

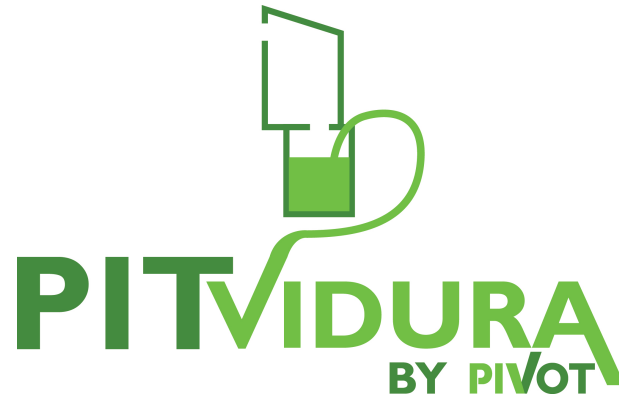


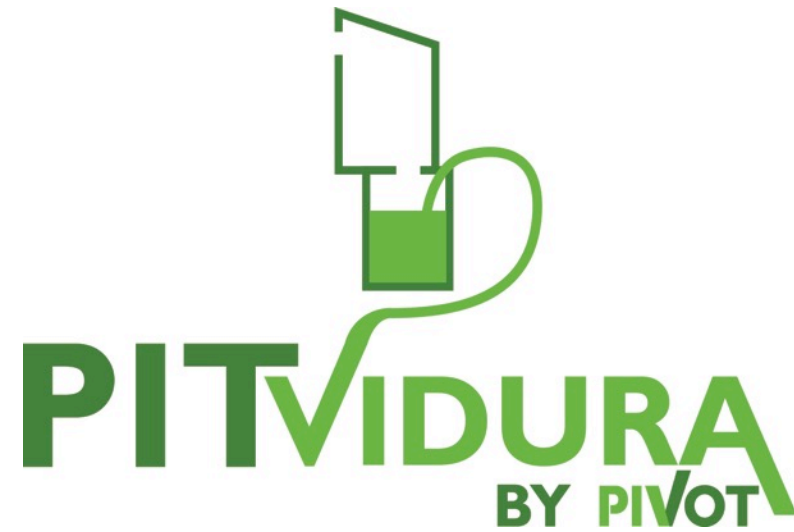
Pit Emptying Businesses to Facilitate City Scale FSM

Lessons from Kigali, Rwanda

Rachel Sklar

Laura Stupin, Nicola Greene, Ashley Muspratt





Maximize volume of Fecal Waste Managed
Minimize Cost and Human Exposure



Pit Vidura by the numbers

May 2016-Jan. 2017

- Households Served: **233**
- Average volume extracted/Pit: **1.5 m³**
- FS removed from communities: **350 m³**
- Current service price: **\$97 USD**



Most of Kigali uses pit latrines

- Population: 1,132,686
- No sewer system
- 67% of Kigali's residents live in dense unplanned settlements
- Majority of slum households use pit latrines
- When pits fill in dense areas, most commonly emptied using manual methods



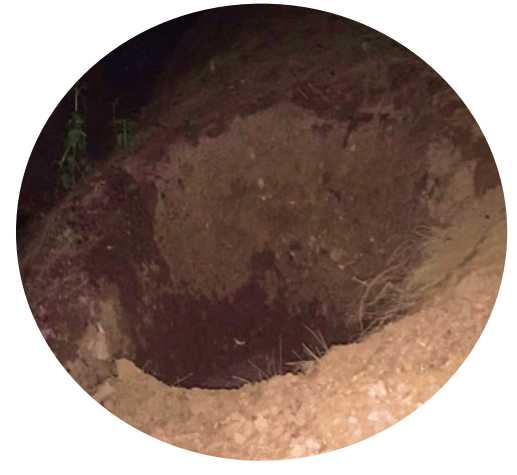
Manual Emptying compromises public and environmental health



Full Pit Latrine



Manual
Emptying

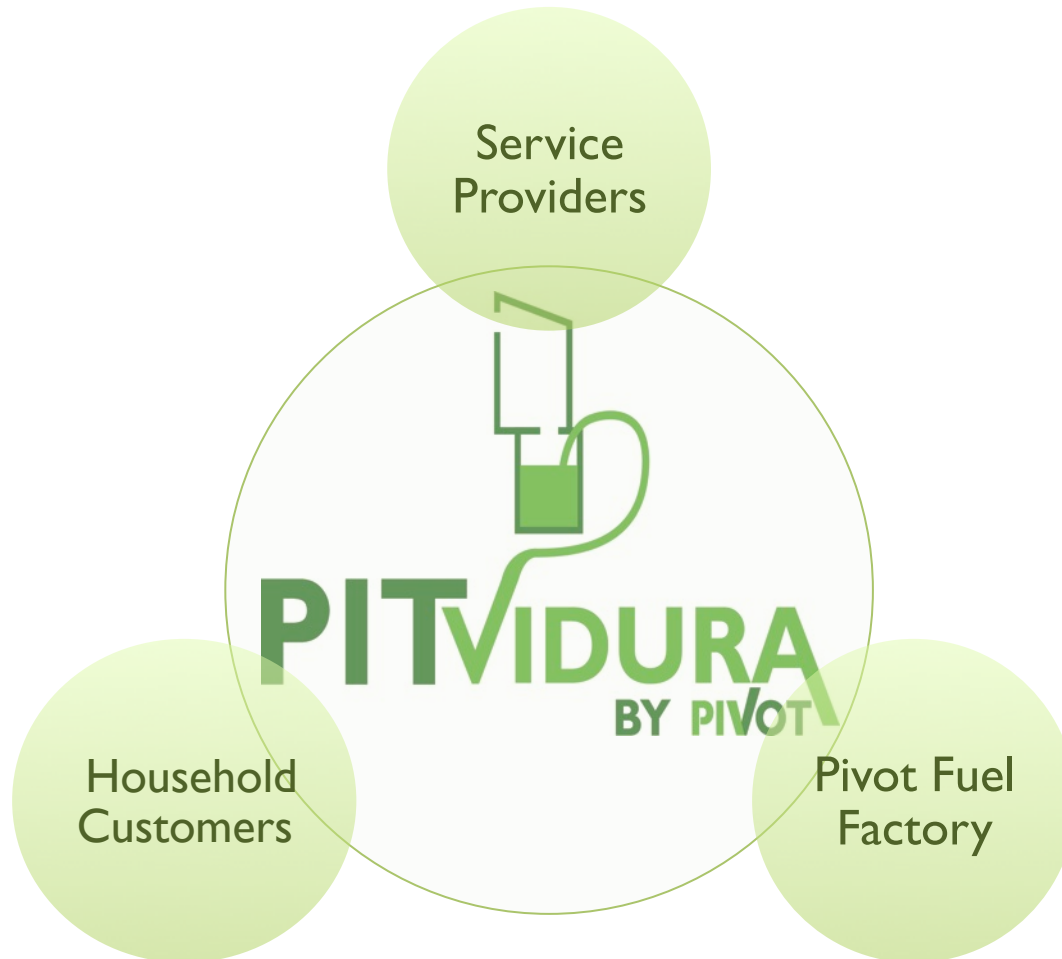


Disposal in Environment

Pit Vidura is an affordable and safe pit emptying service



Pit Vidura creates a win-win-win value proposition



Benefits to Customers Households

- Reliable emptying service at competitive prices
- Reduced diarrheal disease due to safe waste removal and disposal
- Social status and pride associated with using a modernized service



Benefits to Service Providers

Pit Emptiers

- Expansion of potential market via branding and marketing
- Steady supply of jobs
- Reduction in risk of occupational accidents and illnesses with use of improved tools and equipment
- Increased social status
- Legalization of business



Manual Emptying



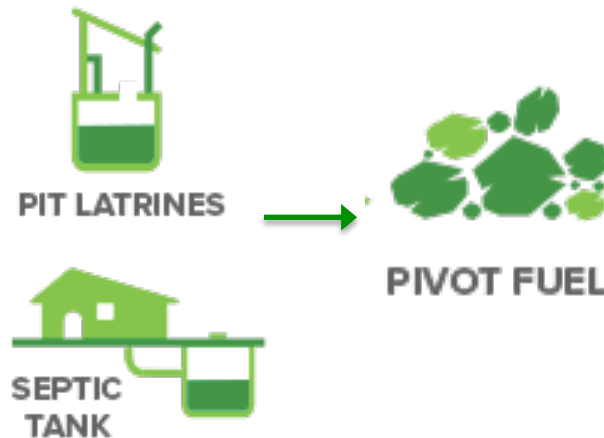
Pit Vidura

Benefits to Backend Users

Pivot Waste-to-Fuel Factory

- Access to a waste stream that will drive commercial viability
- Increased social and environmental impact

PIVOT



Pit Vidura operations are driven by data

- Data on logistics, location, customer attributes, and sludge quality informs
 - design and engineering of new tools
 - pricing strategy
 - marketing strategy
 - scale-up



Pit Vidura operations are focused on minimizing costs

- Goal: Break even on operational costs of emptying and transporting sludge to Pivot Works factory
- Bootstrap approach: operating revenue drives service design

Pit Vidura is focused on household, emptier, and backend user satisfaction

- Customer satisfaction surveys and service help line
- Focus groups with workers
- Monitor quality of sludge delivered to waste-to-fuel factory

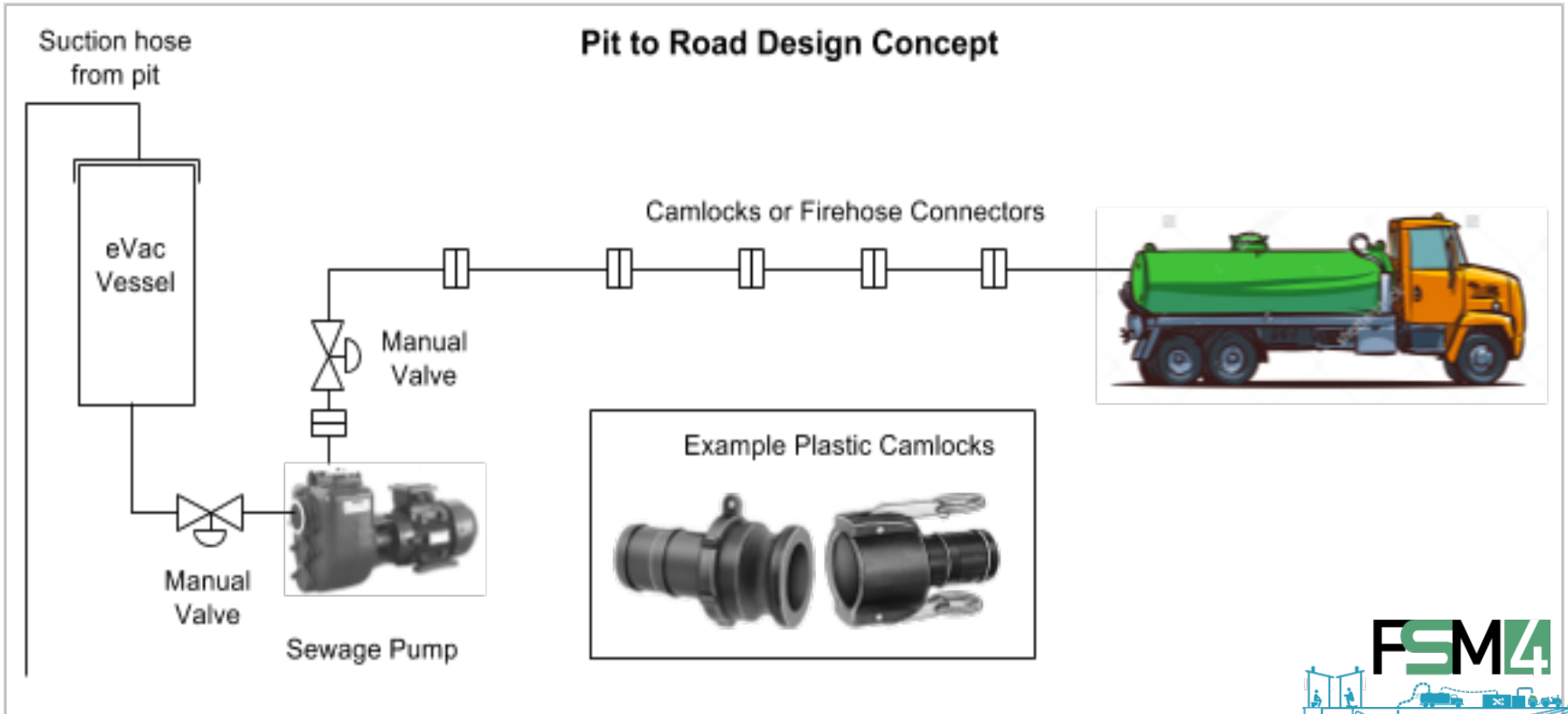
Emptying logistics are complicated by the topography...Land of a thousand hills!

- 45% of empties are uphill from pit to road
- 80% of empties have a pit to road distance >20 meters

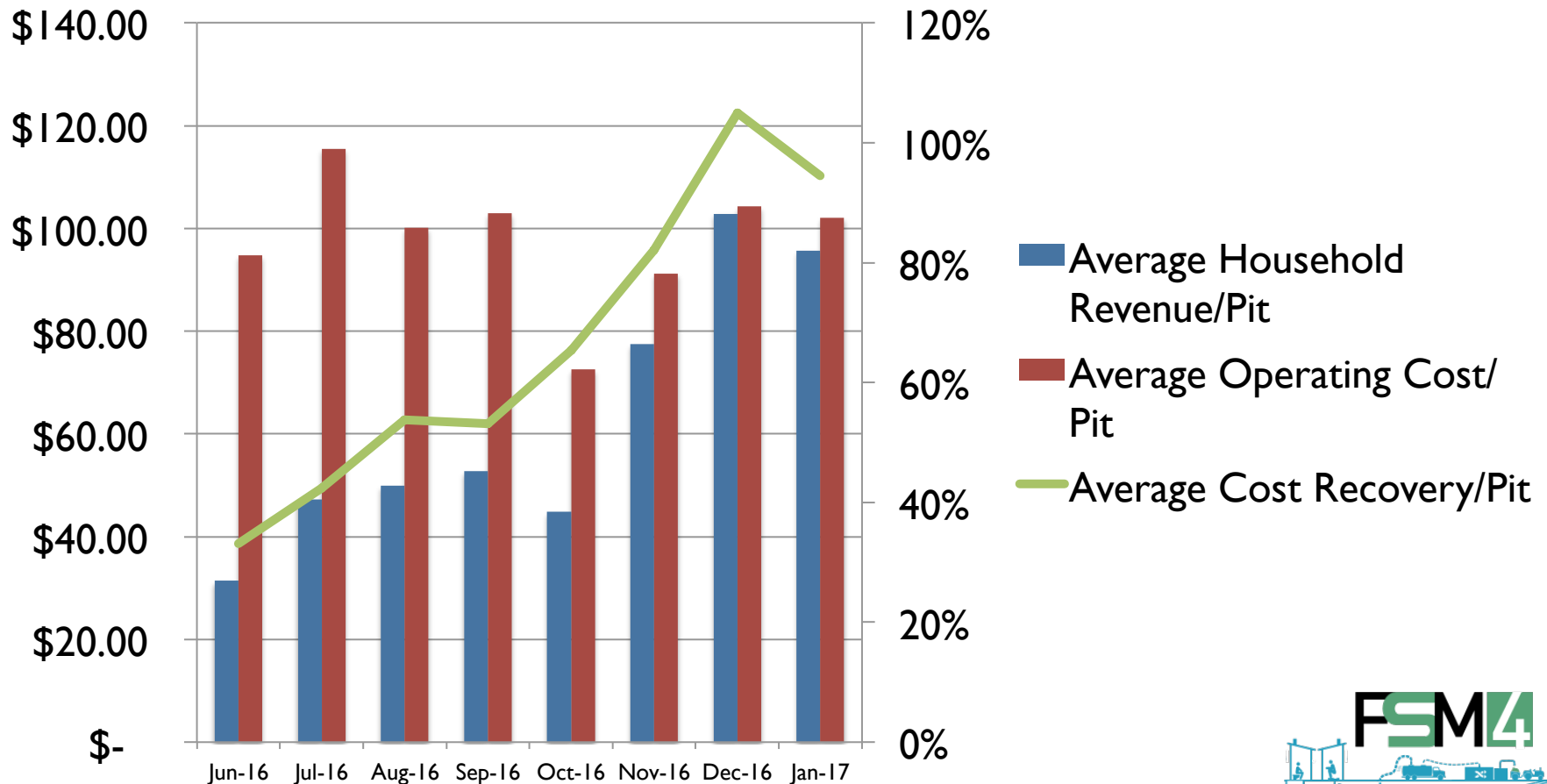




Work on a Pit-to-Road Pump that can speed up process, reduce labor, and increase pits emptied per day

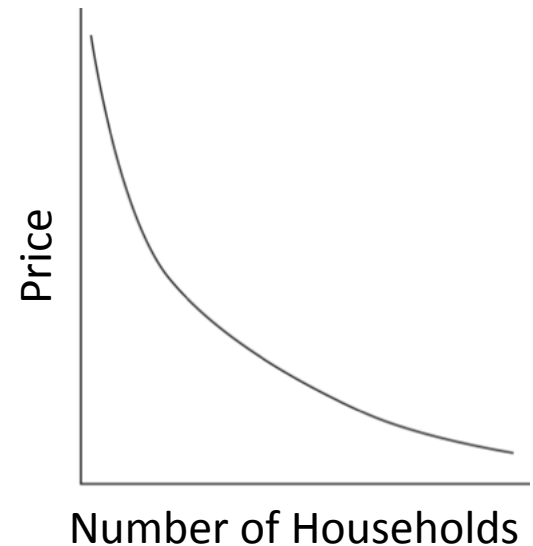


Cost Recovery is improving due to higher prices and more streamlined low touch marketing



Determining optimal pricing & targeted marketing strategies is key to scaling services

- Working with local marketing firm to refine a value proposition that speaks directly to target customer needs
- Determination of price elasticity and generation of demand curve via willingness-to-pay study



PIVOT



water for people

BILL & MELINDA
GATES foundation



UC Berkeley
School of
Public Health