HAWAII COUNTY ZERO WASTE PLAN

PREPARED BY RECYCLE HAWAII IN CONJUNCTION WITH THE INSTITUTE FOR LOCAL SELF-RELIANCE, ZERO WASTE ASSOCIATES AND HIDDEN RESOURCES.

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OUR ISLAND IS UNIQUE

Compact land mass bounded by vast stretches of ocean

Hawaii Island is the geographical equivalent of a ship at sea. Our unique geography obligates us to take extraordinary measures to prevent the introduction of microplastics into marine environments.

Exceptionally h igh level of per capita waste generation

The most recent estimates for Hawaii County per capita waste generation, derived from data collected in 2016, are 7.1 pounds per day for the resident population and 6.4 pounds per day for the de facto population. These estimates are far higher that the U.S. average of about 4.5 pounds per day for that same year.

Lifestyle heavily dependent on imported goods

Over 90% of the goods Hawaii Island residents depend on to sustain themselves are shipped long distances using vessels powered by fossil fuels. The unused backhaul capacity created when empty containers are returned to the continental U.S. creates an opportunity to export recyclables at little additional carbon cost.

Strong culture of environmental protectionism

Hawaii Island is home to a broad base of citizens predisposed to protect the environment. This subculture can be counted on to popularize zero waste strategies and draw significant numbers of early adopters.

Self-haul standard

Most Hawaii Island residents and many businesses deliver their own discards to county transfer stations. This widespread practice increases the potential for engaging both sectors in resource recovery programs.

Vast expanses of barren lava

Ongoing volcanic eruptions on Hawaii Island have created an exceptional need for soil amendments.

Photo courtesy quokkabottles

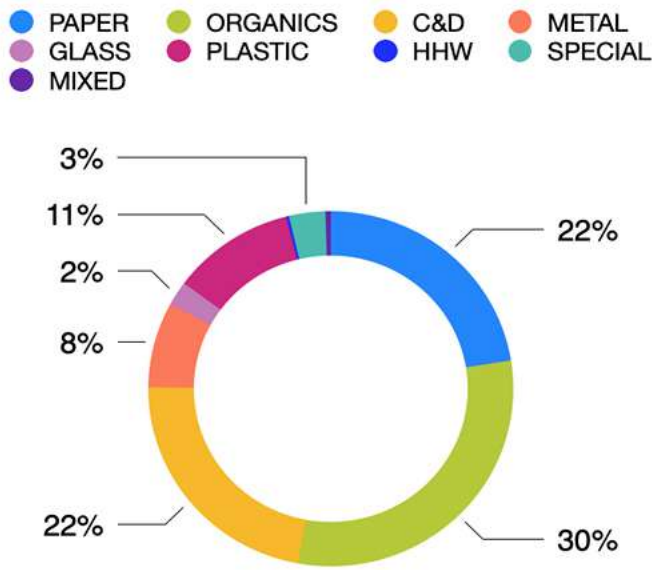
ZERO WASTE IS THE GOAL

According to the peer reviewed, internationally accepted definition: Zero Waste is the conservation of all resources by means of responsible production, consumption, reuse, and recovery of products, packaging, and materials without burning and with no discharges to land, water, or air that threaten the environment or human health.

According to language adopted by Hawaii County: The Zero Waste philosophy is based on the concept that current standards of waste management are inefficient and unsustainable, and that waste can be virtually eliminated by emulating sustainable natural cycles, where all discarded materials are treated as resources that can effectively be reused. It is a whole-system approach that emphasizes a closed-loop production and consumption system by 1) reducing the volume and toxicity of waste through product and packaging redesign strategies; 2) reusing materials and products for alternative uses, as well as for their original intended use; and 3) recycling and composting all remaining materials for their best use.

Within the Zero Waste framework, materials that cannot be easily and conveniently reduced, reused, recycled, or composted are returned to the manufacturer, who is ultimately responsible for product disposal. The Zero Waste approach includes aggressive education of public and private entities because consumer choices are considered to be the driving force in changing consumption and disposal patterns.

Composition of Hawaii Island's Waste Stream



	TONS PER YEAR
ORGANICS	69,448
PAPER	47,130
C&D	46,702
PLASTIC	17,482
METAL	16,388
GLASS	4,592
HHW	527
SPECIAL	6,762
MIXED	997
TOTAL	210,030

The above estimates are found in the 2019 Hawaii County Integrated Solid Waste Management Plan, and based on figures collected in 2001 and 2008, the most recent years for which data are available. C&D refers to construction and demolition waste. HHW refers to household hazardous waste. The SPECIAL category includes ash, industrial sludge, treated medical waste, bulky items, tires and a range of residual wastes. The MIXED category refers to an amalgam of residues that are not readily identifiable. Each of the other categories listed includes a residual component that is not suitable for resource recovery.

These components together with the HHW, Special and Mixed categories amount to an estimated 27.2% that can be considered non-recoverable. This means that although zero waste is the goal, even with the most well designed collection systems in place, unless methods for manufacturing and packaging consumer goods change significantly, Hawaii Island is unlikely to achieve a diversion rate higher than 70%. Hawaii County's current diversion rate is about 21%, with 72% of that percentage attributable to its green waste program and 28% attributable to recycling and reuse programs.

Materials

		Tonnage	Handling
ORGANICS		**63,963**	**Processed OI**
PAPER		**47,130**	
	Cardboard	16,182	**Processed OI**
	Kraft Bags	723	**Processed OI**
	Newspaper	4,000	**Processed OI**
	Ledger and Office Mix	3,422	**Baled & Exported**
	Magazines, Directories, Mixed Paper	11,167	**Baled & Exported**
C&D		**46,702**	
	Lumber	22,984	**Processed OI**
	Gypsum	1,471	**Processed OI**
PLASTIC *		**22,967**	
	All grades	17,482	**Baled & Exported**
	Textiles	5,485	**Baled & Exported**
METAL		**16,388**	
	All grades		**Baled & Exported**
GLASS		**4,592**	
	Container Glass	4,103	**Used & Processed OI**
	Single-Use Beverage Containers		**Used OI/ Exported**

***Exporting low-grade plastics may require fees to brokers due to low value of materials. The volume for this category includes textiles due to the prevalence of synthetic fibers in modern clothing; tonnage for textiles has been subtracted. from the Organics category.

Goals of the Hawaii County Zero Waste Plan

Hawaii County's zero waste goals can be met through a strategy that includes the following objectives tailored to meet its unique conditions and needs.

- Development of public and private sector infrastructure that facilitates the collection of clean, well sorted materials and preserves the value of discarded resources,
- Continuation of drop-off recycling and waste handling practices,
- Transformation of rural transfer stations into community-oriented, family-friendly hubs that promote and support resourcefulness,
- Baling and stockpiling of materials to decrease need for additional sorting and handling,
- Delivery of materials to ports in Hilo and Kawaihae for export to out-of-state brokers,
- Establishment of a distributed system of community scale, strategically located composting operations that support increased food production and less toxic landscaping practices,
- Use of shared saving incentives (service fees) for all recycling, composting and reuse businesses and programs,
- Expansion of existing reuse sector,
- Establishment of public/private partnerships, including product stewardship programs, that attract the funding needed to meet these goals.

THE CLEAN STREAM CONCEPT
A matter of respect.

In 2004, Hawaii County abandoned source separation in favor of a mixed recycling approach. Providing a single large roll-off for later sortation proved to be a mistake that led to contamination and left many questioning the value of recycling altogether. Although recycling should never preempt waste reduction strategies, it does serve as a critical means for establishing circular economy supply chains.

Markets for clean, well sorted materials do exist, and major investments in U.S. recycling infrastructure are set to significantly increase demand for these materials in the near future. By supporting the development of clean stream programs, Hawaii County will provide island residents, business owners and visitors with opportunities to take advantage of this trend and treat precious resources with the respect they deserve.

Handling Materials According to the Plan

Unused Backhaul Capacity

Most of the shipping containers used to deliver goods to Hawaii return to the Continental U.S. empty, with estimates of this unused capacity ranging from 65% to 85% of the total volume.

While the capital cost of returning these containers is embedded in the price of goods sold in Hawaii, the carbon cost goes to w aste.

As the county compares the life cycle costs of its waste handling options, rather than attributing high carbon costs to exporting recyclables, recycling must be evaluated as a means to take advantage of the carbon asset unused backhaul capacity represents.

Collecting resources in ways that preserve their value is the key to creating a zero waste system that works. Once discarded materials are introduced into a clean stream handling system, they will be diverted to on-island resource recovery programs or processed for stockpiling.

Compostable materials will be kept on island. To the extent practicable, glass will be diverted into reuse programs. Glass not suitable for reuse will be crushed and used on island. All other materials will be baled. Those that are marketable will be exported. Those that are not, such as low grade plastics that have no immediate value, can be stockpiled at the WHSL for export when their value increases.

Schemes to recover plastic and reform it into so-called "useful items" are not included in this zero waste plan. As inhabitants of a tiny outcropping in an expansive marine environment, Hawaii Island residents have a special obligation to ensure that the inordinate amount of plastic waste they generate does not end up in the ocean, either as marine debris or microscopic particles. Taking that waste, turning it into lumber or septic tanks and putting it back into the environment where it will degrade into microplastics eschews this obligation, whereas making a commitment to export plastic waste as quickly as possible is the best way to fulfill it.

When coupled with an equal or greater emphasis on decreasing the amount of plastic imported to Hawaii, this strategy offers the most responsible way for addressing Hawaii Island's plastic pollution problem. It aligns with recommendations made by the Center for International Environmental Law as well as the UN Environmental Programme's Global Commitment for a New Plastics Economy.

Hawaii Island's Rightful Place in the Global Movement to Prevent Plastic Pollution

Since 1989, the Center for International Environmental Law (CIEL) has used the power of law to protect the environment, promote human rights, and ensure a just and sustainable society. CIEL seeks a world where the law reflects the interconnection between humans and the environment, respects the limits of the planet, protects the dignity and equality of each person, and encourages all of Earth's inhabitants to live in balance with each other. CIEL's groundbreaking report, titled "Climate and Plastic: the True Cost of a Plastic Planet," recommends reducing the production of virgin plastic and landfilling waste plastic as the best ways to mitigate this material's devastating impact on planetary systems.

The Basel Convention

Originally convened in 1995 to prevent industrialized nations from dumping hazardous wastes outside their own borders, this international treaty was amended in 2019 to include plastic waste among the materials regulated by its provisions. The U.S. is not a party to the Basel Convention, but exporting plastic waste to any of the 187 countries that are parties is considered a criminal activity by the Basel Action Network, which is the organization tasked with enforcing the treaty's provisions.

The Global Commitment for a New Plastics Economy unites more than 500 organizations behind 2025 targets aimed at 1) eliminating unnecessary plastic items, 2) innovating so all necessary plastics can be safely reused, recycled or composted, and 3) circulating necessary plastic in the economy while keeping if out of the environment.

Becoming a signatory to the Global Commitment allows Hawaii Island to collaborate with the UNEP and other signatories to tackle its own plastic pollution crisis. The commitment calls on governments to provide dedicated and stable funding for collection and sorting programs.

Summary Recommendations

The key to economic growth through reuse, recycling and composting is the recovery of discarded materials in ways that make it safe and easy to preserve or increase their value. Instead of providing such waste-to-wealth opportunities, Hawaii County has established a collection system that immediately degrades the worth of these materials and prohibits access to them. The volume of waste Hawaii County generates per capita is about 75% above the national average, while the cost the county pays to manage this waste is far higher than what municipalities on the continental United States pay—all this while losing the jobs, tax revenues and associated economic benefits that could be reaped by expanding Hawaii County's resource and production base. The general recommendations outlined below represent the key components of redesigning the county's discarded materials handling system to better manage resources.

Local ordinances are needed to require:

- Compostable organics out of the landfill.
- Construction and demolition reuse and recycling plans,
- Separation of designated reusables, recyclables and compostables (including all haulers required to provide recycling services as a condition of their county permit),
- Funding for training and marketing programs,
- Retailer and producer take-back of non-recyclable, non-reusable or non-compostable products and packaging.

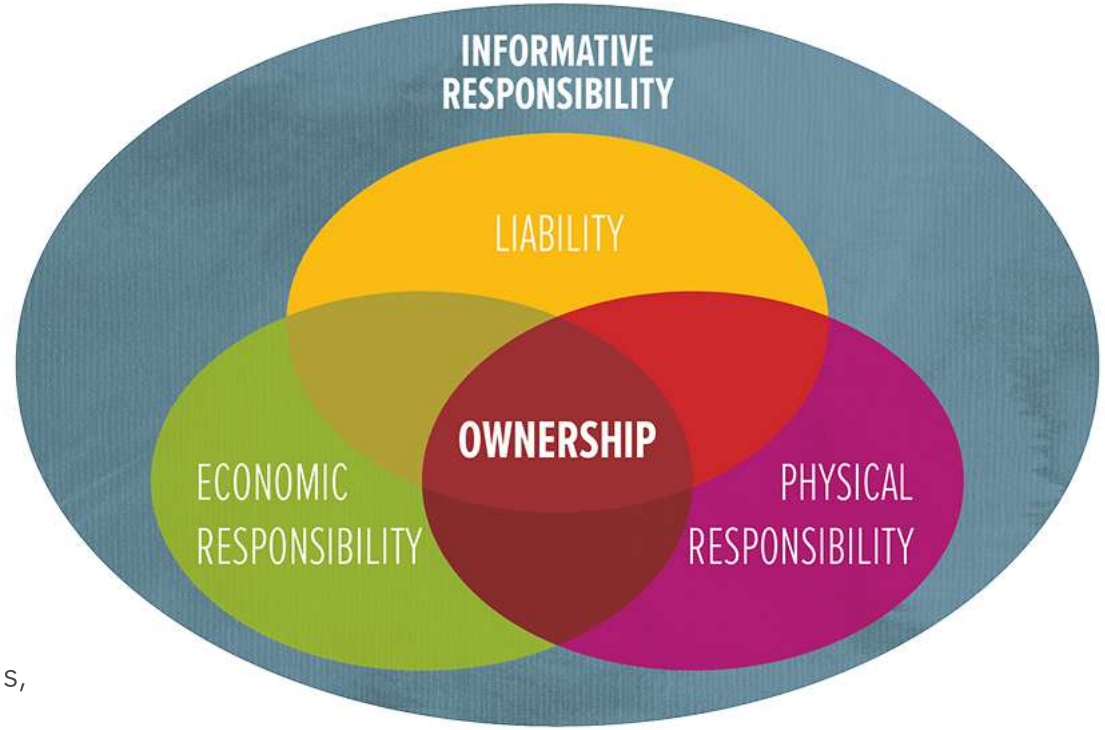
Rural transfer stations should be redesigned into recovery parks that keep resources within the community and provide facilities for:

- Increased capacity for recovering and redistributing reusable items,
- Covered storage for C&D materials,
- Stockpiling of source-separated, drop-off recyclables,
- Organic material collection,
- Rock, ceramics and glass grinding areas,
- Cardboard and paper processing,
- Community composting,
- Family-friendly educational activities, including resource exchanges.

Training and marketing programs:

- Train the trainers,
- Train the technicians and regulators,
- Train people and businesses,
- Facilitate research required to support sound resource management, including facilitation of public, private, and academic partnerships.

Extended Producer Responsibility (EPR):



In order to provide the dedicated and stable funding needed to achieve its zero waste goals, Hawaii County must align with the growing national movement to hold producers and brand owners accountable for the waste their business models generate. Known as extended producer responsibility, or EPR, this movement promotes a variety of approaches aimed at reducing the environmental impacts of consumerism and transferring some portion of waste handling costs from municipalities to producers. The justification for this is simple: Since manufacturers and brand owners control how their products are designed, made, and packaged, they alone control whether or not these items and materials can be safely managed when they are no longer useful.

The ways in which producers are obligated to take responsibility can be categorized as follows:

1) **informative**, meaning producers have a duty to disclose relevant information related to the methods and materials they use;
2) **liability**, meaning producers must be held accountable for the environmental and social impacts the manufacture and sale of their products create;
3) **economic**, meaning producers must provide funding for EPR programs; and
4) **physical**, meaning producers should be involved in the actual handling of materials.

While there is broad agreement among EPR advocates to hold producers accountable with regards to informative, liability and economic responsibilities, there is a growing debate over how much physical control they should have over discarded materials.

Within the EPR movement two schools of thought have emerged; one favors mechanisms that reimburse municipalities, and the other puts producers in charge of collecting and handling waste themselves. Reimbursement strategies fall under what is known as the product stewardship model of EPR.

Given Hawaii Island's unique geography and import-dependent economy, establishing a reimbursement fund that allows the county to enter into cost sharing relationships with producers while creating incentives for them to reduce waste is the best approach. It is consistent with the "polluter pays" principle introduced in the mid-1990s by Swedish environmental economist Thomas Lindhqvist, and it preserves the county's right to decide what form its reduction, reuse and recycling programs will take. Retaining this control is essential if the county is to maximize the waste-to-wealth potential of these programs.

TOP PRODUCERS OF FMCGs

Nestle	**Danone, S.A.**
Proctor & Gamble	**Mondelez**
PepsiCo	**Henkel**
AB InBev	**Colgate-Palmolive**
Unilever	**Diageo**
JBS	**RB**
Tyson Foods	**SC Johnson**
The Coca-Cola Company	**Kellogg**
Mars. Incorporated	**Essity**
L'Oreal	**FrieslandCampina**

Of the top 20 producers of fast moving consumer goods (FMCGs) 16 (highlighted in bold above) are signatories to The Global Commitment for a New Plastics Economy.

EPR LEGISLATION IN THE U.S.

These seven states introduced EPR legislation in 2021: California,Hawaii, Maryland, Massachusetts, New York, Oregon and Washington.

Hawaii had two bills. One, HB1316, introduced by Representative Nicole Lowen, called for packaging producers to be responsible for waste while ensuring minimal social and environmental impacts; the other, SB1419 introduced by Senator Laura Acasio, sought to establish a municipal product stewardship model.

Neither piece of legislation passed. Both senators are set to reintroduce bills in 2022.

EDUCATION & MESSAGING

While education is an essential strategy for engaging participants and making zero waste programs run effectively, emphasizing education in a take-make-waste system that affords few opportunities for waste reduction leads to cognitive dissonance and undermines long term goals. Images of trash dumped in impoverished neighborhoods as the result of failed U.S. recycling programs have taken a toll on the American psyche, so much so that some now find no value in recycling at all.

Since the 1960s, Americans have been subjected to programming created by the industry-backed Ad Council that characterized the U.S. waste crisis as a litter problem. The purpose of such messaging has always been to shift responsibility from producers to consumers and convince consumers that they have the power to solve the environmental crisis wastefulness creates, when, in fact, they do not.

In Hawaii County, residents, business owners and visitors must go to extraordinary lengths to avoid generating waste. Children are consistently exposed to messaging that suggests activities like recycling are heroic achievements, when they should be among the most ordinary things they do.

All consumers, even children, bear a responsibility for the waste they generate, but the call to take responsibility must be received in a social order that allows them to do so. Until the county establishes a system that makes waste reduction, material reuse and recycling possible, its educational efforts should focus solely on providing Hawaii Islanders the information they need to take advantage of existing services.

Education doesn't work if products are not designed to be recycled, if the collection infrastructure cannot properly capture and process the materials, and if the markets do not exist to drive the use of those materials into recycled products.

What we need now is radical sweeping change in policy and infrastructure, supported by recycling education, not led by it.

Kate Bailey, Co-Founder of The Alliance of Mission-Based Recyclers

ORGANICS = 30%

Capturing organics and removing them from the waste stream is the most important element of this plan. Organic discards constitute the single greatest component of the total volume collected by the county, and the tendency for these materials to rapidly degrade into an unpleasant mess makes handling all other materials difficult when they are in the mix. In the landfill, organics generate methane, a greenhouse gas far more potent than CO2. It is not enough to divert these carbon-rich materials from the waste stream; once they are captured, they must be processed in ways that minimize their impact on Earth's climate and take full advantage of their value as soil amendments.

MULCHING

Although the county green waste program has been its most effective waste diversion effort to date, improvements are needed. The enhanced mulch it produces is highly popular, but the value it creates is outweighed by the carbon footprint created when green waste gets trucked long distances to mulch sites and scores of trucks idle for hours on free-mulch pickup days. When there is a need to move large volumes of mulch, the county should work with soil conservationists to efficiently deliver this much needed resource to high priority areas. Otherwise, smaller volumes should be processed through a distributed network that collects materials close to where they are generated and where they will be used. This enhanced mulch should be made available for pick-up on an ongoing basis, rather than as monthly event.

Photo by Gabriel Jimenez

Each year, approximately 24 billion tons of fertile soil are lost through extractive farming methods worldwide. If this trend continues, soil scientists estimate that the agricultural industry has only 60 harvests left.

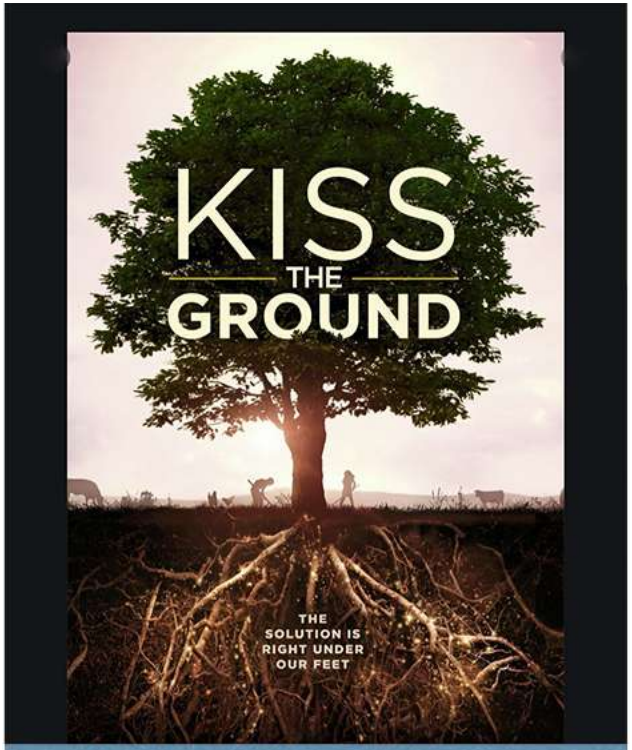
COMPOSTING

Maximizing our capacity for composting requires a tiered approach that organizes the vast amounts of organic materials Hawaii Island businesses, visitors and residents generate for disposal into manageable streams of high quality resources. This plan recommends the use of the following categories for this purpose:

1) Backyard composting: At this most basic level, organic materials are generated, processed and used in the same location, primarily by individuals and families, although some small businesses could fall into this category. Backyard composting is not subject to DOH regulations.

2) Artisan-scale: This category includes small-scale, collaborative efforts that are non-commerical and aimed at collecting materials from a variety of sites for processing into soil amendments that are then shared. The volumes are low enough to prevent public health concerns. Operations at this scale should be exempt from DOH permitting requirements.

3) Food Service-related: These operations form an interface with restaurants and other facilities where significant volumes of pre- and post-consumer food waste are generated on a regular basis. The relatively low volume of green waste in this stream makes it highly valuable to pig farmers who have been diverting these resources for generations. Although this stream is suitable for composting, the fact that it is already being diverted must be taken into consideration as the county develops strategies for capturing and processing organics. The collection and use of this stream of materials are subject to DOH regulations that the agency does not enforce.



This groundbreaking documentary is inspiring people the world over to take action against climate change by building healthy soil.

4) Farm-related: These larger scale operations occur on land zoned for agriculture and are aimed at enhancing soil as a means to increase productivity. They serve as convenient drop-off locations for landscape trimmings and are monitored on a regular basis to prevent the spread of invasive species. Operations at this scale provide a valuable carbon sequestration service because they convert the organics that otherwise generate methane in landfills into amendments that greatly increase the capacity of Hawaii Island soils to capture carbon.

According to current DOH regulations, when composting occurs on land zoned agricultural, a permit is not needed if the organic materials are generated, composted and used on site. If the operation produces compost for off-site use, regardless of whether it is located on a farm or industrial parcel of land, it must be permitted by DOH.

Photo by Kristine Kubat

ACTION: Prohibit disposal of organics in the landfill.

ACTION: Work with DOH to reform regulations that prohibit composting activities.

ACTION: Abandon plans for a single large-scale composting facility in favor of a distributed system that prioritizes the needs of farmers and makes it easy for residential and commercial generators to divert organic discards.

ACTION: Require Hawaii County Parks Department to mulch the green waste it generates.

Panaewa Feed Mill

Functional since 2018, this University of Hawaii project is currently being leased to Na Hoa Kalele, a private business that intends to harvest invasive gorse from the slopes of Mauna Kea and convert it along with unmarketable papaya, taro, oil palm and green waste into livestock feed.

The existing agreement allows Na Hoa Kalele to operate the feed mill for a period of one year. During this period, HPU and Na Hoa Kalele will explore the potential for a longer arrangement. Long-term use of the feed mill is subject to existing commitments and pre-existing use rights by Ulupono, a sustainable development firm that was an early investor in the mill, and UH-Hilo. If all goes well, at the end of the evaluation period Na Hoa Kalele will provide HPU with an operational plan, operating budget, and business plan to maintain and run the feed mill.

Increasing local livestock production will help Hawaii Island become more self-reliant; currently, as much as 80% of the food consumed on island is imported. And research is already underway to explore the potential for the project to accept food waste from residents and businesses.

Photo by Arisa Chattasa

RegenerateLA

As part of an expansive effort to divert 100% of LA's organic waste from the landfill by 2050, this program funds the collection and composting of organics, including food scraps, to create soil amendments for the city's parklands, playing fields and road medians.

RegenerateLA was launched by LA Councilmembers Paul Koretz and Mike Bonin who were both inspired by the groundbreaking documentary, Kiss the Ground. The initiative aims to maximize the carbon sequestration capacity of the city's soils, while also establishing tree planting and methane harvesting programs. RegenerateLA works with healthy soil advocacy organizations in the Greater LA area. Here on Hawaii Island, a number of similar groups have come together as the Hawaii Island Compost Consortium.

Photo by Cameron Venti

KEEP IT HERE

PAPER = 22%

The substitution of paper for plastic in packaging is the single greatest change corporations working within the Global Commitment for a New Plastics Economy framework are planning to make. This trend represents the easiest way for signatory corporations to meet the goal of 100% recyclable, compostable or reusable plastic packaging by 2025. Taking action now in preparation for a significant increase in the volume of discarded paper is an important component of this plan.

CARDBOARD

Hawaii Islanders' dependency on imported goods generates a mountain of unwanted cardboard each year. Although the value of this material as a recyclable commodity fluctuates, its value as a carbonaceous soil amendment in a place where barren lava fields dominate the landscape and the population aspires to become less dependent on imported food cannot be overstated.

The ease with which cardboard can be collected, stored and processed increases its usefulness as a primary resource for composting operations. And, while large scale retailers typically collect, bale and export the waste cardboard they generate, the county pays nearly $XM to export cardboard and brown Kraft bags, two raw materials that could instead be used to significantly increase the health and carbon-fixing capacity of Hawaii Island soils. Recent efforts to collect, process and mulch cardboard have demonstrated its value in this regard, especially for vermiculture operations.

Photo by Evan Lam

NEWSPAPER

Discarded newspapers are another high-value resource that, with proper handling and minimal processing, could be diverted from the landfill. An estimated 4,000 tons per year is available for use as a carbonaceous additive to compost piles, as bedding for vermiculture operations and even as packing materials for exported products such as anthuriums.

PAPERBOARD, EGG CARTONS & MIXED PAPER

Constant exposure to the elements leads to the rapid degradation of plastic pots and similar items commonly used by agricultural operations. Hawaii Island's ambitions to become more food secure don't have to result in increased microplastic pollution. A steady stream of low grade paper, including paperboard (the material used to make cereal boxes), egg cartons and mixed paper is available for remolding into compostable paper starter pots and trays. The process for doing so is low tech and low impact as long as plasticizers like PFAS and PFOS are not added to the mix.

Opportunities for substituting single-use items like cup holders also abound, and niche markets within the tourism industry offer ways to improve the economics of paper molding enterprises operating at a community scale. As an example, hotels could distribute locally made paper coolers to guests who go on excursions then collect them for re-processing at the end of the day. Programs like this exemplify the circularity and regenerative tourism goals promoted in county plans.

ACTION: Establish private-public partnerships that recover cardboard, paper bags and newspaper for processing and redistribution to end-users.

ACTION: Support the development of pilot projects that turn reclaimed egg cartons, boxboard, toilet paper rolls and lower grades of waste paper into useful items for local consumption.

KEEP IT HERE

GLASS = 2.2%

Due to soaring global demand for solar panels, computer chips, fracking mud and concrete, the high grade sand used to produce these items is increasingly hard to find. This shortage of silica sand and the carbon footprint that comes with an energy intensive manufacturing process compel us to preserve glass containers for reuse. The county's current glass recycling program, through which containers are collected, ground into cullet and made available for landscaping, construction and agricultural purposes is actually a form of down-cycling. While this strategy eliminates costs associated with exporting the ground cullet, far too much of the value embedded in glass containers is lost in the process. Not only should we keep glass here, we should endeavor to keep it whole.

Glass is the only packaging material the FDA has certified "generally regarded as safe." Containers made from it are suited to reuse better than any other form of food or beverage delivery, and sterilizing them for this purpose is a tried and true practice. Although private capital is needed to develop the necessary infrastructure, existing state programs that fund glass reclamation can be leveraged to attract this investment.

Hawaii has two programs that drive the collection of glass. They are 1) the deposit beverage container (DBC) program, which assesses a 6-cent fee on most single-use beverage containers and 2) the

Photo by AR@zimbarus

The Auditor's Report

Section 342G-107 of the Hawaii Revised Statutes requires the Office of the Auditor to conduct a management and financial audit of the state's Hi5 program and its special fund for even-numbered fiscal years. In 2018, that audit, like every audit before it since the program began in 2005, found that DOH's reliance on self-reported data exposed the program to the risk of fraudulent and inaccurate reporting.

Although distributors are required by law to report the exact number of beverages they sell, no mechanism for tracking the accuracy of their records exists. Similarly, as DBCs are redeemed, operators of the state certified redemption centers self-report the number of containers they collect and DOH reimburses them based on that accounting with no way of knowing if it is accurate.

Like every audit before it, the most recent examination of the Hi5 program records found accounting discrepancies that raised concerns as to whether the amounts being remitted by the distributors or amounts paid to the redemption centers were appropriate.

container glass program which assesses a 1.5-cent advanced disposal fee (ADF) on glass bottles and jars used to deliver food items of 2 ounces or more.

In addition to reimbursing redemption centers for the deposit they pay when DBCs are redeemed, DOH pays a handling fee per container. On Oahu, the fee is 2 cents for every non-glass container delivered to recyclers; on the outer islands it is 3 cents. When it comes to glass, DOH pays a 2-cent fee for each container processed for agricultural or construction use, and 4 cents for each glass container that undergoes remanufacturing. In 2020, the redemption rate for the DBC program was under 62%, the lowest since the program began. Redeeming less DBCs than the number sold results in an overage. The most recent estimate of unredeemed deposits in the DBC special fund is close to $50M.

As for container glass, the ADF collected by the state and passed through to the county does not cover the costs of DEM's glass collection program. In 2020, Hawaii County received $113,630. In 2021, an effort was made to raise the ADF to 5 cents. According to testimony from the Wine Institute, "On wine products alone, a 5-cent ADF would raise about $1.4 million, almost double the 2019 ADF revenue."

ACTION: Increase the container glass ADF to 5 cents per eligible container.

ACTION: Support the development of glass recycling and reuse programs.

KEEP IT HERE

C&D = 22%

Among the many materials discarded as a result of construction, renovation and demolition projects, clean and treated lumber account for nearly half the volume the county collects. The next greatest component in this stream, at roughly 6%, is a mix of residual materials that are largely unrecoverable.

According to the EPA, demolition activities generate more than 90% of total C&D debris, while construction accounts for the rest. Recovering these materials contributes the second highest level of recycling related wages to the U.S. economy, at nearly $10 billion per year via approximately 175,000 jobs. The success of private ventures like ReUse Hawaii have proven that unwanted building materials offer a wealth of economic opportunities. Any further gains in diversion and job creation are dependent on the availability of large covered spaces where salvageable materials can be conveniently off-loaded and stored.

Six county transfer stations—those located in Kea'au, Kalapana, Hilo, Ka'auhuhu, Ke'ei, and Wai'ōhinu—have sufficient space (over 10 acres) for additional collection and processing operations. These would make ideal locations for the provision of covered spaces that could be used to store and process C&D materials. They could also be places where waste concrete, asphalt paving, and asphalt roofing could be stockpiled; although DOH rules do not prohibit this, some restrictions do apply. Funding for these improvements can be generated by assessing a fee on high-value construction projects, with the revenue used to reimburse private sector reclamation enterprises based on the weight of the materials collected.

Photo by HalGatewood.com

The C&D sector is one where the percentage of residual materials is especially high. Treating discarded resources with greater care on the job site is the best way to decrease the volume of unrecoverable C&D materials.

ACTION: Assess a .05% fee on construction projects over $2M to fund a C&D collection program that reimburses private sector reclamation enterprises.

ACTION: Provide covered areas in West and East Hawaii for the collection of unpainted scrap drywall.

ACTION: Provide areas in West and East Hawaii for the collection of discarded asphalt paving and asphalt roofing tiles.

ACTION: Work with Hawaii Community College construction career programs to develop curricula that instill resource recovery as an industry best practice.

DRYWALL = .7%

Although the volume of clean discarded drywall ending up in Hawaii Island landfills each year is relatively low, the ease with which this material can be collected and processed into a soil amendment make it a material well worth diverting.

The hydrated calcium sulfate used to make drywall breaks down easily and, while its ability to increase food production is debatable, its ability to remove salt from soils is well documented. Approximately 1,471 tons of gypsum gets landfilled in Hawaii County each year. Most of this could be diverted for use in the maintenance of coastal golf course and resort landscapes.

Photo courtesy Henry & Co.

THE PROBLEM WITH PLASTIC

Plastic pollution has infiltrated every last natural system on the planet from human placentas to the air columns above the Swiss Alps. Scientists have found evidence of it in the deepest parts of the ocean and in the blood of polar bears. Turning plastic waste into energy or reforming it into new products does nothing to address microplastic pollution. These so-called solutions only exacerbate the problem by deepening our dependency on plastic at a time when we need to curb its use. Schemes to manufacture lumber or septic tanks from recovered waste plastic put it back into the environment where it will degrade into microplastics that can never be retrieved.

The Global Commitment for a New Plastics Economy is an initiative led by the Untied Nations Environmental Programme and funded by the Ellen MacArthur Foundation that aims to address plastic pollution.

This initiative has united 500 organizations committed to achieving targets aimed at 1) eliminating nonessential plastic items, 2) innovating so all essential plastic items are designed to be safely reused, recycled or composted, and 3) circulating the plastic needed to make essential items in the economy and out of the environment.

This groundbreaking initiative also seeks to decouple the use of plastic from the consumption of finite resources while ensuring that plastic packaging is free of hazardous chemicals, and the health, safety, and rights of those involved in its production are respected.

Photo by Nico de Bruyn

According to Ocean Crusaders, plastic waste kills an estimated 100 million marine animals and 100,000 seabirds each year.

Photo by SparkleMotion

ELIMINATING PROBLEMATIC PLASTICS

The types of plastic packaging most commonly identified as problematic include:

1) **Expanded polystyrene**
2) **Polystyrene**
3) **Undetectable carbon black**
4) **Polyvinylchloride**
5) **PVDC**
6) **Single-use plastic carrier bags**
7) **Single-use cutlery**
8) **Single-use straws**
9) **Multi-layer packaging**
10) **Primary film poly-bags**
11) **Metalized films**
12) **Plastic windows in cardboard boxes**
13) **Sachets**
14) **Pumps, trigger sprays**
15) **Secondary film multi-buy**
16) **Labels/stickers**
17) **Tear offs**

While existing county bans on single-use plastic shopping bags and expanded polystyrene (EPS) takeout containers prove the political will to modify public behavior does exist, Hawaii County has not set procurement rules that hold its own agencies to a similar standard.

Last minute changes to Hawaii County's EPS takeout container ban allowed for the use of "suitable" recyclable plastic substitutes along with compostable ones. The county defines "suitable" as made of plastic that "may be processed into materials untilized in the production of new plastic," but plastic contaminated with food cannot be made into new plastic. This puts vendors using these containers, as well as the businesses that sell them, in violation of U.S. Code of Federal Regulations 16 CFR 260 ("Green Guides") requirements for product claims.

ACTION: Set procurement standards that prohibit county agencies from purchasing single-use beverage and polystyrene containers, including coffee cups.

ACTION: Discontinue the allowance of thermoform plastic takeout containers as a substitute for EPS containers.

ACTION: Ban single-use plastics including straws, cutlery and beverage containers, hot and cold beverage cups, cup lids, plates, bowls, bowl lids, stirrers, and plastic film/wrappers for non-prepackaged foods.

THE PLASTIC SOURCE REDUCTION WORKING GROUP

In 2019, the Hawaii State Legislature passed Act 254, which established a Plastic Source Reduction Working Group. The group's recommendations are summarized below:

1) Create a uniform statewide plastic source reduction standard.

2) Update the state health code as needed to increase the use of reusables in food service.

3) Create a single, inclusive, across-the-board 15- to 30-cent user fee on all single-use service ware items as well as a separate 15- to 30-cent user fee on all carryout bags (but not cups, lids, and containers).

4) Enact a tax credit for businesses that invest in modern commercial reuse and washing equipment that reduce the use of plastics in the waste stream.

5) Organize, finance, and conduct a pilot project that tests the efficacy and expense of making UV-C or other sanitizing technology available.

6) Establish a 5-year state-facilitated education campaign about waste reduction.

7) Accelerate composting.

8) Undertake a fair and careful study of Extended Producer Responsibility (EPR).

Rafael Bergstrom, Executive Director of Sustainable Coastlines Hawaii, was a member of the Plastic Source Reduction Working Group. This excerpt from his personal statement reflects the sentiment of those working on the frontlines to solve the plastic pollution problem:

"Despite an overwhelming majority on the working group who wanted stronger action on extended producer responsibility (requiring accountability to full product life cycles and major shifts in supply chains), we were undermined by the few whose direct financial ties to the industry are very clear. "

Recycling as the Supply Chain for the Circular Economy

At the onset of the 21st century, Chinese businesses desperate for ever more raw materials to feed their rapid growth created and sustained markets for low quality recyclables. The U.S. recycling industry met this demand by adopting single-stream collection strategies–where recyclable commodities are collected in commingled containers and transported to a Material Recovery Facility (MRF) for sorting into marketable feedstocks. The single-stream approach produced increased volumes at reduced costs while leading to high levels of contamination, and dominated recycling in the U.S. until China announced it was no longer willing to accept container loads that included non-recyclable materials and organic matter.

By 2013, growing labor costs and disposal issues led the Chinese government to issue a stern warning to recyclers worldwide. This mandate, called Green Fence, declared that if the quality of the materials coming into the country did not improve significantly, China would act. Recyclers and government agencies ignored this warning, so in 2017, China responded with National Sword, a policy that essentially eliminated imports of single-stream recyclables. As a result, recycling programs throughout the world were thrown into turmoil.

According to the EPA, measured by percent of generation, individual products with the highest recycling rates in 2018 were:

1) **lead-acid batteries at 99%**
2) **corrugated boxes at 96.5%**
3) **steel cans at 70.9%**
4) **newspapers at 64.8%**
5) **major appliances at 59.8%**
6) **aluminum cans at 50.4%**
7) **mixed paper at 43.1%**
8) **tires at 40%**
9) **selected consumer electronics at 38.5%**

High rates for these materials prove that markets for them do exist; getting them to market while preserving their quality is the challenge.

Kate Bailey, co-founder of the Alliance of Mission Based Recyclers, deems these components essential for a recycling system that works:

1) Extended producer responsibility to embed waste handling costs into the purchase price of products

2) Deposit return system to drive participation and increase capture rates of beverage containers

3) Minimum recycled content requirements to improve market demand for recyclables and reduce the environmental impact of packaging, and

4) Source reduction targets and funding, including a focus on refillable and returnable containers

Many people took away the wrong message from these changes in Chinese import policies. While China and other Asian nations will no longer accept contaminated recyclables generated by single-stream programs, demand for clean, well-sorted materials is robust. In fact, as the U.S. builds its domestic recycling infrastructure in response to National Sword, China is the leading investor in U.S.-based paper, plastic and electronic scrap reclamation ventures that send clean materials to Asia for processing.

Although Hawai'i County's recycling programs were seriously impacted by these changes, opportunities to rebuild them in ways that address concerns about the potentially negative impacts of recycling abound. Outreach conducted as part of this plan has verified that international brokers are eager to accept clean, well-sorted materials freight on board (FOB) at ports in Hilo and Kawaihae.

The solution to Hawai'i Island's recycling dilemma is to tap into core values shared among Hawai'i County's multicultural citizenry. With nearly 85% of islanders accustomed to dropping off their own discards, a proven track record of producing high quality materials prior to the introduction of mixed recycling, and the popularity of informal, community-based plastic collections already underway, expanding public drop-off recycling sites and creating opportunities for the public to sort materials makes sense. Once clean recyclables are sorted into more categories and baled for shipment, they can be exported to meet growing demand ffor them on the Continental U.S. as well as in Asian countries.

Relevant Trends:

The 2020 Global Commitment Progress Report details actions taken by the initiative's 500 signatories over the previous year. A total of 118 businesses that produce, use and recycle large volumes of packaging are on record committing to significantly reduce the waste their business models generate. As a result of this type of action, for the first time in decades, the amount of virgin plastic produced worldwide decreased in 2019.

Corporations and governments are taking significant actions outside the Global Commitment as well. Some of these are listed below:

- Spain will tax plastic packaging starting in 2023 in order to drastically reduce plastic waste; among the products banned are cotton buds, plastic straws and cutlery.

- Diageo, makers of Johnnie Walker, Smirnoff and Guinness have created the world's first 100% plastic-free, paper-based spirits bottle, made entirely from sustainably sourced wood. Unilever and PepsiCo are project partners.

- Refillable containers are being introduced by Unilever, Procter & Gamble, Nestle, PepsiCo, Mondelez International and Daone, with the result being 300 products marketed in reusable packaging either online through Loop and other e-commerce sites or at brick-and-mortar locations.

- Bans on single-use plasticware in Berkeley and San Francisco, California are stimulating development of businesses that provide reusable takeout containers.

- Microsoft has pledged to achieve zero waste in its products and packaging by 2030; 90% of the materials currently discarded from Microsoft's direct operations will be diverted from landfill and incineration within a decade.

- In 2020, Closed Loop Partners piloted a reusable cup program in collaboration with Starbucks and McDonald's in the San Francisco Bay Area.

- By the time Pure Cycle Technologies completed construction of its first PPE recycling plant in Ironton, Ohio, the company had pre-sold to major corporations all the recycled plastic feedstock it will produce for the next 20 years.

- By 2025, H&M Group will cease using polystyrene, mulitlayer materials, undetectable carbon black, poly-bags, sachets, single-use carrier bags, single-use hangers, plastic windows and tear-offs.

- By 2030, Lego, which makes almost 100,000 tons of plastic bricks each year, will stop using resins made from fossil fuels.

The Plastics Pact Network

The ambitious vision of a circular economy for plastics has inspired the launch of the Plastics Pact Network of initiatives, which now covers 20 countries—representing over 30% of global GDP—with a total of nine Plastics Pacts launched to date across Europe, the U.S., Chile, and South Africa. Each pact represents a partnership between businesses, governments and NGOs focused on solving the crises driven by plastic pollution. Based on a common vision, they set plastic reduction targets and require commitments for public reporting on progress. The U.S. Plastics Pact is led by The Recycling Partnership which works in conjunction with the World Wildlife Fund to achieve the goals of the Global Commitment.

The Global Tourism Plastics Initiative

Launched in 2020, this initiative is led by UNEP and the World Tourism Organization in collaboration with the Ellen MacArthur Foundation. Its signatories are committed to taking action to reduce plastic waste and pollution in the global tourism sector. This initiative also serves as the interface with the Global Commitment.

THE U.S. PLASTICS PACT AIMS TO DELIVER ON THESE GOALS:

TARGET #1—Problematic and unnecessary plastics are identified by 2021 and eliminated by 2025.

TARGET #2—All plastic packaging is 100% reusable, recyclable or compostable by 2025.

TARGET #3—50% of plastic packaging is effectively composted or recycled by 2025.

TARGET #4—All plastic packaging is 30% recycled content or responsibly sourced bio-based plastic by 2025.

TAKING RESPONSIBILITY IN THE TOURISM SECTOR

The Global Tourism Plastics Initiative lists 61 signatories at last count, including Accor, Club Med, Iberostar Group, and Melco Resorts. No Hawaii resorts have signed on to date.

Photo by Vidar Nordli-Mathisen

What about Waste-to-Energy?

All WTE schemes come with a need for sustained waste generation that cannot be justified at a time when Earth's natural resources are being depleted. As momentum in favor of EPR legislation builds and significant infrastructure investments drive expansion of the U.S. recycling industry, long term commitments to sustain current levels of wastefulness are not prudent. Recycling and composting have always been the preferred strategies for handling discarded items that cannot be reused, and WTE technologies, no matter how advanced, and regardless of whether they outsource the combustion aspect by producing fuels, undermine efforts to reduce waste.

Proponents often cite Denmark's embrace of WTE as a way to validate the technology's acceptability and worth, but in 2018, the country that has been incinerating waste the longest made a commitment to cut its existing WTE capacity by a full 30% over the next 10 years. This reversal in Denmark's energy policy is a critical component of its carbon emission reduction plan.

It is also important to note that Japan, the country with the most experience gasifying solid waste, has reduced its WTE capacity by retiring 600 of its 1,800 gasification plants in recent years.

Rather than anticipate advancements that might someday make gasification or pyrolysis technologies acceptable, the county should take immediate action to achieve the environmental and economic goals set forth in its general and community development plans as well as its climate action initiative through the reduction of waste. A more in-depth review of WTE is provided as an addendum to this plan.

Other sources of information on gasification and pyrolysis technology relevant to Hawaii County's needs include:

1) **"Waste Gasification & Pyrolysis: High Risk, Low Yield Processes for Waste Management–A Technology Risk Analysis"** prepared by The Global Anti-Incineration Alliance in 2017

2) **"All Talk and No Recycling: An Investigation of the U.S. Chemical Recycling Industry"** 2020

3) **"European Incineration Myths,"** issued by Zero Waste Europe in 2020. This document summarizes the variety of measures recently taken to discourage investment in all future solid waste incineration technology.

SEND IT ALONG

PLASTICS=11%

Although plastic waste accounts for a relatively small percentage of the total tonnage collected on Hawaii Island each year, diverting it from the landfill presents an outsized challenge. This is primarily due to plastic's ubiquitous use as a packaging material in direct contact with food and the fact that most of it is only recyclable in theory.

Low value materials like film plastics that satisfy manufacturers' demands for least cost packaging options become useless once they are contaminated with food waste. Until recently, #5 plastic was considered non-recyclable because of its tendency to absorb food odors. Compostable alternatives do exist and although their use for food service seems ideal, they come with issues related to the use of harmful plasticizers (such as PFAS and PFOS), the sustainability of the feedstocks used to produce them, and the need for composting facilities that can break them down and return their organic components, along with those originating from food contaminants, to the soil. Although the use of compostable bioplastics is a strategy recommended by The Global Commitment, they cannot be universally substituted for fossil fuel plastics.

Markets for clean, well sorted plastics do exist and recent attempts by local adherents to the Precious Plastics Movement have proven that significant interest in this type of activity exists to warrant clean stream pilot programs. Clean stream collections can occur outside the system of county transfer stations provided that the collected materials do not resemble waste.

Photo by Marc Newberry

PETE: (*polyethylene terephthalate)* a commonly used plastic found in most water and soda bottles

HDPE: (*high-density polyethylene*) a stiff plastic used for milk jugs, detergent bottles and toys. It is the most often recycled and one of the safest forms of plastic.

PVC: (*polyvinyl chloride*) dubbed "poison plastic," PVC contains a number of toxins and is not recyclable.

LDPE: (*low-density polyethylene*) found in shrink wraps, squeezable bottles, and grocery bags, LDPE is considered relatively safe. It is not commonly recycled.

PP: (*polypropylene*) tough and lightweight, PP is mainly used for packaging food.

PS: (*polystyrene*) cheap and lightweight, PS is used to make Styrofoam products and packing "peanuts."

Other: a catch-all category for less common plastics.

The popular claim that only 9% of the plastics ever produced have been recycled is misleading. Most of the plastic ever produced is still in use, including billions of tons of PVC piping designed to never be replaced. Recycling rates for single use plastics vary; for example, the U.S. recycling rate for PET bottles was 27.9% in 2019. Creating markets for recyclable plastics is a key component of The Global Commitment, which encourages governments to set post-consumer resin targets for both products and packaging. Numerous trends indicate that these markets are set to expand significantly.

A new law in California mandates that, by 2022, all plastic beverage containers sold in the state must contain at least 15% post consumer resin, with this percentage increasing to 25% by 2025 and 50% by 2030. Failure to meet the required targets draws a whopping 20-cent per pound penalty for every pound a manufacturer falls short. The National Association for PET Container Resources estimates that the U.S. would have to recycle over 54% of the PET it currently uses to achieve a 25% recycled content target; whereas a 94% recycling rate would be needed to meet a 50% target.

This plan calls on Hawaii County to respond to the trends driving the expansion of the U.S. plastics recycling industry, including the Basel Convention which effectively prohibits export of plastic waste to foreign markets. Developing clean stream collection pilot programs now is the best way to prepare county residents, business owners and visitors for the changes ahead. Hawaii Island is uniquely positioned to meet market demand for clean, well sorted plastics.

WASTE-TO-WEALTH

TEXTILES= 2.6%

Second to oil, the global textile industry is the greatest non-military source of pollution on the planet. It generates roughly 100 billion garments each year, most of them used an average of six times. In the process, a total of 1.2 billion tons of GHGs are generated, which is more than the global aviation and maritime shipping industries combined. Together, textile manufacture and use represent the single greatest source of plastic microfiber pollution; about 500 thousand tons of plastic microfibers end up in the ocean annually when plastic textiles are washed, the equivalent to over 50 billion plastic bottles. Once in the ocean, these microfibers infiltrate other natural systems; today, they are found in over 83% of the world's drinking water.

Although the zero waste philosophy prioritizes reuse, reusing plastic clothing leads to more and more microplastic pollution, with the amount of microfibers released during washing increasing as an article of clothing wears out. Exporting used clothing is a form of exporting microplastic pollution, and the high volume of cheap plastic clothing typically found in shipments to developing nations is also a source of nitrous oxide (N2O) emissions. As a GHG, N2O is 310 times more potent than CO2.

Another critical concern for developing nations is the impact a seemingly unending source of cheap garments has on small-scale, traditional textile manufacturing enterprises geared towards the use of natural fibers.

Photo Courtesy MJ Trends

Addressing the impact textile and garment manufacturing have on the environment is a huge challenge that will require major changes at every step of the value chain from design and production, consumption and use, and disposal and recycling. An estimated 63% of all textiles are made with plastic fibers, which is why they are categorized as plastic rather than organic waste in this plan. As with other plastic waste, elimination strategies targeting materials that cannot be safely reused, practically recycled or composted are needed.

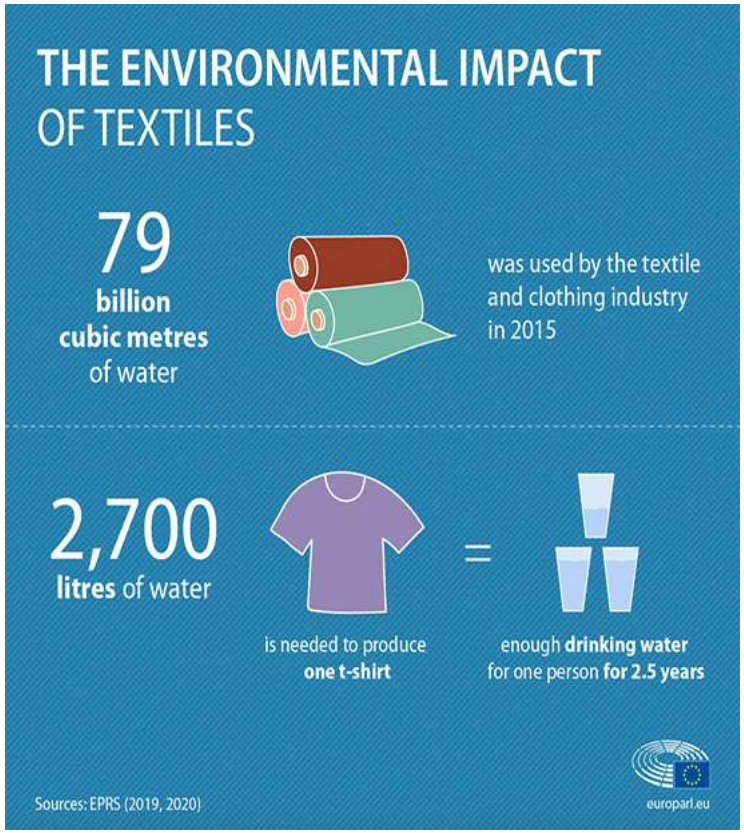
According to the Secondary Materials and Recycled Textiles Association, 45% all used clothing and household textiles can be re-used as apparel; 30% can be converted into industrial polishing/wiping cloths; and 20% can be processed into fiber for the remanufacture of new products. Achieving this 95% recovery rate and avoiding secondary environmental impacts requires proper handling.

In Hawaii, preserving and harvesting the value of discarded textiles means stockpiling them in mildew-free environments. Preventing microplastic pollution requires water filtration and the proper disposal of captured fibers.

Programs dedicated exclusively to the collection of unwanted textiles are needed. Given the level of care clothing receive on a regular basis, diverting them to such programs is relatively easy; the challenge comes with handling the volume, which in Hawaii County amounts to about 5.5 tons per year. DEM does require the vendor that manages its reuse centers to accept used clothing, but, like all other clothing reuse outlets

The environmental impacts of an industry that produces 100 billion garments a year cannot be ignored. Satisfying annual global demand for clothing consumes 39 billion gallons of water, 23% of all the chemicals produced worldwide, and leads to 20% of the world's industrial water pollution. It takes 70 million barrels of oil to produce enough polyester to meet global demand. Plant-based fibers offer some benefits, but only if the feedstocks for them are grown organically and harvested sustainably.

When it comes to climate, according to McKinsey & Company, if 80% of people in emerging economies consumed clothing at the same rate as Americans, by 2025, global CO2 emissions would increase a full 77%.



on the island, the vendor limits the quantity it accepts in order to avoid being overwhelmed.

Expanding Hawaii County's capacity to accept and process unwanted textiles will require a significant investment of capital and human resources; given the upstream impacts of this waste, the effort is justified. Charitable organizations that focus on creating opportunities for the underemployed should be engaged to stand up the program; demand for handmade, eco-friendly, haute couture should be taken advantage of to sustain it.

Reclaiming textiles is a water intensive process. The potential for making industrial use of the R2 water coming out of Hawaii Island wastewater treatment plants for textile reprocessing should be explored as a means to attract outside financing and share the costs of replacing existing infrastructure.

ACTION: Require commercial laundromats to install plastic microfiber filters.

ACTION: Collaborate with other counties to introduce legislation requiring the addition of plastic microfiber filters on all washing machines sold in the state.

ACTION: Solicit proposals for textile diversion programs.

ACTION: Engage private foundations and workforce development agencies in exploring the feasibility of a natural fiber textile reprocessing pilot program.

ELECTRONICS=?

According to research done by U.S.PIRG, the average American family generates 176 pounds of electronic waste per year which equates to a national total of 6.9 million tons annually, while repairing these items instead of discarding them would save the same family $433 per year and provide the nation $40 billion in annual savings. With only outdated waste composition studies to rely on, determining the percentage of discarded electronics in Hawaii County's wastestream is a guessing game. Using the PIRG average, island families would generate an astonishing 5,632 tons per year.

Hawaii's e-waste program only covers computers, related equipment and TVs. It generates about $350k per year through fees assessed on manufacturers who must register with DOH in order to sell these items in the state. The fees do not come close to covering e-waste collection costs, which for the most part, are borne by registrants. Under the state program, manufacturers submit a recycling plan each year, which they then implement at their discretion. The state does not impose any goals for the program and there is nothing in the law that mandates the provision of recycling services for outer islands. As a result, manufacturers are free to meet the arbitrary goals they set for themselves by collecting computer equipment and TVs on Oahu.

This system leaves Hawaii County to develop and fund e-waste collections on its own. DOH does remit a portion of the registration fees it collects to DEM; and in 2020, this amounted to $160k, approximately 46% of the total registration revenue collected in FY19. Clearly the law that established the state's e-waste program in 2009 needs revision.

Photo by John Cameron

Nixing the Fix

A workshop on repair restrictions

In May 2021, the Federal Trade Commission released a long awaited report regarding claims that manufacturers purposely limit repairs of their products as a means to boost profits. Its primary conclusion: Repair restrictions are bad for consumers and likely to place a greater financial burden on communities of color and lower-income Americans.

To quote the report: "There is scant evidence to support manufacturers' justifications for repair restrictions. . . the majority of manufacturers' explanations for repair restrictions are not supported by the record."

To address the issue, the FTC recommends introduction of new legislation to lift restrictions and open repair markets. This comes on the heels of a vote by the European Parliament to endorse a European Union recommendation to enact right-to-repair legislation as a means to extend the life of electronic devices and reduce waste.

The FTC based its conclusions on research it conducted in preparation for a "Nixing the Fix" workshop it held in July of 2019.

It is also important for the state to set goals for the program. This plan recommends that Hawaii County DEM work with its counterparts and DOH to establish goals that increase over time until all discarded electronics are collected and diverted to repair or recycling programs.

Hawaii's existing e-waste program also fails to address the waste created when other electronics are sent to the landfill. Hawaii County does run a program that collects large appliances, also known as white goods, but this program only scraps these items to salvage metal. When it comes to preserving the value of electronics, the highest priority should be repair. A national movement to pushback against planned obsolescence, called the "Right to Repair," is gaining momentum globally, and its proponents have developed pilot projects across the U.S.

ACTION: Collaborate with Maui and Kauai to introduce and pass legislation requiring manufacturers to provide collection services to the outer islands.

ACTION: Collaborate with Maui and Kauai to introduce and pass legislation mandating an expansion of the state's e-waste program to include solar equipment that has reached the end of its useful life.

ACTION: Partner with non-profit organizations to attract funding for appliance repair workshops.

ACTION: Support the introduction of Right-to-Repair legislation at the state level.

ABANDONED VEHICLES

As the most profitable resource recovery industry in the world, automobile recycling offers the greatest waste-to-wealth potential among the programs promoted in this plan. Each year, DEM collects approximately 1,000 abandoned vehicles from private, county and state roadways with the help of a private contractor hired to haul them away. This program is funded by the $12-fee collected when vehicles are registered annually, and accrues over $2M per year.

In FY18/19, the most recent year for which figures are available, sales of auctionable vehicles generated $31, 692 in revenue for the county.

DEM is currently planning to expand its capacity to hold abandoned vehicles. An existing lot will be reconfigured to hold 100 impounded vehicles, and a 5,000 sq.-ft.covered space will be added to store and preserve the value of up to 25 vehicles that are deemed auctionable.

Taking greater advantage of this resource requires a means for making collected vehicles available to private sector dismantlers and safely handling the hazardous metals, refrigerants and fluids found in them. Obtaining the permits needed to handle these substances would also allow DEM to collect used motor oil from the public, which would greatly increase the efficacy of the state used motor oil program.

ACTION: Establish a program that makes abandoned vehicles available to private sector dismantlers.

Photo by Jessica Palomo

REUSE CENTERS

Hawaii County's islandwide system of depots that accept reusable materials is one of its more successful programs and a prime example of how providing the public resource recovery opportunities provides jobs and promotes resiliency.

The success of this program can be attributed to its co-location with county transfer stations. Keeping the same hours as waste operations and locating adjacent to them makes diversion convenient for the public; while access to prime real estate and a steady stream of materials, both at no cost, greatly increases profitability for the private contractor that manages seven of the county's eight reuse centers. (The Laupahoehoe Reuse Center is managed by community volunteers.) Additional county support comes in the form of a monthly subsidy, which, from May 2019 to April 2020, amounted to more than $25k, and in the following year, just over $14k.

Although it's impossible to say how long materials initially diverted through this program stay out of the landfill, the county does track the volume of unsellable materials that eventually get off-loaded by center operators. From 2018 through 2020, this totalled approximately 116 tons.

DEM estimates that, as of 2018, the total volume of materials diverted since the county reuse program began in 2003 was 3,000 tons. Throughout this period, reuse centers operating on the east side of the island have consistently diverted close to twice the amount diverted by those located on the west side.

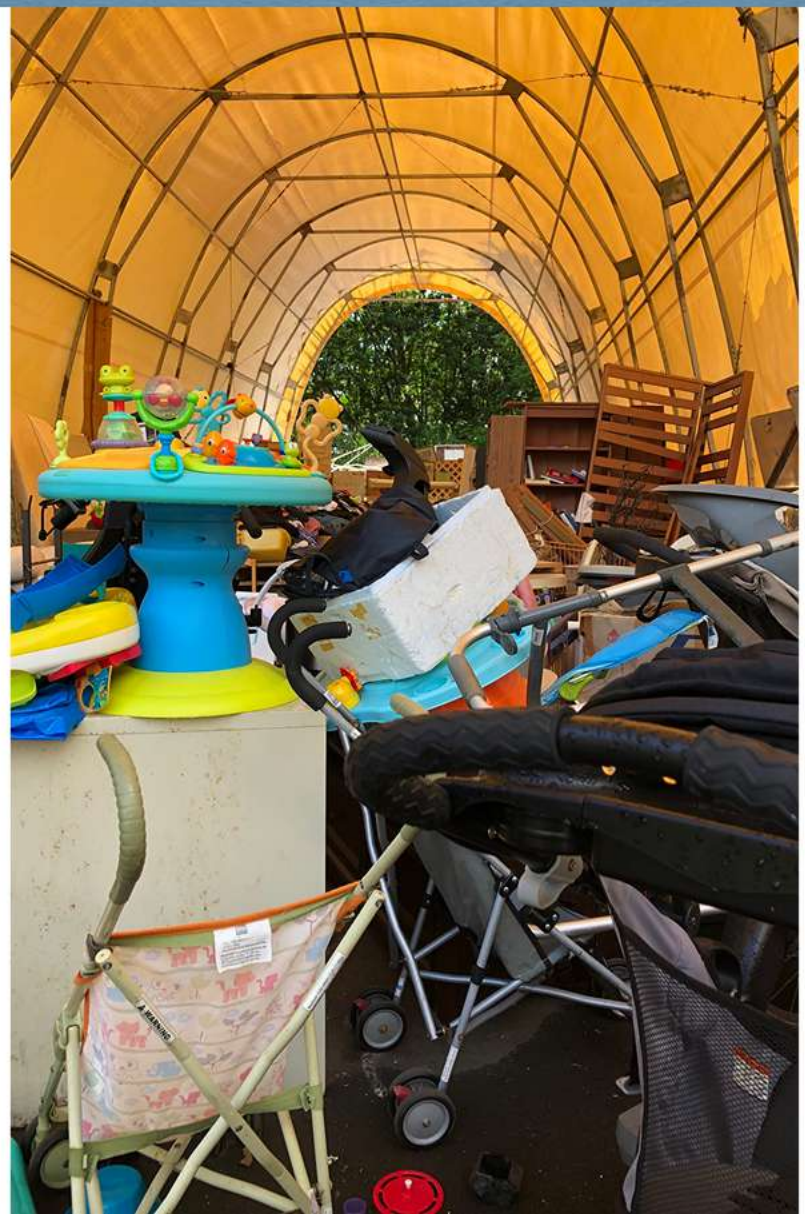


Photo by Kristine Kubat

A photo of the Keaau Reuse Center that clearly illustrates the need for additional covered space.

Another major consideration for this county program, or private reuse enterprises, is the vast difference in climate conditions between the east and west sides. Dry conditions in leeward areas make it far easier to preserve the value of reusable materials, especially items like mattresses and textiles.

Although reuse strategies offer the greatest potential for creating jobs and generating wealth, the county does little to capitalize on such opportunities. Instead it diminishes this potential by limiting its reuse program to what is essentially an ongoing, islandwide rummage sale. Maximizing the economic benefits of reusable items requires a commitment to preserve and increase their value, which in turn requires a means for properly storing and marketing them. Another level of value is added when opportunities to make repairs are provided.

Providing additional covered space for reuse activities, especially on the windward side of the island, is the first step to rectifying the situation, but the county must also commit to restoring program subsidies so the contractor that manages the facilities can afford to invest in improvements. The current policy of drawing down on funding to make the program more self-sufficient has severely degraded the reuse experience. This approach can only lead to decreased diversion and participation rates.

ACTION: Provide additional covered space for reuse activities.

ACTION: Increase reuse program funding.

ACTION: Expand reuse programs to include repair activities.

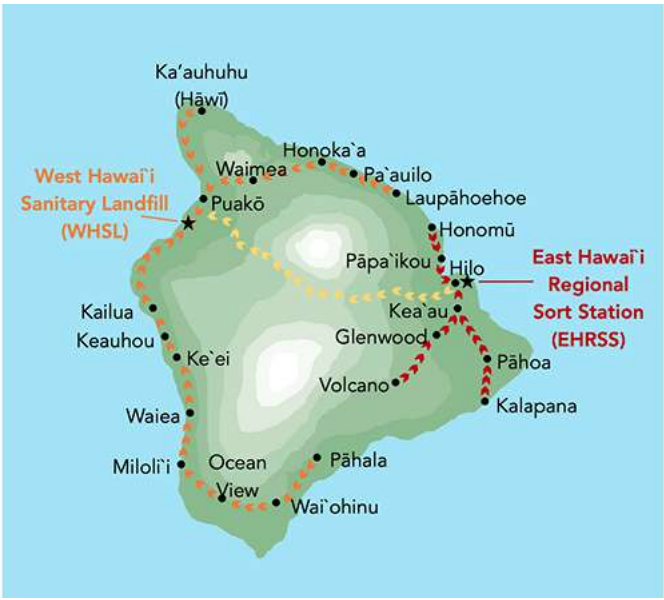
Photo by Kristine Kubat

A photo of the Keaau Reuse Center that clearly illustrates the need for facility improvements.

INFRASTRUCTURE

The Solid Waste Division operates and maintains, either with its own workforce or through contracted services, one landfill, 22 transfer stations and islandwide hauling operations in accordance with local, state and federal guidelines and regulations. The Solid Waste Division also maintains operational base yards in South Hilo, Waimea, and Kealakehe. There is no public residential curbside collection on Hawai'i Island, and an estimated 85% of residents haul their discards to one of the 22 transfer stations. These facilities provide chutes that deliver mixed discards into large transportable compacting containers; some of the stations also provide roll-off bins for recyclables. They are not open for use by commercial generators, who either haul their own discards to the landfill (self-haul) or hire a contract hauler. A small percentage of residents also hire the same hauling companies, some of which advertise recycling services as well.

Six transfer stations (Kea'au, Kalapana, Hilo, Ka'auhuhu, Ke'ei, and Wai'ōhinu) have sufficient space (over 10 acres) for additional collection and processing operations. These sites are also well suited for the development of community engagement programs. Collectively, the above-mentioned sites serve a population of approximately 69,500 people.



Map by Melody Euaparadorn

The system of 22 transfer stations that provide Hawaii Island residents, business owners and visitors with convenient and safe drop-off locations for the things they no longer want evolved as part of an outdated approach that treats all discards as waste. Maintaining the facilities and manning the operations that comprise this system are costly endeavors, and when the end result of this expense and effort is a continued drain on planetary resources, increased greenhouse gas emissions and pollution that cannot be controlled, those costs cannot be justified. Diverting materials from the landfill as a means to reduce Hawaii Island's carbon footprint, create jobs, build soil and displace consumption of virgin resources are primary goals of this plan. In order to achieve them, a new system for handling discarded materials is needed.

Over the past several decades, DEM has made an effort to provide for recycling activities when improving its transfer stations, but as long as the main purpose of the county system is to accommodate more wastefulness, reduction programs will be ancillary. Transforming the entire system into one that encourages and facilitates resourcefulness is a huge undertaking, especially in high population areas. The degree to which the system depends on costly hauling operations of both waste and recyclables must be also be addressed.

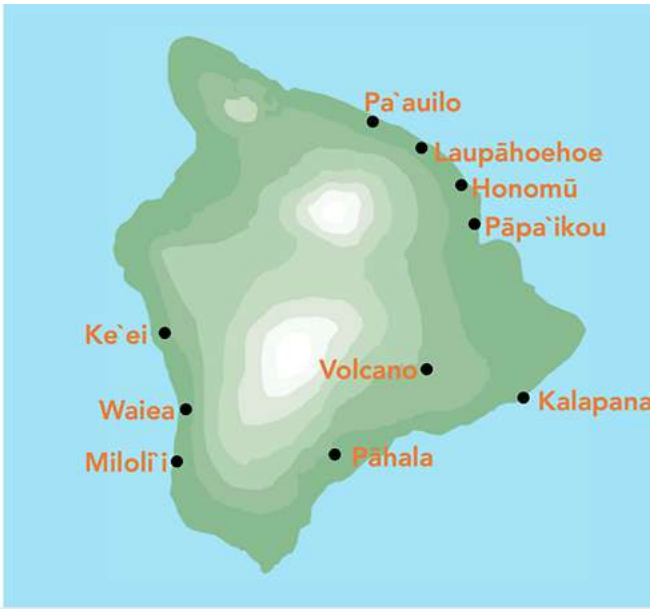
DEM maintains a list of needed infrastructure improvements as part of its ongoing commitment to keep up with growing demand for its services, and funding requests for them are added to DEM's budget annually, often in increments that accrue until the full amount for a specific project is attained. Implementing this provision of the plan requires a reassessment of DEM's existing budget to determine how funds could be reapportioned in support of its waste reduction goals.

The transfer stations that generate the lowest volumes of waste are also among the farthest from the West Hawaii Sanitary Landfill, which makes them ideal locations for piloting models designed to save operational costs while promoting resource recovery. Converting these relatively quiet outposts in rural communities into centers where families and friends can gather to engage in environmentally friendly activities is an objective well worth the investment.

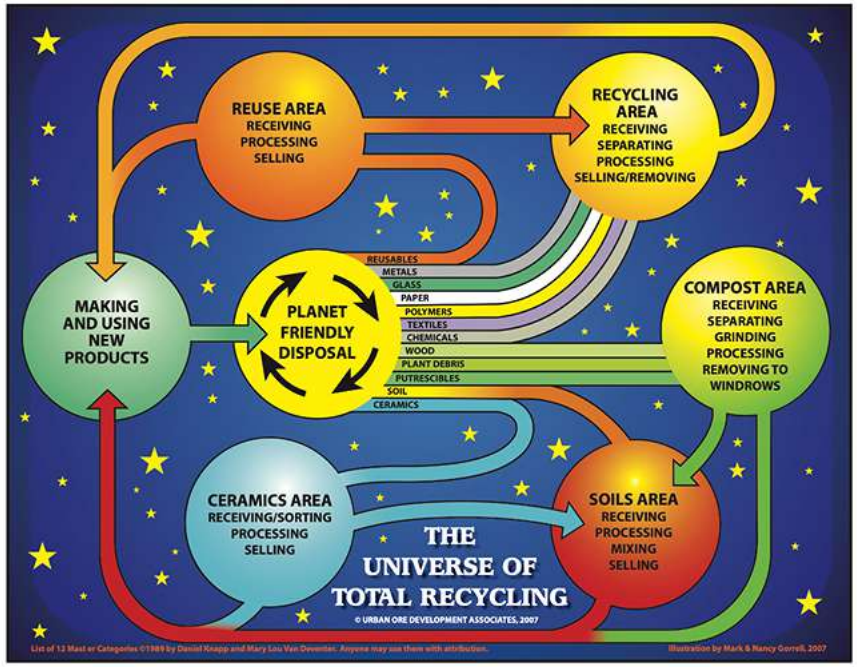
Among the 10 stations collecting less than 4 tons per day, the Ke'ei Transfer Station, which is located over 38 miles from the WHSL, offers a unique opportunity for establishing a community resource recovery center. It is situated on land owned by Kamehameha Schools, a charitable organization with the mission of providing educational opportunities that improve the capability and well-being of people of Hawaiian ancestry. The arrangement through which the county pays $10,000/year to lease the land could be restructured to support the center's development.

10

Transfer Stations Receive Less Than 4 Tons Per Day



Map by Melody Euaparadorn



The resource pipe *has no end* - that's the point! After we Reduce our resource use and our discards, we Reuse and Recycle. Total Recycling recirculates manufactured products and already-refined resources. It provides feedstocks for new products, building the economy while preventing unnecessary mining and logging. No waste is good waste.

URBAN ORE® TO END THE AGE OF WASTE

Courtesy Urban Ore

Urban Ore is a 30,000-sq.ft. resource recovery facility that sits on 3 acres in Berkeley, California, a municipality with a population of just over 120k compared to Hawaii Island's nearly 190k residents. This for-profit operation was started in 1990 by Dr. Dan Knapp (who still manages it today) and current board members Mary Lou Van Deventer and Michael Casady.

About 75% of the materials processed at Urban Ore are dropped off by local residents; another 25% comes from outside traders who go out into the community to collect reusable materials and negotiate sales on high value items such as antiques. This system is also used to deliver purchased items to customers.

Urban Ore's reuse operation currently provides 32 full-time jobs, while providing a model resource recovery scheme that functions within a greater waste diversion infrastructure like the one illustrated left.

FUNDING

Funding for county waste management programs comes from two sources—property taxes and landfill tipping fees. In FY20/21, taxpayers will contribute approximately $25M, while the commercial haulers charged $112 per ton to use county facilities will contribute about $12M. Although this $37M-budget includes a significant increase in the amount allocated for landfilling over prior years, funding for recycling programs, including total expenditures on waste reduction activities, was slashed a full 33%.

This ongoing state of affairs, in which funding for waste reduction can never be found, is a direct consequence of a management approach that treats waste collection and disposal as essential services and diversion strategies as appurtenances. Using former budgets as templates for future ones drives the perpetuation of an unsustainable past. In order to achieve the goals set out in this plan, Hawaii County must commit to providing a dedicated, reliable source of funding for its implementation; and, in a reversal of DEM's fiscal priorities, that commitment must take the form of a strategic zero waste budget developed independently from the department's standard budgeting process.

Mapping out the transition from a system that spends $37M a year creating waste to one that spends the same or less on a system that recovers resources is the single most important action called for in this plan. The process begins with an assessment of DEM's contractual obligations to serve as the basis for the next critical step—planning a strategic withdrawal from practices that perpetuate waste-making and replacing them with practices that support resource recovery and W2W initiatives. The success of the process depends on the director's ability to reimagine the county's waste stream as a wealth stream and identify opportunities that generate income, either over the long term or during a transitional period. Some of these opportunities could result in payments to the county; others would create advantages for private sector businesses or nonprofits.

The Hawaii County Strategic Zero Waste Budget must include the following elements:

1) An accounting of existing contractual obligations, including a timeline of when those obligations are set to expire or come up for renegotiation.

2) An accounting of the department's full-time waste-handling positions and when the county employees holding those positions are set to retire.

3) A plan for replacing waste-handling positions with resource recovery jobs that includes a training component.

4) An analysis of waste reduction actions recommended in the ISWMP that prioritizes their implementation and accounts for their costs.

5) A timeline for the reallocatiion of funding from existing obligations to resource recovery programs.

TRANSITIONAL FUNDING OPPORTUNITIES

EPR Mandates: Requiring producers to accept responsibility for the impact their products and packaging have on municipal waste management systems is the best way to fund the transition from wasting to resource recovery. Tying EPR fees to the volume of waste produced creates an incentive for reducing that volume and driving down EPR costs.

Transitional Zero Waste Fee: The Hawaii County tax base is supported by approximately 10,000 lots. A $10/mo. fee would generate $12M per year and $60M over a 5-year period.

Point of Sale Donations: The simplest EPR program of all is one that offers consumers the opportunity to make voluntary contributions to zero waste programs at the time of purchase. The program could be promoted via a high profile media campaign that tracks the amount raised and the progress made over the transitional period.

A carefully managed transition guided by a strategic budget will eventually allow the county to dedicate the bulk of its funding to waste reduction programs, although in the early stages additional funds will be needed as DEM maintains the old system while crafting the new one.

In its call for the establishment of a Zero Waste Fund, the Hawaii County ISWMP outlines the following method for generating funding for waste reduction programs: "To encourage local innovation and participation, the County would fund community zero waste initiatives with fees levied on landfill disposal. The County could leverage private sector investments by adopting supportive policies and by providing technical assistance, matching funds, and letters of support for independent financing and/or grants. The more that nonprofits and private companies invest in expansion of reuse, recycling, and composting programs, the less the County needs to invest. The County could also identify and support proposals for state, federal, and foundation grants and loans for local zero waste businesses and service providers."

While these suggestions represent a valid means for raising the necessary funding, acting on them will not negate the need for a strategic zero waste budget. Developing and adopting such a budget will greatly enhance the county's ability to attract funding from outside sources. It will also assist in the allocation of contributions from producers as EPR mandates kick in. The transition away from a system that trashes discarded resources to one that maximizes their resale value will not occur without a cogent plan for withdrawing funding from the former and redirecting it to the latter.

Concerns over the time needed to fully transition from a system that makes trash to one that recovers resources should not thwart development of the strategic zero waste budget. The county must commit to making the change. Planning for a reduction in funding for waste collection and disposal activities signals to outside funding sources that the commitment is real and worthy of support. It also prepares the county to efficiently stand up programs in response to federal and state actions aimed at reducing plastic pollution.

Courtesy Urban Ore

ACTION ITEMS

COMPOSTING

Abandon plans for single large-scale composting facility in favor of a distributed system that prioritizes the needs of farmers and makes it easy for residential and commercial generators to divert waste organics.

Require the county parks department to mulch its green waste.

PAPER

Establish private-public partnerships that recover cardboard, paper bags and newspaper for processing and redistribution to end-users.

Support the development of pilot projects that turn reclaimed egg cartons, boxboard, toilet paper rolls and lower grades of waste paper into useful items.

GLASS

Increase the ADF on glass to 5 cents per eligible container.

C&D

Assess a .05% fee on construction projects over $2M to fund a C&D collection program that reimburses private sector reclamation enterprises.

Provide covered areas in For the collection of scrap drywall.

Provide areas for the collection of discarded asphalt paving and asphalt roofing tiles.

Work with Hawaii Community College to develop resource awareness curricula for its construction programs.

PLASTIC

Partner with the public to provide monitored, clean stream collection opportunities.

Develop strategies for capitalizing on the shipping industry's unused backhaul capacity to move plastic off-island.

TEXTILES

Require commercial laundromats to install plastic microfiber filters.

Collaborate with sister counties to introduce legislation requiring plastic microfiber filters on all washing machines sold in the state.

Solicit proposals for textile diversion programs.

Engage private foundations and workforce development agencies in exploring the feasibility of a natural fiber textile reprocessing pilot program.

ELECTRONICS

Collaborate with sister counties to introduce and pass legislation requiring manufacturers to provide collection services to the outer islands.

Collaborate with sister counties to introduce and pass legislation mandating an expansion of the state's e-waste program to include solar equipment that has reached the end of its useful life.

Partner with non-profit organizations to attract funding for appliance repair workshops.

Support the introduction of Right-to-Repair legislation at the state level.

ABANDONED VEHICLES

Establish a program that makes abandoned vehicles available to private sector dismantlers.

REUSE CENTERS

Provide additional covered space for reuse activities.

Increase reuse program funding.

Expand reuse programs to include repair activities.

GLOSSARY

Term	Definition
Calcium Sulfate	A calcium salt that is used for a variety of purposes, such as building materials and desiccants
Carbonaceous	Consisting of or containing carbon
Carbon Sequestration	The process of capturing and storing atmospheric carbon dioxide
Circular Economy	An economic system that aims to redefine growth, focusing on positive society-wide benefits by gradually decoupling economic activity from the consumption of finite resources and designing out waste
Closed-loop	A system where recycling of a material can be done indefinitely without degradation of properties
Cullet	Recycled broken or waste glass used in glass making
Down-cycling	To recycle something in such a way that the resulting product is of a lower value than the original item
Expanded Polystyrene	A rigid cellular plastic that is used for fish boxes, packaging for electrical consumer goods, and for insulation panels for buildings
Gasification	A process that converts organic or fossil-based carbonaceous materials at high temperatures, without combustion, into carbon monoxide, hydrogen, and carbon dioxide
GHG	Abbreviation for greenhouse gas
Green Waste	Solid waste that includes leaves, grass clippings, garden and yard wastes, tree trunks, holiday trees, tree trimmings, and/or prunings
Gypsum	A soft sulfate mineral, frequently used as the main component in plaster, fertilizer, chalk, and drywall
Invasive Species	An organism that causes ecological or economic harm in a new environment where it is not native
Marine Debris	Any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment

Term	Definition
Metalized Film	Plastic coated with a thin layer of metal
Microfiber	Extremely fine, synthetic yarn
Microplastics	Fragments of any type of plastic less than 5 mm in length
Mixed Recycling	When all recyclable material is disposed of together
Multi-layer Packaging	A type of packaging that utilizes multiple layers of various materials, commonly seen in tetra packs containing milk and juice
Plasticizers	A substance added to a synthetic resin to produce or promote plasticity and flexibility
Polystyrene	Commonly referred to as "Styrofoam," and often used for coffee cups, takeout containers, and packing material
Polyvinyl Chloride	Also known as PVC, it is used for making items such as bottles, non-food packaging, and food-covering sheets
Primary Film Poly-bags	Plastic bags commonly used to store and transport goods, such as handle-less bags
PVDC	The abbreviation for Polyvinylidene chloride, it is applied as a water-based coating to other plastic film
Pyrolysis	The heating of an organic material, in the absence of oxygen
Source Separation	When recyclable material is cleaned and sorted prior to collection
Soil Amendment	Any material added to a soil to improve its physical properties, such as water retention, permeability, water infiltration, drainage, aeration and structure
Undetectable Carbon Black	Black plastic packaging, which is primarily used in fast food trays and other plastic pots, tubs, and trays
UV-C	UV-C radiation is a known disinfectant for air, water, and nonporous surfaces
Vermiculture	The cultivation of earthworms

HAWAII COUNTY ZERO WASTE PLAN

2021

PREPARED BY RECYCLE HAWAII IN CONJUNCTION WITH THE INSTITUTE FOR LOCAL SELF-RELIANCE, ZERO WASTE ASSOCIATES AND HIDDEN RESOURCES.