

Enterprise Recycling

Private Sector + Business Supplemental Concepts for APPALACHIAN Reuse Corridor

Updated October 16, 2023, by Murphy Poindexter in collaboration with the Appalachian ReUse Corridor and Coalfield Development.

Executive Summary

Waste generation is a constant element in the bustling realm of developed economies. From everyday activities to large-scale industrial operations, waste is an inevitable consequence of our consumption habits. Yet the unavoidable nature of waste generation has a silver lining: it creates a perpetual demand for waste management and recycling services. This demand provides a significant opportunity to rethink the principles of value and sustainability in our economy.

Finding recyclable markets is a significant challenge for municipal recycling programs across the country. This study explores the potential of an innovative waste management model designed to add value to local economies. By transforming waste from major cities across the U.S. into valuable resources through processing and recycling in southern West Virginia, this model envisions a circular economy where waste is not a dead-end, nor simply reused, but becomes a starting point for new economic activities.

Our approach hinges on the evolving economic model of “bankable loops,” leveraging symbiotic partnerships with community stakeholders to generate sustained local demand for recycled materials and boost local economies simultaneously. West Virginia contains vast opportunities for such synergisms.

West Virginia’s unique infrastructure, including rail pathways initially used for coal exports, provides a framework for efficient, cost-effective, and eco-friendly logistics solutions. Revenue generation would be multifaceted, based on tipping fees, the sale of recycled materials, and waste-derived energy, all underpinning the circular economy model. Government grants, new market tax credits, environmental credits, social impact bonds, and the potential incorporation of advanced market commitments can pose additional financial benefits.

This white paper delves into the concept and benefits of our innovative approach. We aim to transform waste, an unavoidable byproduct of our economy, into a perpetual demand driver that can trigger sustainable growth.

Through this concept paper, we explore transformational approaches to waste management. Together, we can reframe our understanding of waste, transitioning from the traditional linear 'take-make-dispose' model to a circular economy that values waste as a resource. This paper aims to serve as a stepping stone towards a sustainable economic model that meets the present demands and ensures future generations' well-being.

Introduction

During Michael Bloomberg's tenure as Mayor of New York City, he faced significant challenges with the city's recycling program. One of the most notable changes occurred in 2002 when he suspended glass and plastic recycling as a cost-saving measure. The city's recycling program struggled at the time, with high costs and relatively low recycling rates. By suspending parts of the program, Bloomberg's administration aimed to save money during a challenging budgetary period. The move was controversial and faced opposition from environmental groups and other stakeholders.

Over time, the city worked to restructure and improve its recycling program, seeking to make it more efficient and effective. The suspension of glass and plastic recycling was temporary, and efforts were made later in Bloomberg's tenure to revitalize recycling initiatives and promote sustainability in the city. It's a nuanced issue that showcases the complexities of balancing budget constraints, environmental goals, and operational challenges.

These struggles aren't limited to New York City. Economic challenges have contributed to the decision to scale back or suspend parts of the recycling program in many other places across the country. [In 2019, the New York Times reported](#) that Philadelphia burns about half of its 1.5 million residents' recycling in a waste-to-energy facility. In Memphis, each recycling bin in the airport is sent to a landfill. The article cites these examples as a few of the hundreds of cities across America that have canceled their recycling programs.

In the early 2000s, recycling faced economic difficulties as the costs of collecting and processing recyclables often exceeded the sales revenue. This problem was worsened by shifts in global markets, especially in China, a significant buyer of recyclable materials from the United States. Changes in China's policies reduced demand for certain recyclables, leading to oversupply and lower prices. While efforts have been made to improve recycling economics by making collection and processing more efficient, fostering domestic markets for recyclables, and encouraging manufacturers to use recycled materials, the waste management industry still grapples with the ongoing and intricate challenge of finding consistent and profitable markets for recyclables.

The Problem

Contemporary waste management and recycling practices are primarily treated as a means to an end, a problematic viewpoint stemming from a reactive rather than proactive approach to

waste. Waste disposal is considered the final step, a necessary conclusion to the consumption process, rather than an opportunity to create value and promote sustainability.

This narrow viewpoint misses the larger picture: waste is not just an end product to be discarded. It's a resource filled with untapped potential. Acknowledging the inherent value in waste can pave the way for innovative, sustainable, and value-driven waste management practices.

Research suggests today's waste management and recycling industry faces several critical challenges that hinder its efficiency and effectiveness, including:

- **Myopia** - The industry often adopts a short-term, profit-driven approach without fully considering the long-term implications. This myopic view leads to solutions that merely defer problems instead of aiming to resolve them sustainably.
- **Fragmentation** - The waste management ecosystem is highly fragmented, with multiple players operating in silos. This lack of coordination and synergy inhibits the development of integrated, efficient solutions and hampers industry-wide progress.
- **Complacency** - Many in the industry, satisfied with the status quo, do not seek continuous improvement or innovation. This complacency results in outdated methods persisting and new, potentially more effective and sustainable strategies being overlooked.
- **Public Opposition** - Often, new initiatives in waste management face considerable public opposition due to concerns over potential environmental impact, health risks, and other factors. This backlash can delay or even derail necessary changes and innovations.
- **Regulatory Challenges** - Varying and often stringent regulations across different regions can make it difficult for waste management entities to operate efficiently and implement new, innovative practices.
- **Market Volatility** - The value of recyclable materials can fluctuate, creating uncertainty and instability. This unpredictability can dissuade investment in recycling initiatives and innovations.
- **Lack of Infrastructure** - Many regions need more infrastructure to manage and process waste effectively, including insufficient recycling facilities and waste collection systems.
- **Environmental Impact** - Traditional waste management and recycling practices often have significant environmental impacts, contributing to pollution, resource depletion, and climate change.
- **Inadequate Waste Sorting** - Effective recycling requires precise waste sorting, which can be challenging and inefficient due to the high diversity and volume of waste.
- **Lack of Investment** - The waste management industry is opaque and closed, and it often resembles a "red ocean" of competitors and low margins instead of a blue ocean opportunity. This results in fewer and fewer early-stage startups that raise high-risk, high-reward capital intending to break into the waste management/recycling industry.

These problems, among others, contribute to a suboptimal waste management and recycling industry, necessitating comprehensive and forward-looking solutions.

Demand and Supply in the Waste Business

In the business world, certain constants form the bedrock on which economic systems thrive – supply and demand stand at the forefront. This principle forms the core of our feasibility study.

Value is generated at the intersection of supply and demand; however, it is important to understand that demand is the actual driver of value, while supply simply provides the means to realize it. A sustainable, long-term demand is paramount to perpetuating a value-creating chain. Therefore, focusing on the problem or the demand is crucial rather than falling in love with a particular solution or supply. As commonly advised in innovation circles, we must "love the problem, not the solution."

Demand in the recycling economy is fueled by continuous waste generation – an inevitable outcome of human activity. This constant demand drives the value of recycling and waste management services. The perceived value of a cleaner, more sustainable environment enhances this demand, intensifying the value proposition offered by effective waste management and recycling strategies.

Conversely, supply in the recycling economy encompasses the infrastructure, technologies, and services that manage and recycle waste. The ability of waste management companies to meet and adapt to the steady demand for their services acts as the heartbeat of this ecosystem, facilitating the realization of value from ongoing waste generation.

However, this dance between supply and demand in the recycling economy is only sometimes perfectly choreographed. Overproduction of waste, or an insufficient capacity to manage and recycle it, leads to a range of challenges that can impact the economy and the environment as the burden of waste management rises. Therefore, the private and public sectors must strategize and build a sustainable, scalable, and adaptable model to absorb these imbalances and ensure a consistent, effective response to the demand.

In the following sections of this paper, we will delve deeper into these fundamental concepts, providing a roadmap for building a resilient, sustainable waste management strategy that hinges on a comprehensive understanding of supply and demand dynamics in the recycling economy. We hope this deep dive will empower local non-profits like Coalfield Development, other community-focused organizations, and potential entrepreneurs to make informed decisions and contribute positively to our shared environmental and economic future.

The Solution

Our model hinges on the concept of a "[Bankable Loop](#)" – an evolving economic model that offers increasing value over time. Bankable Loops establish symbiotic relationships between businesses and community partners, in which businesses are designed to economically uplift the wider community and create new value, thus building sustained local demand. This model ensures that a venture's success benefits all stakeholders.

The recycling and waste management industry offers a variety of such opportunities, and Southern West Virginia possesses many resources, infrastructure, features, and stakeholders that could achieve many new business models and outcomes with the right investment and alignment.

We begin by imaging waste not as an endpoint but as a resource – a new supply of raw materials. Next, we must identify opportunities for sustainable, long-term demand for these repurposed materials. Finally, we must identify opportunities for these repurposed materials to add new value to our local and regional economies.

The result is a sustainable loop in which waste is managed and repurposed to benefit local communities and create new economic opportunities.

Potential bankable loops in West Virginia

The essence of the new concept, "Bankable Loops," hinges on establishing symbiotic relationships. A tangible example of this is imagining a local bakery strategically aligning itself with a nearby college or an expansive academic system. Envision this bakery diligently catering to the school's regular demand for bread, fulfilling the cafeteria's needs, and supplying for various events. The bakery benefits from consistent demand and local advantages and is also designed for efficiency, ensuring competitive market prices.

More importantly, the dynamic extends beyond a simple vendor-client transaction. Here, the college isn't only a customer but an invested stakeholder, directly benefiting from the bakery's successes. This relationship doesn't just fortify the bakery's foundation but ripples outward, positively impacting the local economy, bolstering real estate stability, and creating a cascade of growth opportunities. Analogously, imagine meticulously placing dominos, anticipating the mesmerizing pattern they'll create once toppled. Before setting the chain in motion, one must ensure the dominos are positioned correctly, priming them for a long-lasting, harmonious fall. Similarly, "Bankable Loops" sets the stage for businesses, enabling them to stand firm and envision and navigate a sustainable growth trajectory.

Bankable Loops look to take a portion of a new company's equity and create strong ties with the various stakeholders in a business. A standout feature of Bankable Loops is equity allocation to early adopters. Companies can offer these stakeholders a piece of the upside, balancing the risk-return profile and establishing a win-win relationship. Such relationships aren't limited to their customers; employees, founders, and investors are all integral to this ecosystem. This

democratization of success enables everyone to share in the business's growth and prosperity, marking a shift from traditional risk-return profiles.

As a thought experiment, we present an example of a potential bankable loop using repurposed waste material to create new value in Appalachia.

One practical application might be using compost, derived from recycled waste, to remediate abandoned mine lands. In this scenario, waste recycling addresses the immediate demand for waste management and yields a new supply: fertile soil for land reclamation.

But the loop doesn't halt here. This revitalized soil could further fuel the growth of feed crops, biofuel crops, or other marketable products, escalating the value chain by creating another layer of demand. Each phase in this cycle presents an opportunity for value addition, reinforcing the "bankable loop" concept.

Opportunities for other bankable loops may include:

- **Electronic Waste (E-Waste):** Electronic devices contain precious metals like gold, silver, and palladium. E-waste recycling can extract these metals, but globally, only a fraction of e-waste undergoes proper recycling. This leads to the loss of valuable metals and poses environmental hazards due to toxic substances like mercury and lead.
- **Tires:** Discarded tires are a major environmental concern, often ending up in landfills or being burned. However, recycled rubber from tires can be used in various products, from road surfaces to footwear and even as fuel in some industries.
- **Rare Earth Elements:** Found in many modern electronic devices and renewable energy technologies, these are crucial for advanced manufacturing but are often discarded because they're difficult and expensive to extract from old devices.
- **Textiles:** While some textile recycling exists, many clothing and other fabric products remain in landfills. Recycled textiles can be turned into new garments, rags, or insulation materials.
- **Organic Waste:** Food scraps and yard waste are immensely valuable for composting, yet a substantial amount is discarded in general waste streams. When composted, they can return vital nutrients to the soil and reduce the need for chemical fertilizers.
- **Construction and Demolition Debris:** Materials like bricks, wood, and certain metals can be recycled and reused, but they're often dumped, occupying significant landfill space.
- **Carpets:** Carpets are made from valuable fibers like nylon and polypropylene. When recycled, these fibers can be used to produce new carpets or other plastic products.
- **Batteries:** Many batteries, especially those in electronics and cars, contain valuable metals that can be recycled. Yet, many end up in landfills due to inadequate collection and recycling infrastructures.

The essence of our venture is to pinpoint ways we can construct a series of robust, durable, and sustainable demands. These demands should be primed to convert every resource or supply unlocked through recycling into long-lasting benefits. The resulting model could cater to

immediate waste management needs, contribute to environmental restoration, promote sustainable agriculture, or otherwise create products that satisfy market needs, thus creating a sustainable "bankable loop" of economic and ecological prosperity.

Business Model

Securing financial support is invariably the inaugural phase in realizing an expansive business initiative. Within the context of our groundbreaking venture in waste management and recycling, financial backing becomes more than a mere initial requirement; it stands as a testament to the broader societal belief in the significant upside potential of this project.

The challenge is twofold. We must demonstrate that the inherent risks of this ambitious undertaking are justifiable in light of the prospective rewards and manageable in the long term. And we must articulate a convincing case for a sustainable, profitable future characterized by our "bankable loop."

We aim to emulate and potentially surpass the valuation metrics that financial professionals, investors, and public markets have bestowed upon recent innovative startups. This aspiration extends beyond mere monetary evaluation; it encompasses a vision for transforming the waste management and recycling industry, capitalizing on the innovative approaches that have characterized some of our era's most successful business ventures.

Investment capital and the high probability of long-term revenue (or secured long-term revenue) must be developed in parallel. The below outlines the basics of what we need to lay the groundwork for a virtuous upward spiral, transforming waste into value, fostering economic growth, and advancing a model of environmental stewardship that resonates with both the practical demands of the market and the ethical imperatives of our time.

Investment Capital

Investment capital is composed of "first money in" – the first few dollars to develop an idea into a prototype or to test that idea in the market – or expansion capital, aimed at building new markets, expanding supply capacity, or developing new ideas and features.

- **"First Money In"** - The goal of this capital is to take the earliest upfront risks for the largest returns. Often, the first money will be equity combined with some "first money out" restrictions, meaning if the company is sold for parts, these investors are paid first. If the risk looks too great, or the capital wants more risk protection, sometimes they will want collateral or personal guarantees from founders. Other funding sources, such as public sources, can be the first money without equity or guarantees. Examples of first money in capital sources may include:
 - Equity
 - Donations
 - Public grants
 - Private foundations

- **Expansion Capital** - Additional equity, debt, grant funding, net market tax credits, etc. This money will take the company that has found a customer that fits their product into expansion and growth. Companies in this phase have a “product-market fit” and are now looking for more customers.

Revenue / Bankability

Revenue is a requirement for any business to survive and raise money in the long term. Customers' payments for a good or service make the company more stable or “bankable,” meaning the business is reliable and creditworthy. Finding and securing these revenue streams is critical to creating a bankable business.

Potential sources may include:

- **Tipping fees** - Consumers pay to have their waste managed
- **Output revenue** - Consumers pay for the products produced from recycled or repurposed waste
- **Credits** - Carbon offsets and other environmental credits
- **Advanced market commitments** - Consumers pay in advance for products we may output

Innovation in the American economy often solves costly problems that can realize value quickly in the form of revenue. In recent history, venture capital and tech have transformed the markets to focus less on current profitability and price in anticipation of future profitability.

For example, [Uber was founded in March 2009](#), and their [first operating profit was in Q2 2023 with \\$326 million as reported in August 2023](#). From 2014 through Q1 of 2023, the [Financial Times noted that Uber lost 31.5 billion dollars leading up to that profit](#). To make this happen, [Uber has had 32 funding rounds, including going public, debt, and equity, raising 25.2B dollars](#). The platform is currently worth around \$95 billion. We are left with a digital market and infrastructure that anyone with a smartphone and a credit card can tap into.

Today, Uber and many other startups focus on transparent markets where enormous spending and disruption are likely or possible, and product-market fit experiments are quick and actionable. Waste management and recycling, unfortunately, don't have similar characteristics at first glance. Being stuck in a city without a cab is a common and relatable occurrence; what happens to our trash is not (unless the garbage pick-up gets canceled that day).

This paper's goals and hopeful future are the groundwork for an investment thesis, grant application, and support for collaboration with the Reuse Corridor to build up long-term, viable businesses to support the circular economy. With a focus on layers of long-term and bankable demand and large-scale problems facing society at large, a win-win scenario of profitability and environmental sustainability is likely achieved. Private spending and budgets, along with siloed long-term grants, can come together to create a system of intertwined supply and demand combinations to solve problems across various industries and markets.

Next Steps:

A deep study and analysis of the following topics is a crucial first step in finding and developing bankable business models. We present a framework for future research:

- 1) What is the target region's current waste management value chain?**
 - a) Current physical solutions and processes (I.e, trash collection, landfills, and recycling centers)
 - b) Costs, revenues, profits
 - c) External costs and burdens
 - d) Market totals by area (municipal/county/state/private companies)
 - e) Business and financial models of each player
 - f) Scope 3 emissions and other polluting factors externalized to the general public or surrounding areas
- 2) What are the current gaps/problems with this system?**
 - a) Deep customer empathy (Finding the various stakeholders in a system and learning about their problems)
 - b) Financial analysis
 - c) Potential threats/futures analysis
 - i) Environmental
 - ii) Electronic waste
 - iii) Other specific issues
- 3) What infrastructure or unique competitive advantages does WV have? How can they be utilized?**
 - a) Intermodal facilities
 - b) Rail
 - c) Coal infrastructure and know-how
 - d) Public/private partnerships
 - e) Minelands / federal abandoned mine land funding
 - f) Others?
- 4) What new “bankable loops” can be made by combining existing infrastructure and revenue streams in Appalachia?**
 - a) What are new businesses' current revenue streams and concepts?
- 5) What capital/financing is available to establish new bankable loops?**
 - a) Private and Public Financing
 - b) Various structures and mechanisms
- 6) Launching a feasibility study**
 - a) Collaboration with Reuse Corridor

Conclusions

By taking the lessons of modern-day venture capital with a new stakeholder-focused economic approach, a green and prosperous future is more than possible. West Virginia and the wider



REBUILDING THE APPALACHIAN ECONOMY FROM THE GROUND UP.

Appalachian regions have a unique opportunity to turn neglected areas into flourishing, sustainable, and economically vibrant areas. We can rewrite the narrative of these traditional industrial regions.

The call to action is urgent and clear. With environmental crises unfolding around us, redefining waste as a resource rather than a burden becomes paramount. This is not just a local necessity but a global one. Regions like Appalachia can lead the way, demonstrating a transition from extractive industries to regenerative, sustainable models. By converting waste into wealth and regenerating our landscapes, we're restoring environments, reshaping economies, and rejuvenating communities.

Now is the moment to step boldly forward, forging a future where our environment, economy, and community coexist in a mutually enriching relationship. Let's take this step, transforming recovery into regeneration and creating a future that's both sustainable and prosperous.