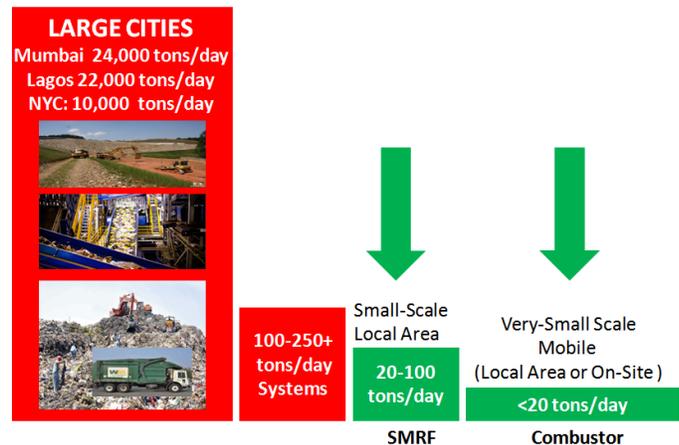


## THE SMALL/STARTER MATERIAL RECOVERY FACILITY (SMRF) EMPOWERMENT PROGRAM

### I. TARGET: SMALL CITIES (up to 250,000) WITHOUT FORMAL WASTE MANAGEMENT

Today, waste management in developing countries is challenging, even for large cities, as populations increase and “disposable” consumerism marches forward. For the most part, the largest cities are aggressively tackling their waste situation by incorporating large scale, often expensive modern waste collection, recycling and disposal systems with massive burden on local infrastructures, but still they face massive waste overflow issues



For smaller cities the problem is even bigger. There are hardly proven and affordable systems. As a result the vast majority do not even have minimal waste management. Shockingly, around 40% of all municipal waste in the world is openly burned or sent to unsanitary garbage dumps.

**Our target will be secondary/tertiary cities – with populations below 250,000 – in developing countries and for island archipelagos. These places have growing populations, too much waste, and limited or no waste collection/landfill infrastructure in place.**

### II. ESTABLISH SANITARY WASTE TREATMENT BY INSTALLING OUR SMALL/ STARTER MATERIAL RECOVERY FACILITY (SMRF)

Our Small/Starter Material Recovery Facility (“SMRF”) is a decentralized small-scale waste management facility that small cities use to collect, compost, recycle and dispose of waste within a specific self-contained area.

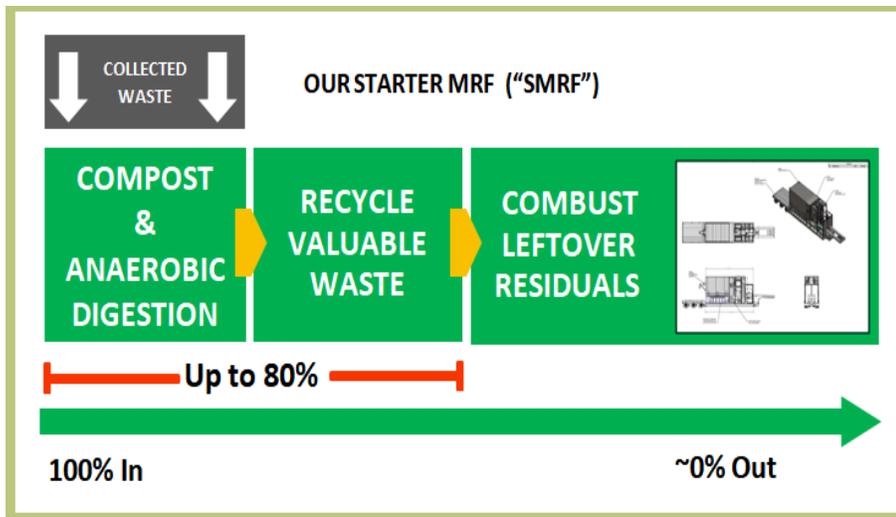
Within the facility, we combine a number of waste management technologies to efficiently treat both the organic waste streams of the local area and also the valuable recyclable waste.

The centerpiece of our system is a portable/containerized ultra-high temperature 1200C small-scale proprietary combustor. It allows us to treat the remaining inorganic household waste, such as plastics, while producing heat, and potentially electricity, if required.

Starting small, with waste intake only for the combustor, we tackle the most urgent problems first to work our way up the waste chain, which will optimize the SMRF, enabling us to handle up to 25,000 tons/annually of household waste cleanly and efficiently.

It's important to note that we are able to keep costs from escalating due to the nature of the modular design to fit within each community's different needs and demands. This structural and design flexibility also gives us the ability to replicate our SMRF any and everywhere.

**The Waste Management Process: How It Works**



**KEY ROLE OF OUR PROPRIETARY COMBUSTOR:  
A SMRF SPURS FORMAL RECYCLING!**

Without the combustor's ability to dispose waste within the SMRF, any nascent recycling activities, by and of itself, would most likely not be as robust in many locations. Why? The combustor makes the waste "go away/disappear" in the mindset of people once the waste is picked up— they never see it again. 100% enters the SMRF and 0% leaves. The combustor disposes the leftover valueless residual waste after the first 80% is reused/recycled. Plus, it can also dispose of select hazardous materials that otherwise would require special treatment at high costs. This is the same role, in many respects, that the modern landfill plays within the developed world. Currently, without the combustor as an option, the only choices for getting rid of the same waste are to openly burned the waste or send it to a nearby dump. With continuous collection and disposal, the area is Waste-Free!

### III. THE SMRF EMPOWERMENT PROGRAM

#### **[A] Its Goal is to Transform Waste from an Unhealthy Liability in a Small City to a Valuable Asset for Sustainable Growth**

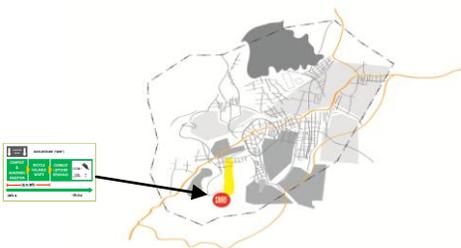
In a city without formal waste management, there are mostly no boundaries to where waste is discarded, burned or dumped. Over time, certain locations become official and/or defacto garbage dumps, debris accumulates along waterways, and streets are continuously littered with trash. Informal waste pickers earn meager livings. Residents only know this way of life, i.e. treating waste as an afterthought. Even if waste is collected, sanitary treatment is an afterthought or just too expensive.

In fact, even as a developing city rapidly grows, especially with the expected increased energy access through grid and off-grid renewable energy, the treatment of waste usually remains the same – there just becomes more and more waste in the same places – causing increased health, water and air problems and increased sicknesses and diseases.

The Frontline Waste SMRF Empowerment Program is designed both from the bottom/up (through residential and business community/neighborhood involvement) and top/down (active participation of local government in waste management operations and profits) to introduce a new way to collect, process, recycle and dispose of waste:

#### **[B] The Program Has Five Core Components**

##### **[1] Waste is collected in defined self-contained areas. Sanitary disposal occurs in or nearby these same areas. This creates visible accountability at all levels.**

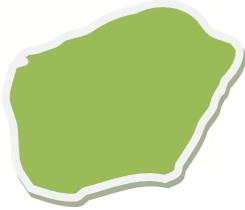


- By creating multiple neighborhood-based (and standalone) smaller waste collection areas in a city, we build-in accountability by the waste operator who collects the waste, the locals who source segregate the waste, and the designated small-scale sanitary waste processing facility, we call a SMRF, where the waste is sent and never leaves.

##### **[2] The Program has staged-flexibility – different for each SMRF and each small city**

- Expecting a SMRF to service a city and collect up to 100 tons/day doesn't happen overnight. We have built-in a series of three steps that can occur, as needed: (a) Starting with collecting combustible materials; (b) expanding to collect small amounts of recyclables and organic waste; and finally (c) launching a full waste treatment service to reach 100% capacity within 6-12 months.

**[3] Included in our Program are additional infrastructure improvements within the waste collection area that will be made, based on achieving waste management milestones, that further spur economic and health improvements in the city.**



- It is not just about getting rid of waste. By analogy, if you clean the river without giving the fishing industry new nets and boats, you may have healthier fish to eat, but you won't see a huge improvement in the quantity of fish caught. Improvements could include clean stoves for households, a cold storage facility for farmers, water purification equipment, solar panels for health clinics.... All of which greatly benefit from a city's new waste-free conditions.

**[4] Program success absolutely depends on active community and industry participation and the right economic incentives.**

- Local residents and businesses are asked to actively participate and are rewarded when milestones are reached due to their participation. These neighborhood reward programs (tie-in the household, community and industry infrastructure improvements) are used to spur proper source segregation behaviors that lead to these visible and tractable metrics and milestones reached. This is a joint project.

**[5] Local government commits to long-term contracts to help secure funds to pay for waste operations and equipment**

- Waste operations and administration involves private sector and profit incentives, but includes profit-sharing with local government and the community, itself. They are both active stakeholders.

**In sum, we believe small cities that adopt our SMRF Empowerment Program will have a long-term economic advantage over small cities that fail to provide sanitary disposition of its waste**