

PATHWAYS TOWARDS CIRCULARITY

THE ZERO WASTE ISLANDS FRAMEWORK

A PRACTICAL GUIDE FOR CIRCULAR AND RESILIENT ISLAND SYSTEMS





**PATHWAYS TOWARDS CIRCULARITY:
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A PRACTICAL GUIDE FOR CIRCULAR AND RESILIENT ISLAND SYSTEMS**
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GAIA is a global network of more than 800 grassroots groups, networks, NGOs, and individuals. We envision a just, Zero Waste world built on respect for ecological limits and community rights, where people are free from the burden of toxic pollution, and resources are sustainably conserved, not burned or dumped. We work to catalyze a global shift towards ecological and environmental justice by strengthening grassroots social movements that advance solutions to waste and pollution.

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LIST OF ACRONYMS

BAU	Business-as-usual	MRF	Materials Recovery Facility
CSR	Corporate Social Responsibility	PAYT	Pay-As-You-Throw
DCA	Divers Clean Association	PV	Photovoltaic
EPR	Extended Producer Responsibility	SIDS	Small Island Developing States
FAO	Food and Agriculture Organization	WABA	Waste Assessment and Brand Audit
IEC	Information, Education, and Communication	WACS	Waste Assessment and Characterization Survey
IPCC	Intergovernmental Panel on Climate Change	ZWI	Zero Waste Island
MIZA	Mission Zero Academy		

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1. INTRODUCTION

On the surface, islands are archetypal symbols of relaxation that offer pristine and biodiverse ecosystems. The image of clear blue waters, white sandy beaches, and thriving greenery and marine life simply invites more than dissuades.

Despite all their charm, islands—land masses surrounded by a large expanse of ocean—are also characterized by their limited resources. They rely on imported products because of the lack of variety in local goods and services due to the limitation of options inland. These restrictions lead to import dependence on unnecessary products which is further aggravated by mass tourism activities.

With the intensification of globalization and the prominence of social media, previously remote destinations have gained popularity, and accessibility has been made possible to the whole world. As a result, tourism has become a prominent source of livelihood and a staple part of the economy for many islands globally. The growing demands of island tourism puts additional pressure on already resource-scarce communities, especially when it comes to the limited supply of water, food, and energy. Due to most islands being single sector-based economies, those with a prominent tourism industry face tensions between livelihood opportunities and environmental protection efforts when a tradeoff is made to allow unregulated human activity in ecologically sensitive areas in the name of GDP growth and development. The significance of import- and tourism-dependence of island economies further implies a shift away from the consumption of local produce and preference for traditional food, an effect that can likewise be associated with the waning support towards ancestral agriculture and fisheries.

A crucial element of an island's physical geography is their vulnerability to climate change, and its impact would depend on the context of the island (urban or rural, tropical or non-tropical). Appropriately termed as a “threat multiplier,” climate change exacerbates natural hazards and their impacts which worsen existing vulnerabilities already experienced by isolated geographies like that of islands. The drastic shifts in weather patterns and prolonged periods of drought will affect agricultural activity alongside farmers’ livelihoods. Higher overall temperatures and an increase of carbon dioxide in the atmosphere leads to changes in ocean temperatures and ocean acidification which impacts marine habitat and biodiversity, and creates additional consequences for fishermen and communities that rely on the ocean for their subsistence.

Intrinsically linked to the issues of import dependence, resource scarcity, environmental pressures, and vulnerability to climate change is an island's waste management system. The increasing traffic of tourists also denotes an increase in products and waste being imported, further overwhelming an already limited infrastructure for waste collection and management. In addition to marine pollution and litter being carried to an island's shores by the wind and the ocean, islands also become major sources of plastic leakage as a result of the insufficient land for storage and landfilling.

As the compounded effects of climate change continue to threaten lives, livelihoods, and the ability of future generations to thrive, it is crucial that island communities become capacitated to cope with and mitigate its impacts. As an issue of climate justice, it is imperative to enable island communities to approach their waste and resource management through a socially just, ecologically sound, and regenerative strategy that prioritizes the well-being of local residents.

This document proposes a set of guidelines for island communities to implement a Zero Waste Islands Framework. This framework will be developed through the assessment of key features of an island and taking stock of best practices to sustainably manage waste and other resource vulnerabilities of islands around the world. This framework considers material and financial constraints along with the richness of the natural environment and local ways of life in developing multisectoral and multipurpose strategies to achieve the goal of a sustainable and regenerative island ecosystem. Underpinned by an environmentally and socially just approach, this document aims to provide a roadmap to guide local leaders, decision-makers, and environmental champions to apply the framework in their own communities.





2. PURPOSE, SCOPE, AND LIMITATIONS

By drawing from proven practices by communities worldwide, this Zero Waste Islands Framework aims to inspire island governments to take their first steps towards circular and Zero Waste systems. This framework articulates Zero Waste principles to guide the planning, implementation, and scaling starting from a local village level through providing a step-by-step guide to support the transition from linear and disposal-based waste systems to circular, community-led, and regenerative models, going beyond collection and recovery to include waste reduction and regeneration. This framework is intended for:

- **Local governments and municipalities** developing Zero Waste policies or integrating Zero Waste programs with circular systems for food, water, energy, and livelihoods
- **Communities and civil society organizations** leading or developing grassroots initiatives
- **Private sector and tourism-related establishments** looking to align their practices and daily operations with circular and sustainable business models
- **Development agencies and financing institutions** supporting island sustainability programs and climate change mitigation strategies

Some limitations must also be mentioned. This framework is not designed for national-level policy development, but rather for local and municipal-level governments and interest groups. While the framework highlights the importance of the interconnectedness of different resources within an island ecosystem, it focuses on circularity in municipal solid waste systems and does not provide exhaustive guidance for other areas such as water, energy, or food systems. Moreover, the focal point of this framework is municipal waste management. Further strategies for handling legacy waste and industrial waste (i.e., waste from industrial activities such as mining, manufacturing, shipping, and energy production) are beyond the scope of this document.

Islands can also vary from rural, urban, touristic, and sparsely populated, with differing environmental conditions. Considering the diverse nature of islands around the world, some approaches outlined throughout the document may not be precisely applicable nor relevant to every situation. Nevertheless, this framework aims to be an adaptable tool that can be built upon given whatever currently exists in a particular context.



3. RESOURCE MANAGEMENT IN ISLANDS

3.1. CHALLENGES OF MANAGING WASTE

Due to their remote locations, compact land mass, and varying sub-geographies (upland, coastal, etc.), islands face challenges with collecting, storing, and processing waste. Not only is an island's waste management infrastructure limited in terms of equipment and facilities, they are also restricted by the amount of land available for storage and landfilling for non-biodegradable waste that cannot be processed inland and require transportation to the mainland.

The increasing number of tourists also denotes a rise in the importation of goods that are eventually disposed of on the island, putting additional strain on the waste management system. For example, one notable challenge of island communities with plastic regulations is that visitors are unaware of the policies before traveling and bring along huge amounts of plastic packaging that are thrown away during their stay. By nature of their short-term visits, tourists also end up generating more—sometimes more than double the amount of waste generated by locals. Despite there being a demographic of tourists who do prioritize sustainable travel, there are still considerable amounts of those who err towards the side of convenience regardless of its environmental impact.

Congruent to these outcomes is the high cost of transportation for the non-biodegradable waste that cannot be managed on the island. On smaller rural islands, recyclable waste has little to no value on the island due to the lack of technological capacity and facilities to purchase and recycle the materials. As a consequence, recyclable waste would also need to be exported along with other residual and hazardous waste. Depending on the distance and cost of transportation, these trips can be sporadic and may pose an additional burden to an island's already-limited storage and financial capacity.

3.2. OTHER RESOURCE VULNERABILITIES

Land

Islands face additional vulnerabilities with land in terms of rapid commercialization, political sovereignty, and the loss of natural safeguards against climate change impacts.

Rapid commercialization refers to coastal and inland redevelopment in the interest of private and tourism-related establishments like resorts, hotels, restaurants, and tour operators. Coastal redevelopments are particularly damaging to the local community. By building beachfront resorts, local fishing activities which could otherwise support local subsistence and traditional enterprises are displaced. Indigenous coastal communities have also been involuntarily pushed out of their habitat as a result of gentrification which further threatens the overall equity of island inhabitants. Forcibly relocating indigenous and fisherfolk groups away from their sources of livelihood creates further marginalization and a loss of cultural identity. With rising sea levels already posing a threat to coastal communities to migrate inland, unregulated coastal commercialization puts more pressure on already-limited inhabitable spaces with potential intrusion on ecologically sensitive areas.

Related to the aforementioned issue is foreign ownership. The increase of non-native residents on the island consequently causes a steep increase in the prices of land and general goods and services for locals whose income remains the same. This subtle shift in land ownership drives displacement of residents, which equally destroys the connection between locals and their cultural identity intrinsically tied to their land.

Of equal importance regarding this issue of gentrifying coastal land is the depletion of seaside ecosystems. Marine ecological systems such as mangroves, coral reefs, and seagrass significantly mitigate climate change impacts by acting as protection against storm surges and soil erosion, providing a natural habitat for fishes and birds, and sequestering carbon dioxide from the atmosphere. An increase in coastal human activity also leads to more coastal litter and marine pollution.

Food

The improvements in accessibility of islands to meet the demands of urban development and tourism created an opportunity for foreign enterprises to enter the local market. This dynamic adds to an island's dependence on imported essential goods and shifting trends due to globalization that subsequently impacts local consumer behavior and economy.

As a further consequence, island communities have become reliant on the importation of low-cost and highly-processed food. According to the Food and Agriculture Organization (FAO), around 80% of food in many Small Island Developing States (SIDS) are now imported. This change in preference and diet undermines food sovereignty, compromises the support for the local agricultural and fishing economy, and creates long-term health risks.

Due to globalization and trade liberalization, foreign, processed food is often cheaper than locally-grown whole food. Land vulnerabilities previously mentioned also contribute to the limited agricultural and coastal land available for food production. Furthermore, worsening impacts from climate change have drastically shifted food production cycles and pose other difficulties for local food security and sufficiency. This dietary and nutritional shift towards nutritionally-poor food has also caused an increase in the incidences of obesity, diabetes, and hypertension in small island communities.

Energy

The energy vulnerability of islands is characterized by its dependence on one centralized energy source (typically fossil-fuels) and the rocketing consumption from the tourism sector. Due to their off-grid nature, islands in most cases rely on imported fossil fuels as a source of power. This not only creates a barrier in achieving a sustainable energy future, but it also makes islands ill-prepared to deal with external shocks such as price volatility of fuel and rotating blackouts. The growing intensity of climate change impacts may also make weather conditions more severe and unpredictable. Such a situation could prevent fuel imports to travel to the target communities, and severe weather could also cause trees to fall and trip up power lines that lead to island-wide power outages. With increasing energy demand surpassing the projected demand of local energy facilities, island communities must find a way to diversify power generation and secure a clean and sustainable energy future.

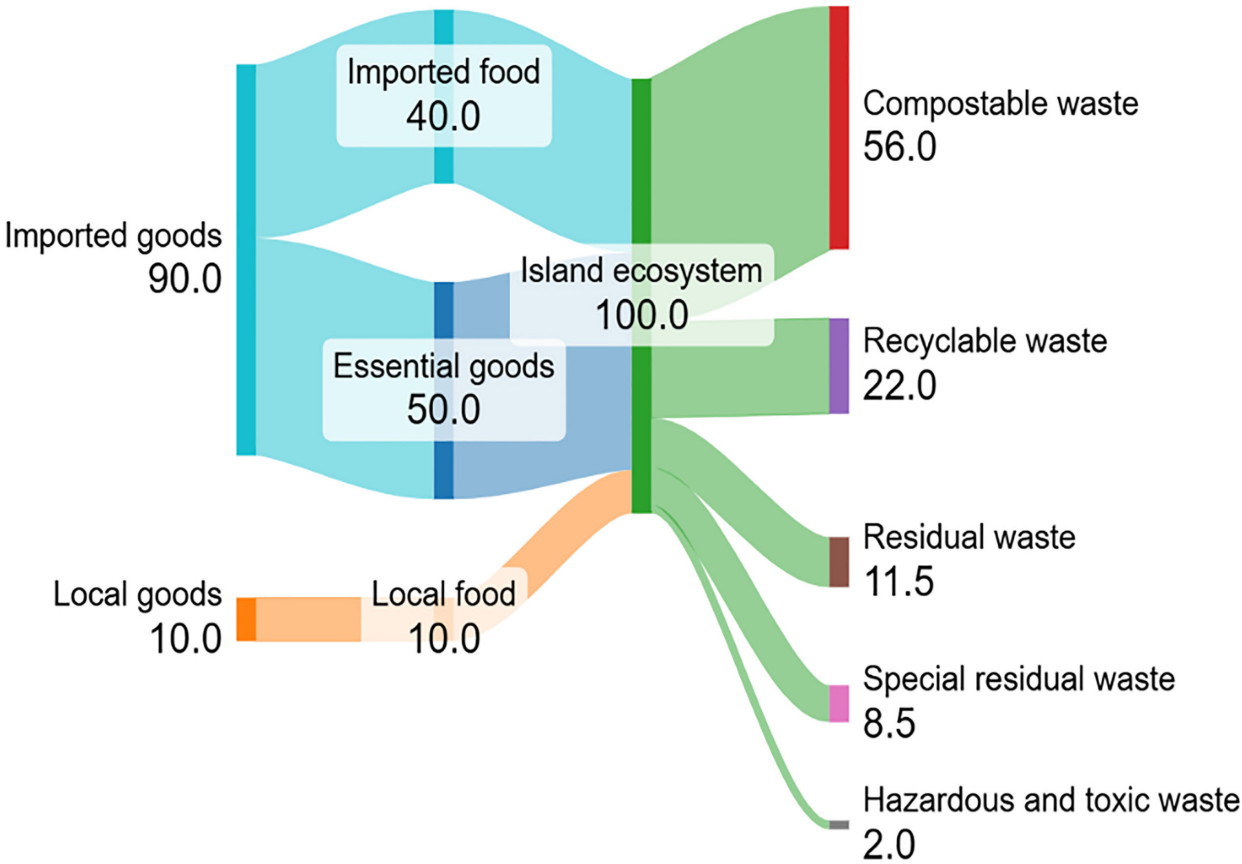
Water

Islands are characteristically limited with sources of fresh water. On top of high water consumption from the influx of tourists and salt water intrusion through sea level rise, islands are becoming more vulnerable to the scarcity of fresh water supply. In the Pacific Islands, more than half of the residents do not have access to safe drinking water. When tourist activities see their peak during the dry summer seasons, the island's residents and farmers experience critical water shortages. Freshwater and groundwater systems are also highly impacted by climate change. According to the Intergovernmental Panel on Climate Change (IPCC), as a result of the increasing warming of global temperatures, periods of drought, and ocean acidification, small tropical islands are projected to experience a severe decline of fresh water availability in the coming years.



3.3. LINEAR MATERIAL FLOW

Below is an illustration of an approximated business-as-usual (BAU) linear material flow of imported and local goods that takes place through an island ecosystem. The numbers in the diagram are based upon assumptions, proxy data, and anecdotes of island communities and communities of similar remote geographies isolated from the main supply chain. The numbers on food importation are based on an FAO (2016) report that stated imported food made up 80% of the total food consumed in Caribbean islands. The waste generation numbers are based on the Waste Assessment and Brand Audit (WABA) conducted in Siquijor Island, Philippines in 2023.



3.4. FINANCING SOLID WASTE MANAGEMENT

The financing for a locality's waste management system can be funded from public, private, and international development finance mechanisms. Public funding for waste management is context-dependent and is usually allotted in the local or national government budget. However, there are some exceptions. For example, if the island is classified as a protected area by the national environmental ministry, then waste management, disposal, and its necessary funding must come from the national ministry and not the local government. Private funding is typically indicated through private waste management service providers. Reasons for the provision of grants and loans from inter-development banks and bilateral donors depend on funding priorities of the institution and political or trade linkages.

In terms of securing funding from Extended Producer Responsibility (EPR) mandates, its implementation in island contexts may pose some challenges due to their relatively isolated geographies and limited infrastructure for waste collection, storage, and processing for residual and recyclable waste. On this end, conducting brand audits may provide a potential remedy. In the Indian Himalayas, annual brand audit results allowed them to demand accountability from corporations whose products consistently showed up as top polluters of their fragile mountain ecosystems.



4. GUIDING PRINCIPLES

The philosophy of this Zero Waste Islands Framework is underpinned by five guiding principles: resource sovereignty, Zero Waste, inclusion and equity, regeneration through localization, a systems approach, and respecting ecological limits. Seeking to address the climate injustices and resource vulnerabilities faced by islands, these concepts tied together serve to complement and adhere to GAIA's previous work on the 5 environmental justice principles for the waste sector.

The Zero Waste Islands Framework is not meant to be a one-size-fits-all guideline, but rather highlights a way of approaching the management of an island's natural resources and waste systems by giving precedence to meeting the needs of local residents while eliminating unnecessary waste generation and allowing natural ecosystems to thrive.

DEFINING A ZERO WASTE ISLAND: A VISION

A Zero Waste Island is a community that manages its resources within its ecological limits, achieving self-sufficiency by designing out waste, circulating materials locally, and respecting the carrying capacity of its land and sea. In a true Zero Waste Island, no organic waste leaves the island, clean materials are fed back into the local economy, and only minimal, non-toxic residuals are left to be managed within the island ecosystem, with a long-term goal of eliminating all exports of waste to the mainland.

4.1. RESOURCE SELF-SUFFICIENCY

Resource self-sufficiency is the practice of reducing import dependence for unnecessary single-use products and enacting policies and programs that increase self-sufficiency and equity for and within island communities. At its core, this principle promotes the right of island communities to participate in national or regional decision-making over the management of their resources, including the ability to decide how and when their resources are distributed, utilized, and managed.

6 Guiding Principles of the Zero Waste Island's Framework



Resource Self-Sufficiency

Resource self-sufficiency means reducing import dependence for unnecessary products and enacting policies that increase equity for island communities.

Zero Waste

Zero Waste as a principle sets the groundwork for resource conservation, mindful consumption, and avoidance of single-use products.

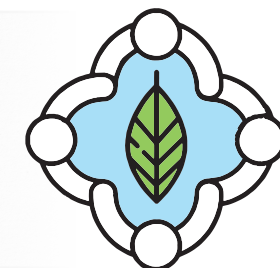


Inclusion and Equity

Inclusion and equity entails the right to participate in decision-making processes and meaningful utilization of local knowledge in resource management.

Regeneration through Localization

Regeneration through localization strengthens as island's resilience to climate change impacts through solutions designed by prioritizing traditional and indigenous knowledge.



Systems Approach

The principle of a **systems approach** acknowledges the interdependencies among all resources, including the interconnections of waste and climate issues with wider socioeconomic issues.

Respecting Ecological Limits

Respecting ecological limits ensures that human activities remain within an island's biophysical limits and ecological ceiling.



This approach to resource efficiency—water, land, people, energy, biodiversity—looks like ensuring that critical nature reserves such as marine and land protected areas and their surroundings are sufficiently safeguarded through the strict regulation of human activity with respect to their carrying capacities. Moreover, a robust regulation against the excessive privatization and commercialization of agricultural and coastal areas inhabited and utilized by farmers, fisherfolk, and indigenous communities would support the preservation of local enterprise and sociocultural identities. Restrictions on foreign land ownership, as well as regulating the amount of foreign-owned establishments, can counter the looming threat of forced migration and displacement of local communities and protect their well-being and identities tied to their land.

Food self-sufficiency for island communities prioritizes local food production through investments in the local agriculture and fisheries sector. This occurs through the protection of the rights of farmers and fisherfolk to access their land and financing climate-resilient tools and technologies. Village leaders must also facilitate supply chain partnerships between local farmers and commercial establishments to enable wider distribution and consumption of locally-grown whole foods while simultaneously supporting the local food production sector.

On islands where natural resources are abundant, installing renewable energy sources diversifies the power grid and supports local energy security and energy sovereignty. Solar energy, biogas, and other ocean-based solutions such as offshore wind energy, wave and tidal power plants, depending on the physical context, are considered effective strategies that can also contribute to climate mitigation. However, while a shift towards renewable energy and mindful consumption is a step in the right direction, a strategy must also be in place for managing the eventual waste at the end of the lifecycle of renewable energy infrastructure, such as photovoltaic (PV) cells and battery banks from solar energy facilities.

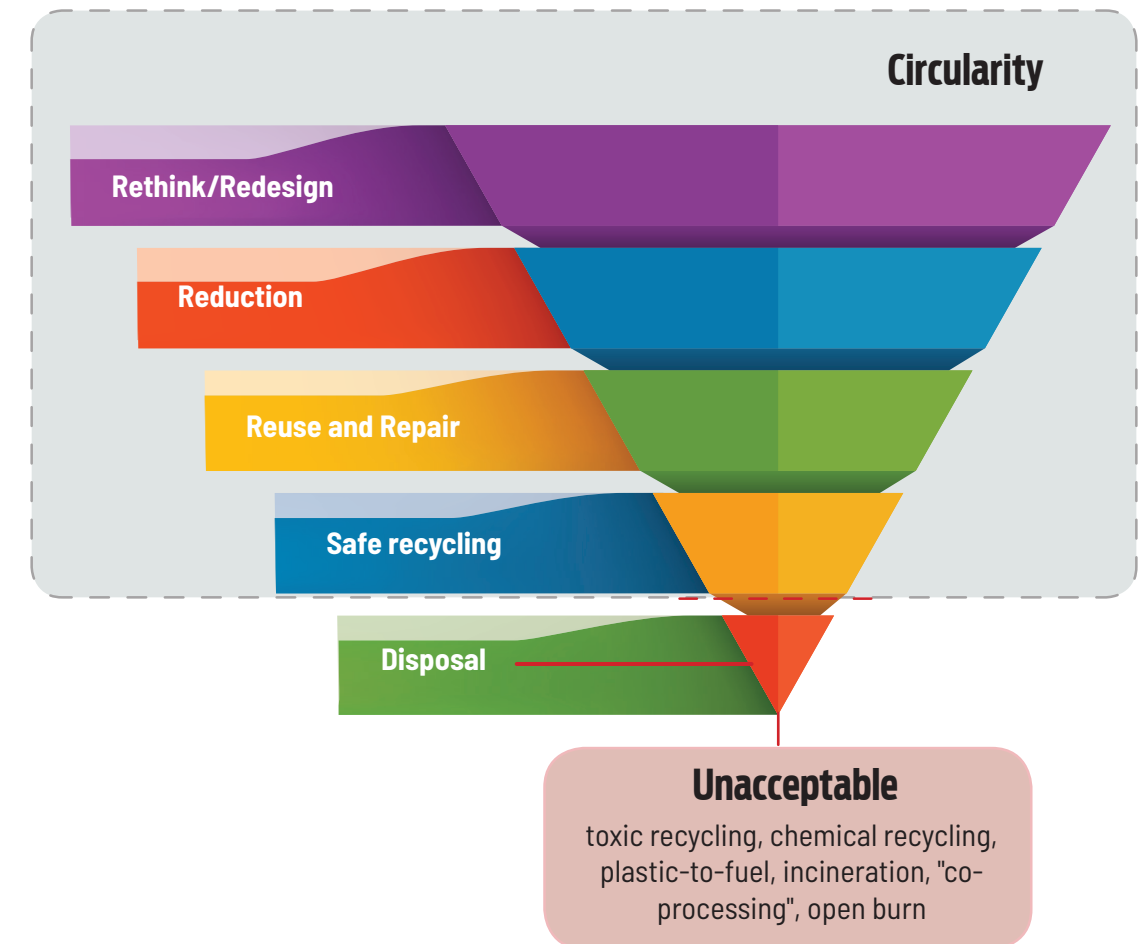
Water self-sufficiency requires the sustainable management of an island's natural water sources to ensure availability, quality, and accessibility for local residents. Achieving water sovereignty is also critical as access to sufficient freshwater upholds food and land sovereignty. For example, institutionalizing the installation of rainwater catchment systems for agricultural areas and commercial establishments can support water efficiency and ease water consumption from the tourism sector. Harvested rainwater and treated sewage water can be diverted towards irrigation for agricultural land. It can also be utilized by hotels and resorts for their garden irrigation and toilet flushing. Investing in rainwater harvesting infrastructure will be especially beneficial during dry summer seasons and can potentially abate water shortages during these periods.

Addressing an island's resource vulnerabilities through effective Zero Waste systems that acknowledges resource interdependencies and prioritizes resource efficiency is intrinsically tied to an island's ability to achieve genuine sustainable development.

4.2. ZERO WASTE

The Zero Waste principle is defined by “the conservation of all resources by means of responsible production, consumption, reuse, and recovery of all products, packaging, and materials without burning them and with no discharges to land, water, or air that threaten the environment or human health.” With direct reference to the Zero Waste Hierarchy, this principle sets the groundwork for natural resource management policies where rethinking consumption and preventing the production of single-use products is the priority, and disposal in landfills would be the least preferred way to manage waste. Waste incineration is not an accepted approach in managing waste under the Zero Waste principles. In island contexts, rethinking and reducing consumption of all products is especially relevant given the limited waste storage capacities of islands. In a Zero Waste Island, this is accomplished through interrelated programs and policies that are underpinned by an island's ecological limits and prioritizes community building, responsible consumption, and resource use reduction. This can look like implementing a robust and localized solid waste management policy, introducing single-use plastic bag regulations and EPR schemes, and establishing refill and reuse centers. Installing a waste incineration facility in an island is an especially risky venture due to high installation and maintenance costs, high waste input requirements, and high risk against community health and environmental consequences.

Zero Waste Hierarchy



4.3. INCLUSION AND EQUITY

Inclusion and equity are key elements of participatory justice. This entails the right of local residents to participate in decision-making processes of programs and policies that directly affect them. More importantly, this principle implies the meaningful utilization of local and indigenous knowledge and skills in the proper management of natural resources.

In the context of a Zero Waste Island, inclusion and equity necessitates that local waste pickers and waste workers are consulted and included in planning, designing, and implementing an island's local waste management program. This also signifies the presence of waste pickers and waste workers in key decision-making councils regarding the monitoring and enforcement of the solid waste management strategies.

4.4. REGENERATION THROUGH LOCALIZATION

The principle of regeneration through localization refers to building an island's resilience to climate change impacts by designing solutions using indigenous knowledge that fit with the local context. In developing waste and resource management systems, localization is related to the engagement of critical sectors such as waste workers, waste pickers, farmers, fisherfolk, and indigenous communities. Taking stock of their cultivated skills and embedded knowledge in crafting waste and resource management approaches can better ensure that these strategies work with and not against an island's features and overall ecosystem.

Moreover, understanding that the island tourism industry can remain a significant contributor to the local economy for some islands, governing institutions must put the well-being, health, and prosperity of local residents and their livelihoods first, while concurrently conserving their natural resources as well as strengthening the ability of their environment and natural ecosystems to regenerate and flourish.

4.5. SYSTEMS APPROACH

This Zero Waste Islands Framework is designed through a systems approach that acknowledges the interdependencies among the resources of waste, land, energy, and water. Beyond these issues, a systems approach also recognizes the interconnections with the problems of waste, climate, and the environment with wider socioeconomic issues.

In this framework, policies are not developed in silos. Rather, they are created with the awareness that each intervention will have an impact on other key resources. This requires an interdisciplinary and participatory approach. Partnered with sufficient government support and climate-resilient approaches, food sovereignty further strengthens local livelihoods, decreases reliance on imported nutritionally-deficient food, improves overall health and well-being, and valorises local food heritage and culture. In the same vein, establishing and supporting refill and reuse centers for drinking water, toiletries, and other kitchen and cleaning necessities can decrease the dependence on imported single-use goods, reduce waste generation through the elimination of unnecessary single-use packaging, and lower the stress on waste management systems.

To effectively address the problem of waste management in islands, adopting a well-coordinated approach will be key in ensuring that the waste issues and resource vulnerabilities can be better addressed.

4.6. RESPECTING ECOLOGICAL LIMITS

Island ecosystems have finite carrying capacity for waste assimilation, freshwater supply, land use, and energy generation. All Zero Waste strategies must be designed within these biophysical limits. This means prioritizing decentralized, low-footprint infrastructure; preventing waste generation at source to reduce pressure on land and water; and actively managing the additional burden from tourism to ensure it does not exceed the island's capacity to regenerate and absorb impacts. The goal is not just to manage waste, but to ensure that human activities remain within the island's ecological ceiling.

5. FRAMEWORK ARCHITECTURE: CORE PILLARS OF A ZERO WASTE ISLAND

Islands face a unique convergence of challenges arising from geographic isolation, limited land and resources, high dependence on the importation of unnecessary single-use products, vulnerability to climate impacts, and strong linkages between environmental health and local livelihoods. These conditions require a unified approach to sustainability that goes beyond sector-specific interventions. In developing this framework through a systems approach, four core pillars were identified as integral to a Zero Waste Island because together they address the most critical pressure points in island systems, while offering the greatest potential for strengthening self-reliance, building upon climate resilient capacities, and harnessing inclusive development. These four pillars are: 1) Zero Waste systems and resource efficiency, 2) circular food systems, 3) water and energy stewardship, and 4) sustainable and inclusive economies.



These four pillars work complementary to each other in creating an ecosystem that emphasizes the interdependencies and ripple effects of sustainable and regenerative systems.

All over the world, some island communities have undertaken the implementation of small-scale interventions through holistic, Zero Waste, community-based interventions that are socially equitable and environmentally sustainable. These examples listed in the Annex are recognized as best practices that can be categorized according to what this document has identified as the core pillars of a Zero Waste Island.



ZERO WASTE SYSTEMS AND RESOURCE EFFICIENCY

Zero Waste systems and resource efficiency make up the primary pillar of a Zero Waste Island and adheres to the principal element in the Zero Waste Hierarchy. Zero Waste systems encompasses the implementation of an integrated solid waste management program as it is the backbone for an effective approach to achieving a Zero Waste Island. Acting in conjunction with these systems is resource use reduction which is demonstrated through reuse and refill schemes, repair centers, multifunctional and space-efficient infrastructure, as well as regulations like plastic bans and EPRs.

CIRCULAR FOOD SYSTEMS

This second pillar refers to the regenerative and socially just method to food production, food distribution, and food waste management that is fundamental to cultivating food sovereignty and overall community health and well-being. In line with the Zero Waste methodology, this pillar adheres to redesigning food systems that considers the entire life cycle of food, from production to composting, and how the community should ultimately benefit from this approach.



WATER AND ENERGY STEWARDSHIP

Water and energy stewardship is a fundamental pillar of a Zero Waste Island as it directly responds to essential resource vulnerabilities faced by islands. Water and energy stewardship in islands upholds the significance of utilizing these resources in a way that is socially just and flourishes natural ecosystems and the local community.

SUSTAINABLE AND INCLUSIVE ECONOMIES

To reduce the risk of gentrification and alienation of locals from participating and benefiting from the local economy, island governments must rigorously mandate a people-first and ecologically-conscientious operations of all business and commercial establishments that concurrently work to uplift and integrate local and traditional livelihoods into their operations.



6. ENABLING MECHANISMS OF A ZERO WASTE ISLAND

In order for the core pillars of a Zero Waste Island to be realized and maintained, enabling mechanisms that allow these initiatives to take root must first be established. These enabling mechanisms align with the activities across the five stages outlined in the roadmap below. Governance and policy integration through strong regulatory frameworks enables the initial baselining and visioning stage to take place.

Institutional coordination and partnerships further supports the planning and policy-setting activities. Capacity building and community engagement strengthens the planning efforts and provides a solid foundation for the piloting stage. The tasks behind technical implementation and sustainable financing are in line with the fourth stage that involves scaling up and institutionalizing the Zero Waste program through solidifying the physical and financial infrastructure necessary to achieve a Zero Waste Island. The fifth stage of continuous improvement and innovation is supported by effective monitoring, evaluation and learning activities that aim to routinely adapt and improve upon the program as it goes.

GOVERNANCE AND POLICY INTEGRATION

For the integration of any new and innovative community-based program, or even reintroduced practices based on indigenous knowledge systems, the endorsement from the local government or village authority is a major factor. Island communities in the Asia Pacific region are typically characterized by a traditional social hierarchy where the community leaders such as the village chiefs or mayors have significant influence on program and policy acceptance. Having someone from the local government champion environmentally-aligned proposals can ensure that the investments and infrastructure needed to implement the initiative are provided. There needs to be a commitment to uphold the conservation of land and marine protected areas and ecologically sensitive regions through thorough monitoring and protection of these spaces. Policies that provide the foundation for the development of a Zero Waste Island are ordinances on solid waste management, single-use plastic bans and regulations, EPR implementation, mandates on organic waste management, and enacting a community-wide program on eco-tourism, sustainable business practices, and environmental protection. This entails regular monitoring for compliance among residents, businesses, and visitors alike, and the issuance of penalties where necessary.



INSTITUTIONAL COORDINATION AND PARTNERSHIPS

The execution of a Zero Waste Island will only be as good as the commitment and coordination of the sectors involved. Some elements of the program may overlap among different groups and target areas, thus the delineation of responsibilities is crucial. Specifically, a Zero Waste vision can only be realized through the participation of different key stakeholders within an island ecosystem: (1) civil society organizations, (2) tourism establishments (restaurant and hotel owners), (3) local residents, (4) educational institutions, and (5) local food producers such as farmers and fisherfolk. Obtaining the commitment of these sectors would be a crucial step towards achieving the activities under a Zero Waste Island program. For example, getting the buy-in of tourism establishments in replacing single-use packaging with reusables and partnering with local food producers for food supplies would lead to a decline in single-use waste generation and the cost for food imports, while supporting the local cuisine and livelihoods of farmers and fisherfolk.



TECHNICAL IMPLEMENTATION AND SUSTAINABLE FINANCING

Technical implementation of the program requires existing and operational physical and legislative infrastructure. The necessary pieces would be informed by the target components of the program, as decided upon during the initial stages. Local governments must ensure that an adequate annual budget is set aside to implement the activities outlined in the Zero Waste Island program. Guaranteeing sufficient and sustainable funding for the program can assure that the proposed interventions under the initiative will be executed as desired. Developing local solutions that align with climate mitigation and blue economy strategies can potentially assist in acquiring financial support through grants and loans from climate funds, development banks, and bilateral donors who are looking to fund nature-based solutions to the climate crisis.



CAPACITY BUILDING AND COMMUNITY ENGAGEMENT

The involvement of the community is another important mechanism that would make a Zero Waste Island possible. As previously mentioned, a prerequisite to establishing compliance with any proposed intervention is ensuring sufficient community awareness about the objectives and mechanisms of the program which can be achieved through an IEC campaign. In small islands where familial and community ties dictate the strength of stakeholder engagement with local programs, it is also important to be able to gain the trust and buy-in of the residents. Once achieved, community members can be better able to take ownership of the program and independently champion its goals and values.

Just as important in the success of a community-wide program is the general awareness of the local residents about the different proposed interventions under the Zero Waste Island initiative. Conducting an information, education, and communication (IEC) campaign is essential to building the foundation for solid community awareness, compliance, and appreciation for policy proposals from the local government.



MONITORING, EVALUATION, AND LEARNING

Aligned with effective governance of a Zero Waste Island program is instituting a monitoring, evaluation, and learning plan from the get-go. This enabling mechanism is all about program data and how it feeds into continuous improvements. An essential tool that would facilitate this is collecting baseline data prior to infrastructure development and implementation with which further information from the monitoring and evaluation system will be compared. For the purpose of improving the programs in place, the existing data can be continuously studied and revised as needed.



7. ZERO WASTE ISLAND ROADMAP: STAGES OF IMPLEMENTATION WITH KEY ACTIVITIES

The following section illustrates a roadmap that outlines the steps to implementing a Zero Waste Island into strategic stages. Guided by the principles under Section 4 of this document, the key activities and enabling mechanisms are categorized into 5 fundamental stages that starts from defining an entry point to the program which facilitates the initial evaluation of an island's

resources and developing program targets and objectives, which then progressively builds upon succeeding tasks to achieve the objective of a fully institutionalized and self-sustaining Zero Waste Island.



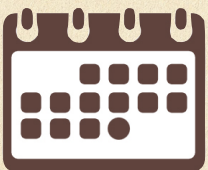
**STAGE 0:
Defining an entry point**

Facilitate the introduction of Zero Waste programs and initiatives




**STAGE 1:
Baseline assessment and visioning**

Understanding the current system and build a shared direction

**STAGE 2:
Planning and policy setting**

Convert the vision into plans, policies, and clear actions.




**STAGE 3:
Piloting**

Test approaches and build political and community confidence.




**STAGE 4:
Scaling up and institutionalization**

Expand successful models across the island and embed them into policy and systems.




**STAGE 5:
Continuous improvement and innovation**

Keep the system adaptive, resilient, and future-ready.





STAGE 0: DEFINING AN ENTRY POINT

Purpose: Facilitate the introduction of Zero Waste Island programs and initiatives

Key activity

Identify priority problems or objectives such as open burning hotspots, unreliable water supply, food import dependency

Further information

If the task of beginning a Zero Waste Island feels daunting, one potential strategy for identifying a starting component of the framework to focus on is by engaging with any of the enabling mechanisms that fall under the categories of (1) opportunity, (2) aspiration, or (3) pain points.

An opportunity can be considered as an entry point based on something that already exists in your community. For example, a council in the local government dedicated to waste management, ecotourism practices that can be applied to other activities, water refill station models that can be replicated in different neighborhoods, community gardens that can be expanded to incorporate composting initiatives, or household rainwater catchment systems that can be institutionalized and replicated in formal institutions and business establishments.

An aspiration is choosing an entry point based on an existing goal or priority area of the local government. For instance, having the goal of cutting down on costs can be the path towards launching a decentralized, at-source waste segregation system, or aiming to achieve sustainable tourism around the island can lead to mandating sustainability standards for all commercial or tourism establishments operating on the island.

Pain points can be defined as more complex problems that, when addressed, would make succeeding activities and objectives easier to achieve. Pain points as an entry point to implementing Zero Waste Island components could look like abating the pressures on an island's carrying capacities, such as freshwater shortages and oversaturated landfills. Pain points would also include addressing open burning as a pathway towards a Zero Waste system, and targeting food import dependency through investing in local agriculture and food production.

While entry points may vary depending on targets and available resources, each pathway would eventually reinforce other priority areas of a Zero Waste Island program. As illustrated in the examples mentioned above, practices like proper management of organic waste can support local food production and create an alternative source of energy through the production of biogas, and harvesting rainwater can support agricultural irrigation as well as ease pressures on an island's freshwater supply.

It is worth mentioning that these entry points do not have to be limited to those communities that are starting their Zero Waste Island journeys from the very beginning. These entry points are not static and can also be utilized by communities that have already started similar components that exist within the Zero Waste Island framework, but are looking to improve them or explore alternative implementation approaches.

STAGE 1: BASELINE ASSESSMENT AND VISIONING

Purpose: Understand the current system and build a shared direction

Key activities

- Conduct baseline assessments based on the identified priority area of work (waste, food, water, energy, tourism, and livelihoods)
- Map stakeholders including communities, informal workers, tourism operators, utilities, and local CSOs



- Hold participatory workshops to co-create the island's sustainability and Zero Waste vision
- Set initial goals and indicators, such as diversion targets, renewable energy share, food waste reduction
- Document existing policies, gaps, and opportunities

Further information

Baseline assessment items

The resulting evaluation of key components of an island will feed into the development of a contextualized Zero Waste Island program that reflects its current realities, barriers, and community needs. Depending on the target objectives and priority components of your program, some items for evaluation could include:

- **Current waste management ordinance:** What are the waste reduction and diversion targets
- **Water generation and consumption:** How much water is being consumed by residential areas?
- **Energy generation and consumption:** How is energy generated?
- **Status of tourism activity:** What is the average annual number of tourist visits?
- **Ecological carrying capacity:** Have current human activities (including tourism) exceeded the island's carrying capacity?

The complete list of recommended target areas and evaluation questions can be found in Annex I

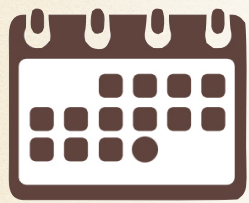
Visioning

Incorporated in the development of your Zero Waste Island program is the formulation of the specific target objectives for your target community, such as diverting 80% of waste from the landfill or from open burning in five years, establishing 15 rainwater catchment systems in three years, or providing solar energy for 40% of residents in five years.

The multisectoral task force

To begin planning the Zero Waste Island program, a multisectoral task force that consists of key stakeholders and actors within the community needs to be established. On the government side, this includes local leaders, local environmental officers, and any national agency that is present in the community (e.g., environmental ministry, housing agencies). If the target community encompasses the entire municipality, a representative per neighborhood or village needs to be in the task force to ensure a participatory and inclusive process. For civil society, the participation of community leaders, school administration representatives, and other sectoral representatives would be beneficial. When it comes to the private sector, it will be crucial to get the buy-in and support of small and medium business owners as well as tourism operators through their involvement in the multisectoral task force.

This multisectoral task force will co-develop the overall Zero Waste Island program, including the targets for reduction, maintenance, or protection of critical areas (waste, natural resources, ecotourism, food, energy). These targets will thereafter be embedded into the policy design for plastic bag bans in public markets, mandatory at-home waste segregation, farm-to-table supply chain partnerships, solar-generated accommodations, refill centers, and establishing composting toilets or rainwater harvesting systems.



STAGE 2: PLANNING AND POLICY-SETTING

Purpose: Convert the vision into plans, policies, and clear actions

Key activities

- Develop an integrated island sustainability plan guided by the Zero Waste Island principles
- Draft or update local ordinances, guidelines, and procurement rules that support Zero Waste and circularity
- Identify infrastructure needs such as composting hubs, refill points, microgrids, rainwater catchment systems, and MRFs
- Prepare financing plans, including revenue sources, and partnerships
- Assign clear roles and responsibilities within government and across actors

Further information

Preparing financing mechanisms

In order to secure financial longevity, the task force can begin to identify potential financing mechanisms external to the allotted amounts within the local and national budgets. One promising approach is the integration and implementation of an EPR scheme. While realizing EPR schemes for islands and communities of similar remote geographies will come with its challenges mainly due to their small-scale economies, isolated locations, and logistical difficulties, a regional EPR model proposed by Common Seas could present a potential approach to addressing these challenges. This approach requires the coordination of islands and the immediate surrounding municipalities to converge as a unified body in the collection and aggregation of waste to make the conduct of EPR, along with the associated financial mechanisms, more accessible and efficient. Alternatively, the aforementioned campaign of the Indian Himalayas of calling corporations to be responsible for managing their waste by using data from a WABA could also be a potential path towards getting consumer goods producers from complying with EPR mandates.

Additionally, to feed into the financing of future pilot projects, the managers of the pilot areas can consider tapping into climate funds, development grants, and green bonds that seek to support small-scale projects for climate change mitigation, decarbonization, or green and blue economy ventures. To compensate for bans and regulations on the use and distribution of single-use plastics, the local government can introduce a provision for fiscal incentives through tax reliefs for commercial establishments operating in the target community that integrate the reuse and refill systems into their business operations.

STAGE 3: PILOTING

Purpose: Test approaches, learn quickly, and build political and community confidence

Key activities

- Implement pilots in selected neighborhoods or village
- For Zero Waste implementation: establish a solid waste management program for source segregation, reuse and refill systems, composting units, and community repair hubs
- Introduce incentives and behavior-change initiatives
- Build capacity of staff, cooperatives, and entrepreneurs who will run reuse, composting, and recovery services



- Monitor participation, operational issues, and user feedback
- Evaluate what works, what needs adjustment, and what can scale
- Community recognition through public sharing of early wins to strengthen buy-in

Further information

Community recognition

To encourage wider participation throughout the island, the local government can create a recognition program for pilot projects that achieve the standard criteria for a Zero Waste Island community. By broadcasting the money saved, waste diverted, and resources maximized as a result of the Zero Waste Island program, neighboring villages and municipalities can be incentivized to learn and repeat the successes of these pilot communities.



STAGE 4: SCALING UP AND INSTITUTIONALIZATION

Purpose: Expand successful models across the island and embed them into policy and systems

Key activities

- Scale successful pilots across other villages
- Expand infrastructure based on proven demand and operational learning
- Formalize service provision by cooperatives, social enterprises, or local authorities.
- Enforce local ordinances and compliance requirements
- Strengthen financial mechanisms such as service fees, EPR contributions, or tourism sustainability levies
- Integrate Zero Waste, circularity, and resilience into island development plans and land use plans
- Establish routine monitoring plans and annual reporting to maintain momentum

Further information

Interweaving gains

After successfully piloting a number of target villages and achieving the desired preliminary outcomes, the Zero Waste program can now be scaled up to cover the entire island community. This involves weaving in and interlinking the different resource management components for water, food, energy, and waste outlined under Stage 4. In this phase, these pilot projects will be scaled up through the creation and institutionalization of process loops that weave together the primary resource targets of a Zero Waste Island: waste, water, food, and energy. Some examples include:

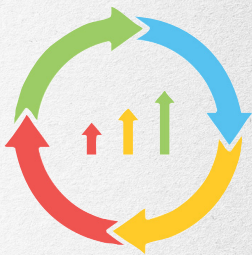
- Recovered food and organic waste can be composted and used as fertilizers for community gardens and farms or turned into biogas which fosters a circular economy and creates alternative sources of energy.
- Harvested rainwater can be redirected into agricultural irrigation and toilet flushing systems which lessens the strain on an island nation's water supply.
- Tourism establishments can contract local farmers and fisherfolk to supply organic and regional produce and fish as part of their food offerings which supports local livelihood while cutting down on costs and energy expended for importing food.

STAGE 5: CONTINUOUS IMPROVEMENT AND INNOVATION

Purpose: Keep the system adaptive, resilient, and future ready

Key activities

- Conduct regular system reviews using agreed indicators
- Adjust strategies based on new data, community feedback, and emerging challenges
- Introduce innovation labs or community idea hubs to test new solutions
- Facilitate cross-island learning exchanges and participation in regional networks
- Refresh communication strategies to keep public engagement strong
- Update policies to reflect new technologies, economic opportunities, or climate challenges
- Celebrate successes and recognise community champions



Further information

Regular system reviews

As aforementioned, continuous monitoring needs to be undertaken from the pilot implementation stages of the Zero Waste program. After a predetermined amount of time (i.e., 1-2 years) the multisectoral committee managing the Zero Waste program can review the progress and challenges observed leading up to this point. Points of improvement and best practices should be noted and reincorporated moving forward. These learnings should be well documented for future iterations and for sharing with neighboring communities who are also interested in implementing a Zero Waste program.

If targets are not being met, it might be necessary to adjust certain strategies. For example, if your target community has ample garden space, it might be valuable to explore at-home composting workshops to strengthen the organics management strategy and reduce the land requirement for community composting areas.

This final stage would require solidifying circular and regenerative policies and infrastructure along with achieving the desired behavioral changes and sustainable financing mechanisms.

This roadmap, along with the guided example in the following section, makes use of resources from GAIA and its global membership, such as the 10-Step Manual to Implementing a Community Zero Waste Program and Cities Waste Assessment and Brand Audit (WABA) Methodology and Toolkit for households, both of which were developed in partnership with Mother Earth Foundation. These resources are free and can be found online.

8. USING THIS FRAMEWORK: DIFFERENT STARTING POINTS, ONE PATHWAY

Island governments are at different stages of waste management and Zero Waste implementation. This framework is designed to be flexible, allowing islands to enter at different points while following a common direction of travel.

Given that GAIA's expertise is focused on Zero Waste systems, this guided example highlights this approach in the implementation of a Zero Waste Island. Nevertheless, interested implementers of this program can choose to approach and apply the framework in whatever way works best according to what entry point is identified and pick what components of this guided example are appropriate.

		
	PATHWAY A	PATHWAY B
	Islands starting their Zero Waste journey	Islands with existing waste collection systems
	<i>Limited or no formal waste collection systems</i>	<i>Collection in place, seeking to scale and improve</i>
Typical situation	● Irregular or no waste collection ● Open burning or dumping is common ● Limited technical and financial capacity	● Waste collection services exist ● Centralized waste management system ● High dependence on landfilling, burning, or export ● Limited segregation and recovery
Recommended entry point	● Stage 1: Baseline and Visioning	● Stage 2 or Stage 3, depending on readiness
Focus in early stages	● Establish basic waste management governance and coordination ● Conduct waste characterization and mapping ● Introduce source segregation and decentralised systems ● Build trust and participation through pilots	● Improve segregation and reduce contamination ● Retrofit or redesign existing waste facilities into MRFs ● Introduce waste reduction, reuse, and bans ● Strengthen policy, financing, and monitoring
Key priority	● Build the foundations before scaling.	● Shift from collection-led systems to reduction- and recovery-led systems.

9. STEP-BY-STEP GUIDE

STAGE 1: BASELINE ASSESSMENT AND VISIONING

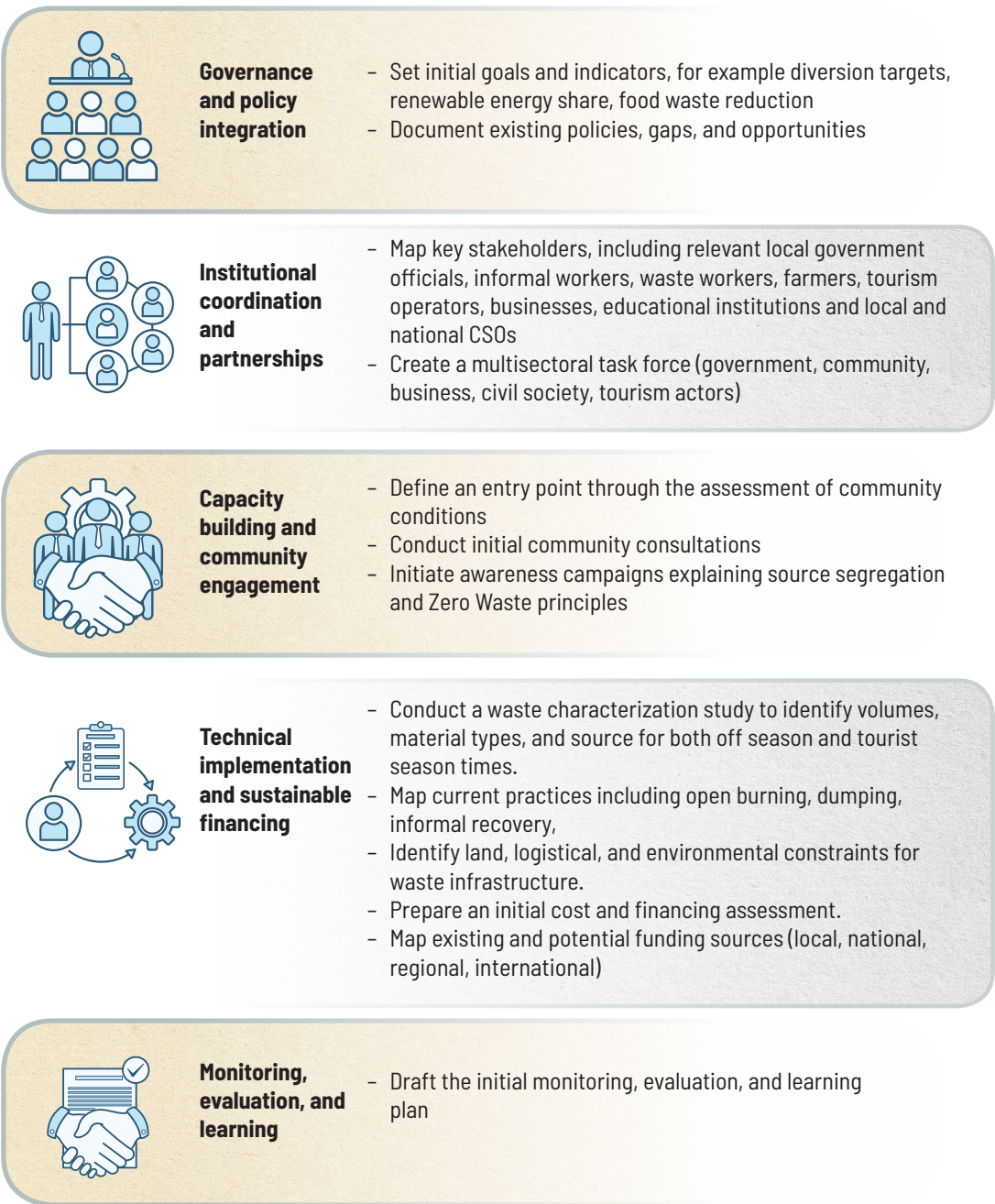
Purpose

Build a shared understanding of the current waste system and define a realistic Zero Waste ambition.

Key outputs

- Assessment of waste generation and waste management practices
- Defining a Zero Waste vision and measurable targets, such as diversion rates or elimination of burning
- Establishment of Zero Waste Island Task Force

Key activities per enabling mechanism



Exercise Sheet 1: Conducting a Waste Characterization Study

Purpose

To understand what waste is generated, where, and in what quantities to inform system design.

Note: The materials required and the categories of waste utilized to conduct this activity should be adapted according to what is available and typical in your target area. If your community is not a tourist area, disregard the items that correspond to tourism activities.

Instructions

1. Select a representative location such as:
 - a. Residential areas
 - b. Public markets
 - c. Commercial establishments
 - d. Tourism zones
 - e. Educational institutions
2. Define the sampling period:
 - a. Choose a period of 8 consecutive days to conduct the complete waste collection and assessment
 - b. Identify the waste collection schedule (e.g., morning, afternoon, evening)
 - c. Identify whether this is during a dry or wet season
 - d. Identify whether this is a high or low season for tourism
3. Inform the target location regarding the segregated waste collection for the given time period ahead of time.
4. Identify a waste assessment area where the collected waste can be laid out and measured.

Materials needed

For waste collection

1. Vehicle for door-to-door waste collection (e.g., pushcart, sack, tuk-tuk)
2. 3-5 containers for waste segregation, depending on the typical characteristic of waste produced in your area (see the recommended waste categories below)
3. Safety and hygienic equipment (e.g., gloves, masks, adequate clothing)
4. Daily monitoring sheet for door-to-door collection (see below)

For waste assessment

5. Waste assessment form (see below)
6. Segregated waste collected from the 7 designated collection days (don't mix)
7. Ground sheet/clear open space (at least 15 square meters)
8. Weighing scale (digital/kilogram scale) for weighing organic waste
9. Protective gear (cloth gloves, face masks, tongs) for sorting
10. Sanitation kit (alcohol, soap, first aid kit)

Step-by-step Guide

1. Collect the segregated waste from your target location and sort into the following categories after each designated collection day:
 - o Organic/biodegradable waste (kitchen/food/garden waste)
 - o Recyclable waste (metal, glass, hard plastic/PET bottles, paper, carton)
 - o Residual waste (textile/cloth, sachets (multilayer packaging), plastic bags, foil, styrofoam, straws, drinking cups, cigarettes)
 - o Hazardous residual waste (bulbs, used batteries, worn out electronics and appliances; health care waste such as face masks, containers of disinfectants and sanitizers, other medical waste)
 - o Special residual waste (diapers, feminine pads, tissue, cotton buds)
2. Record each category according to the waste assessment form at the end of each collection day.
3. Identify materials that
 - o Can be composted locally
 - o Can be recycled locally
 - o Can be switched to a reusable option
 - o None of the following is possible and needs to be safely landfilled
4. Document current disposal practices (burning, dumping, export).

Expected output

- Waste characterization of target community

¹If your community does not process or separately collect recyclable waste, group this category with residual waste.

Sample exercise sheet for localizing your WACS results

Name of Village/Municipality/Neighborhood: _____
Your Village/Municipality/Neighborhood Profile: Rural Upland/ Rural Coastal/ Urban Low Income/ Urban High Income

Activity 1: Computing total village waste generation

BOX 1	BOX 2	BOX 3	BOX 4
Your per capita waste generation	Your population (use latest census)	Your total waste generation (Box 1 x Box 2)	Total waste generation in Tonne (Box 3 / 1000)

Activity 2: Computing for waste characterization

BOX 5	BOX 6	BOX 7	BOX 8	BOX 9	BOX 10
Total waste generation (copy Box 4)	Biodegradable Waste (Box 5 x____)	Recyclable Waste (Box 5 x____)	Residual Waste (Box 5 x____)	Hazardous Waste (Box 5 x____)	Special Waste (Box 5 x____)

Activity 3: Computing for potential income from recyclables (if applicable)

BOX 11	BOX 12	BOX 13	BOX 14
Total households (use latest data)	Factor rate (LIB: 12 / *HIB: 18)	Possible income/ week (Box 11 x Box 12)	Possible income per month (Box 13 x 4)

Activity 4: Computing for potential tipping fee WITHOUT recycling and composting

BOX 15	BOX 16	BOX 17	BOX 18	BOX 19	BOX 20
Total waste generation (copy Box 4)	Cost per Tonne	Total cost per day (Box 15 x Box 16)	Total cost per year (Box 17 x 365)	Internal Revenue Allotment (Insert IRA)	Percent of IRA (Box 18 / Box 19)

Activity 5: Computing for potential tipping fee WITH recycling and composting

BOX 21	BOX 22	BOX 23	BOX 24	BOX 25	BOX 26
Total disposable waste (Box 8 + Box 10)	Total cost per day (Box 16 x Box 21)	Total cost per year (Box 23 x 365)	Internal Revenue Allotment (Insert IRA)	Percent of IRA (Box 24 / Box 25)	Percent of IRA (Box 18 - Box 23)

Additional exercises

Activity 6: Computing for average methane emissions

BOX 27	BOX 28	BOX 29
Total organic waste (tons)	CH4 emission factor/tonne	GHG avoided (Box 27 x Box 28)

Activity 7: Contribution of each type of plastic to cost of disposal

BOX 30	BOX 31	BOX 32	BOX 33	BOX 34
No of pieces of plastic type per brand	Total no of pieces of plastic type (e.g. MLP)	Total weight of plastic type	Weight of plastic type produced by the company	Cost of disposing specific plastic by a brand (Box 33 x Box 16)

Activity 8: Computing for potential income from biodegradable waste

BOX 35	BOX 36	BOX 37	BOX 38
Total weight of the compostable organic waste	Weight of Compost produced	Rate of compost (per kg)	Income in selling compost (Box 36 x Box 37)

Sample daily monitoring sheet for waste collection (for households)

Target location:_____Duration of collection (dates): _____

Street	Name of Residents	Week 1						Week 2						Week 3					
		M	T	W	TH	F	S	M	T	W	TH	F	S	M	T	W	TH	F	S
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			

Name of Monitoring Officer: _____

Signature:_____

Date : _____

Legend:

(/) IF SEGREGATED

(X) IF MIXED WASTES

(1) IF NO WASTE GIVEN

Sample waste assessment form

Type of Waste	Day 1 <i>(Historical waste: excluded in data computation and analysis)</i>	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Overall Total
1. Biodegradable		By weight (in KG)						
Kitchen waste								
Garden waste								
Other organics								
2. Recyclable		Per piece						
Metal								
Glass								
Carton								
Paper								
Hard plastic (PET)								
3. Residuals		Per piece						
Plastic bags								
Sachets								
Other single-use plastics								
Rubber								
Textile								
Styrofoam								
Cigarettes/ Cigarette butts								
4. Residual – Special Waste		Per piece						
Diapers								
Sanitary pads								
Used tissues								
Cotton buds								
5. Hazardous Waste		Per piece						
Bulbs								
Electronics and appliances								
Healthcare waste								

Assessing the current waste management system

What are the current waste disposal practices?	Organic/biodegradable waste	☐ Landfilled ☐ Burned	☐ Exported to the mainland ☐ Other: _____
	Recyclable waste	☐ Landfilled ☐ Burned	☐ Exported to the mainland ☐ Other: _____
	Residual waste (all types)	☐ Landfilled ☐ Burned	☐ Exported to the mainland ☐ Other: _____
Which of the following types of organics can be composted locally?	☐ Kitchen waste – animal feed ☐ Kitchen waste – food waste ☐ Garden waste	☐ Other organic waste: _____ ☐ None	
Which of the following types of recyclable waste can be composted locally?	☐ Metal ☐ Glass	☐ Carton ☐ Paper	☐ Hard plastic (PET) ☐ None
Which materials can be switched to reusable options?	☐ _____ ☐ _____	☐ _____ ☐ _____	☐ None is possible, everything needs to be safely landfilled

Exercise Sheet 2: Developing a Zero Waste vision and goals

Purpose
To define a shared Zero Waste ambition that is realistic, measurable, and aligned with island priorities.

- Instructions**
Bring together representatives from:
Local government departments
- a. Local government departments
 - b. Civil society organizations
 - c. Local residents
 - d. Waste workers or cooperatives
 - e. Educational institutions
 - f. Tourism and business associations
 - g. Local food producers (farmers, fisherfolk)

- Step-by-step**
1. List the top three waste-related challenges on the island (e.g. open burning, landfill capacity, marine litter)
 2. Identify root causes for each of these issues (inadequate waste collection; no mechanism to manage collected waste; no enforcement on waste generated by tourists etc.)
 3. Define a clear outcome-based goal based on root cause analysis and WACS data, for example:
 - o “Reduce waste burned or landfilled by 70% in five years.”
 4. Set interim targets (1 year, 3 years, 5 years).

Expected output
Unified vision for the Zero Waste Island program

1. List the top 3 waste-related challenges on the island	2. What are the root causes of these issues?	3. Define a goal based on the root cause analysis with 1 year, 3 year, and 5 year targets
Ex. Open burning of waste	Ex. Inadequate waste collection in the target community	Ex. - Segregated waste collection system covers 80% of the community in 1 year - Open burning of waste is nonexistent in 3 years - Amount of waste brought to the landfill is reduced by 70% in 5 years

STAGE 2: PLANNING AND CO-DESIGN

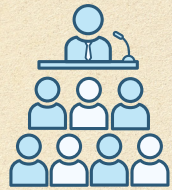
Purpose

Translate the vision into a clear, implementable Zero Waste system design.

Key outputs

An implementation plan with timelines, roles, and responsibilities.

Key activities per enabling mechanism



Governance and policy integration

- Draft or update local ordinances, guidelines, and procurement rules and by-laws mandating segregation and banning open burning.
- Embed targets into policy design (plastic ban, EPR, mandatory segregation, incentives for composting toilets, etc.)
- Develop standard operating procedures for segregation, collection, and processing.
- Integrate Zero Waste mandates for tourism and private sector (pre-requisite for new license or renewal)



Institutional coordination and partnerships

- Begin consultations with tourism operators and commercial establishments for Zero Waste integration and supply chain localization
- Assign clear roles and responsibilities within the task force
- Establish partnerships with recyclers or mainland processors where needed



Capacity building and community engagement

- Train municipal staff, collection workers, and community volunteers
- Organize community meetings
- Announce the Zero Waste vision and goals with the community and tourists through a comprehensive IEC campaign



Technical implementation and sustainable financing

- Define a waste collection system according to waste characterization data (route, frequency, schedule, vehicle, materials)
- Identify and secure land for decentralized infrastructure
- Identify infrastructure needs such as composting hubs, refill points, microgrids, and MRFs
- Identify potential sources of alternative and sustainable energy
- Identify areas for establishing rainwater harvesting systems
- Prepare financing plans and budgets, including revenue sources, user fees, or grants



Monitoring, evaluation, and learning

- Enhance the initial monitoring, evaluation, and learning plan

Exercise Sheet 3: Mapping stakeholders and establishing roles

Purpose

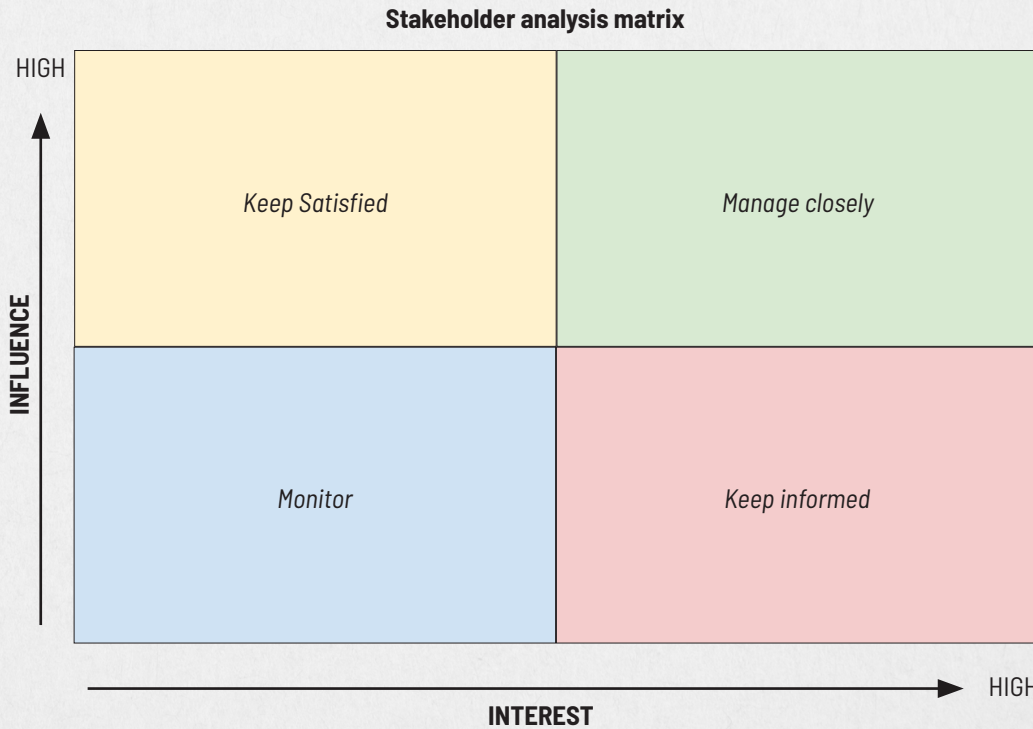
To delineate roles and responsibilities and strengthen coordination.

Step-by-step

1. List all stakeholders involved in waste, food, water, and tourism.
2. Identify their level of influence and interest in the Zero Waste program using the stakeholder analysis matrix (see below). This would also be the basis for drafting your IEC campaign.
3. Identify existing and overlapping mandates. e.g., What Zero Waste mandates does the tourism sector have to follow? Are farmers using compost for their crops?
4. Clearly define roles of each stakeholder:
 - o Civil Society: IEC, capacity building for waste workers
 - o Tourism: develop Zero Waste plan for the sector and implement within 1 year
 - o Farmers: integrate organic and regenerative farming practices
 - o Educational institutions: incorporate Zero Waste and climate topics into the curriculum
 - o Households: program compliance and Zero Waste championing
 - o Other businesses
5. Identify gaps where partnerships are needed (e.g., social enterprises who can provide refill service).

Expected output

- List of implementation partners
- Completed stakeholder analysis



Exercise Sheet 4: Designing a source segregation system

Purpose

To design a waste segregation system suited to island logistics and capacities.

Step-by-step

- 1. Identify the number of waste collectors needed for the target location.
- 2. Identify the required and/or available waste collection vehicles to be used.
- 3. Decide on the number of waste streams (at least three).
- 4. Define realistic collection schedules for each stream based on available capacity.
- 5. Identify behaviour change barriers and solutions.
- 6. Develop clear, locally appropriate communication materials.
- 7. Identify user fee for collection and management for different areas (residential, tourist, business, institutions)

Expected output

Segregation model and collection plan

Additional materials

MEF 10 Steps Program - Step 5: Formulation of Systems and Collection Schedule
https://docs.google.com/document/d/1HEnyTMaIU2g-BuYXaVVoo7kGuFaoJTlg2DBil_tRplQ/edit?tab=t.0

Exercise Sheet 5: Drafting an IEC campaign strategy

Purpose

To develop an Information, Education, and Communication (IEC) campaign that is appropriate to the target group(s).

Step-by-step

- 1. Identify your target group for the IEC campaign based on the stakeholder analysis (see Exercise Sheet 3)
- 2. Determine the format(s) of your IEC campaign material.
- 3. Identify and secure how and where you will produce the material (if campaign material is physical).
- 4. Determine the method of delivery for your campaign (e.g., door-to-door distribution, community bulletin boards, through SMS/ social media).
- 5. Where applicable, identify who will administer or distribute the IEC campaign materials.

Expected output

IEC campaign draft and strategy

Additional materials

Sample IEC campaign material:
https://drive.google.com/file/d/1bmFAbpJ9ChKTxjXiHybvBMoUS9FQ1-BW/view?usp=drive_link

Who is the target group of this IEC campaign?	☐ Households ☐ Local government offices ☐ Local associations ☐ Farmers and fisherfolk ☐ Educational institutions ☐ Tourism establishments (hotels, homestays, etc.) ☐ Commercial establishments (restaurants, local eateries) ☐ Other: _____
What is the format of your IEC campaign material? More than one option is possible.	☐ Flyer ☐ Poster ☐ Radio announcement ☐ TV Commercial ☐ Text message ☐ Social media post ☐ Other: _____
What is the method of delivery for your campaign? More than one option is possible.	☐ Door-to-door distribution ☐ Pinned on the neighborhood bulletin board ☐ Displayed at business establishments ☐ Text message distribution ☐ Posting on social media channels ☐ Other: _____
Why is this the most appropriate material and distribution method for your target location?	☐ It is the most cost-efficient ☐ It is a tried and tested method that works well for the target group ☐ It is easily produced ☐ Other: _____

Exercise Sheet 6: Finance mapping for sustainability

Step 1: Identify current and potential funding sources

List all possible financing options that could support Zero Waste planning, piloting, and operations.

Financing option	Description	Applicable (Yes/ No)	Potential contribution
Village/ municipal budget	Designated public funds for waste management		
User fees	Fees collected from residents for waste collection		
Donation (village leaders)	Voluntary contribution of community members		
Corporate social responsibility (CSR) contribution	Mandatory dues from the tourism sector		
Tourism fees	Obligatory fee collected from tourists		
Income from sale of recyclables, compost	Revenue from diverted residual and organic waste		
Income from eco-learning/ Zero Waste tours/ refill centers	Revenue from eco-tourism activities		
Others			

Step 2: Assess each financing option

Discuss some key considerations of each option in the island context

Financing option	Description	Applicable (Yes/ No)	Potential contribution
Village/ municipal budget	How much is allotted per financial year?		
User fees	How much should the user fee be? How can the residents be consulted?		
Donation			
Corporate social responsibility (CSR) contribution	How much is the contribution and when is it paid?		
Tourism fees	How and when are the fees collected?		
Income from sale of recyclables, compost			
Income from eco-learning/ Zero Waste tours/ refill centers			
Others			

Step 3: Build a blended financing model

1. Identify core, stable funding sources (e.g. village budget, user fees).
2. Identify supplementary or variable sources (CSR, tourism levies, income generation).
3. Decide which sources fund:
 - o Capital costs
 - o Operational costs
 - o Community engagement and education

Expected output

- A financial sustainability map for the pilot phase
- Clear roles and responsibilities for financial management

CASE STUDY

Community-Led, Rotational Waste Collection (Sangti Village, India)

In Sangti village, Arunachal Pradesh, waste management is organized as a shared community responsibility. Households segregate waste at source, and a rotational system of volunteers takes turns collecting and transporting waste to the local Material Recovery Facility. This approach ensures no single group or individual is burdened, and responsibility is distributed across the community.

Key takeaway for islands

Voluntary community collection and participation can be a powerful entry point to operationalize Zero Waste approaches, especially where formal services are limited.

STAGE 3: PILOTING AND DEMONSTRATION

Purpose

Establish core Zero Waste infrastructure and systems, and generate proof of concept.

Key outputs

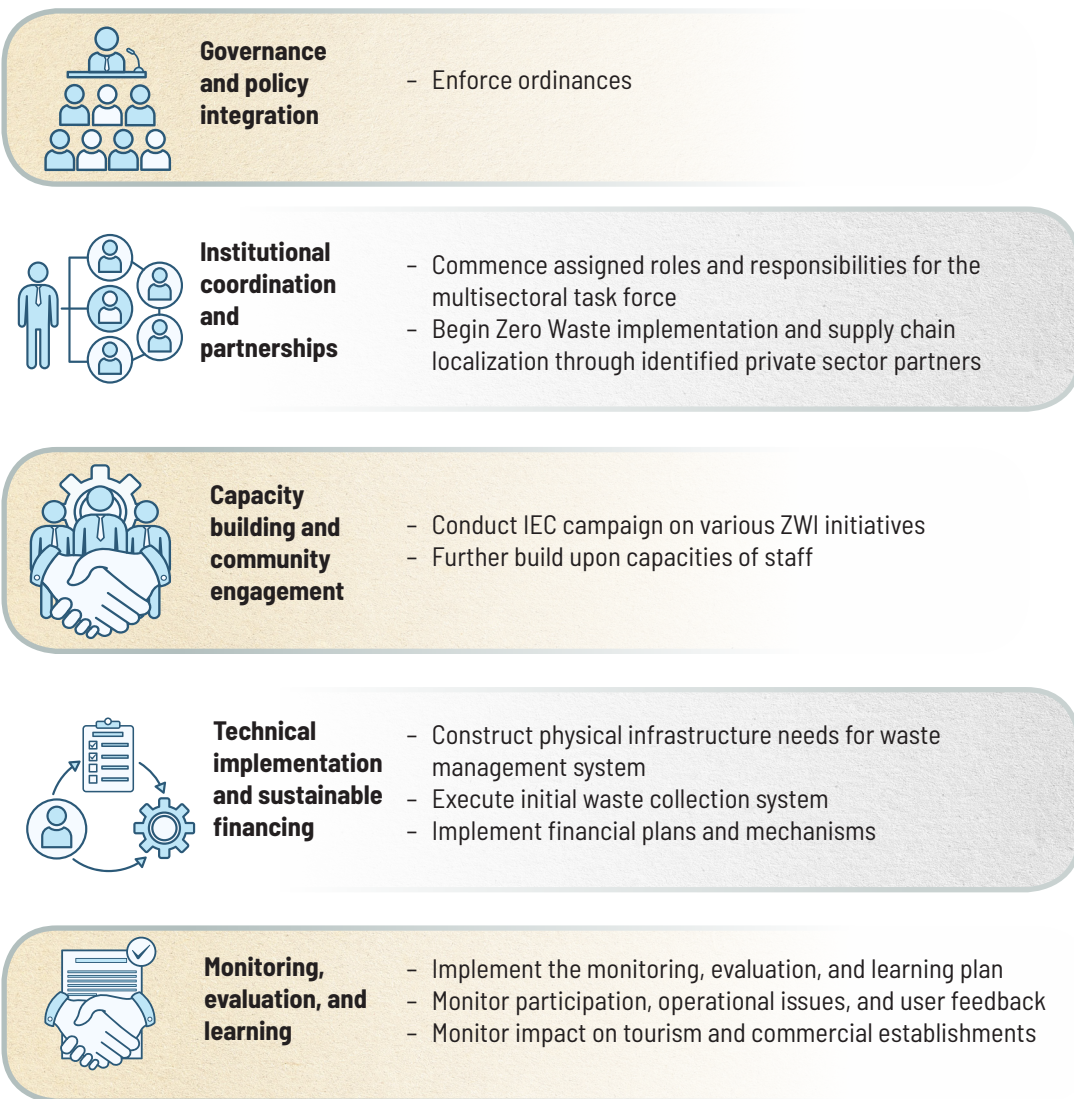
Operational Zero Waste community programs incorporating fundamental Zero Waste Island components.

Additional material

Sample description of dry run and piloting methodology from MEF:

https://docs.google.com/document/d/195NAhAZlpcjKB6BsxSS_uQEyRMOX8I88zyaVM-105ak

Key activities per enabling mechanism



This stage is implemented in four progressive phases:

Phase 1: Establishing the Zero Waste backbone

Phase 2: Reducing residual waste

Phase 3: System integration with other pillars

Phase 4: Managing unavoidable residual waste

Phase 1: Establishing the Zero Waste backbone

Focus: Source segregation and material recovery.

Key outcomes

- Roll out mandatory source segregation in pilot areas.
 - Enforce segregation rules with supportive compliance measures.
 - Monitor contamination rates and participation.
- Establish a Material Recovery Facility (MRF) designed for island conditions:
 - Set up decentralized composting systems for organic waste.
 - Provide hands-on technical training for MRF and composting operations.
- Integrate informal waste workers or cooperatives into system operations.

Exercise Sheet 7: Planning a Materials Recovery Facility (MRF)

Purpose

To design an MRF appropriately sized and constructed for island conditions and space limitations.

Step-by-step

- Estimate daily waste volumes based on waste characterization data.
- Design the sizing based on the MRF design calculation and land availability
- Identify materials needed based on what is readily available, affordable, and appropriate in the community.
- Identify labor needs and expenses to operate the MRF, including any transportation cost for sending recyclables to the mainland.
- Define downstream pathways for recovered materials.*
- Undertake public consultation before establishing an MRF.**

Expected output

MRF plan

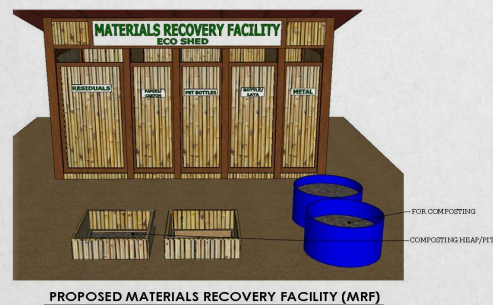
Additional resources

Standard Operating Procedure for a Materials Recovery Facility by Thanal:

https://thanaltrust.org/wp-content/uploads/2020/07/SOP_-_Material-Recovery-Facility.pdf

* Consider the limited land availability within an island when designing the MRF and final disposal process. Prioritize vertical systems over horizontal ones to reduce land required.

** Engaging with the community would be essential in the acceptance and utilization of the MRF.



PROPOSED MATERIALS RECOVERY FACILITY (MRF)



PROPOSED MATERIALS RECOVERY FACILITY (MRF)

Exercise Sheet 8: Designing organics management systems

Purpose

To manage organic waste locally and reduce landfill dependence.

Step-by-step

- 1. Identify suitable composting methods, both for in situ composting or community composting.*
- 2. Identify incentives for residents, establishments for composting within their premises
- 3. Estimate compost output and demand.
- 4. Identify opportunities to link compost to food systems.

Expected output

Organics management plan, including use of compost

** Continue to encourage at-home and decentralized composting, as opposed to relying on the composting areas within the MRF compound. This would reduce the required amount of land to accommodate compost from the entire community.*

CASE STUDY

Community composting in Siquijor Island, Philippines

Included in Siquijor’s MRFs are compost pits, drum composters, tire composters, and biodigesters for processing organic waste. The compost produced from these composting methods are further utilized for its community gardens. As of 2024, the installation of MRFs around Siquijor has resulted in a 67-74% household waste diversion rate.

Through the open-space design and locations of these MRFs, not only can the essential role of waste pickers and waste workers be best demonstrated, but residents themselves can better grasp the importance of a well-executed waste management system for the betterment of the community as a whole.

Key takeaway for islands

Implementing accessible and well-distributed facilities for community-level waste management is fundamental in the effectiveness of a Zero Waste strategy.

Phase 2: Reducing residual waste

Focus: Minimizing waste sent to landfill

Key outcomes

- Introduce single-use product bans or restrictions, prioritising hard-to-manage items.
- Establish reuse stores for durable goods and set up water refill stations in public spaces and tourism zones to reduce bottled water.
 - Partner with local businesses and tourism operators to adopt reuse systems.
 - Provide incentives or recognition for compliance and innovation.
- Mandate reusable packaging in hospitality.
- Track reductions in residual waste volumes.

Exercise Sheet 9: Planning residual waste reduction

Purpose

To move beyond recycling and reduce waste reaching the landfills

Step-by-step

- 1. Identify top contributors to residual waste using the Waste Assessment and Brand Audit (WABA) methodology (see the WABA manual for households by GAIA AP).
- 2. Prioritize single-use products for bans or restrictions.
- 3. Map products (and suppliers) which can be sold in reuse format.
- 4. Set measurable reduction targets.

Expected output

- Residual waste reduction roadmap
- Drafted policy or incentive proposals that target single-use product restrictions.

CASE STUDY

Plastic-free markets and restaurants in Siquijor Island, Philippines

Known as the first Zero Waste Island province in the Asia Pacific, Siquijor enacted and strictly enforced a plastic-free ordinance in 2019 to reduce the number of SUPs being consumed and disposed of on the island.

As a result of the ordinance and through the support of Mother Earth Foundation, local restaurants in the provincial capital have stopped serving food in single-use plastic containers and actively encourage customers to bring their own container when having something for takeaway. In public and wet markets, vendors discontinued the distribution of single-use plastic bags to no trouble to their customers who regularly bring their own reusable bags and baskets for their fresh produce. The Siquijor branch of Jollibee—a Philippine fast food chain– has since begun to phase out single-use plastic products for dine-in and take-out orders, such as the elimination of plastic drinking straws, plastic food packaging, and gravy and drink containers.

Key takeaway for islands

Comprehensive community consultations and intensive house-to-house information, education, and communications campaigns can facilitate the compliance of residents to ambitious mandates such as single-use plastic bans.

Exercise Sheet 10: Establishing refill centers

Purpose

To create neighborhood refill centers and kiosks to facilitate accessible sustainable consumer behavior.

Step-by-step

- 1. Identify partner neighborhood stores or tourism centers to locate refill operations.*
- 2. Identify products (and suppliers) to be offered for the refill operation.
- 3. Develop a business model for the respective identified location and product selection (see worksheet below).
- 4. Provide relevant training and capacity-building for refill principles mechanisms.
- 5. Establish a regular monitoring system and an assigned officer from the multisectoral taskforce.
- 6. Facilitate equipment and supply acquisition for the respective partner refill center.
- 7. Assist in awareness raising and promotion about refill centers in the target community.

Expected output

Fully operational refill centers.

Additional material

Refill Store Toolkit by YPBB (in Bahasa):
<https://drive.google.com/file/d/1MlrteaawWYklcPkChY1K2Mze8i9cs6sj/view>

* To maximize the limited land and other resources on the island, design refill centers to be multipurpose. For example, water refill kiosks should also be able to offer refill services for other products.

CASE STUDY

Setting Up Refill Stores in the Thousand Islands, Indonesia

In the Thousand Islands (Kepulauan Seribu) near Jakarta, Divers Clean Action (DCA) introduced Toko Cura to reduce single-use plastic pollution in this marine protected area.

Toko Cura partnered with established reuse service providers supplying consumer goods like cleaning liquids, shampoo and soy sauce in bulk. The island has diverted 56,000+ pieces of plastic from their island since launching this initiative in 2021.

Key takeaway for islands

Reduces dependence on single-use packaging for essential goods

Refill center business model worksheet⁴

Key partnerships	Key activities	Value proposition	Customer relationships	Customer segments
Which suppliers are available/ more accessible to your target community?	How can you get the buy-in of bulk suppliers and business establishments to form a partnership for the refill centers?	What is the ultimate goal for the refill store? What target refill and reuse products are you hoping to provide, and how will it benefit the community? How will the provision of these products in refill form make a social, economic, and environmental impact on the community?	How can you make the refill centers accessible to the community?	Which target group will be the main customers of the refill center?
Which partner business establishments are located in key areas that would be beneficial for the refill centers?	Key resources		Channels	Who else, beyond the customer base, will benefit from the refill and reuse system?
	What are the target products of the refill centers? What material, financial, and human resources will be necessary in designing and operating the refill centers?		How can you develop feedback loops into the offered products that can allow you to identify new opportunities?	
	What capacities and training need to be provided to the operating staff?			
Costs			Revenues	
What are the (material, labor, product, etc.) costs of designing and operating your refill kiosks?			What new service or product, aligned with the Zero Waste Island program, can be supported through the revenues of the refill centers?	

⁴Originally developed by Osterwalder & Pigneur (strategyzer.com) and adapted from the Ellen MacArthur Foundation’s Circular Design Guide.

Exercise Sheet 11: Initiating a reusable menstrual products programme

Purpose

To reduce menstrual waste at source by supporting the adoption of menstrual cups and reusable cloth pads

Step 1: Assess readiness

- Estimate number of menstruating people.
- Identify current products used and key concerns (health, culture, water access).
- Identify trusted facilitators (health workers, women’s groups).

Step 2: Build trust and ownership

- Secure village council support.
- Engage women’s groups and health workers.
- Identify local champions.
- Decide support model: voluntary, subsidized, or free.

Step 3: Choose products

- Select menstrual cups, reusable pads, or both.
- Ensure quality, safety, and ease of use.
- Identify suppliers or NGO partners

Step 4: Awareness and training

- Conduct small, women-only sessions.
- Include demonstrations, hygiene guidance, and open discussion.
- Avoid pressure or targets.

Step 5: Distribution and follow-up

- Distribute through chosen support model.
- Track uptake respectfully.
- Review after 3–6 months and adapt.

CASE STUDY

Reducing Residual Waste Through Reusable Menstrual Products (Kerala, India)

In Muhamma village, Kerala, community-led awareness and local government support enabled women to shift from disposable sanitary pads to menstrual cups and reusable cloth pads. Over 500 women adopted reusable options, significantly reducing menstrual waste that would otherwise end up in landfills or be burned.

Key takeaway for islands

Promoting reusable menstrual products through community engagement and awareness is a practical residual waste reduction strategy that:

- Reduces single-use waste
- Strengthens local health and hygiene outcomes

Phase 3: System integration with other pillars

Focus: Deepening circularity and self-reliance

Key outcomes

- Strengthen linkages between waste, food, water, and energy planning.
 - Use compost outputs to support community kitchen gardens, or landscaping.
 - Apply learnings from composting systems to introduce composting toilets where water scarcity exists.
 - Explore biogas to meet energy needs (only if adequate land is available)

CASE STUDY

Turning fish waste into fertilizer and feed (Tamil Nadu, India)

Coastal communities in Tamil Nadu demonstrated how fish market waste can be fermented into fish-based liquid fertilizer and silage instead of being dumped or burned.

The outcome of this initiative led to fish waste ...

Being used as organic fertilizer for kitchen gardens and landscaping

Being used as protein-rich feed for poultry and livestock

Reducing pollution while creating local livelihoods

Key takeaway for islands

Closes the loop between waste, food systems, and livelihoods, and reduces dependence on imported inputs.

Phase 4: Managing unavoidable residual waste

Focus: Responsibly manage remaining residual waste while advocating for upstream responsibility and system change, with the long-term goal of reducing the amount of residual waste exports.

Key outcomes

- Quantify and characterize unavoidable residual waste
- Identify least-harm, legally compliant pathways, such as:
 - Transport to mainland or provincial facilities, where mandated or supported by law
 - Use of village or municipal budgets for interim disposal
 - Avoid creating permanent disposal or incineration infrastructure on the island
 - Reduce the amount of residual exports to the mainland.
- Transparency, education, and advocacy
- Organize eco-learning tours for residents and tourists, showcasing:
 - Zero Waste systems (MRF, composting, reuse, refill) as well as the final disposal site, to honestly demonstrate remaining challenges
 - Use tours and data to build public understanding of system limits and advocate for island-appropriate Extended Producer Responsibility (EPR)

CASE STUDY

Himalayan cleanup brand audits and producer accountability

Across the Indian Himalayas, The Himalayan Cleanup conducts annual brand audits to identify companies whose plastic packaging pollutes fragile mountain ecosystems. The audits reveal large volumes of single-use, non-recyclable packaging, shifting the focus from cleanup to upstream solutions.

Using audit data, the campaign advocates for better packaging design and stronger Extended Producer Responsibility (EPR). In Himachal Pradesh, EPR compliance is mandated for producers, requiring them to take responsibility for collection and processing of plastic waste in mountain regions.

Key takeaway for islands

Brand audits help islands and fragile regions move from waste collection to producer accountability and packaging redesign.

STAGE 4: SCALING UP AND INSTITUTIONALIZATION

Purpose

Expand successful pilots across the island and embed Zero Waste into governance systems.

Key outcomes

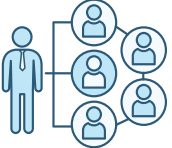
- Scale segregation, MRFs, composting, and reuse systems island-wide.
- Institutionalize service provision
- Integrate Zero Waste requirements into procurement, tourism policy, and land-use planning.
- Establish stable financing mechanisms such as service fees or levies.

Key activities per enabling mechanism



Governance and policy integration

- Integrate Zero Waste plans into island climate/ SDG plans, etc.



Institutional coordination and partnerships

- Expand partnerships with private sector and explore further iterations of Zero Waste practice incorporations



Capacity building and community engagement

- Continuous monitoring of training and capacity building needs



Technical implementation and sustainable financing

- Expand infrastructure
- Strengthen and secure financial mechanisms



Monitoring, evaluation, and learning

- Continuous implementation of the monitoring, evaluation, and learning plan
- Monitor participation, operational issues, and user feedback
- Establish routine monitoring and annual reporting to maintain momentum
- Incorporate feedback to improve Zero Waste Islands program

Exercise Sheet 12: Financing and sustainability planning

Purpose

To identify **longer-term and higher-value financing mechanisms** needed to expand Zero Waste systems island-wide and ensure durability beyond pilot projects.

Step 1: Review pilot phase financing

- Which financing sources worked well?
- Which were unreliable or insufficient?
- What costs increase during scaling?

Step 2: Identify scaling-stage financing options

Financing Option	Contribution			
	Operation and maintenance	Infrastructure expansion	Residual waste transport or management within the village	Packaging waste management (including establish of reuse systems)
Formalized user fee systems				
Tourism levies				
Provincial government support				
EPR contributions				
Long term CSR partnerships				
Climate or resilience funds				

Expected output

A scaling finance strategy

Exercise Sheet 13: Developing a monitoring, evaluation, and learning plan

Purpose

To routinely monitor and evaluate the performance of the program and integrate valuable learnings to future iterations and neighboring communities.

Note: This is a simplified version of what a monitoring, evaluation, and learning (MEL) plan could look like. Other MEL plan resources found online can provide more in-depth information into certain steps and processes.

Step 1: Define the purpose

Define the main purpose of your MEL plan in accordance with the Zero Waste vision and Zero Waste Island program objectives by determining the following:

- **Why:** Why are you developing a MEL plan? What is the purpose of monitoring your learnings from this initiative?
- **Where:** Where is your target study area?
- **What:** What are the key performance indicators (KPIs) of your program? What kind of data will be collected to conduct the MEL plan?
- **Who:** Who will be responsible for the execution of the MEL plan? Who will be assigned to collect the data for each indicator?
- **When:** When is the period of evaluation?
- **How:** How will the data be collected?

Step 2: Define the target audience

Determining who the MEL plan is for and what purpose it will serve them will dictate what kind of information is needed, how it should be presented, and when it should be given. For example, if the MEL plan is for village leadership or government officials, it would be beneficial to highlight the gains and successes of the program being evaluated through presenting the impact in numbers.

Step 3: Formulating MEL questions

At the onset, MEL questions can be developed in accordance with the target audience of the report. The MEL questions pertain to broad assessments of the program implementation journey. Such MEL questions can be as follows:

- **Process:** How many sectors were consulted during the initial stages of the program? How participative was the process?
- **Activities:** Were the tasks executed as planned?
- **Outcome:** Did the program produce the intended outcomes? Which components of the program were more effective than others?
- **Impact:** Did the program create the intended impact? How has the program changed community behavior?
- **Learnings:** What worked and what didn't? What were the unexpected results or findings from the program?

Step 4: Define the KPIs

Identify the KPIs of the program. Do you want to measure waste segregation compliance? Amount of waste diverted from the landfill? Number of refill centers established? Savings accumulated from fewer trips to transport waste to the mainland? Ensure that a baseline for each KPI is established alongside this step. That is, what is the current status or amount of these indicators prior to program implementation?

Once these have been identified, narrow down the measurable (quantitative or qualitative) metrics that can be used to evaluate the achievement of the KPIs. For example, waste segregation compliance will be measured by the number or percentage of households properly segregating their waste.

Part of this step would also be to identify any and all other contextual factors that may influence or impact the achievement or unfulfillment of your KPIs. This would help in delineating certain outcomes that can be attributed to the program.

Step 5: Develop the monitoring strategy

This step refers to determining the approach to data collection with regards to your target KPIs. What kind of data will you need and how will you obtain this data? Will you be collecting this directly from respondents through a survey, or through government documents and statistics?

Expected Output

A MEL plan aligned with your Zero Waste vision

Additional materials

MEL plan guide by WWF:
<https://wwfint.awsassets.panda.org/downloads/2-2-monitoringevaluation-learning-vjan2024.pdf>

Evaluation Toolbox by evaluationtoolbox.net.au:
<https://evaluationtoolbox.net.au/>

MEL Framework Scale Toolkit by Global Schools Forum and Better Purpose:
https://www.globalschoolsforum.org/wp-content/uploads/mel_framework_-_explanation_0.pdf

Sample KPI matrix

Indicator	Indicator definition	Data source	Data collection methodology	When	By whom

ANNEX I: BASELINE ASSESSMENT ITEMS

Baseline assessment of ...	What needs to be evaluated?
Current waste management ordinance	- Who oversees the waste management system? - What are the waste reduction and diversion targets?
Supporting ordinances (e.g., plastic regulations, EPR, organic waste management, natural resource management, ecotourism)	- What are the existing ordinances that supplement and support the ZWI program? - What additional policies need to be developed and enacted?
Waste collection system	- What waste collection vehicle is used? - How often is waste collected? - Is the waste segregated by households? - Where is the waste stored before it is transported for landfilling? - Is the entire community covered by the waste collection system? - How are the waste workers and waste pickers involved?
Waste audit	- What is the average amount of waste being generated per person and per household? - What is the waste composition?
Water generation and consumption	- How much water is being consumed by residential areas? - How much water is being consumed by tourism-related establishments? - How much water is being consumed by agricultural areas? (if any) - What is the status of the current water storage systems? - Is the entire community covered by the water and sewage system? - Does the entire community have access to clean drinking water?
Energy generation and consumption	- How is energy generated? - How much energy is being consumed by residential areas? - How much energy is being consumed by tourism-related establishments? - Does the entire community have access to energy?
Status of land and marine protected areas (if any)	- Does your community have land and marine protected areas? - Does the designated environmental ministry regularly monitor and rehabilitate these protected areas?

Status of natural and cultural resources	- What are the natural resources occurring in the community? - How are these natural resources being managed? - What are the natural and cultural resources that have become/ are becoming popular tourist spots (e.g., waterfalls, beaches, etc.) - What are the carrying capacities of these tourist spots? - Have current human activities (including tourism) exceeded the island's carrying capacity?
Status of agriculture and fisheries sector (if any)	- What kind of crops, vegetables, and fruits are cultivated and produced for local consumption? - What kind of livestock are raised and sold for local consumption? - What is the production rate of the farms? - What kind of fish are harvested and produced for local consumption? - How many farmers are primarily engaged in agriculture? - How many fisherfolk are primarily engaged in fisheries?
Status of mining or quarrying activities (if any)	- What areas in the island are mining/quarrying sites? - How many mining/quarrying firms are operating on the island?
Status of local enterprise (food establishments, homestays, carpentry, handicrafts, etc.)	- What are the local enterprises in the community? - What are the local handicrafts and artisan products being created?
Status of tourism activity and tourism-based establishments	- What is the average annual number of tourist visits? - How many tourism-related resorts, hotels, and homestays are there within the community? - How many tour operators are there within the community? - How many ecotours are operating within the community?
Overall target objective for the ZWI	- What is the target waste collection coverage rate? (e.g., 95% by 2030) - What is the target waste diversion rate? (e.g., 70% by 2030) - What is the target waste compliance rate? (e.g., 85% by 2030) - What is the target percentage of eco-/sustainably-operated tourism establishments? (e.g., 80% by 2030) - What is the target amount of food locally produced and consumed? (e.g., 20% by 2030) - What is the target percentage of energy generated from renewable sources? (e.g., 40% by 2030)

ANNEX II. BEST PRACTICES OF ISLAND AND SIMILAR REMOTE COMMUNITIES

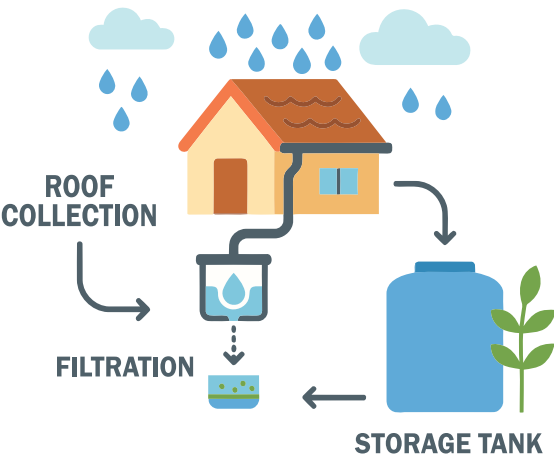
BUILDING RESILIENCE IN FOOD SYSTEMS IN THE PACIFIC ISLANDS

The mission of the International Fund for Agricultural Development (IFAD) is to empower rural communities through strategic funding that leverages local resources and capacities. Part of their work has been helping to bolster the Pacific Small Island Developing States’ food systems through a strategic private-public partnership for co-financing local-level agricultural and social programs. The agro-biodiversity-rich Pacific Islands have received support from IFAD for regenerative food systems, social development programs, and poverty eradication initiatives. These bottom-up funding programs also take the form of training and capacity building that have strengthened local residents’ climate adaptation capacities, food security, and external shock resilience. One part of IFAD’s goal for the Pacific Island farmers is to capacitate them to transition from subsistence farming to semi-commercial farming, allowing them to further develop their entrepreneurial skill and economic well-being through resilient food systems.



RAINWATER HARVESTING IN THE CARIBBEAN ISLANDS

In order to cope with drier seasons and freshwater scarcity from the worsening impacts of climate change, Caribbean islands are bringing back an old tradition of rainwater harvesting to improve water security, self-reliance, and climate resilience. Majority of the countries in the Caribbean are served through pipe-borne sources of water, and rural and poor communities without access to these sources rely on water from rivers, streams, rainwater, or from infrequent water truck deliveries. In some cases, the municipal water supply only comes through pipe-borne sources at most twice a week. Standardizing the installation of rainwater harvesting systems for all households throughout the islands has improved overall water resilience, self-sufficiency, and well-being of the island communities.



COMPOSTING TOILETS IN OGASAWARA ISLANDS, JAPAN

Population: 2,459
Yearly tourism: 20,000

The Ogasawara Islands are classified as a UNESCO Natural World Heritage site due to the richness of their natural ecosystems. The Ogasawara Islands are made up of 4 main groups of islands: Bonin Islands, Volcano Islands, Okinotorishima (“Remote Bird Island”) and Minamitorishima (“Southern Bird Island”). Bonin Islands is where Hahajima (“Mother Island”) is found. Hahajima Island is home to around 450 residents and hosts a vast variety of endemic flora and fauna, making it a popular ecotourism destination welcoming about 3,000 visitors annually. Through the commitment of preserving the Ogasawara Islands’ natural habitats, the Hahajima Tourism Association implemented a composting toilet. Located at a popular sightseeing spot, the composting toilet also acts as a counter against pressures on the island’s water and energy resources, as well as on its waste and sewage management systems. Due to the fact that it is built off the power, water, and sewage grid, the composting toilet requires no water or electricity

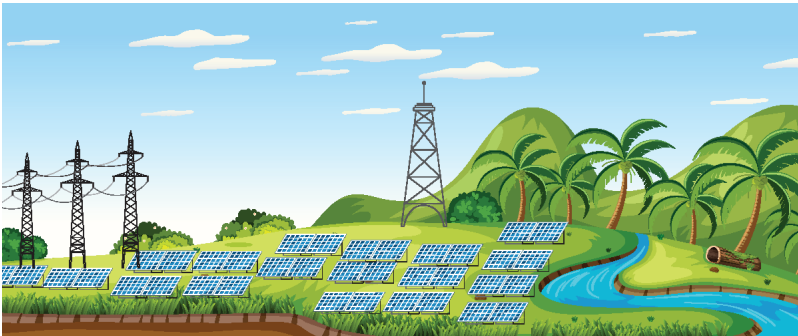


to fully operate. It makes use of a solar-powered motor that churns the waste and blankets it in sawdust; a process that eventually turns the composted waste into fertilizer. A simple yet effective innovation, a composting toilet is one way for local communities to mitigate resource vulnerabilities while continuing to provide basic facilities for residents and visitors alike.

THE RENEWABLE ENERGY NATION OF TOKELAU ISLANDS

Population:
2,600 residents
(Worldometer
estimate as of 2025)

Area: 10 sq km



Tokelau Islands, a group of three atolls in the South Pacific, has proclaimed themselves as the world’s first renewable nation. Tokelau Islands is completely powered by solar energy as of 2013, and storage batteries and generators that run on coconut-derived biofuel, a renewable energy system developed through the Tokelau Renewable Energy Project that was funded by the New Zealand government. Having once been 100% dependent on imported fossil fuels for their energy, this renewable energy project empowers this Pacific Island community to be energy independent and secure their sustainable energy future. Not without its risks, the lead acid battery banks and PV cells at their end-of-life present a looming environmental concern. To reduce the risks, a robust renewable energy system requires long-term recycling strategies and technically-equipped personnel to manage these issues. Tokelau’s renewable energy system provides them with energy security that would otherwise continue to be an issue with imported fossil fuel-dependent island communities. At the very least, a diversified energy system that includes renewable sources and does not fully rely on fossil fuels can already provide islands with a better sense of energy security and energy independence.

INDIGENOUS FOOD SYSTEMS IN MEGHALAYA’S MEI RAMEW CAFÉS IN INDIA

Population: 3,379,000
(as of 2024)

In operation since:
2013

Number of Cafés: 2



Nestled in the Khweng Village of Meghalaya, northeast India are two cafés that are preserving and re-introducing indigenous food systems into the community. Mei Ramew (“Mother Earth” in Khasi) is the name of the local establishment that aims to educate the community about ancestral food through highly nutritious meals that are rooted in age-old practices. These cafés were initiated by the North East Society for Agroecology Support (NESFAS), an NGO based in Meghalaya, that saw the village’s agrobiodiversity and wanted to find a way to bring that back onto the plates of the people while providing a sustainable source of livelihood at the same time. The establishment of the Mei Ramew cafés incentivized entrepreneurs who were willing to take on the challenge of cooking with ancestral methods and food for their community. Farmers, too, were given an additional source of livelihood by producing indigenous and local vegetables through organic farming methods to supply to the cafés. Locals and foreigners alike frequent these cafés and are served nutritious meals while taking away newfound knowledge and appreciation for indigenous food systems.

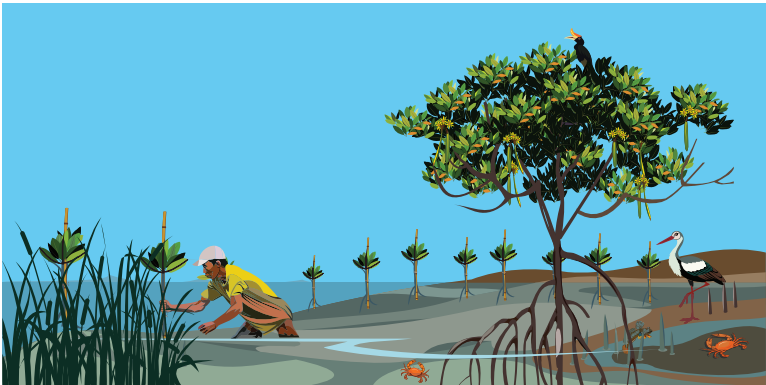
MANGROVE CONSERVATION AND ECOTOURISM IN SOUTH SUMATRA, INDONESIA SINCE 2021

Population: 622,206
(2020 census)

Population: 3,379,000
(as of 2024)

Impact: 15 hectares
of mangrove forests
revived as of 2024

Land area: 12,551.15
sq km



Around 20% of the world’s mangroves can be found in Indonesia. In the Banyuasin Regency of South Sumatra, a mangrove restoration project started in 2021 resulted in the restoration of 15 hectares of damaged mangroves. Mangrove ecosystems bolster climate change resilience, greenhouse gas reduction, and biodiversity conservation. Mangroves also play a significant role in mitigating storm surges and floods, effectively protecting coastal and inland communities. Establishing ecotourism spots in mangrove forests further supports mangrove conservation and restoration. The communities that host these ecotours see improvements in their access to resources such as potable water, energy, and road accessibility. Additionally, communities also gain an additional source of livelihood through mangrove seedling distribution, boat operation, food vending, and homestay provision. Mangroves, however, are also under threat. Aside from natural weather events that affect mangrove forests, leading causes to mangrove loss are largely anthropogenic. These include rapid urban development, the expansion and conversion of coastal land for commercial establishments, commercial agriculture expansion, and excessive logging. With their ability to support the local economy, protect coastal communities, and uphold climate change resilience in the long-term, mangrove forests are a much-needed resource of sustainable and self-reliant islands

ACHIEVING ZERO WASTE THROUGH COLLABORATION IN TOP TOURIST DESTINATION KRK, CROATIA SINCE 2020

Population: 6,816
(since 2021)

Population: 3,379,000
(as of 2024)

Impact: 58%
reduction in residual
waste generated per
capita since 2014

Daily tourism during
peak season: 120,000



Not only has Krk Island in Croatia received positive national and international recognition due to their pioneering efforts in municipal Zero Waste management, but this approach has also reinforced the tourism branding of the island for having a good quality of life, on top of being clean and sustainable. Krk’s campaign to become Zero Waste began in 2020, and as of 2024 they have earned a Zero Waste Certification from MiZA. The success of Krk’s efforts is demonstrated through the achievement of key Zero Waste system components such as door-to-door waste collection, a “Pay-As-You-Throw” (PAYT) system, separate biowaste collection and processing, and awareness raising campaigns on the promotion of resource reduction and reuse. However, Krk’s success can also be attributed to the effectiveness of their inclusive approach to drafting their Zero Waste Plan, which was a highly collaborative process that involved representatives from their 7 municipalities along with key stakeholders of the island. Through this approach, the Zero Waste Plan accurately illustrated the collective goals of the different municipalities, the realities and challenges of the island, along with the real needs of the community. According to Zero Waste Europe, Krk now boasts a 57% segregated collection rate in all municipal waste categories, a 58% reduction in residual waste generated per capita (since 2014), a 40% increase in local jobs through employment in the municipal waste management system, and a 60% decrease in illegal dumping on the island as a result of a more effective waste collection system.

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