

A Zero Waste Fantasy

Notes from a Keynote presentation by Warren Snow

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Introduction

Most of us are trying through our work and in our lives to work towards a sustainable society. The problem though is that none of us really know what a modern sustainable society will actually look like –let alone how to create it. Hyper production and consumption have created vast and increasing flows of materials through society to the point where the Earth can no longer sustain our demand for resources nor absorb the wastes from our consumer lifestyles. For all of our talk around sustainability and all of our efforts to reduce waste, we are losing the battle. It's time for a completely new approach.

Zero Waste – A Key Driver For Sustainability

Zero Waste is a key driver for sustainability because it addresses and focuses on material flows and the practical actions that can be taken immediately to reduce waste, as well as, the long-term strategies for completely redesigning the industrial system.

Scientists tell us that all living systems on this planet are in decline. Whether you look at air, forests, soil, oceans, fresh water systems, underground aquifers, wetlands or coral reefs, they are all in decline and the rate of decline is increasing

According to a Cornell University study of population trends in 1989, life on earth is killing us. An estimated 40% of deaths around the world can now be attributed to various environmental factors. Each year the population of the world increases by 80 million. This means we are adding five billion in this century alone - five times more than all of history combined.

Human population growth shows on a graph as an exponential curve. Wherever you see such a growth curve there is no exception to the fact that you are either in the middle of, or about to have, a resource crash. This applies to the number of tadpoles in a pond, gorillas in the forest, housing prices or the climb of a jet and it applies to the number of humans on the planet. Unless we take avertive action, we are headed for total ecological or system collapse. We are in crisis and the cause of that crisis is a basic design fault in our industrial system. Waste!

A crisis demands a breakthrough strategy that will completely redesign the system - one that has immediate and long-term strategies and will inspire and engage everyone in a call to action. I propose that Zero Waste is that strategy.

What is Zero Waste?

Zero Waste is a disposal technology comprising of a basket of technologies and strategies for change that if applied in unison will achieve radical waste reduction outcomes. It competes directly against landfill and incineration - technologies based on the same thinking that created the current crisis and that create new problems of their own.

Zero Waste is a whole system approach to material flows that seeks to ‘eliminate’, rather than ‘manage’ waste. It addresses the whole supply chain, right from the design end through to manufacturing, marketing, distribution, consumption and final disposal. For zero waste, final disposals means it goes back into the human economy or harmlessly into the environment.

There are a range of technologies, practices and even social inventions in the Zero Waste “basket”. The range includes such concepts as design for disassembly, cleaner production, industrial ecology, recycling, market development, resource recovery centres, drop-off centres, reverse logistics, dynamic modularity, extended producer responsibility, community education, local economic development, legislation and many more. Zero Waste simply unifies all of these existing concepts into one simple call to action – a brand and target that everyone can easily understand and aim for.

The Leadership Challenge

No longer can we be content to simply address waste at the end of the pipe. Waste is a signal of design failure. We as waste managers must start looking at integrating actions all the way up the supply chain instead of taking the reductionist view that “waste exists therefore we must manage it”. We must challenge the whole notion of waste, create leadership from the end of the pipe and lead society towards sustainability by eliminating waste – the industrial system’s fundamental design flaw.

The Ecology of “Discard Chain” Management

Newspapers frequently carry advertisements for supply chain management and logistics experts. There are a vast range of technologies, disciplines, training, education and resources for moving materials, products and consumer goods through the supply chain into society. It is an enormously complex system. Yet once society is finished with all these products there is a very simple system of disposal for the vast quantity of materials that are discarded. What we as waste managers, recycling co-ordinators, industry producer responsibility bodies, designers, recovered materials brokers, financiers and entrepreneurs must do is to create the same complexity and discipline around “discard chain” management as there is for supply chain management.

The first law of ecology is that complexity lends stability. If you look at the huge complexity of supply chain management you will see how interdependent it is on each component of the system. There is a vast array of skills all working in harmony. For the purposes that it was built the industrial “supply chain” operates almost perfectly. If we took the banking or transport system or any other component out of the supply chain, it would collapse within months. It’s a finely tuned interdependent system reliant on all of its components to survive – just like natural systems.

So our task as discard chain managers is to build the systems, economic structures and infrastructure for insuring that all materials are reintegrated (by design) back into the human economy or harmlessly back into the environment. When we see our role in this context, it’s far more than just being a recycling co-ordinator or a waste manager. We are actually designing a new and complex industrial ecology. Not just the simple version where two or three factories feed off each other to create added value and save waste, but a whole industrial ecology that integrates the whole system of material flows into a complex web of interactions resulting in absolutely no waste.

Zero Waste - Emerging Trends

The notion of Zero Waste is supported and validated by a number of emerging trends. The extended producer responsibility approach that some of the provinces in Canada use is part of this new industrial ecology. Design for disassembly is another. There are groups of industrial designers around the world who are coming together to design waste completely out of the supply chain, to design products so that they can be disassembled at the end of their life and component parts reintegrated back into the industrial system or nature.

I can envision the day when local recyclers will bid for franchises from manufacturers to disassemble their products. They will build disassembly lines to manufacturers' specification for breaking down old cars, appliances, electronic equipment and other manufactured goods. Some of the parts in those products will be designed to transcend two, three or even four models. This is already happening. Look at photocopiers. I'm told they last much longer now because they are generally leased and not sold. Manufacturers now want those machines to last longer because they sell the service and not the thousands of parts within it. We don't mind as long as we get good quality copies.

Will this alone enable us to get to Zero Waste? The answer is probably not, but I do believe that we can create an industrial system where all materials flow in cycles. It's a matter of intent and design.

Outrageous targets

Industry has become accustomed to setting ambitious, even audacious, targets. 'Zero Emissions', for example, is a standard concept throughout the world. Another one is Zero Accidents, which is now the aim of many large and even small companies. An occupational and health officer at a large company in New Zealand told me that when he heard of the idea of zero accidents he thought it was nuts, but after implementing it and seeing how dramatically it rallied everybody around the idea of eliminating accidents, he is a total believer.

The concept of zero defects has enabled many companies to achieve previously unheard of defect rates. For example the company that makes my computer have as few as point one of one percent defects per one million products – a totally unheard for result only a few years ago in manufacturing.

Why aim for anything less than ZERO? Even if we can't ultimately eliminate the last one percent, who is going to criticise us, if by the year 2015 we have reduced our waste to one or two or even three percent of current volume. All we do then is set the target again for another ten years and reduce that three percent down to point three percent. Eventually with the right determination, I believe we will achieve our goal of a 100% resource efficient sustainable society – certainly in terms of current flows.

Zero Waste is a vision, a target, and a breakthrough strategy - one that aims to shift the emphasis from disposal of waste resources via landfills and incinerators to complete elimination of waste.

Impediments to change

In aiming for this impossible target of Zero waste we must be aware of the impediments to change. These include:

1. **A culture of disposability.** The industrial system has marketed the concept of disposability for its own ends. We must use that same marketing system to restore attitudes of care for resources that once existed in all cultures.
2. **Vertical integration of the waste industry.** Many contracts for transfer stations are integrated into the cartage and landfill contract. Transfer stations are the last point in the supply chain where materials can be stored, separated, processed and re-integrated back into the economic system. By separating contracts and with the right incentives waste will be reduced at transfer stations before it hits the wasting system.
3. **Contracts sending the wrong message.** We need to rewrite contracts so that waste companies have a clear message that they are expected to be part of this whole process of eliminating waste, protecting precious landfill space, reducing economic and environmental costs for future generations.¹
4. **Little recognition of the community sector.** In New Zealand our campaign for Zero Waste is driven very much driven by the community sector. We have a network of community organisations that are setting up small businesses and community education initiatives all over the country. Some of them are winning mainstream contracts from local authorities enabling them to generate significant cash flow, which in turn enables them to meet social objectives.
5. **Lack of supportive legislation.** We need to implement the full range of supportive enabling legislation for creating a Zero Waste society. Many municipalities are beginning to wonder if it is necessary to be involved in waste disposal. This is fine as long as they create the right incentives and legislative environment for a truly fair market to operate that results in massive and rapid waste reduction outcomes.²

The New Zealand Experience

In New Zealand we are attempting to create a Zero Waste society. To date 33 of New Zealand's 74 municipalities have signed on to a Zero Waste policy. Each community is approaching their Zero Waste strategy in different ways. In some cases the Zero Waste policy has brought community groups, businesses leaders and municipalities together in a shared common interest. The Zero Waste campaign is giving inventors and entrepreneurs the confidence to set up new businesses utilising recovered materials and a number of new businesses around material handling technologies are emerging. We have recently identified that New Zealand exports over \$100 million of recycling related products, technologies and consultancy per annum and we believe this is going to grow considerably. Perhaps most heartening is that many people who were otherwise not valued by the new global market economy are now gaining employment in new entry-level jobs.

Private entrepreneurs are beginning to put considerable money into new technologies for recycling. For example two entrepreneurs have put close to ten million dollars into worm

¹ Landfill space owned by either the private or public sector is probably the most valuable and precious real estates in any community.

² I believe that Canada is far ahead of New Zealand in the area of legislation at present with the Industry Stewardship Agreements.

farming, which in turn has created employment for around two hundred small worm growers who supply them with worms on a contract basis. Resource Recovery Centres are being built in a number of communities. We see these as job machines for local communities.

Our campaign for a Zero Waste New Zealand is grassroots driven with a growing network of community organisations setting up initiatives and working as sub contractors to business or contractors to councils. These local community initiatives are reaching far deeper into the waste stream than mainstream waste companies could ever do, to the point where in some cases, the waste companies are actually creating joint ventures with community groups to achieve their respective aims through a common objective.

Large retailers are developing reverse logistic systems for broken and returned merchandise that otherwise would have gone into the landfill. Even very small rural communities are setting up small recycling drop-off centres where previously there were just transfer stations. Schools are becoming involved and challenging the children to help them become Zero Waste schools.

New Zealand's only appliance manufacturer, Fisher and Paykel, has set up a reverse logistics system for all the second hand appliances throughout New Zealand. They are returned to a specialised recycling centre, which is virtually a disassembly line for their products. Already the designers of the new products are obtaining feedback from the dismantlers, which will help enable them to design the new appliances for ease of disassembly at the end of their life. The disassembly and recycling centre was built to do the right thing, but has surprised the company by becoming a stand-alone profit centre adding to the bottom line of the company. It is quite amazing to see how little is left of the dismantled fridges and other appliances at the end of their life.

To help stimulate the development of a recovered materials industry the Revolving Loan Fund and Recycloans Fund have been established. Many entrepreneurs with new ideas for utilising recovered materials find that the banks simply won't recognise or support them. These funds have helped a number of initiatives for utilising computers, paint, wood, glass and other waste materials.

The Zero Waste Institute

To maintain quality and best practice standards, we have joined with Massey University (New Zealand's largest university) to develop the Zero Waste Institute. The Institute will aim to be a centre of excellence in the technologies, systems, disciplines and infrastructure for a Zero Waste society. It will offer courses for consultants and advisors, waste managers, recycling businesses and even training for those people who work at and manage recycling depots and resource recovery centres.

We want everybody that is involved in Zero Waste to be on a continual learning process and to be certified at each stage as having learnt the necessary skills to enable them to market themselves and to feel that their work is valued with formalised training.

If we were to build a Zero Waste society, we have to make it practical, accessible and efficient to gather the materials that would otherwise be carted to landfill or for incineration. Western Sydney in Australia has proposed a national network of 'Drive Through Recycling Centres'. These will be placed in high profile places, and networked right throughout cities.

The idea is to give everybody ready access to a branded network of highly efficient and visible collection points that are as convenient as petrol stations.

All of these efforts are part of a new science of discard management – practical, community based and managed for local benefit.

Getting to zero is not going to be easy. To have any hope of getting there we have to change the way we are doing things. We need new thinking and new priorities. I would suggest as a start the following five key strategies;

1. Project a clear vision of Zero Waste - by a definite date.
2. Set intermediate targets.
3. Put the incentives in the right place – ensure that contracts and pricing send the right signals to the market to do the right thing.
4. Develop the infrastructure - make it visible, accessible and economic.
5. Engage the public – get everyone involved

Is it a mere fantasy to strive for a zero waste society? I don't think so. Perhaps it's time for all of us to take a hard look at our existing culture and where it's heading and maybe we will realise that it's time to turn fantasy into reality.

Warren Snow

wsnow@envision-nz.com

Trustee, Zero Waste New Zealand Trust

www.zerowaste.co.nz