

A Zero Waste Local Economy Myth, Mystery or Magic?

By the **Institute for Zero Waste in Africa**
IZWA

(Izwa means “listen” in Southern African Nguni languages)

Prepared for the ICLEI Conference

Cape Town

2006



The Internationally Accepted Definition of Zero Waste:

“Zero Waste is a goal that is both pragmatic and visionary, to guide people to emulate sustainable natural cycles, where all discarded materials are resources for others to use.

Zero Waste means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them.

Implementing Zero Waste will eliminate all discharges to land, water or air that may be a threat to planetary, human, animal or plant health.”

Zero Waste International Alliance – 2004

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The booklet is available in electronic format.

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Some Motivational Sayings:

“He who blazes the trail determines the straightness of the path”

Old African Proverb

“Live the change you wish to see.”

Mahatma Gandhi

“We look neither East nor West. We face forward.”

Kwame nKrumah

“Anyone who believed growth can go on forever in a finite world is either a madman or an economist.”

Kenneth Boulding

“Success must be measured by creating the greatest possible benefit to the largest number while harming none.”

Muna Lakhani

**IZWA – Tired of the TALK !
Let’s Walk the Talk Together!**



Introduction to Zero Waste.

Zero Waste means designing out pollution and waste at the start of the process, through Clean Product Design and Clean Production, and sensitive material selection. If one is left with a problem at the end of the useful life of a product, process or service, then the point at which this "problem" was introduced must be re-designed, such that the problem is no longer within the process.

Simple principles, such as DFE (Design for Environment), DFD (Design for Disassembly), and ensuring full and safe recovery or wholly organic compostability of the materials would be the route to developing a genuinely sustainable economy. This also implies maximum energy and water efficiency.

Zero Waste is a proven technique, and works well as a robust philosophy, which can be applied to any application. Zero Waste designs waste out, and designs sustainable jobs in. It is primarily a philosophy - a way of thinking, that allows us to move towards real and genuine sustainable development. Even the term "sustainable development" is being misused, with people thinking it means "sustainable economic growth" or even worse, "sustained economic growth".

Sustainable development can (in this context) be understood to mean that any product, service or process can be wholly maintained in its present form indefinitely. Products, services and processes that satisfy this definition would have to, by implication, leave no unusable waste; use sustainable energy and replenish the resource base in a closed loop economy. One could call them "sunrise industries", as opposed to the accepted "sunset industries".

Sunset industries, by definition, are unsustainable, as they cannot be maintained indefinitely. Examples would include mining (as resources run out); coal fired and nuclear energy; plastics; petrol, diesel and fossil gas; most chemicals; many forms of transport as they now exist; packaging as it now exists, especially plastic; paper production as it now exists; agro-industry in its current form; etc.

Sunrise industries would include: wind, wave, tidal, micro-hydro, solar and solar thermal power generation; truly compostable packaging; bio-diesel; labour intensive production methods; sustainable building methods, using local material with low embodied energy; organic food production; etc.

(The diagram on the centre page outlines the ideal towards which we should be moving, and the various components that need to be in place for this to happen.)

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Local Government Challenges around Waste Management and Pollution today:

- a problem to be sent ‘away’
- ever-increasing regulation and cost
- ‘safe disposal’, and environmental and health impact responsibility
- increasing demand on wasted capital expenditure on ‘collect and dump’ scenarios, with no end in sight
- political mandate for poverty alleviation and job creation
- need to keep costs manageable
- increased distance to dumps and greater costs

Why go for Zero Waste?

Only 1% of materials are in use 6 months after their sale, with at least 32 kg of waste is produced for every kg of product on the shelf.

Only 6% of materials extracted from the Earth are turned into durable goods – the other 94% become waste within months.

The lifetime of much of our waste exceeds 500 years.

The negative health consequences are very clear, as well as being the main threat to conservation.

Less than 2% of over 100 000 chemicals have been adequately tested, with ZERO toxicological data for nearly half.

We are living well over the carrying capacity of the planet in terms of materials extraction.

What is happening now?

Current approaches to Waste and Pollution Management are bound to fail, because:

Even 100% post-consumer recycling will manage only 2% of the total waste stream, without addressing toxicity issues.

Only 2% of 556 million tons is recycled, almost all pre-consumer (South Africa).

External subsidies (direct, indirect and perverse) are not accounted for, skewing the market in favour of unsustainable products.

Full Cost Accounting is slow in its implementation, as it does not suit those who benefit from externalised costs.

Job creation suffers because there is minimal opportunity in adding value to the resource chain.

Negative health and environmental impacts continue to grow, with attendant pain and suffering; social disruption and increased healthcare costs.

So now what?

Successful waste and pollution management can only be achieved if the entire chain is considered. Anything less will not produce the desired results.

Frequently Asked Zero Waste Questions :

Isn't it hard to do?

Too technical?

Very expensive?

Need lots of bureaucratic involvement?

Does it mean extra paperwork?

Cost jobs?

It's about the “Think”!

Zero Waste requires, more than anything else, a different approach. It is supported by lots of easily accessible information, and one can almost always find local expertise.

Without exception, the Zero Waste approach delivers results rapidly when implemented, which motivates people and companies to move even more rapidly, and while ZW is usually achieved as a medium term goal, short term results begin to accrue almost immediately – normally within the first 30 to 60 days.

So, what does Zero Waste deliver?

- Minimise exposure to risk and liability
- Improve profitability
- Improve overall efficiency
- Develop a competitive edge
- Maximise positive PR opportunities

- Join the world leaders, be world class
- Implement International Best Practice
- Take the lead in the marketplace
- Reap immediate and ongoing benefits.
- Ensure legal compliance
- Improved SHE performance, simplify ISO compliance
- Seamless implementation - no “culture” change
- Improved material and capital efficiency
- Minimised downtime and maintenance
- Improved market access

International Conventions supported by Zero Waste:

By avoiding waste going to incinerators, you will be supporting the Stockholm Convention (POP's). UNEP agrees that 69% of the worlds dioxins and furans are generated by incinerators.

International Conventions supported by Zero Waste: (cont)

The Basel, Bamako & Stockholm Conventions

UN Conventions on Desertification (UNCCD);

BioDiversity (CBD) & RAMSAR

UN Framework Convention on Climate Change (UNFCCC)

– the Kyoto agreement

And others

As well as supporting these existing policy directions:

- Extended Producer Responsibility (EPR)
- Life Cycle Analysis (LCA)
- Clean Production and Sustainable Consumption (CP&SC)
- Ecological Tax Reform
- Full Cost Accounting
- Internalisation of Externalities

Zero Waste has 5 main areas:

Redesigning Products, Processes and Packaging

Extended Producer Responsibility

Infrastructure Investment

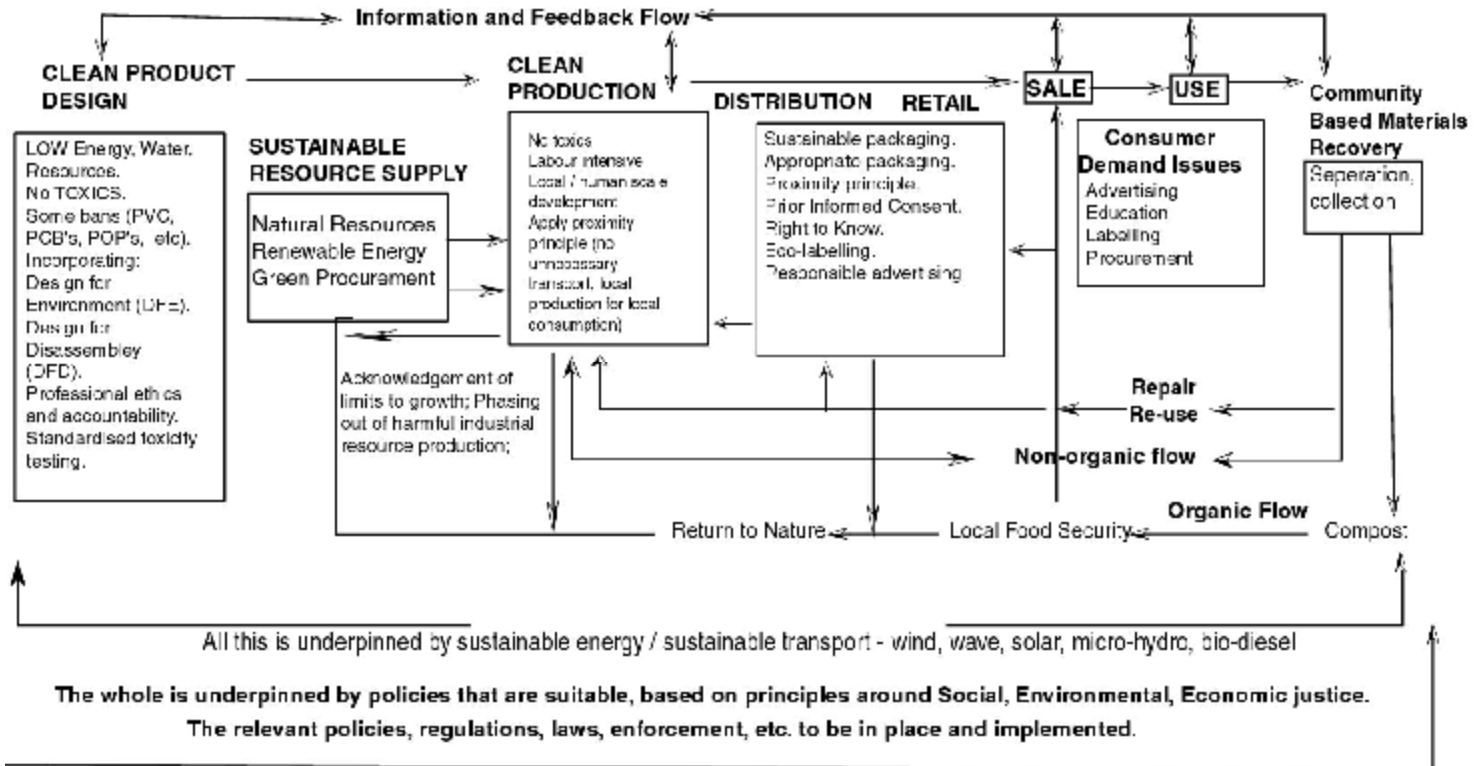
Monetary Efficiency

Job Creation

(Continued after chart on the next page)

SUSTAINABLE ECONOMY FLOW CHART

OVERARCHING REQUIREMENTS - Cradle to Cradle (Safe, low emissions / NO Emmissions / Discharges / Dilution)



All statements, boxes, and paths will be expanded upon in the relevant documentation. Thanks to Julie Dickinson (Zero Waste International Alliance) for inclusion of the Proximity Principle; Nicole Venter for Education; Rory Short for Ethics;

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1 - Redesigning Products and Processes.

Why is this product a 'crap' design?

12 litres of safe, drinkable water per flush, to move what is 98% water, and 2% compost, using expensive reticulation and kilometres of sewage systems.

A family of 4 generates less than 50 kilograms of this kind of solid waste per annum, but using about 18000 lt of water! (350 lt per kg)



Why re-design products?

You see this list below:

Antioxidants TBHQ and BHA; Niacinamide, Electrolytic Iron, Zinc Oxide, Pyrodioxide, Thiamin mononitrate, Riboflavin, Folic Acid, Vitamin A palmitate, calcium carbonate, Calcium propionate, sodium diacetate, calcium acetate.

- Do you know what these are?
- Do you know if they are safe, or if you can (or should) breathe, eat or drink them at all?
- Do you know what they do the human body?
- Do you know what product these are contained in?

Answer on the next page.....

Answer: Woolworth's Brown Bread !

Which product contains the following?

- Propylene glycol, found also in brake fluid and anti-freeze, and is a neurotoxin shown to cause dermatitis, liver abnormalities and kidney damage in animal studies; Sodium laureth / Lauryl Sulfate, with effects such as cancer, hormone disruption, eye damage, hair loss, skin sensitivity, and dry skin;
- Cocamide mea – cancer in laboratory animals, and reacts with the previous to produce the cancer causing substance nitrosamine;
- DMDM hydantoin – lung cancer and DNA damage in rats, irritant, carcinogenic, and causes a toxic reaction to 20% of people exposed to it;
- Benzoic acid - possible hormone disruptor, cause birth defects, irritates the respiratory tract, and eyes and skin;
- Methyl / propyl paraben – endocrine disruptors – mimic oestrogens, and interfere with sexual development and reproduction, and common allergic reactions;

What do you think this product is?

The Answer?

Clairol Herbal Essences Shampoo !

(and they say it is made from “Organic Herbs and Mountain Water”!) and for the record, there is a 100% organic shampoo on the South African market – Enchantrix !

Why re-design processes?

Problem 1: Underground Air Quality in a Mine.

Diesel engines contribute SO₂, CO₂, CO, No_x, etc.
Current solution - 4 giant fans, 24 hours a day, lots of electricity used, more emissions

The Answer?

Get a 100% reduction in SO₂, 50% reduction in CO₂, by simply changing the fuel to biodiesel!

Problem 2: Tyres are a problematic waste stream.

Burning them is toxic and unsustainable
They cause problems in landfills.

The answer on the next page.....

The Answer?

- Tyres can be crumbed and turned into over 75 different products
- Create sustainable livelihoods at many levels of scale and location
- Reduce toxicity & pollution dramatically
- Enhance local SMME development.

2 - Extended Producer Responsibility

Extended producer responsibility (EPR) is defined as the extension of the responsibility of producers for the entire product and packaging life-cycle, and especially for their take-back, recycling, and disposal. Manufacturers are held physically or financially responsible for products and packs when consumers are done with them.

Currently, end-of-life management costs fall on local governments and consumers. Few incentives exist for companies to re-design or recycle their products. Little infrastructure exists to handle products at end of life (i.e., industry is not designing recycling programs on their own)

This approach creates and optimizes recycling/recovery infrastructure, levels the playing field among manufacturers and shifts costs of recycling, HHW collection away from taxpayers to manufacturers

3 - Infrastructure investment

Why invest in landfills, which have a limited life?

“Landfills” built at a huge cost, designed for 20 years, lasted 7 years. A similar investment in materials efficiency & recovery, remanufacturing and recycling, will yield ongoing benefits for life, and more sustainable jobs at a rate of about 15 jobs created for every one in collection and landfilling. The return on investment is TEN times higher with Zero Waste investments , compared to dumping.

Continued investment in ever-larger compactor trucks, waste transfer stations, incinerators (especially those incorrectly considered ‘waste to energy’) and ‘landfills’, are the exact opposite of sustainable development in this field.

4 - Monetary Efficiency

- For example, a 5 million investment the Community gets a 50 million return on materials recovery
- Money stays longer in the local economy, with positive knock on effects
- Studies in Italy shows that, in some systems, it is LESS expensive to collect separated waste than current ‘collect all together and dump’ approaches.
- The economic knock-on and multiplier effects of Zero Waste are well proven.

5 - Job and SMME Creation

Reuse and recycling industries in the US, which comprises a vast number of small businesses, comprised 56,061 businesses with a total employment figure of 1,121,804. Total annual payroll was \$36,7 Billion. Estimated total income \$236.4 Billion. The waste industry in the same year was valued at only \$40 Billion. (Resource Recycling Magazine)

What does ZW deliver for local government?

- Jobs, and “just transition” support
- Political support, as it is simple, popular, cheap and quick
- Lower regulations and enforcement needs.
- Lower expenditure on capital intensive infrastructure
- Improved health
- SMME development
- More sustainable rates base, mainly through security of income and SMME development, but also new industry
- Improved public relations
- Positive impacts on tourism
- Supports national policies and processes
- Lower external costs
- World class status
- Potential for dramatic reductions in pollution levels in sensitive areas.
- Potential for generating support of fence-line communities
- Potential for attracting world-class businesses to the city.

- Potential for demonstrating genuine sustainable development
- Potential for becoming the leading Sustainable Development Hub.

What we need to do to make ZW work?

- Win high-level support.
- Establish a clear policy, law, or practice that will institutionalize ZW and set measurable goals and targets that can be easily enforced e.g. Polokwane Declaration – requires us to reduce waste by 50% by 2012, and develop a plan for Zero Waste by 2022.
- Have a clear focus. (“We haven’t got a plan, so nothing can go wrong!” Spike Milligan)
- Engage all stakeholders.
- Train yourself first.
- Implement pilot projects.
- Offer incentives beyond compliance levels – support until then.
- Pool your resources.
- Think beyond Cleaner Production – experience confirms that while there is indeed an initial drop in pollutants, these gains are lost with increased volumes.

What challenges for local government?

- Getting the “think” right
- Accepting that current production is unsustainable
- Accepting that non-renewable resources must, over time, be phased out.
- Look to innovative income generation alternatives to energy and water for the longer term (many examples)
- Begin to work on the internalisation of externalities (subsidies, health, other) i.e. ecological fiscal reform
- Develop appropriate waste solutions, and implement Extended Producer Responsibility
- Build alliances with committed people
- Be open to new ways of delivering development
- Be committed to genuine Sustainable Development

What resources are available to local government?

- Control over charges, rates and taxes
- Council committed to job creation and sustainable development.
- Good body of local knowledge, often within NGO structures
- National policy processes of most countries.
- Existing commercial and non-profit initiatives.
- Growth potential

In closing, Zero Waste is a robust, practical and proven methodology and philosophy in the world of pollution and waste. The Zero Waste network is already worldwide, and information is easily available on all aspects of Zero Waste.

If not Zero Waste, then how much waste?

If not now, then when?

If not us, then who?



What is the Institute for Zero Waste in Africa?

(A Section 21 Not for profit organisation)

Our Mission Statement

Working towards a world without waste through public education and practical application of Zero Waste principles.

Charter Principles

Redesign products and methods of production to eliminate waste by mimicking natural processes and developing closed-loops

Convert waste to resources for the benefits of local production and the creation of a healthy and sustainable society.

Resist incineration and land filling in order to promote innovation in resource conservation and methods of production

Collaborate with others with common interests worldwide

Objectives

To advance the education of the public by all appropriate communication means and through supporting the elimination of waste and the associated health impacts.

To promote and fund appropriate research for the public benefit, including education

To promote the effectiveness of other Zero Waste initiatives

To promote the principles of waste avoidance and minimisation, re-use, repair, recycling and composting, through sustainable resource management in accordance with best environmental options.

IZWA documents Available FREE Electronically:

(as at February 2006)

Short Documents:

1. Introduction to Zero Waste
2. Avoiding waste – 1st prize!
3. Basic Purchasing Guidelines for Zero Waste
4. Cleaning Chemicals and Alternatives
 5. Paper Saving for Offices
 6. Paper Saving A3 Poster
 7. The Problem with Plastics
8. Waste Reduction and Recycling
 9. Water and Energy Saving
10. Zero Waste for Restaurants.

Long Documents

11. Better Local Government Buying for Sustainable Development
12. Local Economic Development – Zero Waste Projects

(in progress: “The Idiot’s Guide to a Zero Waste Workshop”.)

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IZWA welcomes all as members and supporters.

Not-for-profit civil society organisations concerned with waste and pollution qualify as members; all others are able to become supporters of IZWA. Please contact us for membership details, or request our latest e-newsletter.

Membership is FREE.

Contact the National Co-ordinator:

INSTITUTE for ZERO WASTE in AFRICA

Physical address: 261 Moore Road - Durban - 4001

Postal address: Postnet Suite 126 - Private Bag X04 - Dalbridge - 4014 - South Africa

Phone: 031-202-4576

email: zerowaste@iafrica.com

**Member of the
Zero Waste International Alliance.**

Member of GAIA.

(Global Alliance for Incinerator Alternatives / Global
Anti-Incinerator Alliance)

Founder member of ELF

(Environmental Learning Forum)

