

Sanivation

Emily Woods Co-Founder/CTO

World Water Week

August 31, 2017

“Solid fuel from sludge:
Resource recovery worth getting heated about”

The Problem

Market failure.



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The Problem

Market failure.

95%



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The Problem

Market failure.

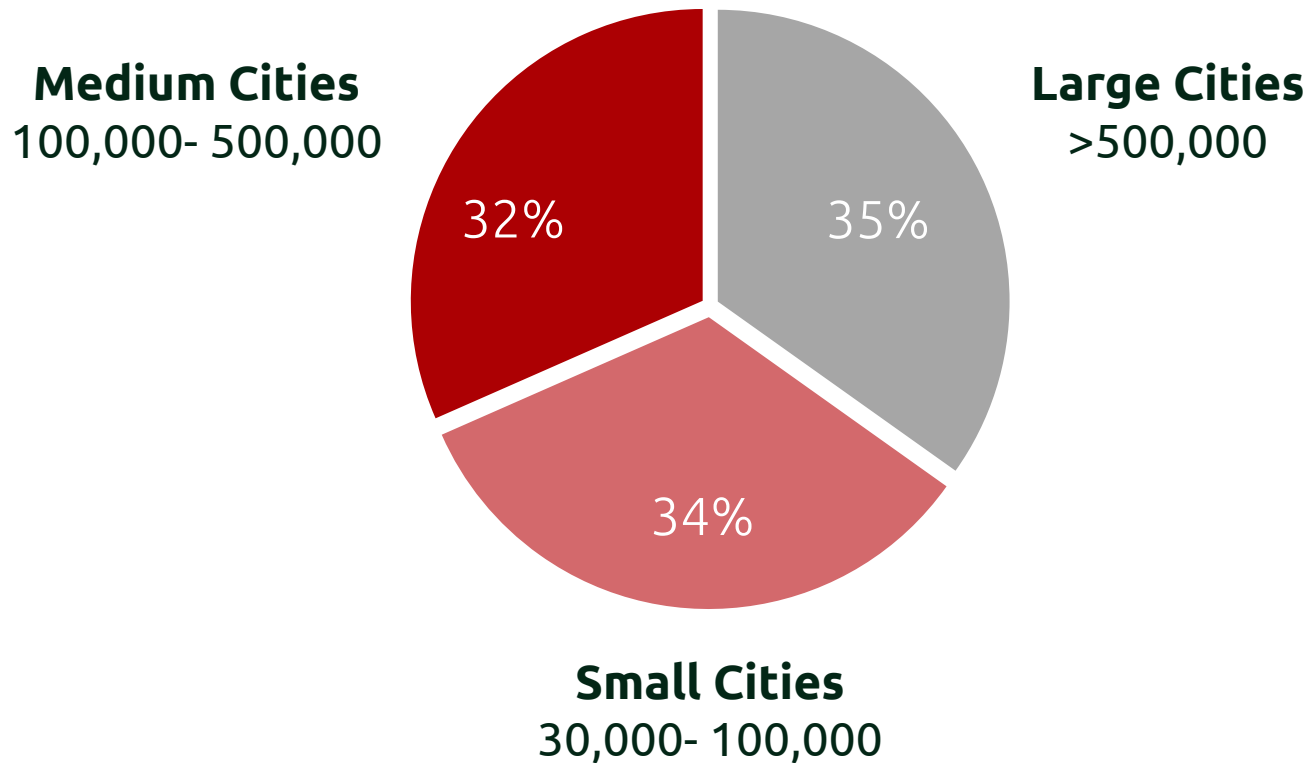
95%

\$1.4 billion

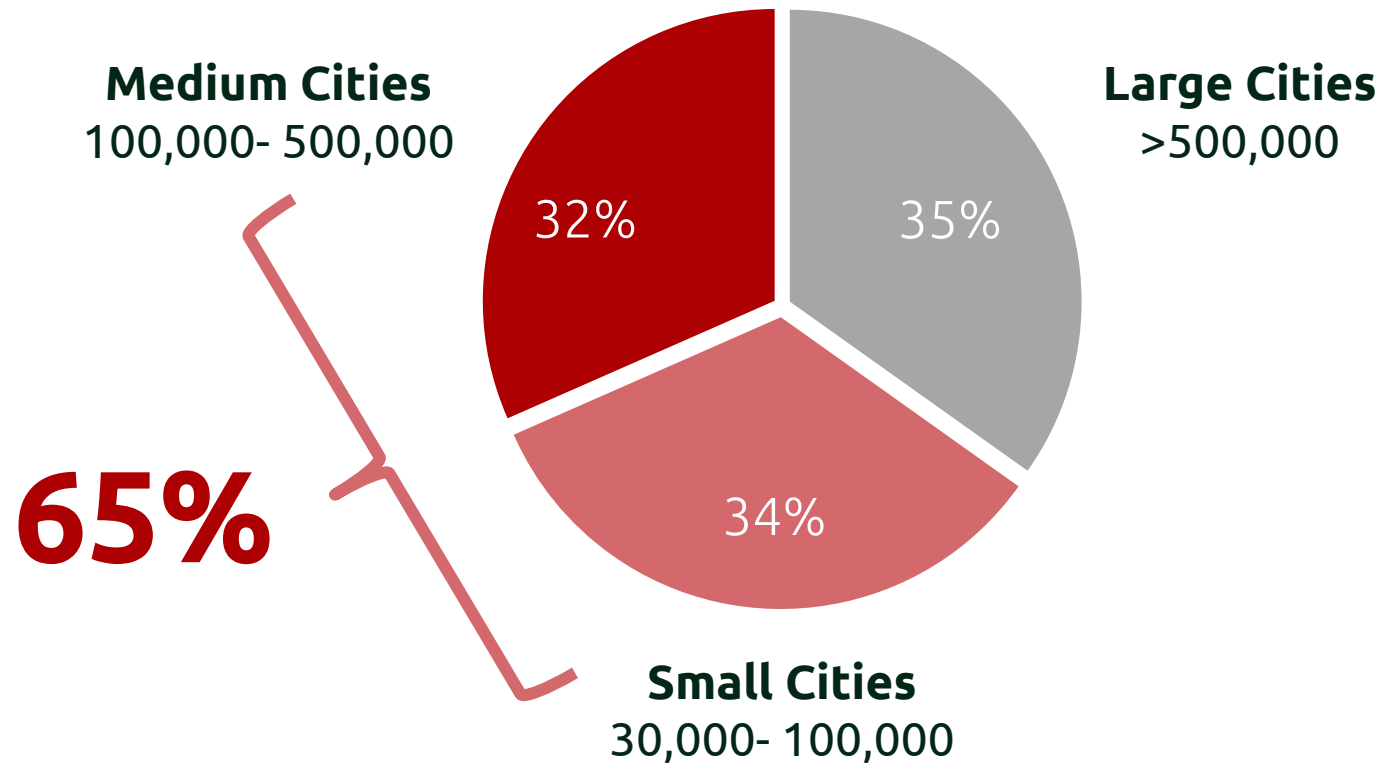


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Kenya's Urban Population



Kenya's Urban Population



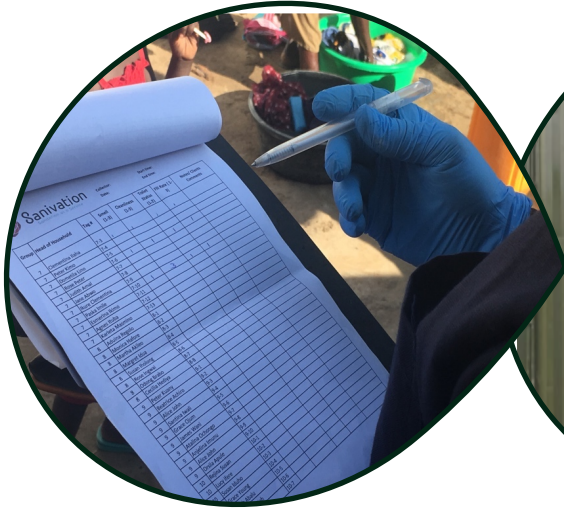
The 2030 Urban Kenya Landscape

SDG: 100% of waste safely managed



Sanivation's Model for the other 60%

City planning to increase
waste collection



Waste treatment
factories

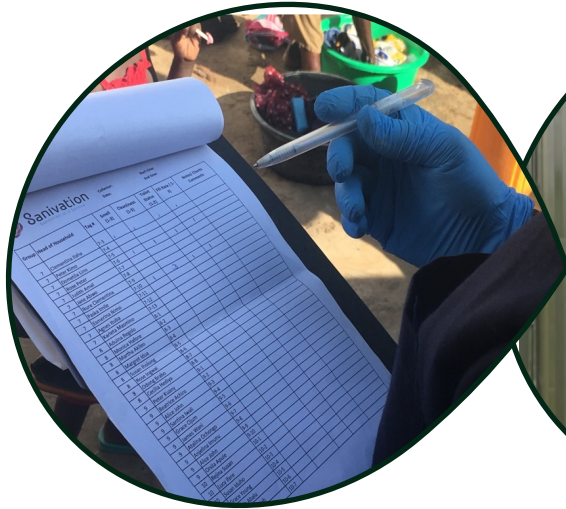


Charcoal
briquettes



Sanivation's Model for the other 60%

City planning to increase waste collection



Waste treatment factories



Charcoal briquettes



| | | | |
|--|---------------------|-------------------|--------------------------------------|
| Signed partnership with local government 2017 | Factory Size | Net Margin | Net margin enables project financing |
| | 60,000 ppl | 13% | |

Why Charcoal Briquettes?

Potential of Other Reuse Products

| | Reuse Product | Monthly Revenue from 600 tons FS |
|---------------------------|--|----------------------------------|
| Current Fuel | Charcoal Briquettes | \$140,000 |
| Solid Fuels | Uncarbonized Industrial Briquettes (Sawdust + Dried Feces) | \$40,000 |
| | Carbonized Biomass + Feces Binder (Carbonising cost \$75/ton) | \$140,000 |
| | Dried Feces Fuel | \$2,500 |
| Non-Solid Energy Products | Biogas to Electricity (selling electricity at end consumer price) | \$2,000 |
| | Biogas To Electricity with Food Waste (selling electricity at end consumer price) | \$8,000 |
| | Biogas to Compressed Gas (Selling at equivalent price to LPG) | \$3,000 |
| | Biogas to Compressed Gas with Food Waste (Selling at equivalent price to LPG) | \$30,000 |
| | VIP to Electricity (steam engine to electricity at end consumer price) | \$4,000 |
| | VIP with Feces and Biomass (steam engine to electricity at end consumer price with 95% Biomass) | \$70,000 |
| Non-Fuel Products | BSFL | \$30,000 |
| | Compost | \$16,000 |



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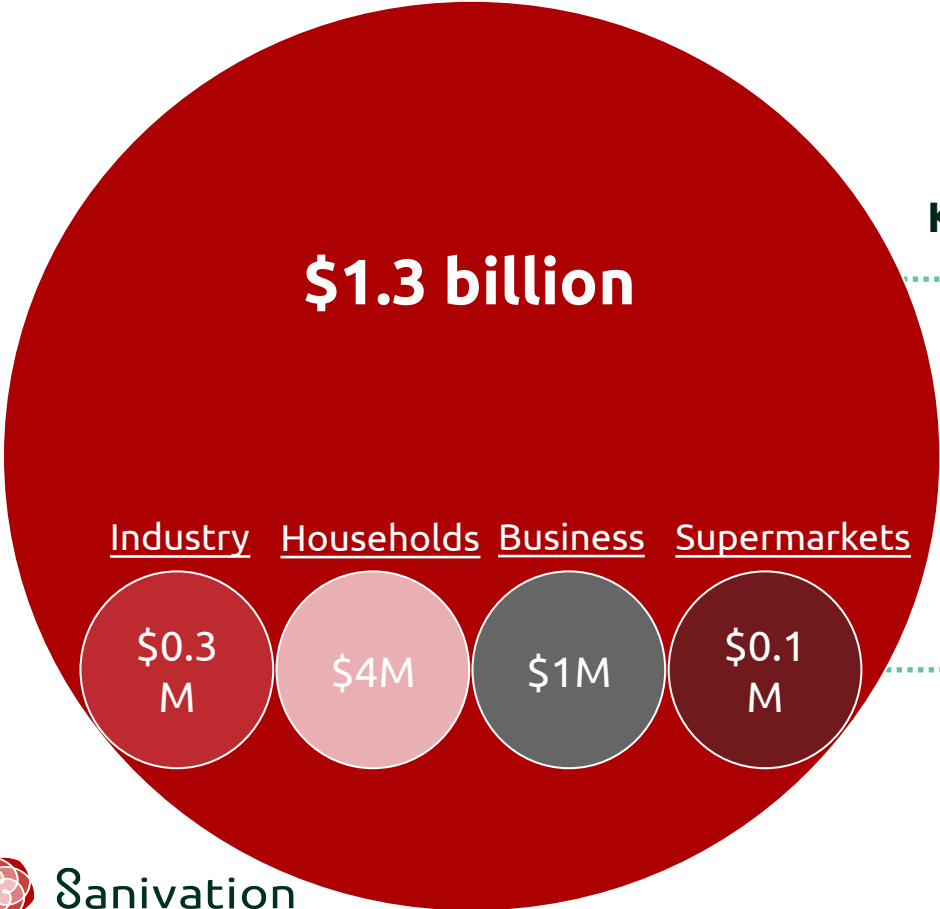


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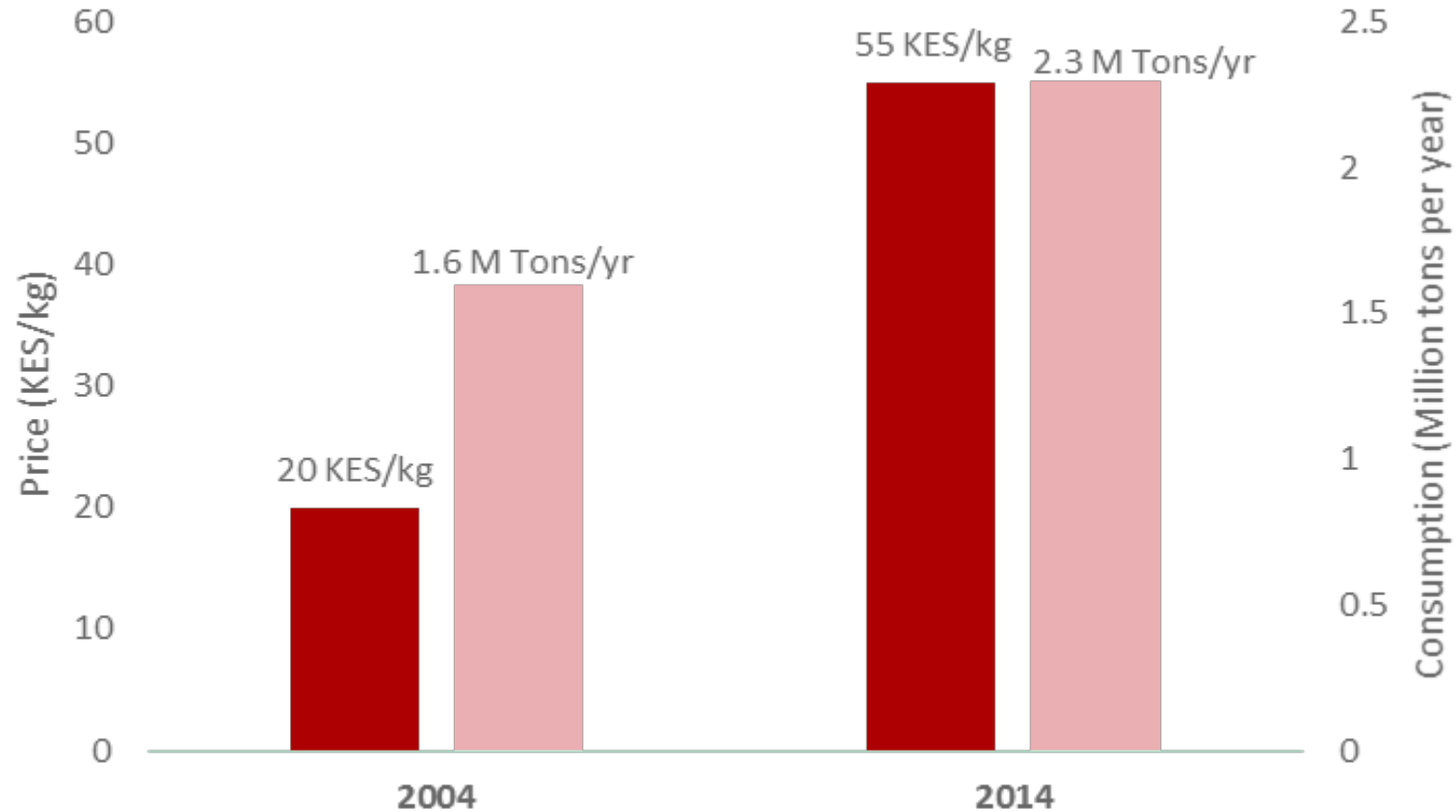
Charcoal Market



Kenyan Charcoal Market

Naivasha Briquette Market (Local)

Charcoal Demand in Kenya





Charcoal Briquettes

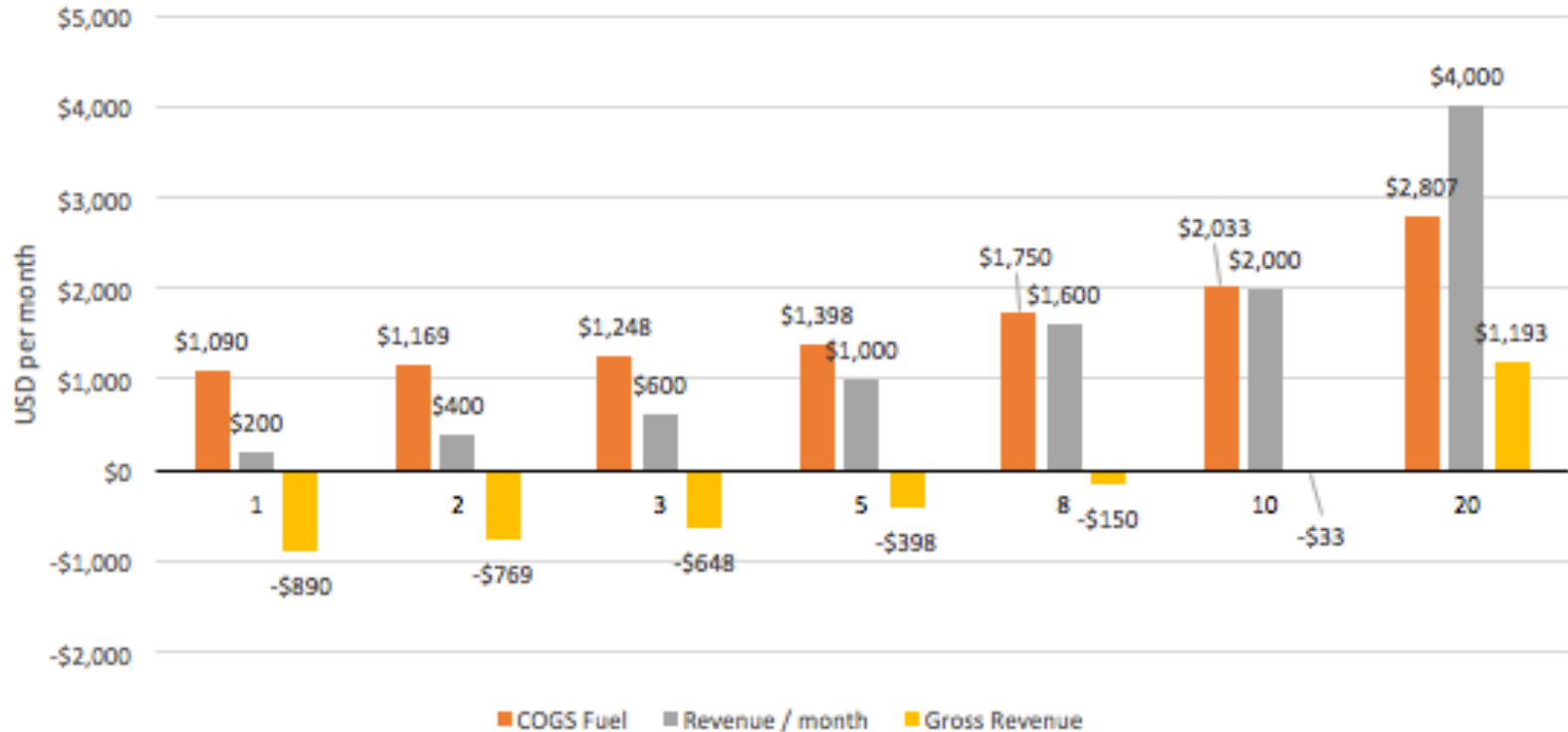
Why are we confident?

Our Current Factories



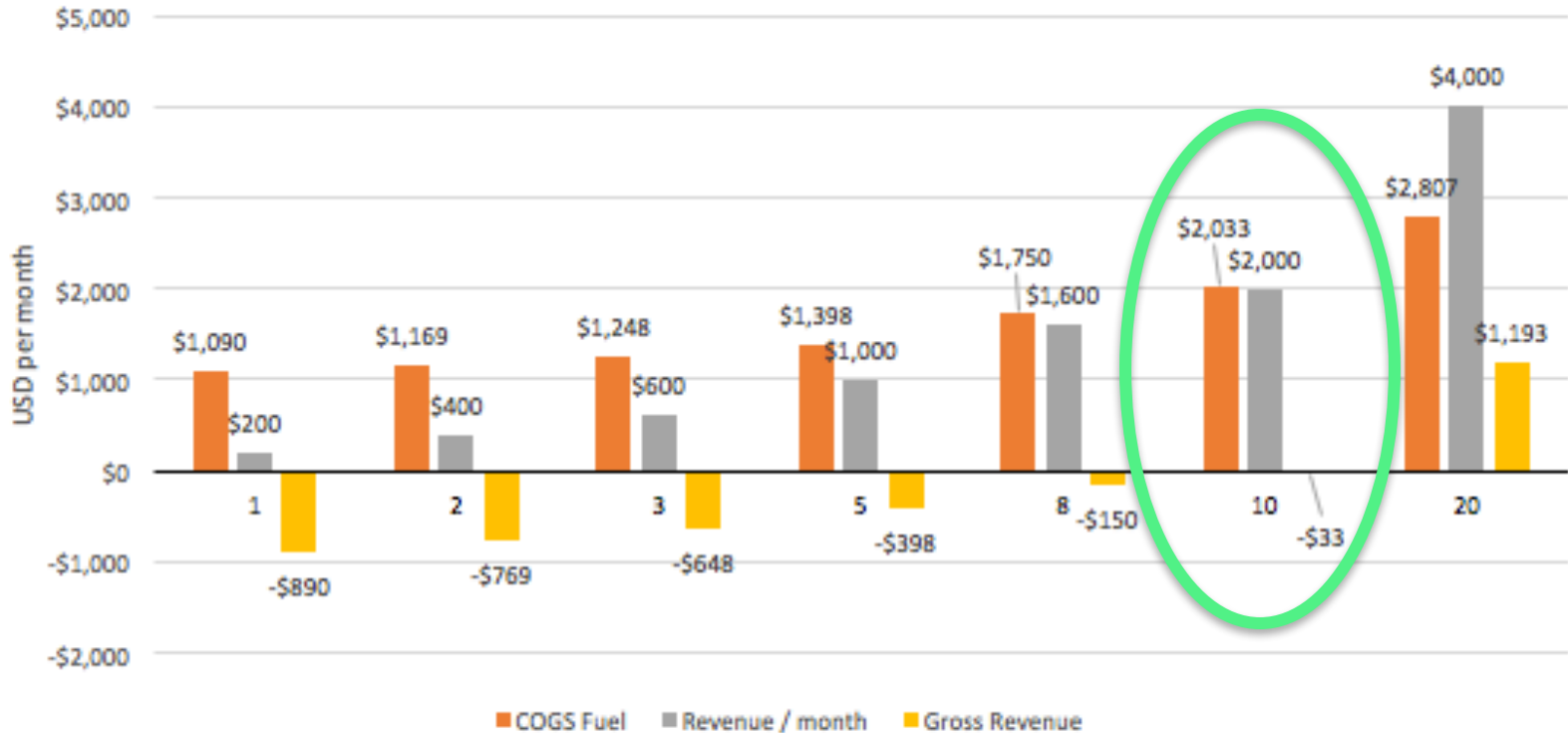
2016 Financials: Naivasha

Gross Margin of Feces Briquette Production



2016 Financials: Naivasha

Gross Margin of Feces Briquette Production



Sales Market Segments

Supermarkets



Local Households



Restaurants



Chicken Farms





SUSTAINABLE CHARCOAL SUBSTITUTE

EcoFlame[™] briquettes are the ideal fuel for:

Space Heating & Ambience

Warming Food & Water

Cooking & Grilling

Dependable

Produced consistently in
Naivasha for over 3 years

Eco-Friendly

Made from recycled waste
products without killing trees

High-Performance

Last longer and burn cleaner
than any other solid fuel

ECO FLAME 

CHARCOAL BRIQUETTES



MAKAA YA JAMII

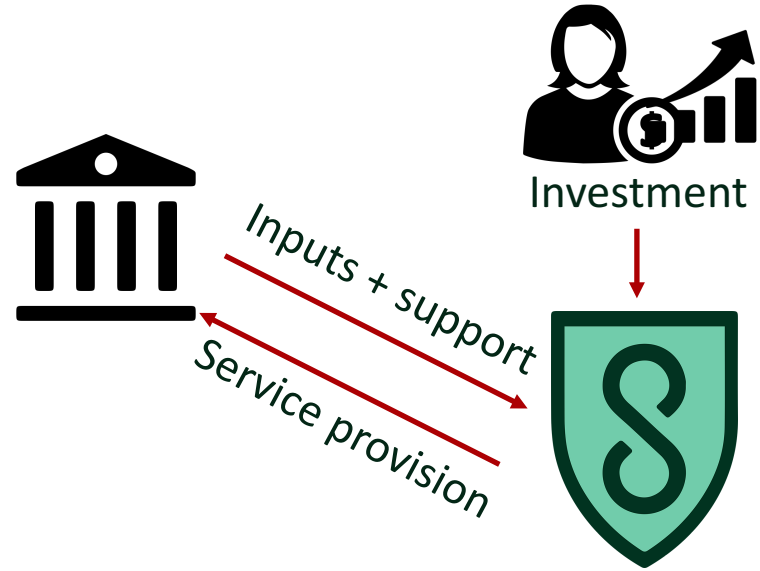
FROM ECO FLAME

75% of charcoal
market

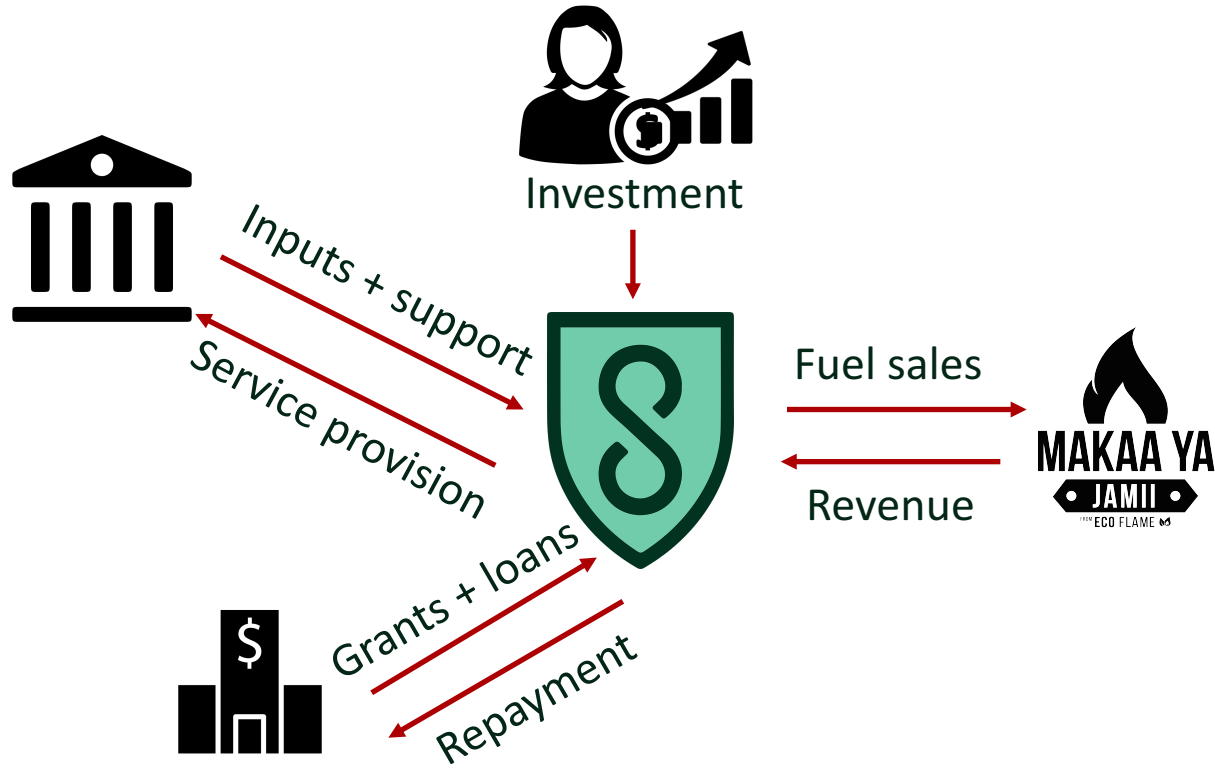


What's next?

New Factories

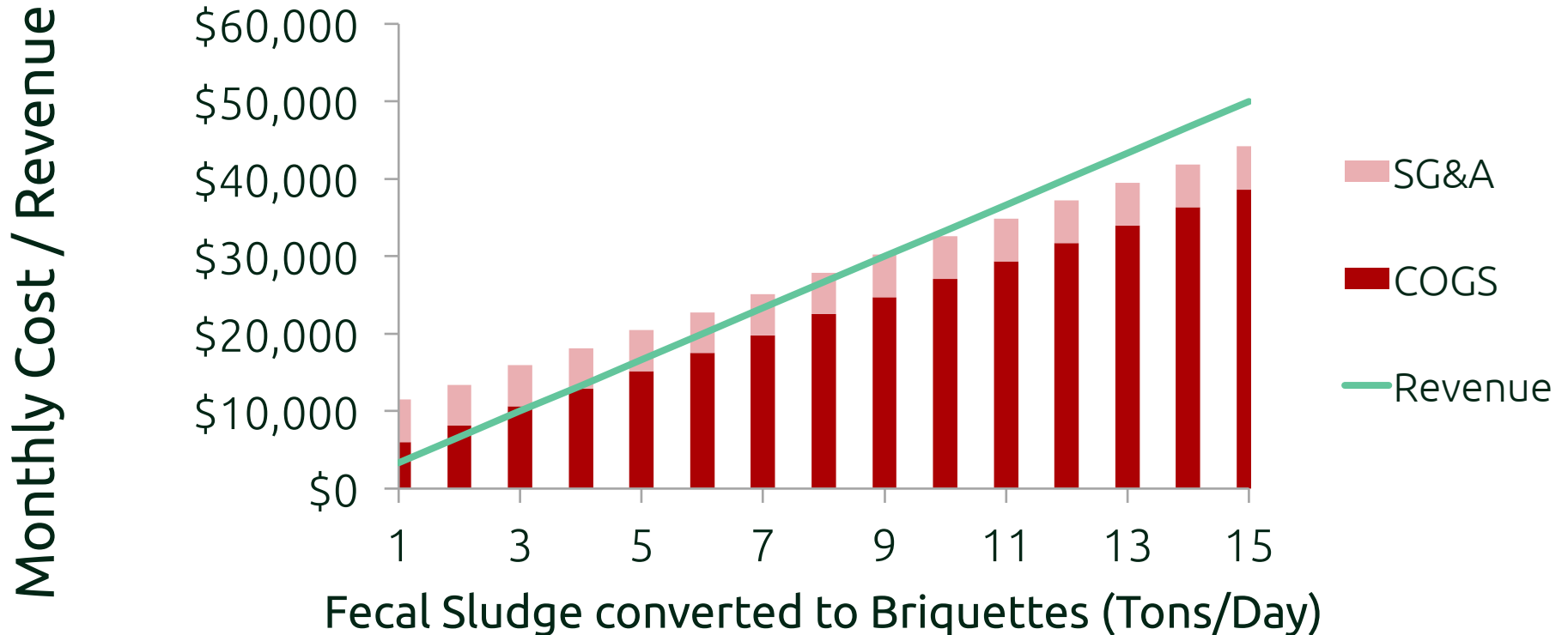


New Factories

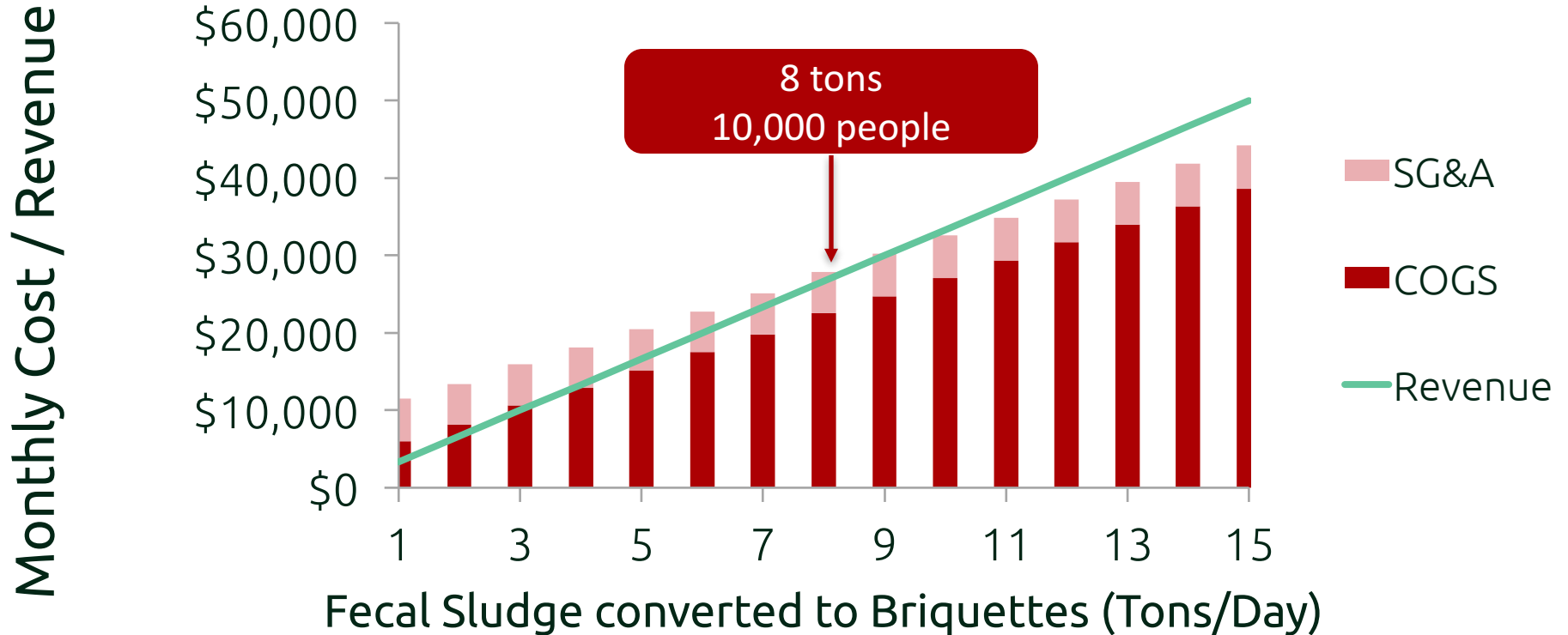


New Factory in Naivasha Town

FSTP Break Even Unit Economics

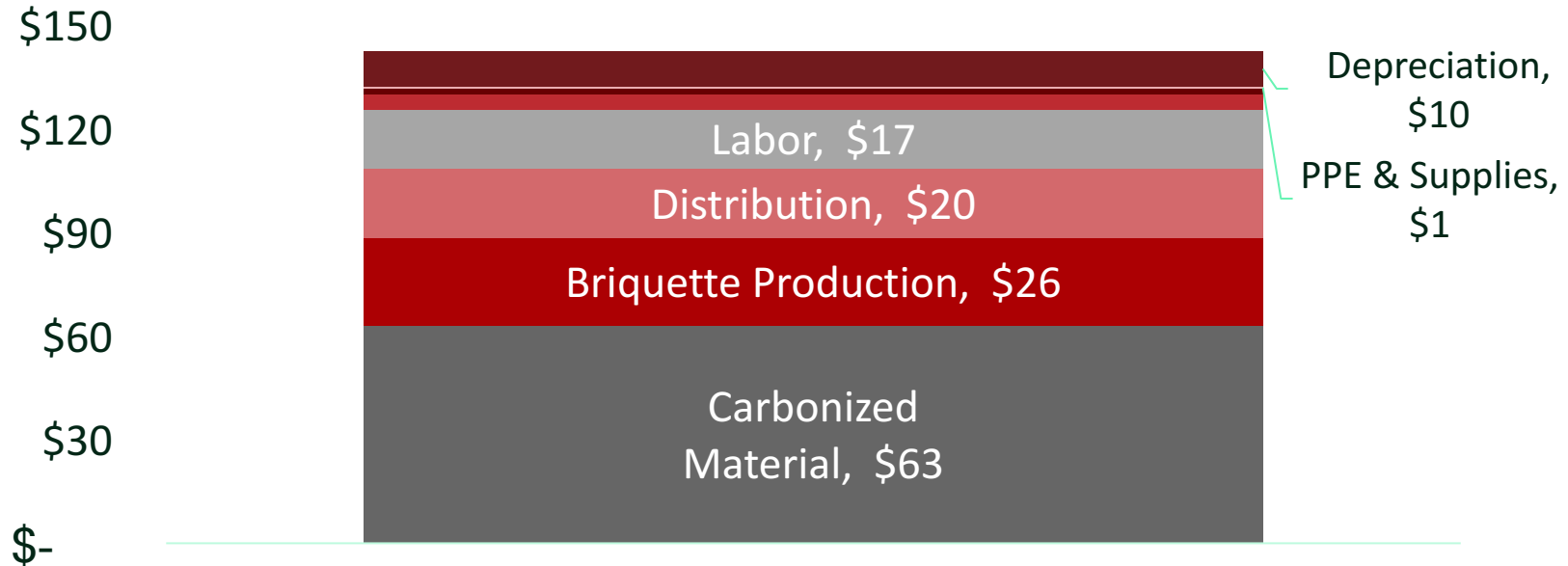


New Factory in Naivasha Town



COGS at 100 tons/month

\$142

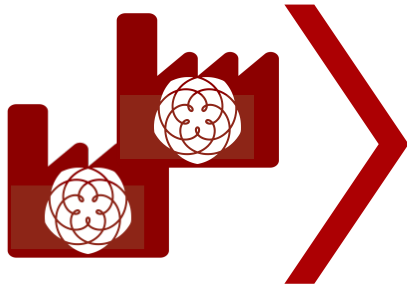


Scale Plan

2018-2019

2020+

Showcase
bankability



Scale Plan

2018-2019

2020+

Showcase
bankability

Finance
\$2B+



Scale Plan

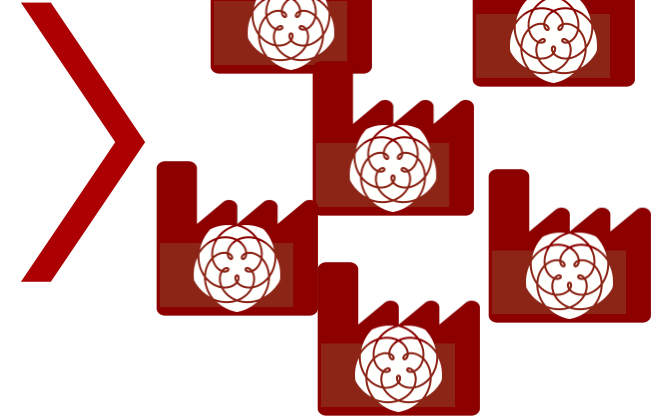
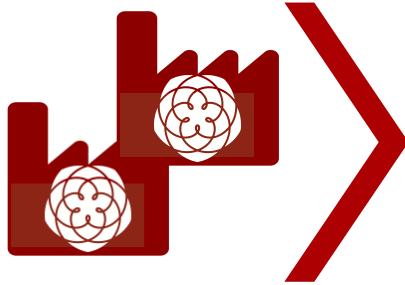
2018-2019

2020+

Showcase
bankability

Finance
\$2B+

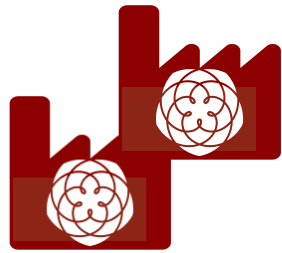
Replicate
with WSPs



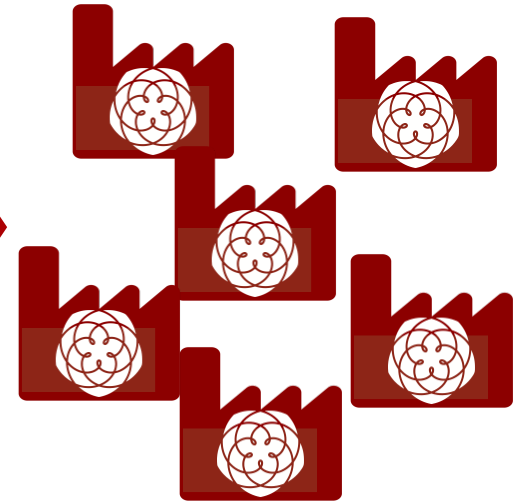
Scale Plan

2018-2019

2020+



1. Develop PPP mechanisms
2. Advocacy for on-site
3. Simple financing



Sanitation as a service

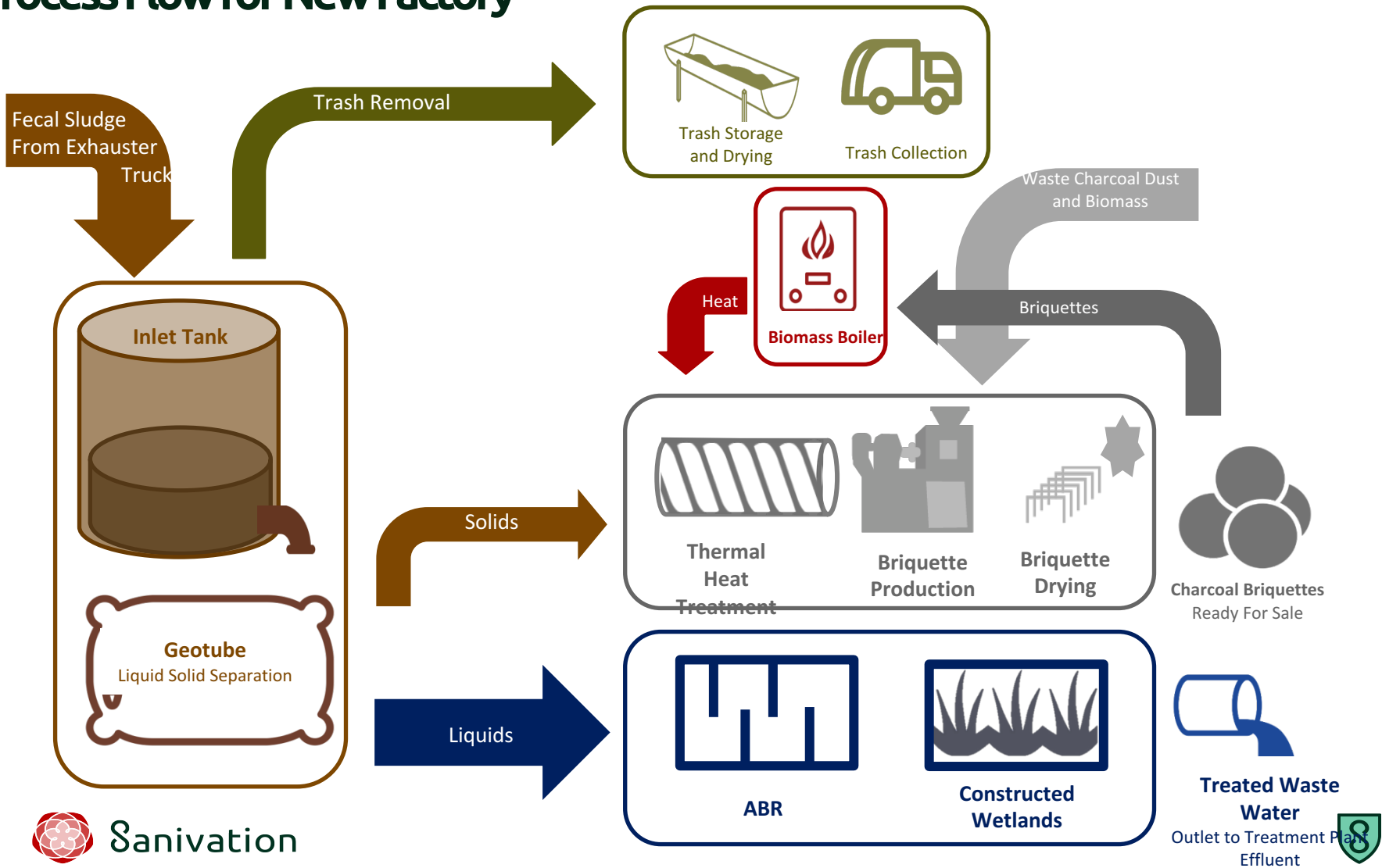
Have questions?

Contact

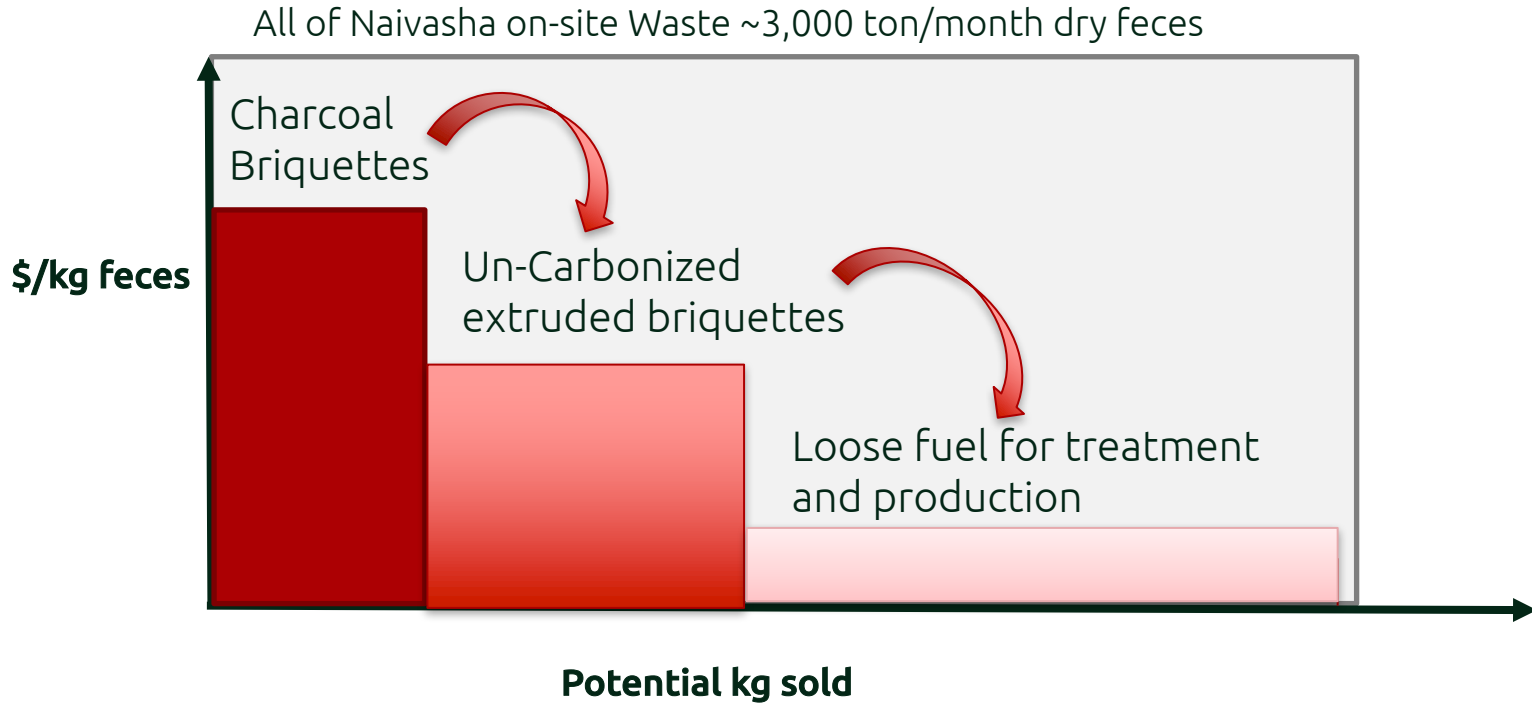
emily.woods@sanivation.com

Appendix

Process Flow for New Factory



Cascade Model



System dependant on Market

Local Charcoal Fuel Market Total Revenue (\$/year)
Total: \$6 Million

