



International POPs Elimination Project

Case study of Zero Waste Kovalam:
A progressive waste management programme with focus on the
best available technology options and material substitution



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Nityanand Jayaraman

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Executive Summary

Kerala's increasing prominence since the 1980s as a tourist destination has transformed the South Indian coastal state's landscape. Unfortunately, the growth in infrastructure to accommodate and entertain tourists was unplanned and done in the absence of regulatory infrastructure to deal with the fall-outs of tourism. The most visible manifestation of this inadequacy is the mounds of garbage, and plastic-clogged cesspools that mar the otherwise breath-taking beauty of Kerala.

In 1999, when the Kerala Tourism Department proposed an incinerator to address the garbage crisis, residents and environmental groups rose up in protest against the proposal. While the incinerator proposal was shelved, the garbage problem remained. Plans were afoot to truck the garbage to a location 25 kms away. It was then that Zero Waste Kovalam was born to not merely address the garbage problem, but to also change the mindset of regulators, industry and common people about their mistaken notion that garbage is waste.

In the vocabulary of public interest activists, the term "waste" had already been replaced by "discards" to differentiate between the items in the trash that could be safely recovered in one form or the other (resources), and the unsustainable material (waste) that either could not, would not be recovered or would create a range of environmental problems if recovery of any form was attempted.

The dominant paradigm sought to burn, bury or dump the "wastes" after it is produced. This paradigm prescribes no measures to prevent waste. The challenging paradigm — called "Zero Waste" — sought to address the problem by changing the materials and economies leading to the production of "waste."

Zero Waste goes beyond technical interventions. It has at its core a set of social and ethical criteria that are required to be considered even at the stage of designing a product.

1. Necessity: Is the product necessary?
2. Environmental Impact: Can the product be made from material that minimise negative environmental impacts?
3. Economic Impact: Can the need for the product be fulfilled using locally available resources and can the product be manufactured locally?
4. Conservation: Can the product be designed to reduce the resources required?
5. Transportation: Can it be manufactured close to the point of use so as to minimise transportation and packaging?
6. Post-use recovery: Can the product be reused, recycled or safely composted at the end of its life?

International POPs Elimination Project (IPEP)

An integral part of the Zero Waste program in Kovalam has been to explore ways of boosting the local economy by generating entrepreneurial livelihood activities that convert local natural resources into environmentally-friendly replacements for items currently made using unsustainable material like plastic.

To implement this, the program began with a two-pronged workplan.

1. Resource Recovery (RR): Typically, an RR facility consists of a 15 cubic metre biogas plant, an RR Room for non-biodegradable discards, a compost pit and drying yard. Biodegradable wastes that would otherwise stink up the landscape would now be converted to fuel-gas by the biogas unit, while other discards would be segregated and sold as scrap. RR facilities can be within individual institutions or serving clusters of establishments.

The Zero Waste initiative has succeeded in convincing hotel clusters to set up 3 biogas units resulting in the diversion of more than 1 ton of biodegradable discards out of the total garbage of 7 tons/day.

2. Material Substitution: Extending the useful life of eco-friendly discards (paper, coconut shell, cloth waste) to displace products made using unsustainable material is the aim of the Material Substitution programme. Currently, the Zero Waste Centre is promoting products made of paper, jute, cloth and coconut shell. This program runs closely with “Entrepreneurship Development and Support” through which local people are trained to develop and manage small enterprises.

At least three entrepreneurial units run solely by women have come up that make products out of coconut shell, paper and tailoring wastes.

With the consolidation of its work through the Centre, the program added three new components to its portfolio.

3. Poison Free Farming: Linked to the concept of material substitution is the program to replace agrochemical-intensive farming practices with chemical-free small-scale agriculture. Under this program, local farmers – mostly women – are given technical assistance and training on organic agricultural practices. Both production and marketing support are provided in a bid to revive homestead farming and supply the tourist industry and domestic markets. This initiative has spawned at least 45 new organic farmers, some of whom supply local hotels with organic produce.
4. Water Conservation: Addressing the water crisis in Kovalam is imperative to the long-term ecological security of the region. The Water Conservation program aims to involve the local communities in reclaiming their water resources.
5. Community Capacity Building: The Community Capacity Building program is a long-term effort that aims to equip people, particularly children, with the skills required to build a environmentally sustainable and socially just world.

In all, the Zero Waste initiative has resulted in the creation of nearly 160 jobs between 2002 and 2005. About 115 jobs allowed entrepreneurs to take home a modest amount each month, while 45 livelihoods in the agriculture sector yielded longer-time dividends.

Preface

One school-day in early 2005, Srihari — a shy 10-year old boy dressed in his school uniform — walked into the Zero Waste Centre in Kovalam with a grave question: “How much for paper cups?” The Centre’s administrative officer, the 62-year old V.S. Nair was unfazed. “Take a seat, and tell me what this is all about,” he told his unlikely customer.

Srihari seemed upset. His fifth grade class was moving out of the Muttakkadu Lower Primary School that year, and it was customary to end the year with a graduating ceremony jointly organised by the students and the teacher. Over the years, serving beverages in plastic cups had also become customary. But Srihari would have none of that, and told his teacher that plastic cups were not on. When his teacher explained that the school didn’t have the money for paper cups, Srihari offered to purchase it from his savings.

He walked nearly a kilometre to the Zero Waste Centre where his mother, L. Latha Kumari, worked as a housekeeper. The Zero Waste Centre, Srihari knew from experience, would have an answer to his dilemma. Srihari has been part of the Centre’s “Children for a Toxic-Free World” program since August 2003. That is where the child had learnt about the dangers of plastics and that a poison-free world was possible. Srihari comes from a zero waste family. His mother, Latha, runs a zero waste home, inspired by what she learnt at work. Even paper cups, anything disposable, would find entry into her home difficult.

Srihari and Latha are only two of the hundreds of people, author included, that have been directly influenced by the Zero Waste Centre in Kovalam. Many of the changes brought about by the Centre in Kovalam are quantifiable. The more important ones are not. These are the mind-changes, the gentle attitudinal shifts that can only happen when well-researched information is conveyed through a medium of trust in the process of building lasting personal relationships.

What started as a fight against a garbage incinerator in the beach resort of Kovalam has now become a social campaign for economic revival, creativity, efficient material use and localisation. The campaign has pushed the envelope in defining “Zero Waste” – it goes beyond the techniques and technologies of recycling and recovery, or even the pioneering concepts of Extended Producer Responsibility and material substitution. The Kovalam campaign has chosen to emphasise the “community” element of “Zero Waste,” by tackling the far more challenging task of changing minds, and bringing people together in rebuilding a community and economy that were affected by unplanned tourism.

The Gandhian influence is visible in the ethics of Zero Waste Kovalam. Unlike many Western models that do not place a premium on simplicity, the Kovalam campaign attempts prioritise fundamental needs over luxury applications. It is interesting to see the hesitant marriage of the culture of simplicity with the inherently leisure- or luxury-oriented tourism economy in Kovalam.

This report attempts to capture the successes and shortcomings of the ongoing Zero Waste Kovalam campaign, for the benefit of those engaged in or considering similar ventures. This report is also for the benefit of those battle-weary activists — a breath of fresh air, a whiff of optimism, a glimpse of something going right.



Srihari

- Nityanand Jayaraman

“God’s Own Country.” Immodest though it may seem, that’s how Kerala describes itself. The description has some truth to it – shades of luscious green, the hills, the backwaters and snaking rivers, and the omnipresent sea broken by golden sand beaches do give Kerala a heavenly touch.

Kovalam is just 12 km from Thiruvananthapuram, the capital of God’s own country. Four crescent-shaped beaches, safe bathing waters, a modest surf and graceful coconut palms — Kovalam’s days as an idyllic fishing village were numbered the day tourists felt crowded in Goa.

Kovalam’s economy, before tourism, was diverse. Fishing and fish-related businesses, paddy cultivation, palm and coconut-based industries including coir, copra, thatch, toddy tapping – almost the entire population was engaged in primary and related secondary industries.

The degree of self-sufficiency was high. Water was plentiful and available from open wells, ponds, lakes and streams. Discards from homes and local entrepreneurial establishments were mostly organic in nature. These were either composted within the homesteads, directly applied in the fields or burnt.

In the early 1970s, the Department of Tourism and the India Tourism Development Corporation took tentative steps to open Kovalam for tourism. In the 1980s, the boom began, and brought with it a spurt in illegal constructions. Either the Tourism Department and the Panchayat (Local Self Government of the smallest administrative unit) didn’t know what hit them, or they didn’t want to restrict what they saw as a good thing. Within years, the beach-front was peppered with illegal shacks and out-of-place hotel constructions.

In 1991, the Government of India notified the Coastal Regulation Zone (CRZ) to protect the ecosensitive sea-land interface. According to this notification, the Kovalam beach area was accorded highest protection and designated as CRZ I. New buildings, drawing of groundwater or dumping of wastes was prohibited within 200 metres of the High Tide Line. In 1993, unrelated to the CRZ notification, the District Authority and the Tourism Department demolished 67 illegal constructions, including hotels, restaurants, shops and houses.

The second boom began in 1995, when an anticipated increase in demand for rooms to accommodate chartered tourists – who began arriving that year — led to another spurt in illegal constructions and commercial establishments. Simultaneously, the Tourism Department too began paying more attention to the resort, building roads and pathways, installing lighting and water supply infrastructure.



Kovalam – After Tourism

Tourist visitation trends have been erratic over the years, varying between 55,000 (1994) and 140,000. The number of domestic tourists has increased markedly over the years. However, because the tourism growth was unplanned, commercial establishments and tourist visitations grew without a concomitant expansion of water and sanitation infrastructure. Wetlands and even ponds, such as the *Thampuran Kulam* were filled up and built upon.

Restaurants and hotels installed septic tanks for their sewage. This led to extensive groundwater contamination particularly in the foothills and low-lying areas. *Kuthira Kulam*, a freshwater pond, had to be abandoned because of contamination. Around the same time, open wells were being abandoned or restricted for purposes other than drinking. Only one pond, the *Vaikol Kulam* which is protected by concrete walls, remains in use today.

Until very recently, and through the best years of tourism, Kovalam had no infrastructure to deal with the sewage, or discards from homes, commercial establishments and hotels. The Tourism Department provided beach cleaning services, but little else.

The result: Throughout Kovalam, the rich and the poor, the Government and the private sector ended up dumping or burning their garbage first in hidden pockets of the village, and subsequently out in the open.

Until mid-1980s, disposable plastics were just not common in India. What plastic entered the household was cherished and secreted away in a special corner of the kitchen cupboard to be brought out when the occasion demanded. After the Indian economy was liberalised in the early 1990s, the composition of garbage changed dramatically. From a predominantly organic waste stream, Indian trash began seeing a growing quantity of disposable plastics. For places like Kovalam, this change was all the more pronounced.

As tourist confidence in the quality of local water declined, the sales of bottled drinking water increased. Within years, the smaller ponds and the numerous streams or *thodus* were converted into cesspools of plastic trash, particularly PET bottles. Right in the main beach, a depression in a rocky outcropping jutting into sea was the preferred location for burning garbage.

Banning the Burn

By the late 1990s, the garbage problem had assumed mythical proportions. The officer in the Tourism Information Centre in Kovalam told one researcher that more than 30 tons of trash was being generated each day – an impossible 7.5 kgs of trash for every man, woman, child, tourist and migrant worker — in Kovalam. Daily per capita garbage generation in India is less than 0.5 kg; even Japan has a per capita waste generation of less than 1.5 kg. The problem of the mounting trash was compounded by the total absence of reliable data on the quantum, nature and sources of discards.

Besides being a public health hazard, the growing mounds of garbage marred the beauty of the coastal village. Not only that, the Tourism Department was paying the Vizhinjam Panchayat Rs. 25 lakhs (\$58,000) annually for waste related expenses with nothing to show for it. Collection and removal of garbage was *ad hoc*, and the collected garbage ended up on the roadsides *en route* Kovalam, or in the field of some unsuspecting farmer.

Foreign tourist visitations began to decline. The golden goose was ready to leave its soiled nest.

The question foremost on the minds of the tourism industry and the Government was: “What do we do with the garbage? How can we make it disappear?” First came the proposal to burn. In 1999, the Kerala Tourism Department announced its plans to install incinerators in four major tourist destinations, including Kovalam which was to host a 30-ton per day incinerator.

Just the previous year, Greenpeace and the International POPs Elimination Network (IPEN) had organised a conference to highlight the dangers of Persistent Organic Pollutants (POPs), and the global measures to curb POPs emissions through the UNEP-led Stockholm Convention. POPs targeted by the Convention are carbon-based chemicals that also contain chlorine as part of their molecular structure. All of these chemicals persist in the environment, tend to accumulate in the tissues of living organisms, and are distributed globally

Thanal, a Thiruvananthapuram-based voluntary organisation that had been conducting nature appreciation programs for children since 1986, was part of a South Asian workshop on Persistent Organic Pollutants organised by Greenpeace in 1998. The conference highlighted the dangers of POPs and the global measures to curb POPs emissions. POPs were carbon containing chemicals that exhibited highly toxic and life-threatening properties. In the course of the workshop and interactions with international activists, Thanal learnt about the dangers of incinerators, and the fact that the discredited technology was attempting to find a home in industrialising countries that were desperate to find a quickfix answer for their mounting garbage woes.

The Kovalam incinerator proposal was vociferously opposed by a local citizens' forum. Separately in 1999, a coalition of organisations including Thanal, Greenpeace and Bangalore-based Equations cited environmental reasons and urged the Tourism Department to drop the proposal. The community struggle succeeded, and the Kerala Tourism Department shelved the incinerator proposal.

Truth to be told, the effort expended in averting the incinerator crisis was modest. As important as public opposition to the incinerator was to killing the proposal was the presence of a sensitive and forward-thinking bureaucrat at the helm of affairs in the Tourism Department. Dr. V. Venu, then Tourism Director,

shelved the incinerator proposal promptly enough. But the garbage crisis remained unaddressed, and plans were afoot to truck the 7 to 8 tons of garbage daily to a garbage facility 25 kms away.

Thanal realised that unless a lasting solution was found to the problem in Kovalam, the trash would threaten the environment or communities in one place or the other.

Grassroots Globalisation

Anti-toxics activists in India were well linked to a loose global network of like-minded environmental justice activists and public interest professionals. Progressive concepts regarding how to deal with municipal, medical and hazardous wastes were already in popular currency among environmental activists in India, thanks to travelling speaking tours by knowledgeable speakers like the garbage guru Dr. Paul Connett from New York, medical waste consultant Glenn McRae and the toxics expert Pat Costner.

In the vocabulary of public interest activists, the term “waste” had already been replaced by “discards” to differentiate between the items in the trash that could be safely recovered in one form or the other (resources), and the unsustainable material (waste) that either could not, would not be recovered or would create a range of environmental problems if recovery of any form was attempted.

Waste had to be eliminated, and recovery maximised, according to progressive discards management practices. Landfills, incinerators, pollution control devices such as filters and scrubbers were all end-of-pipe interventions – unwise attempts to mitigate the problem after causing it intentionally.

The dominant paradigm sought to burn, bury or dump the “wastes” after it is produced. This paradigm prescribes no measures to prevent waste. The “reduce, reuse, recycle” paradigm was an improvement over the dominant paradigm, but it still did not challenge the use of unsustainable material. More dangerously, “recycling” was reduced to a greenwash term to justify the use of unsustainable material that placed an unacceptable burden on the environment at one or more stages of its lifecycle.

The challenging paradigm — called “Zero Waste” — sought to address the problem by changing the materials and economies leading to the production of “waste.”

In Kovalam, the desperation of the tourism industry to address the garbage problem combined with the Tourism Department’s willingness to experiment with progressive concepts set the stage for Zero Waste Kovalam. The campaign was formally announced in December 2000 at the first meeting, in Johannesburg, of the Global Anti Incineration Alliance, a formal alliance of the loose global network mentioned above.

GAIA decided to throw its weight behind Thanal’s Zero Waste Kovalam initiative given its relevance to the situation in towns and cities worldwide.

Zero Waste: Getting down to the Basics

Anti-incineration guru Dr. Paul Connett is prone to reminding his audience that asking the right questions is the only way to arrive at the right answers. The lead-up to the launch of the Zero Waste Kovalam involved much collective soul-searching for the right questions and the right answers.

The deliberations on tackling the problem of PET bottle waste are a case in point. Kovalam was littered with PET bottles discarded by tourists. Because the local water was contaminated or otherwise unfit for drinking, most tourists opted for bottled water. PET bottles ended up in the trash heap after a single use. In searching for a way out, various interventions – collect and dump; collect and recycle; return to manufacturer etc — commonly advanced as solutions were evaluated and dropped.

The actual solution to the PET bottle crisis lay not in dealing with the bottles, but in cleaning up the groundwater. If the local water were clean, there would be no need for bottled water. To deal with the crisis of plastic wastes, Zero Waste principles would require resources to be invested in revamping the sewage system, and not in recycling PET bottles.

A similar intervention addressed the problem of plastic laundry bags being used by the Kovalam hotels. The Zero Waste intervention replaced the mass-produced plastic laundry bags with locally hand-made paper bags. On the one hand, it eliminated plastic. On the other, the alternative created local jobs and kept the money within the community.

Thus, Zero Waste goes beyond technical interventions. It has at its core a set of social and ethical criteria that are required to be considered even at the stage of designing a product.

Thanal outlines some basic questions to evaluate the impacts on economy, environmental and health arising from the production and use of material:

1. Necessity: Is the product necessary?
2. Environmental Impact: Can the product be made from material that minimise negative environmental impacts?
3. Economic Impact: Can the need for the product be fulfilled using locally available resources and can the product be manufactured locally?
4. Conservation: Can the product be designed to reduce the resources required?
5. Transportation: Can it be manufactured close to the point of use so as to minimise transportation and packaging?
6. Post-use recovery: Can the product be reused, recycled or safely composted at the end of its life?

Zero Waste Kovalam declared that their interventions to address the garbage problem in Kovalam would:

- Involve local people and the generators of garbage;
- Boost the local economy by generating entrepreneurial livelihood activities that are healthy, remunerative, meaningful and self-sustaining;
- Not be wasteful or propagate the use of wasteful material;
- Not transfer the problem to a different community;

- Not consider recycling as an option if that operation has the potential to pollute or affect worker health;
- Re-establish Kovalam as a tourist destination of choice.

Thanal's Zero Waste Roadmap

The Zero Waste journey in Kovalam was never portrayed or understood as an environmental struggle. It was always a political struggle to win people's minds, change lifestyles and revisit the way in which business is conducted. A thorough understanding of the various players influencing decisions in Kovalam, their vested interests and attitudes towards garbage, tourism and Zero Waste was seen as key to the success of the journey.

Comprehending the Problem

In February 2001, Zero Waste Kovalam initiated a preliminary study to estimate the quantum, nature and sources of various kinds of garbage in Kovalam. Simultaneously, a study team began the analyses of the different interest groups operating in Kovalam, and their attitude towards tourism, the waste problem and zero waste as a solution.

Shibu K. Nair, a Thanal member, was entrusted with the overall responsibility of coordinating the studies. Shibu recalls that scepticism and hostility, particularly among the hoteliers, was rampant in the earlier days. It was clear that Thanal was taking the lead on the issue. But they didn't want to convey an impression that Thanal would take the responsibility for removing the garbage.

The first step was just getting accepted. Whether they liked Shibu or not is a different matter. Getting used to seeing him walking up and down was a step in the right direction, as far as Shibu was concerned. Shibu's perseverance paid off. Within a few months, Shibu not only had an idea of the kinds and quantities of garbage in Kovalam, but he also knew who the main players were and who the likely allies and adversaries were.

"If it took me 30 minutes to walk a stretch in my initial days, it took me 2 hours to walk the same stretch a few months later. I had to stop every ten feet to talk to somebody I knew. This was a good development, because relationships were being cemented," says Shibu.

Between February and July, a number of formal and informal interactions with members of various panchayats were held. A study of garbage dumping or burning sites spread throughout Kovalam revealed that most such sites were in Muttakkad, Vazhamuttom and Vellar – all villages in Venganoor Panchayat. Kovalam is one among many wards within the Vizhinjam panchayat. While Vizhinjam got significant revenue from Kovalam, all of Kovalam's liabilities (wastes) seem to have been sent to the neighbouring Venganoor Panchayat.

This information was to prove valuable to Thanal at a later point when the Vizhinjam panchayat refused to cooperate and attempted to stymie the Zero Waste attempts.

For and Against

In July 2001, a comprehensive waste audit was launched to generate primary data on peak and lean season garbage generation. A total of 171 out of 562 commercial establishments in the Kovalam area were surveyed. Separately, an attitudinal survey was also begun.

The first meeting involving all interest groups was held in November 2001, where the results of the waste audit were presented during a skillshare titled “Towards Zero Waste Kovalam.” The workshop, which was jointly organised by Thanal, Greenpeace, Kerala Tourism Department and the Kerala Hotel & Restaurants Association (Kovalam), involved elected Panchayat members, women’s self-help groups, merchant associations, religious leaders, voluntary organisations, craftsmen and artists, and Government officials.

Table: Study findings, November 2001

Discard stream	Quantity/day	Main generators	Popular Disposal Options
Biodegradables	6,690 kgs	Hotels, restaurants, tender coconut vendors	Dumping, burying, burning
PET water bottles	4,340 bottles	Hotels, lodges and restaurants	Dumping, burning, scrap merchant
Plastic carrybags	2,390 bags	Curio shops, petty shops, general stores, provisionstores	Burning, dumping
Milk covers	2,760 covers	Hotels and restaurants	Burning, dumping, scrap
Cloth	20 kgs	Tailor shops	Burning and dumping

Source: “Towards Zero Waste Kovalam: A Draft Report.” Thanal & Greenpeace. November 2001

Never before had all these interest groups come together under one roof to discuss the garbage problem. Zero waste was a new concept. The name sounded too idealistic to be practical.

The Hoteliers were a sceptical lot but willing to experiment, out of sheer desperation. The elected officials of the Local Self Governments were either opposed or neutral in their stance. The Tourism Department was neutral, but the tourism secretaries followed the trend set by Dr. Venu and extended their cautious support for the Zero Waste program. The women’s Self Help Groups led by the then Kovalam ward member Latha Sugadhan were among the few that saw the opportunities presented by Zero Waste.

The battlelines became clear. The Vizhinjam panchayat, of which Kovalam was a part, was going to be the stumbling block. Venganoor Panchayat could be won over. [See box titled “Wasted Effort?”] The Hoteliers would cooperate as long as they saw a continual process of improvement. The women’s groups would be a key ally.

The table below outlines how the attitudes of various interest groups changed over time.

Interest Groups	1998			2001			2004		
	-ve	Ntrl	+ve	-ve	Ntrl	+ve	-ve	Ntrl	+ve
Vizhinjam panchayath (Local Self Govt.)	X			X			X		
Venganoor Panchayath (Local Self Govt)		X			X				X
Dept. of Tourism	X				X				X
Womens Self Help Groups		X				X			X
Thanal			X			X			X
Greenpeace			X			X			X
Equations			X			X			X
Kerala Hotel and Restaurant Association	X					X			X
Ms. Latha Sugathan (Former ward member Kovalam Ward)	X					X			X
Mr. G. Sukeshan (Present ward member, Kovalam Ward)	X			X			X		
Mr. Yusuf Khan (Standing Committee Chairman, Vizhinjam LSG)	X			X					X
Mr. J.L. Blnu (Standing Committee Chairman, Venganoor LSG)		X			X				X
Mr. G. Prabhakaran (President, Vizhinjam LSG)	X			X			X		
Mr. Rufus Daniel (President, Venganoor LSG)		X			X				X
Mr. Ramachandra Kumar (Present Ward Member, Thozhichal Ward)							X		
Dr. V. Venu I.A.S. (Former Director of Tourism, Govt. of Kerala)		X				X			X
Mr. Alkesh Kumar Sharma I.A.S. (Former Director Tourism, Govt. of Kerala)						X			X
Mr. E.K. Bharathbushan I.A.S. (Secretary, Tourism, Govt. of Kerala)									X
Mr. Balakrishnan I.A.S. (Former Secretary Dept. of Tourism)	X					X			X
Institute of Hotel Management & Catering Technology		X				X			X
KTDC Hotel Samudra		X			X				X
Merchants Association		X				X			X

-ve : Negative, Ntrl: Neutral, +ve: Positive

Wasted Effort?

Right from the time that the incinerator was proposed, most of the elected representatives of the Vizhinjam Panchayat have viewed Thanal and the Zero Waste Kovalam project with suspicion. The beach area of Kovalam – the tourist stretch – fell within Vizhinjam’s jurisdiction, but the areas adjoining the tourist hotspot belonged to Venganoor Panchayat.

Repeated attempts by Zero Waste Kovalam to engage the Vizhinjam Panchayat members in their efforts failed. “Perhaps, we could have invested that effort and time in the border villages of Vizhinjam in Venganoor and created something attractive for the Vizhinjam panchayat to see,” Thanal member Shibu K. Nair muses.

His colleague C. Jayakumar too has second thoughts. “We decided to take a non-confrontational role because we wanted to take everybody on this journey. But the opposition from Vizhinjam was without basis. I sometimes feel we should have gone straight to the people and confronted the members with the power of the people,” he says.

Vizhinjam’s actions have indeed been self-contradictory. On the one hand, they protested against the setting up of biogas plants alleging that they would create an odour nuisance and explosion hazard. On the other, the Panchayat President Mukkola G. Prabhakaran proudly declares that the Panchayat has invested Rs. 25 lakhs (about \$58,000) to set up biogas plants in his Panchayat.

Indeed, going by what Prabhakaran says, Zero Waste Kovalam may have had an impact even on detractors after all. Vizhinjam’s formula to tackle the environmental crisis could have been written by Thanal. “We need to revive farming. We need drinking water. We should tackle the producers of waste. We should ban plastics and do composting on a large scale. We should reduce chemical fertilisers and promote organic farming with the support of the agricultural office. Biogas plants are a good solution for waste management,” says Prabhakaran.

That sounds like a Zero Waste proposition.

Step 2 of the political process involved consolidating the ally base, even while keeping the lines of communication with the adversaries open.

The November 2001 meeting had arrived at a few consensual decisions – that biogas plants could be a viable option for the biodegradables, and that steps to phase out disposable plastic items like carrybags would need to be taken. Not a bad start.

The women’s groups expressed interest in undergoing training in manufacturing items using local eco-friendly resources to replace unsustainable material such as plastics

Implementing Zero Waste

If the Zero Waste program was to take off in Kovalam, a couple of things needed to happen urgently. The program's interventions would need to make a visible difference in terms of making garbage disappear, and the means of doing so would need to create economic incentives for the garbage generators and those involved in solving the problem.

The implementation phase of the program began with a two-pronged workplan.

- Assess the modalities of running biogas plants for the biodegradables;
- Train women's groups on relevant livelihood options that would yield products to replace applications served by plastic or other unsustainable material.

Two major components of Zero Waste Kovalam were thus identified –

1. Resource Recovery (RR): Typically, an RR facility consists of a 15 cubic metre biogas plant, an RR Room for non-biodegradable discards, a compost pit and drying yard. Biodegradable wastes that would otherwise stink up the landscape would now be converted to fuel-gas by the biogas unit, while other discards would be segregated and sold as scrap. RR facilities can be within individual institutions or serving clusters of establishments.
2. Material Substitution: Extending the useful life of eco-friendly discards (paper, coconut shell, cloth waste) to displace products made using unsustainable material is the aim of the Material Substitution programme. Currently, the Zero Waste Centre is promoting products made of paper, jute, cloth and coconut shell. This program runs closely with "Entrepreneurship Development and Support" through which local people are trained to develop and manage small enterprises. The Centre maintains relationships with small enterprises to support them where needed and take support from them as and when they become viable units.

In April 2003, the Zero Waste Centre was inaugurated on a building leased to Zero Waste Kovalam by Rufous Daniel, president of the Venganoor Panchayat and supporter of the Zero Waste program. Zero Waste, as the centre is popularly referred to by the locals, has now become a point of convergence for people seeking to learn new trades or sell their eco-friendly products. According to Thanal, the Centre is a "Resource use and Education Centre with the objective of imparting training, product design and development, and awareness about resource use. . . [It] has been able to disseminate the lessons learned from Zero Waste Kovalam to local self government, institutions and public as an economically and ecologically viable way of handling waste and help build relationships and partnerships. . ."

With the consolidation of its work through the Centre, the program added three new components to its portfolio.

3. Poison Free Farming: Linked to the concept of material substitution is the program to replace agrochemical-intensive farming practices with chemical-free small-scale agriculture. Under this program, local farmers – mostly women – are given technical assistance and training on organic agricultural practices. Both production and marketing support are provided in a bid to revive homestead farming. Since November 2003, the Zero Waste Centre has been organising "Organic Bazaars" to provide markets for organic producers from Kovalam and elsewhere.
4. Water Conservation: Addressing the water crisis in Kovalam is imperative to the long-term ecological security of the region. Groundwater is currently contaminated by the bad sanitation

infrastructure. The poor water quality has led to increased dependence on bottled water. Used PET bottles then compound the waste problem. What groundwater remains is being siphoned off by private businesses. In all this, the community seems to have lost control over their water. The Water Conservation program aims to involve the local communities in reclaiming their water resources.

5. **Community Capacity Building:** Environmental education and leadership training programs for children and adults are the centrepiece of this program. The concept of Zero Waste does not sit in isolation. Rather, it is rooted in ecology. Active participation and assertion by communities is imperative to the success of any Zero Waste campaign. The Community Capacity Building program is a long-term effort that aims to equip people, particularly children, with the skills required to build an environmentally sustainable and socially just world. In February 2005, this program saw its first major milestone when the Muttakkadu ward, within the Venganoor Panchayat, announced its decision to become India's first Zero Waste ward.

Zero Waste Kovalam's formula is simple:

1. Assess opportunities for replacing products made using unsustainable material with locally available, locally made products.
2. Train local people in making these products and innovating new ones
3. Provide them with training to access government funds and loans to set up entrepreneurial units
4. Help them develop accounting and marketing expertise
5. Continually expand the program's circle of influence by organising vocational trainings and general environmental and social awareness trainings to new audiences.

Well into its fourth year, Zero Waste Kovalam has had more gains than losses. What started out as a survey in 2001 with two full-timers has now grown to a campaign involving 17 full- or part-time staff and 25 volunteers.

Growth in Zero Waste Kovalam staff/volunteers

Year	Staff	Volunteer
2001	3	8
2002	3	11
2003	15	10
2004	17	25

The campaign's progress is well in line with the two priority objectives they set out to achieve – namely, “waste” reduction and generation of safe livelihoods.

Livelihood generation

Between 2002 and 2005, Zero Waste Kovalam created nearly 160 jobs within Venganoor and Vizhinjam panchayats. About 115 jobs allowed entrepreneurs to take home a modest amount each month, while 45 livelihoods in the agriculture sector yielded longer-time dividends.

In January 2002, the livelihoods program began with a discussion with about 100 women from Venganoor and Vizhinjam panchayats about the possibilities of livelihood generation as part of the material substitution program of Zero Waste Kovalam. About 100 women showed up. Encouraged by the interest, training programs for making paper bags, cloth bags from tailoring waste, jute bags and bamboo products were organised in March 2002. More than 380 people participated in the 7-day program.

In the years that followed, several more trainings were held on designing and making coconut shell products, clay and terracotta, patchwork using tailor waste, and poison-free homestead agriculture. Marketing support and marketing training were given assured to entrepreneurs for a limited time during which time the entrepreneurs were expected to become self-sufficient in terms of writing project proposals, book-keeping, work-planning and seeking out markets.

Virtually every one of Zero Waste Kovalam's trainings seems to have paid off. The paper training resulted in the Pioneer Paper Bag Unit employing 11 women. [See box "The Pioneers"]

The Poison Free Farming trainings have spawned at least 45 new organic farmers. N.L.Nigita, a Zero Waste staff, also began Nigita Enterprises along with three other women to market processed food made using organic produce. According to Nigita, the organic farming initiative has had interesting pay-offs. For one, children in her neighbourhood have a new-found liking for vegetables. "Pavitra [a child who lives near Nigita's house], who wouldn't eat vegetables now says "I want vegetables from Nigita *Chechi's* [elder sister] house,"" Nigita says proudly.

The Institute of Hotel Management and Catering Technology that used to buy pickles in 250 gram bottles now buys it bulk from Nigita Enterprises. That not only keeps the money in the community, it also reduces packaging waste – what used to be supplied in 120 containers is now supplied in one. For Nigita Enterprises, that translates to more than Rs. 3000 in revenue for the 30kg pickles that IHMCT purchases every month.

Intensive courses on making coconut shell craft products yielded two entrepreneurial units – the *Palm Craft* and the *Classic*.

The former was shutdown within months of opening in the first year of the programme. Both Thanal and the women entrepreneurs were taken for a ride by a local ward-member who had planned to take over the unit, and keep the women under his political and administrative control. Nobody gained. Thanal distanced itself and the women gave up after both realised that it was impossible to operate the unit.

Other non-governmental efforts too have begun tapping into Zero Waste Kovalam's expertise. SISP, an NGO with Indo-European collaboration, undertook paid training in coconut shell and paper production at the Zero Waste Centre, and set up production units using their own funds.

The training to make utilitarian products and art using tailoring waste resulted in the Vismaya Patchwork Unit. In June 2004, Medha Ganguly began a program that was to change the lives of 6 young women. "Patchworking Women's Lives" was the evocative name given to a program that aimed to make artists of ordinary women who would use tailoring waste to create utilitarian products and art. The Vismaya Patch Work Unit was set up by a bunch of sceptics.

The Pioneers

In January 2003, 13 women from “Below Poverty Line” families came together to start a paper products unit called the Pioneer Paper Bag Unit. All had undergone training in paper bag making in March 2002. When they approached their local self government in Venganoor Panchayat for financial assistance, some of the Panchayat officials, including a ward member, tried to dissuade them. However, their own ward member and the Panchayat President Rufous Daniel supported the project and motivated them to start the unit.

The group started with seed money of Rs. 13,000 (Rs. 1000 each). The women constructed a thatch shed, labour for which was contributed by them and their families and friends. With Thanal’s help to navigate the usual bureaucratic hurdles and demands for bribes, Pioneer was able to secure Rs. 2 lakh (\$4650) from Kudumbasree, the State program to promote women entrepreneurship, and a Bank.

The women elected one of their youngest members as Secretary, and their oldest member as President. Work hours are from 9.30 a.m. to 4.30 a.m., and the unit meets every week to discuss the past week, and the work orders for the following week.

Having started with paper bags, the group has picked up skills to make other paper products including pulp products, jewellery, paper pen, and baskets and handbags.

After a slow start, business picked up as the women started bagging orders with the Tourism Department, and with local hotels for laundry bags. Marketing is handled by three Pioneer women working under Thanal’s guidance.

“Earlier, we were unemployed, and did not know what to do. Now we know a lot of things, and people also know about our products,” says one Pioneer woman. “People who used to ask ‘What is the alternative for plastic bags’ do not repeat their questions after seeing our bags.”

Now, orders are steady and sometimes require the women to stay up till late hours. During such occasions, their menfolk wait outside the units, making tea for the women from time to time, playing cards until it is time to walk home.

For women from conservative backgrounds, this role reversal and new-found confidence is at least as big an achievement as the money they earn – between Rs. 600 and Rs. 900 per month.

The women talk in one voice about their dreams: “We spend Rs. 1100 on rent. We want our own building, new machines, water, current, furniture and new products.”

“The patchwork training was a strange new experience. We had doubts about working with waste. We thought it was madness to stitch different pieces of cloth together. We doubted the market. In a world of expensive clothes, who’s going to go for things made from cloth waste, we thought,” says one of the Vismaya girls during a group interview. “But now, our products are being purchased by customers in the US, Germany, Philippines, Japan and England.”

From a listless group of seemingly bored girls, the Vismaya group has transformed into one of the most energetic groups hosted at the Zero Waste Centre. “Now they are very dynamic. They have a workplan, a budget and even purchased a sewing machine from their own earnings,” says Thanal co-founder Jayakumar.



Reclaiming Resources

Between 2002 and now, Zero Waste Kovalam has facilitated the installation of two 15 cu.m biogas plants and one 25 cu.m plant diverting a total of 1000 kgs of biodegradables. In the process, four jobs have been created. Thanal and Zero Waste Kovalam are clear that they would merely provide motivation and support in terms of technology, access to maintenance personnel and monitoring. Capital, commitment and ownership would need to come from the garbage generators.

The Kerala Hotel and Restaurant Association (Kovalam) would officially cooperate, but it was, at best, a mixed bag. Forty-six percent of Kovalam's establishments that were owner-operated clearly manifested a stronger stake in the process and tended to be more cooperative than the remainder that occupied beachfront premises seasonally on lease. As KHRA president G. Sudheesh Kumar explains, "Among the 100 members, only 25 are cooperating actively. That is because most of the hotels and restaurants are operated on lease. They do not belong to this place. It is very difficult to get them involved. They are not interested in taking steps for sanitation or waste management. Some of them don't even allow you to collect waste from their property." Sudheesh also runs Hotel Seaface, one of the more visionary and eco-friendly establishments in Kovalam.

Kovalam's Resource Recovery program has two components – Resource Recovery Parks for non-biodegradables and Biogas Plants for biodegradables. Resource Recovery parks were areas where non-biodegradables could be sorted into reusables, recyclables, repairables and waste, and stored for further sale or use.

While RRP's worked well for discards generated within private premises, the garbage littering the beaches and common grounds had no takers. In January 2004, Zero Waste Kovalam organised its first beach clean-up. Subsequently, 7 more beach clean-ups have been conducted, and more than 100,000 PET bottles collected.

"Beach clean-up is not what we want to do in the long-term. But we see this as an important means of making the problem visible. For each of our clean-ups, tens and sometimes hundreds of people participate. The clean-up is a time to raise their awareness and the awareness of those watching us about the futility of littering and then cleaning up," says Zero Waste coordinator Shibu.

Food to Fuel. . .to Food

Biogas plants enjoy pride of place in Zero Waste Kovalam's Resource Recovery program. The success of the Resource Recovery program hinged on the ability to popularise segregation.

The diagnosis of Kovalam's problem indicated that 61 percent of the business establishments in the resort area did not follow any kind of segregation. However, nearly 90 percent of businesses felt that waste should not be burnt, and all agreed that dumping should be stopped.

Given the receptivity of some of the bigger members of KHRA, Thanal decided to focus its efforts on these business establishments to divert biodegradables. A survey done in 2001 found that more than 6.7 tonnes of biodegradable discards were generated daily during peak season, of which 4 tonnes were from 100 hotels and restaurants. About 54 percent of the establishments were found to have land to manage their own waste.

Both individual and shared or cluster facilities were envisaged. In 2001, when the plans were being made, there were three biogas installations in Kovalam, of which only one – in Hotel Seaface – was functioning. This model – the Deenabandhu prototype – was adopted as the model suitable for Kovalam.

The preparatory work in the lead up to setting up biogas plants involved training the hotel and restaurant staff in source segregation. A two-bin system – for wet and dry wastes – was deployed, and a dedicated operator trained to look after each biogas plant that was set up.

The Institute of Hotel Management and Catering Technology was identified as the place where the model project would be implemented. That decision was prompted by the support promised by Mr.B.N. Mohanty, principal of the Institute, and because implementing the program here would provide hotel management students with a rare opportunity to gain hands-on experience in garbage management.

Inaugurated in February 2003, the facility ran into minor problems. Old habits and mindsets needed to be changed. It took a while for people to get a hang of segregation, and even longer for them to feel comfortable to use gas generated from garbage in the kitchen. "All issues of resistance from the and students to participate by segregating were ironed out by Mohanty's efforts," Zero Waste coordinator Shibu Nair and Thanal member R. Sridhar write.

The biogas plant diverts nearly 300 kg of biodegradables daily. For IHMCT, that has meant savings of Rs. 5000 (\$120) per month. Separately, the non-biodegradables sorted and stored at the Resource Recovery Park yielded more than Rs. 12,000 in the first year of its operations.

Emboldened by the IHMCT success, the Zero Waste program set up two more units – one at Samudra Hotel and another 500 kg/day biogas unit near the Lighthouse beach for 15 restaurants and hotels on the beach. Both were paid for by the respective beneficiaries. The Samudra Hotel plant is linked to the hotel's boiler, while the unit at Lighthouse beach is linked to a 2.5 kW generator that powers electric lights on the beachfront.

Another proposal for a shared biogas facility in Vaikol *kulam* was thwarted by the Vizhinjam Panchayat on grounds that the plant represented an explosion hazard. Although, the Panchayat's objections were overturned, KHRA and Zero Waste Kovalam decided to seek an alternative location out of deference to the Local Self Government's objections.

Independently, three other hotels with spacious premises have set up their own biogas plants. One hotel has even set up a full-fledged unit for recovering non-biodegradables.

Financial Sustainability

The replicability of models such as Thanal's Zero Waste Kovalam program depends heavily on the financial commitments required, and the sources from which such funds can be generated.

While the Zero Waste Kovalam has used its international connections to good effect, it has taken care to ensure that the program has a substantial component of local contribution, especially in programs that directly benefit communities or one or the other interest groups. Zero Waste Kovalam would raise money to defray its expenses for surveying, identifying technologies and helping maintain long-term support for, say, popularising biogas. But it would not pay for the setting up of the biogas plant, or for its maintenance. That would be the contribution of the beneficiary. Likewise, if it trained women's self-help groups in a material substitution entrepreneurship program, it would seek to recover training costs from funds set aside within the local self government for activities such as these.

Opportunities to recover money from Government sources were not many even five years ago. But since then, Local Self Governments in India have been given a prominent role in garbage management through the Municipal Solid Waste Rules. "This was not the case in 1999. That's why we went abroad for funds," explains Jayakumar. "But now we have learnt the ropes. We now advise interested Panchayats to tap into the budgets for Poverty Alleviation for training, or entrepreneurs to talk to specific banks for capitalisation. Like in Zero Waste, we now segregate the different components of our activities and find sponsors for different components."



International POPs Elimination Project (IPEP)

Milestones – Zero Waste Kovalam.

Date	Events
1998, March 13	Kerala Tourism Department announces plans to set up 30 tonne/day incinerator in Kovalam
1998, November	Thanal member S. Usha attends South Asian workshop on Persistent Organic Pollutants (POPs). This meeting marks the entry of Thanal into pollution-related issues, and campaigning and advocacy.
1999, June 27	Thanal, Equations and Greenpeace launch campaign against Kovalam incinerator.
2000, July 9	Kerala Tourism Department, under the leadership of director Dr. Venu, shelves incinerator proposal, and encourages Thanal/Greenpeace to come up with a progressive solution for the Kovalam garbage problem.
2000, July 20	Zero Waste Kovalam is conceived at Waste Not Asia – a meeting in Bangkok of public interest groups working on municipal, medical and hazardous waste-related issues in Asia.
2000, December	The Global Anti Incineration Alliance formed at Johannesburg. GAIA pledges support for Zero Waste Kovalam.
2001, February	Zero Waste Kovalam launches study into garbage generation/disposal patterns in Kovalam.
2001, November 19-20	“Towards Zero Waste Kovalam - A Skill Share” is organized by Thanal, Greenpeace, Kerala Hotel and Restaurants Association and Dept. Of Tourism. Various local interest groups participate. Dr. Paul Connett, anti incineration guru from USA, delivers key note address. Findings of preliminary study of Kovalam presented. Consensus arrived at regarding suitability of biogas plants for handling biodegradables. Women’s groups express interest in producing replacements for plastic products using natural, locally available material.
2002, March 8-14	Training in manufacture of paper bags, cloth bags from tailoring discards, jute bags, bamboo products. More than 380 women participate in 7-day programme. Training conducted by Wynad-based Uravu and New Delhi-based Karm Marg, an organization for street children.
2002, April to June	Zero Waste Kovalam begins promoting non-chemical agriculture with the help of initiatives by women’s self help groups such as Sthree Sakthi, Keerthi and Priyanka. Venganoor Panchayat accept in principle to move away from pesticide use.
2002, October 15	Inauguration of Coconut Training and Production centre at Thozhichal, Venganoor.
2002, October 18	Venganoor Panchayath endorses implementation of ZWK. Thanal invited as resource group for agriculture and local area development sectors. Venganoor Panchayath decides to convert panchayat into “no-pesticide farming” zone in 5 years. Local area development plan includes bio-gas plants, coconut shell production and training centre, and development of other alternative industries especially in food products and agriculture products.
2003, January 1	Pioneer Paper Bag Unit – Kovalam’s first such unit — begins functioning.
2003, January	First Biogas plant and Resource Recovery Facility commissioned at IHMCT
2003 April 28	Inauguration of Zero Waste Centre
2003 August 17	First Childrens programme on Toys and Children at ZWC
2003 November 1	First Organic Bazaar at Sugathan Memorial Hall, Vazhuthacaud
2005, February 5–11	A team from ZWK visited Cuddalore, Tamil Nadu to initiate vocational training programme
2005, February 18	Inauguration of Zero Waste Ward in Muttakadu – India’s first zero waste ward.
2005, March 23	Inspired by Zero Waste Kovalam, the Philippines Government announces Zero Waste Tourism as goal for tourism authority.

About the International POPs Elimination Project

On May 1, 2004, the International POPs Elimination Network (IPEN <http://www.ipen.org>) began a global NGO project called the International POPs Elimination Project (IPEP) in partnership with the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Program (UNEP). The Global Environment Facility (GEF) provided core funding for the project.

IPEP has three principal objectives:

- Encourage and enable NGOs in 40 developing and transitional countries to engage in activities that provide concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention;
- Enhance the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process;
- Help establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety.

IPEP will support preparation of reports on country situation, hotspots, policy briefs, and regional activities. Three principal types of activities will be supported by IPEP: participation in the National Implementation Plan, training and awareness workshops, and public information and awareness campaigns.

For more information, please see <http://www.ipen.org>

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