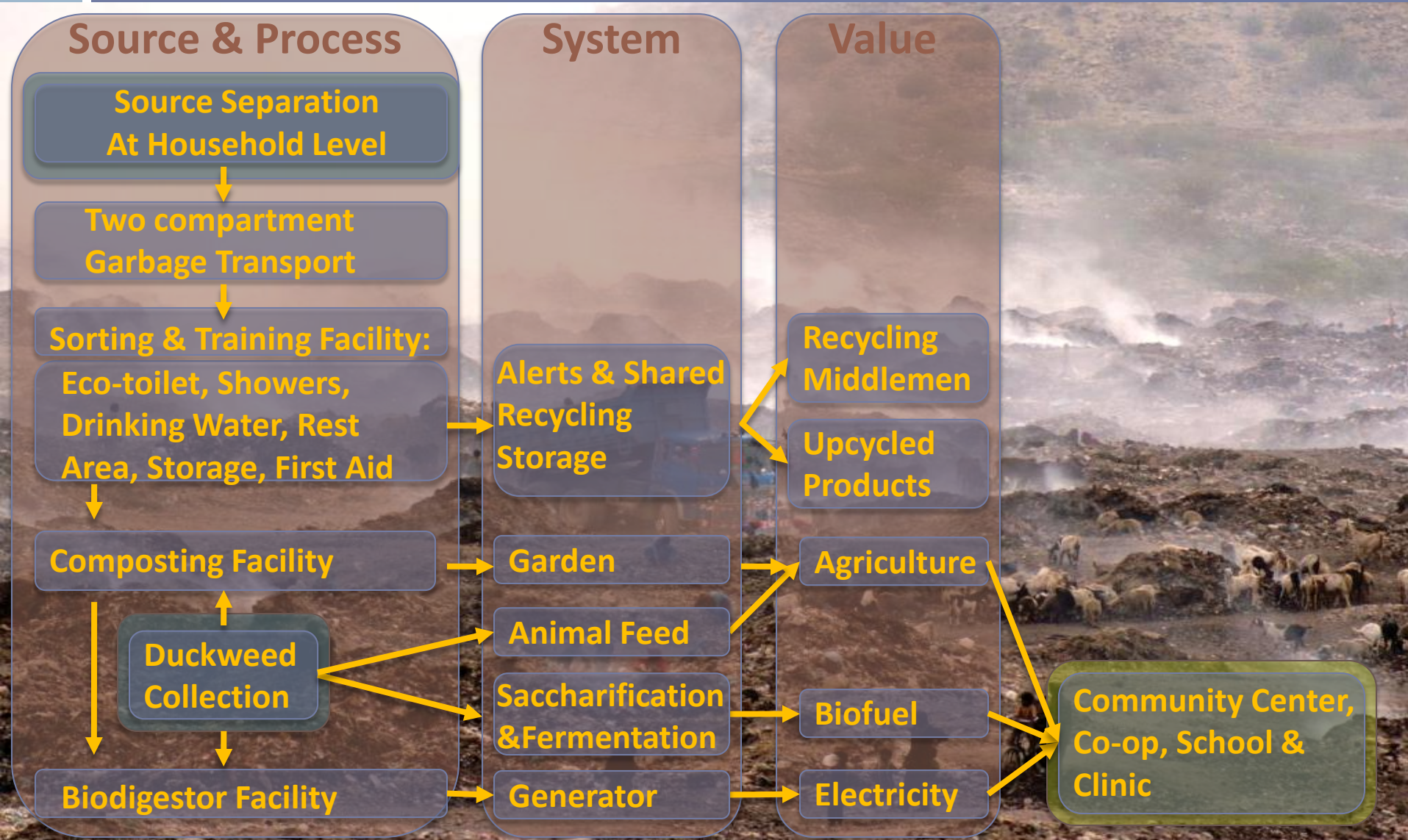
Waste to Opportunity Centric

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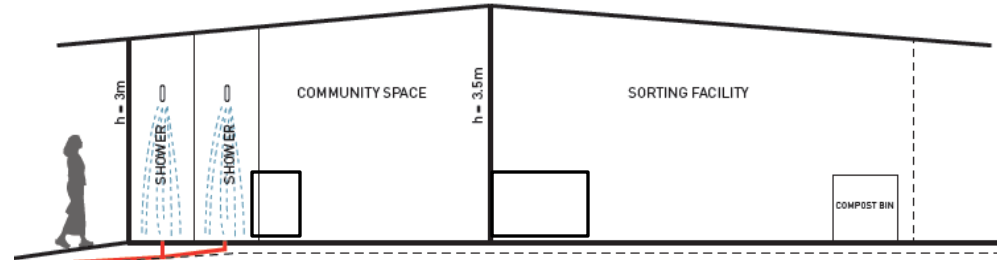
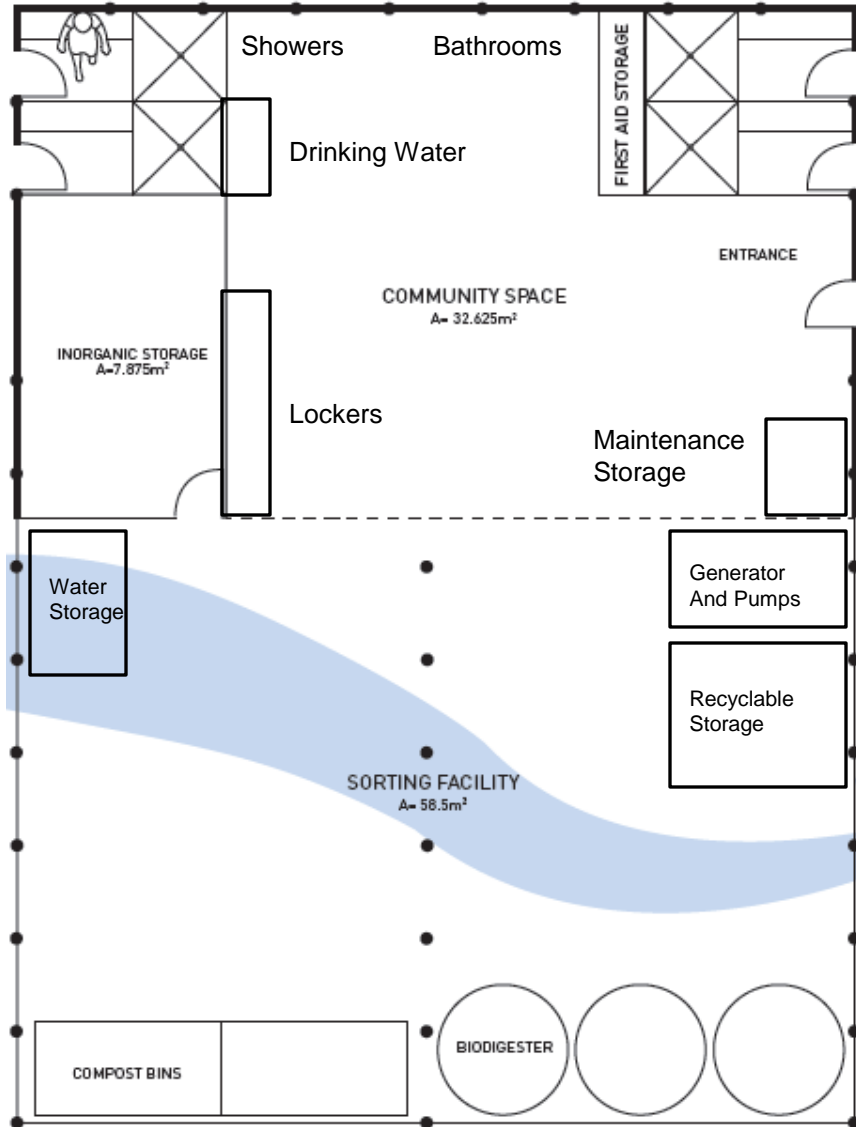
Community Guided Solutions

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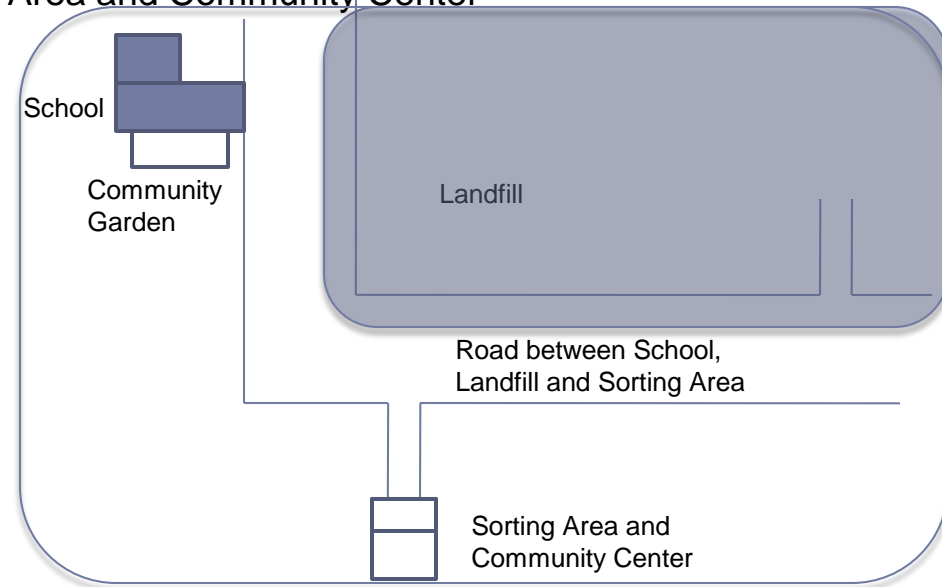
Sorting Facility and Community Center

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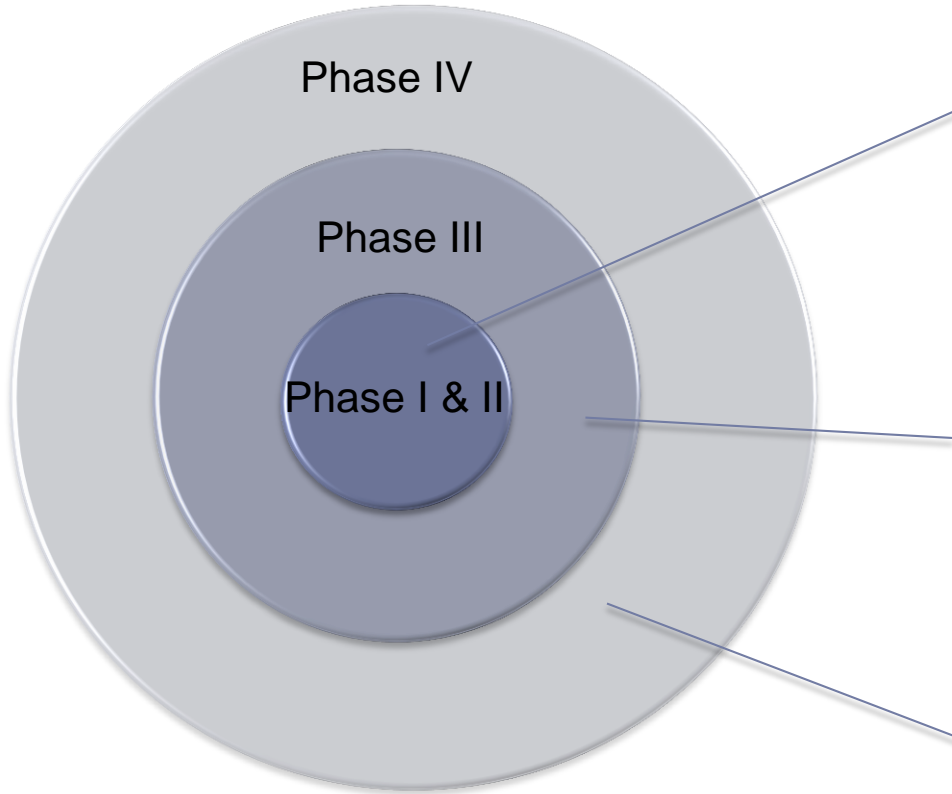
Lot size is 50 feet X 65 feet = 3250 sq. feet
 Approximately 500ft from both the school and the landfill

Community Garden and Vocational Training Can Occur at the School. This is shown below in relation to the Sorting Area and Community Center



Project Bangladesh Plan & Market Analysis

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Product	Customer
School & medical supplies	School, Health Clinic, Community Center
Compost Bins & Community garden	On-site Agriculture, Community, Nearby City
Upcycled Goods, Recyclables & Storage	On-site Vendor, Nearby City
Fair Trade Goods	Fair Trade Partners and contractors
Food & Water	School, Clinic, Locals
Vocational Education & Peer Learning	On-site Waste-Picker, School
Surveys	Community, Government
Product	Customer
Energy from waste/ Electricity/ Batteries	School, On-site Community
Sorting Facility, alerts & Deposit Tracking	Waste-picker, waste drivers, middle men, and partners
Bathrooms, Showers, Co-op Development	On-site Community
Product	Customer
Electricity and Fuel	Municipal Grid and Community
Community Development	On-site community

Co-op Model

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Startup
Funds



Community
Businesses



Employee Compensation

Fixed Wages

Co-op
Shares



Co-op Shares

Challenges

Resource
Competition

Surrounding
Community
Buy-In

Theft and
Corruption

Competitive Advantage

Community Connections

Team and Partnerships

Pioneering opportunity

Low startup costs

Clear social impact

Financially sustainable
model

Partnerships with experts

Scalability

Repeatability

Community Uptake

A Summary of Metrics for Success

People

School attendance:

school capacity, computers, communications and vocational training

Healthcare access:

Co-op food, drinking, water, clinic access and capacity

Electricity, Sanitation and Water Access for Community:

Access to safety gear, safe working environment, bathrooms, showers, cell phones and lighted households.

Community Wages:

mean wages, source diversity, wealth preservation resources and co-op business development resources

Subjective well-being:

Reduce child labor, Increase proximity to children, reduction of required travel, reduction of time spent in dump, reported satisfaction

Work Effectiveness: Increased collaboration, Supply/demand awareness, storage, scale pricing and reduce theft

Planet

Unused landfill waste:

mass of unused waste

Greenhouse gas emissions:

volume of released methane and carbon

Enhanced rate and efficiency of recycling processes

Profit

Revenue Goal:

Recover startup in 4 years

Co-op Goal:

Community Shares Distributed, Begin co-op business development



Team and Partnerships

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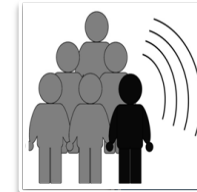
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- Registered 501(c)3 non-profit in NJ with subsidiaries across the country
- Over 100 team members, primarily from Princeton, NJIT Rutgers and other Universities
- Winners of 4 business plan competitions (total prize money \$17k)
- Recognition and awards from organizations like the Clinton Global Initiative and the United Nation Foundation



Global Partners

- Bangladesh
 - GUC
 - Mothers Co-op
 - GIZ
 - D-Net
 - BRAC
 - Emergence Bio-energy
 - City Corporation of Dhaka
 - Ministry of Energy
 - Prokritee
- Pakistan
 - Al-Khair Welfare Society
- Cambodia
 - People Improvement Organization



Professional Partnerships

- Princeton University
- Rutgers University
- SCS Engineering
- McGee Environmental
- IGERT
- Waste Concern
- Rutgers EcoComplex
- Marlow Industries
- Infinia Corporation
- Warm Heart
- International Lemna Association
- Renewing Roots
- BYOB Earth
- Masons on a Mission
- Engineers Without Borders
- Insight Access
- Formal Internships available to students
- Wishwas

Landfill Slums: A Worldwide Problem

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Other Active Projects: Karachi Pakistan | Phnom Penh Cambodia | San Paulo Brazil

For More Information

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