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Zero Waste

Does it mean an end to waste?

by Warren Snow

Is Zero Waste a Utopian ideal or a practical response to the problem of dealing with society's escalating mountains of rubbish? According to communities around the world who are committing themselves to the principle of Zero Waste – and actually setting targets – it can be made to work.

A growing number of towns and cities around the world are adopting Zero Waste. Places as diverse as the small fishing village of Kovalam in South India, and Bath and North East Somerset Council in the UK, are working towards a Zero Waste vision. Canberra in Australia was the first city in the world to set a Zero Waste target, now Western Australia is aiming for a Zero Waste by 2020, South Australia is adopting a Zero Waste strategy, and a target has been set for Eurobodalla Shire Council. British Columbia has a Zero Waste Working Group and New Zealand has a national strategy with more than half its local territorial authorities setting Zero Waste targets. Many communities in the Philippines have official Zero Waste goals. In the USA, California has put in place a state strategy, and individual targets have been set by San Francisco, Del Norte County and Santa Cruz County. Seattle in Washington has also adopted Zero Waste as a guiding principle and Toronto in Canada is aiming for 100% recycling by 2010. All these communities are turning from the idea of managing waste and are aiming instead to eliminate it.

Some see the idea of Zero Waste as preposterous, even dishonest. Others greet it with enthusiasm and relief – at last we have a new and inspiring way of dealing with the intractable problem of waste. Regardless of how we view it, Zero Waste is an emerging trend that, if successful, could impact significantly on the way materials flow through society and the quantity of waste that needs treating by the use of current technologies.

This poses questions for leaders in the industry that until now has had control of the discard supply. What is Zero Waste? Will it impact on the waste industry or, given time, will it run out of steam and fade away? Who is driving it?

Zero Waste is not new – it was perfected by nature over millions of years. Natural systems treat waste products as resources that are used to build wealth, diversity, system viability and resilience.

The beginning of waste

The industrial revolution signalled our move away from cyclical to linear material flows but it wasn't until after World War II, when war-time industrial capacity was moved to domestic production, that our modern consumer society took hold. The idea of stimulating consumption to meet growing industrial capacity meant that people had to acquire more of everything, almost as a duty, to help build national economies.

Along with the growth in consumption came the growth in waste, and by the middle of the 1950s, waste was being held up as a virtue. For example, marketing consultant Victor Lebow called for what he called 'forced consumption' and made the following impassioned plea in *The Journal of Retailing*. 'Our enormously productive economy ... demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfactions, in consumption... We need things consumed, burned up, worn out, replaced, and discarded at an ever increasing rate.'

The success – and failure – of recycling

The rise of waste and the growth of non-returnable packaging in the 1960s and 70s, led to the phenomenal growth of recycling which became a civic duty for millions of people. The recycling industry owes its existence partly to the pioneers who worked to make recycling a part of everyday life. That success is underscored by a 2002 study by RW Beck Inc, for the USA National Recycling Coalition. It showed that the US recycling industry employs 1.1 million people and generates gross annual revenues of US\$236 billion.

In spite of the successes of recycling, waste continues to grow and is now piling up in newly industrialised nations of Asia and in parts of Africa. Recycling is essentially an end-of-pipe response to waste and has little or no influence over the whole supply chain. This means that it is not part of an integrated whole-system approach to material flows and is only marginally better than landfilling or incineration.

Increased waste disposal capacity increases material flows

Landfills, incinerators and recycling are sinks for materials and, as such, regulate and encourage upstream wastefulness. Increased capacity results in increased material flows – partly because it reduces friction in the supply chain that would otherwise push responsibility for eliminating waste back to producers, and partly because capital intensive facilities require consistent quantities of material to remain viable – which in turn discourages alternatives. This is all good for an industry predicated on the idea that waste is a problem to be got rid of or hidden. But it does little to address the unsustainable patterns of production and consumption that lie at the core of the international environmental crisis.

The reality is that our ‘ecological footprint’ has reached the point where we have exceeded the capacity of nature to provide resources at the rate we demand them, and to absorb the end products of the human industrial system. In spite of our understanding of nature’s limits, we are still addicted to the concept of growth and expanding the world economy. Add to this the fact that human population is expected to almost double before it levels out, and that nearly half of the world’s population aspires to move from low consumption to high consumption lifestyles, and the sheer scale of the crisis becomes evident. These realities are key drivers for Zero Waste advocates.

The fight against waste

Over the last few years, communities around the world have risen up against waste, fighting landfills and incinerators and in many cases stopping them. Local campaign leaders are often characterised as ‘knockers’ who have no viable alternatives to propose, even if they are hard working community development advocates running local recycling programmes. Many of them have grabbed the idea of Zero Waste as a way of demonstrating a viable alternative to existing waste technologies and the control of local resources by the waste industry.

The power of an idea whose time has come

Every now and then a new idea comes along that breaks through existing thinking and practice to bring about radical change. As a new vision for society, Zero Waste is attracting support from businesses (including Bell Canada, DuPont Inc, Hewlett Packard, Honda Motor Corp, Interface Carpets, Kimberley Clark, Ricoh Group, Toyota and Xerox Corp, all of whom have set Zero Waste targets), cities, governments, philanthropic funds, community groups, inventors, entrepreneurs, and financiers – even within the waste industry. They are beginning to understand that Zero Waste is a driver for creating sustainable communities and presents huge opportunities for employment and local economic development – all by changing the way we view and deal with waste.

What is Zero Waste?

Advocates promote Zero Waste as an alternative disposal technology, in direct competition with landfill and incineration. But whereas the latter are single and often large-scale technologies, Zero

Waste is a 'brand' for change and a diverse flexible range of policies, technologies and actions, starting with 'Design For Disassembly' at the beginning of the supply chain and embracing Industrial Ecology, Cleaner Production, EPR (Extended Producer Responsibility) responsible consumption, public education, and local economic development, right through to waste minimisation and resource recovery at the end of the pipe.

Zero Waste is a whole-system approach to redesigning the way resources and materials flow through society. This is its key competitive advantage. The thinking behind landfills and incineration accepts that waste exists and must be got rid of; Zero Waste says that it shouldn't exist that waste is a signal of design failure and represents inefficiency, or as business puts it, 'lost profit'. It says that existing technologies are born of the thinking that caused the problem, and as such will never solve it.

In many senses, the battle between community and corporate ownership of the discard supply is the battle between two completely different world views. Small local community organisations and recycling companies on the one hand, who want to create jobs and business opportunities from waste, pitched against big national and international companies who see it as a straight business proposition to increase shareholder returns.

The start of a new Zero Waste movement

It's unclear where Zero Waste first took hold, although Zero has been used by industry for many years as a target for achieving goals that *create* constant dissatisfaction, resulting in improvements previously thought impossible. Zero Emissions, Zero Accidents and Zero Defects are other examples.

In 1996, the Australian city of Canberra was the first in the world to set a target of 'No Waste' and is currently diverting 64% of its waste from landfill. Their ideas were copied and popularised in New Zealand, where over half of all local authorities have Zero Waste policies. The New Zealand government has since adopted Zero Waste as the national vision for their new waste strategy.

Can we ever get to Zero?

Critics say that achieving Zero Waste is impossible. Zero Waste advocates say 'don't get hung up on the Zero'. In Boulder, Colorado, local buses sport signs saying 'Zero Waste – or darn near it!' Critics say we should aim for achievable targets. Zero waste advocates say that achievable targets don't stretch our capabilities and that we should aim for the unachievable, like Zero Waste.

Incremental change and improvements based around existing technologies – which themselves are based on wrong assumptions – won't bring about the change we need. A new way of looking at the problem creates new thinking and a new vision for a sustainable society. Zero Waste has become the rallying call for that vision. It's often said that when in crisis, a breakthrough strategy is needed. If we agree that we are in crisis, then Zero Waste is that breakthrough strategy.

Zero Waste is a simple idea that everyone can understand, and if we want to mobilise people into action, is what is needed. Regardless of the logic or impossibility of Zero Waste, judging by the way it's catching on around the world it looks like it's here to stay. And for its proponents, Zero Waste really does mean the end of waste.

Three New Zealand case studies

Leading from the front

Opotiki (population 9200)

Opotiki District Council was the first New Zealand council to take up the Zero Waste challenge and, in September 1998, adopted Zero Waste by 2010, starting on a journey that has seen waste plummet from 10,000 tonnes to 1,500 tonnes to landfill per annum – an 85% reduction in five years.

The driver behind Opotiki's decision was the imminent closure of its landfill and the no-win decision it faced of either developing a new landfill site at a cost of over \$2 million, or trucking waste out of the district at a cost of around \$100 per tonne. Adopting a Zero Waste policy enabled council staff to take a fresh look at the problem and start looking for solutions to eliminate waste rather than manage it. A secondary driver was the potential to create new, self-supporting local jobs and businesses. So far, five full-time and four part-time unsubsidised positions have been created within the council, and another two positions with a private contractor.

The main reasons for Opotiki's success are that the council took a strong leadership role, developed a whole system approach, and invested the necessary resources to make its programmes work. Specifically it:

- Imposed charges at the landfill (1999)
- Established a kerbside collection of recyclables (2000)
- Reduced the size of the residual rubbish bag from 75 litres to 25 litres (2001)
- Established a resource recovery infrastructure network throughout the district, starting with a satellite drive-through centre in Waihau Bay (107 km from Opotiki), in 2001. The main Resource Recovery Centre in Opotiki township was built in 2002, and a second satellite drive-through developed in Te Kaha (65 km away), in 2002.

The cost of Opotiki's Zero Waste strategy was \$460,000 to establish three resource recovery facilities. This is approximately \$3,000 more than what it would have cost to continue to landfill waste, and for that \$3,000, they have created local jobs, massively reduced waste and built new infrastructure and community owned assets which will in turn enable the Opotiki to further reduce waste. . Opotiki District Council is now aiming for a 90% diversion from landfill by June 2004.

Community partners

Kaikoura (population 5000 – plus 1 million visitors annually)

Kaikoura District Council was the third council to adopt a Zero Waste policy, in March 1999. Factors influencing the decision include a rapidly filling landfill, a strong environmental ethos (driven by the income derived from more than a million visitors who come to enjoy the environment) and the need to create employment for individuals at the bottom of the social heap.

Kaikoura responded to its Zero Waste challenge by forming a joint venture company with a local community group, Kaikoura Wastebusters. The new venture, called Innovative Waste Kaikoura (IWK), was given responsibility for managing all the town's waste services and implementing its Zero Waste policy. Kaikoura faces a problem common to all small tourist towns – how to stretch income from its narrow rating base to cover the infrastructure requirements of a booming tourist trade, including waste services. Innovation has been the key, and IWK has lived up to its name developing low-cost solutions to drive waste diversion to its current level of 56.8% by volume (and increasing). These include:

- Weekly kerbside recyclables collection for town residents (residual waste has to be either self-hauled to the resource recovery centre or a bin-hire company employed)
- Fortnightly recyclables pick up for outlying areas
- Twice weekly recyclables collection for business
- Skip-bin hire for the construction industry
- IWK designed and built enclosed composting units to handle green-waste and food-waste
- Landfill cell storage for those materials that are currently uneconomic to recycle but could have value in the future
- A thriving re-use shop
- Use of crushed recovered glass as a filter medium for leachate control.

- Compaction and baling of residual waste once recyclables have been removed to maximise landfill space.
- Mining of old parts of the landfill to extract recyclable material and create more space.

IWK has the support of the community in its drive for Zero Waste and has created nine full time jobs through its activities, where there were only two people employed at the landfill four years ago.

Planning for a whole system approach

Mackenzie (population 4000 plus seasonal tourism)

MacKenzie District Council was the 13th council to adopt Zero Waste, in November 1999, and it has set a target date of 2014. Like Kaikoura, it has a seasonal tourist influx necessitating a waste minimisation strategy that works as well in the tourist season as in the off season.

Council staff spent a significant amount of time running financial models to assess its options and the financial impact of each option. Each option was also assessed for how well it would deliver on the Zero Waste goal. The outcome of this planning was the launch of a range of new waste minimisation systems in June 2002. These include:

- A new, three-bag, kerbside collection system for household residents, with one bag for recyclables, one for organics and one for residual waste. This is the first of its kind in New Zealand
- The construction and in-house operation of three new Resource Recovery Centres in each of the main townships of Twizel, Lake Tekapo and Fairlie
- A comprehensive education programme (developed by neighbouring Mid Canterbury Wastebusters)
- The installation of a Vertical Composting Unit to process large volumes (47% of the waste stream) of food waste and green waste into compost. This includes a large amount of seasonal food waste originating from the hermitage in Mt Cook National Park
- Financial incentives to separate waste

Key to the success of MacKenzie's system has been its meticulous planning and its utilisation of the full range of skills at its disposal, from the political skills of the Mayor and the communication skills of Ashburton's Mid Canterbury Wastebusters, to the engineering skills of the Solid Waste manager and the financial skills of the accountant. MacKenzie's strategy has truly been a team effort and is already resulting in waste diversion of around 70%, just one year after implementation.

These three case studies demonstrate that against conventional wisdom, small rural communities using innovation and local solutions can take control of and rapidly reduce waste within their communities.

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