

Tax Working Group Public Submissions Information Release

Release Document

September 2018

taxworkinggroup.govt.nz/key-documents

Key to sections of the Official Information Act 1982 under which information has been withheld.

Certain information in this document has been withheld under one or more of the following sections of the Official Information Act, as applicable:

- [1] 9(2)(a) - to protect the privacy of natural persons, including deceased people;
- [2] 9(2)(k) - to prevent the disclosure of official information for improper gain or improper advantage.

Where information has been withheld, a numbered reference to the applicable section of the Official Information Act has been made, as listed above. For example, a [1] appearing where information has been withheld in a release document refers to section 9(2)(a).

In preparing this Information Release, the Treasury has considered the public interest considerations in section 9(1) of the Official Information Act.

Economic Tools to Influence Effective Waste Reduction.

Karl Henderson

[1]

Research Paper: Advanced Waste Management

188.751

Massey University

Abstract

In 1972 the United Nations Conference on the Human Environment convened to introduce and discuss the ‘massive and irreversible harm to the earthly environment on which our life and well-being depend’ (UN Conference on the Human Environment, 1972) as posed by the creation and disposal of waste.

As the risk posed by our existing lineal consumption model to humanity is significant, it would be reasonable to view the generation and disposal of products and materials from a simplistic risk-based perspective with the questions being:

1. If products were required to enter a zero waste ecological or technical recovery cycle and future scientific evidence indicates that we were wrong about the potential outcome being ‘massive and irreversible harm’ to the environment, what is the outcome to society if the zero waste approach to waste was enforced and is this acceptable?
2. If we did nothing about our consumption and maintained the existing lineal economic model (the ‘status-quo’) and we were wrong with the outcome *being* actual ‘massive and irreversible harm’ to the environment (along with our extinction), is this acceptable?

This paper will argue that looking at lineal waste generation from the above risk perspective, maintaining the status-quo with the significant risk that the majority of life on Earth (including humans) could reasonably be considered at risk of extinction; is unacceptable and as such governments *must* move away from the current and ineffective ‘incremental-change’ approach and achieve meaningful change via the establishment of comprehensive economic ‘producer focussed’ incentives to fundamentally change the behaviour of consumers. It will also discuss why the zero harm approach to waste management via the use of technical and ecological cycles *must* be employed to change New Zealand’s existing and unsustainable lineal ‘consume and dispose’ economy to one of ‘consume and re-use it all’.

This paper will also briefly explore the societal, ecological and financial benefits associated with establishing effective producer focussed economic incentives for change. It will look at existing producer focussed economic incentives in use and discusses the benefits and limitations of these ‘front-end’ economic instruments. Finally it will provide thought on an alternative producer/importer focussed economic instrument, a tiered waste taxation system similar to the Goods and Services Taxation model that can be reduced as zero waste outcomes are achieved.

The Use of Economic Tools to Effect Meaningful Waste Reduction

It is well established that mankind's consumption behaviours are negatively impacting on the environment. It is critical to the very survival of humans and a significant number, if not all, of Earth's species, that we manage our consumption generated waste in such a manner as to produce zero wastage (Phillips, et al, 2011). We are consuming Spaceship Earth's supplies at such an alarming rate it is as if we have multiple earth-like planets to exploit (Connett, 2013) or that we will be able to live in space while robots clean up our waste here on Earth for our pending return as portrayed by the animated Disney/Pixar movie WALL-E (Stanton, 2008). It is arguable that until we manage our resources within the zero-waste framework of technical and ecological cycles, we cannot expect to effectively manage other environmental initiatives such as global warming and species protection.

As it stands the existing societal viewpoints of waste and the subsequent waste management practices are inappropriate for sustainability to occur (Green Alliance, 2014). Without sustainability there is no future for our species, as currently humans are playing the 'short-sighted' and ultimately tragic lineal consumption model to achieve economic wealth. The pursuit of comprehensive sustainability requires a cohesive society with a strong government led focus on zero waste methodologies, a government who is willing to resist those persons with the majority of the worlds financial wealth; a wealth that is derived almost entirely from lineal, unsustainable human consumption.

From a waste generation and management perspective, New Zealand's claims of being clean & green or '100% pure' is in effect an abhorrently false marketing campaign that betrays New Zealand's long-term future. Successive New Zealand governments have maintained the wasteful lineal consumption model and have instead been relying on the ineffective incremental approach to managing wasteful and harmful industry practices within New Zealand as exemplified by the Waste Minimisation Act (2008) which focuses on the application of an ineffective 'end-of-pipe' economic tool and a yet unapplied 'priority product' stewardship scheme (currently there are no priority products identified).

As the incremental approach to waste management have proven to be ineffective in managing waste generation, significant and comprehensive economic tools are recommended to be applied for the effective management of waste as economic tools have been proven to be the most effective influencer on reducing waste streams and waste management (Greyson, 2007) (United Nations, 1992) (Agenda 21 (UN), 1992) and that we must as a society, work cooperatively to achieve a sustainable and desirable quality of life (Dr. J. Morgan Williams, 2006) (Agenda 21 (UN), 1992). It will discuss how ideally governments would be aiming to move from an incremental approach to a preventative approach to reducing wastage, which, as stated by James Greyson (2007), "Less Bad is not good enough". It will be argued within this paper that a preventative approach requires the introduction of innovative, flexible and graduated taxation systems that employ two of the most powerful tools to effect behavioural change – Taxation and subsidies (Dr. J. Morgan Williams, 2006).

Over the last century, western societies have sometimes intentionally or unintentionally removed informal re-use and recycling systems without a formalised and systematic process in place to replace it. This process had been responsible for returning technical and ecological materials into the material stream and with its removal has resulted in the disappearance of jobs and an increased dependency on landfills that has recently resulted in a flurry of activity by governments to rectify (Wilson, Velis, & Cheeseman, 2006). In less developed economies the informal recycling industry is critical to the survival of large numbers of people with studies estimating that approximately 2% of the urban population across Asia and Latin America are involved within the informal reprocessing of waste materials (Wilson, et al, 2009).

Apart from informal employment opportunities, there are many societal and economical advantages associated with achieving a zero waste economy that should elicit a government led divergence from the existing and unsustainable lineal consumerism to the sustainable model of cyclical consumerism. Boulding (1966) assesses and compares the lineal economy (one where resources are consumed as if they are unlimited) against the zero waste cyclical economy and notes that there are both environmental and societal impacts associated with lineal consumerism, where pollution, exploitation and violence repetitively occur. Greyson (2007) further expands on Boulding's assertions by attributing the significantly detrimental outcomes to the modern lineal consumption economy. These negative outcomes include; extreme inequalities, population expansion, urban sprawl, disease pandemics, public and personal debts, psychological stress and depression, overeating, overworking, unemployment, overuse of alcohol, tobacco and other

drugs, suicides, failing pension systems, rising taxes, over-regulation, materialism, alienation, distrust, refugees, erosion of civil liberties, military occupations and terrorism.

It is reasonable to conclude that positive benefits associated with a change in consumerism models could reasonably be expected to result in achieving the opposite of Boulding's (1996) identified lineal consumption outcomes. These benefits would also include a significant increase in formalised employment opportunities within industries that include Research & Development, material collection & processing, education & industry training and verification. As a result employment could reasonably be expected to significantly increase within the waste management sector, especially if existing waste generating disposal methodologies such as landfills were no longer an option (Green Alliance, 2014). Other identified benefits include; the reduction of poverty (Wilson, Velis, & Cheeseman, 2006) (Hawken, Lovins, & Hunter Lovins, 1999), the redistribution of wealth across a greater percentage of the world's population including those from lower socio-economic levels of society (Gutberlet, 2010), reduced drain on resources resulting in lower prices for products and improved public health (Levitzke, 2012), increased availability of technical materials and independence from resource rich countries. Other financial benefits to governments include an increase in income tax (more people employed = more income tax), an increase in GST revenue as more attain financial independence, Increased business tax revenue as more businesses are created to meet the demands of existing industries/producers, and of course the wastage tax with the revenue generated being redirected into zero-waste research and development programmes, infrastructure, consultants, auditors, etc. to support all industries. It could also be

expected that there would be a reduction in the draw from welfare as more people become employed, there would be less draw on the public health & policing systems as the populous becomes happier and healthier from significant improvements to urban environments such as zero exhaust fumes and pollution in their environment and an increasing positivity regarding the future.

A significant question that we as a society should consider is; If we knew that the world was going to end in 10 days time due to a giant asteroid being on a collision course with Earth, would we as a society continue to function? Would we go to work, look for a jobs, build houses, etc., or would society fall into disarray as individuals either removed themselves from society to seek spiritual solace or break societies rules (looting, killing, suicide, etc.) before the asteroid struck? This question is posed as without hope there is a reduced desire for individuals to participate fully in society and todays existing 'lineal consumption' is arguably removing that hope, with the symptoms identified by Boulding (1966) becoming increasingly visible around the globe.

On a national 'financial security' level, one of the key drivers for a zero-waste economy is one that should be very attractive to governments around the world as it manages the significant risk associated with national resource limitations experienced by all countries that have to import raw 'technical' materials such as minerals, metals, oils, plastics, etc., This significant risk could be effectively mitigated via the application of zero waste methodologies (Greyson, 2007), as such materials when managed appropriately throughout their lifecycles (from product design through to product 'end-of-life') could remain within a technical cycle while maintaining their

original properties to ensure that the quality of the technical product is not diminished, for example, high quality stainless steel is not degraded by being remelted with lower quality stainless steel.

It is important that governments understand the societal and subsequent financial benefits associated with making the transition from a linear consumption economy to a Zero-waste cyclical consumption economy as government support is critical to the success of effective zero waste management practices (Wilson, et al, 2009) (Gutberlet, 2010) and without this support governments can actually create barriers that greatly reduce the likelihood of success (Gutberlet, 2010), with these barriers either being generated by intentional or unintentional means (Dr. J. Morgan Williams, 2006). An example of an intentional barrier would be the under-financing of research into alternative fuels and their production as “lucrative tax revenues from fossil fuel dependence undermine[s] leadership by governments, and rising fuel prices generate short-term profits rather than long-term investment in substitute fuels that do not become wastes” (Greyson, 2007). Sadly this could also be applied to other significant industries within New Zealand such as the agricultural sector.

Only governments can create an environment where producers who embrace zero-waste processes are not unduly penalised against those producers who do not. The best way to achieve this ‘level playing field’ is via the introduction of appropriate and consistently applied economic instruments as evidence has shown that economic instruments such as taxation, the application of subsidies and levies etc. are very effective behavioural influencers in the reduction of wastage if applied appropriately

throughout a products lifecycle (Dr. J. Morgan Williams, 2006) to the correct stakeholders who are responsible for the generation of the waste in the first place .

It could be argued that globally, from an environmental and societal standpoint, the existing free market policies as practiced, is exactly that for the producers of the waste. It is effectively free of fees and or costs for the manufacturers of the waste associated with their products and packaging materials. As it currently exists a producer makes a product, sells it and pays taxes on profits; everything else becomes an operating cost and subsequently claimed on or passed on to the end consumer within the purchase cost. As it would be reasonable to suggest that environmental altruism is not the strongest behavioural modifier to effect change (Dr. J. Morgan Williams, 2006) sustainability cannot be achieved without rectifying this market failure and subsequently creating a level playing field for those producers wishing to become zero-waste organisations to ensure that they are not unfairly compromised (Greyson, 2007).

As stated above economic tools are critical for improving waste management practices and have been identified as being essential for modifying our waste generating behaviours, however they must be applied consistently and continually to prevent these behaviours returning to how they were prior to the incentive being initiated (Dr. J. Morgan Williams, 2006) and unless they are applied, alternative ecologically sound waste treatment practices will struggle to compete against those established within the dominant lineal consumption model. The following paragraphs explore some of these economic tool groupings that are currently or could potentially be utilised to both rectify the financial disparity between producers operating within

the zero-waste model & those producers who are not, and to financially incentivise a transition from the lineal to cyclical economic model.

The majority of economic tools used to influence behavioural change need to be durable and reliable (Dr. J. Morgan Williams, 2006) and fall into the following categories; Mandated stewardship programmes & legislative regulations that are enforced by government agencies such as the Environmental Protection Agency, Tradeable credits/permits associated with producer/consumer waste generation & impact profiles, deposit schemes, direct subsidies, recycling insurance - managed and enforced by insurance providers and taxation & levies.

There are many provinces, states and nations within the OECD that are committed to the zero waste ethos and as such have supported the introduction of economic instruments such as stewardship programmes that are primarily developed by organisations and industries, such as the tyre manufacturing and distribution industry, wishing to minimise their impact on the environment and improve their image regarding their waste profile. However there is an exhibited unwillingness of some OECD governments, as exemplified by New Zealand, to apply mandated stewardship programmes to individual products/industries and as such the focus is on voluntary, industry funded, development of product stewardship schemes. Fortunately there are also an increasing number of large international organisations and industry bodies committing to zero waste product stewardship.

However it should be noted that with the New Zealand context, government strategy is heavily reliant on voluntary approaches to product stewardship programmes. With this approach comes the inability or unwillingness of businesses,

particularly those small to medium in size, to become engaged in effective product stewardship as it is reasonably likely that it is viewed as somebody else's problem or believed that such programmes are only within the realm of larger organisations and/or governments. The reluctance of governments, including New Zealand, to legislate further product stewardship requirements is exacerbated by the existing complexity associated with existing and conflicting legislative requirements such as environmental laws, regulations and fee application structures that as they exist are predominantly biased towards producers and end-of-pipe waste management solutions. This complexity and bias results in the financial burden associated with waste being allocated to the end consumer and society as a whole, rather than on the producer who's product/packaging generated the waste in the first place. The result is that the majority of product stewardship programmes in existence globally are limited to voluntary uptake models rather than in a required & enforceable manner.

The creation of regulations to manage issues is arguably the most commonly practiced governance influencer applied by governments around the world, as they are easier to develop, implement and maintain with regulations usually being enforced by a singular governmental authority or agency. This approach although common has limitations that includes; they are usually inflexible & cumbersome and as such do not allow for variances across industries and sectors, they are difficult to police in a proactive manner due to resource issues & limitations within the appropriate government agency and that from a behaviour modification perspective the outcomes are negative in nature, uncertain and not immediate resulting in the worst level of behaviour modifier (Keil Centre, 2016).

The use of tradeable credits/permits (i.e. carbon credits) effectively requires producers to introduce effective waste management practices to be credited with them. The intent is that these credits can be bought & sold in a manner similar to shares and would be traded when there is a return on the initial investment. An advantage of a tradeable credit system to modify behaviours regarding waste management is that it can influence change at a global level as exhibited by the international exchange of stocks/shares. Barriers to the success of such a set up includes; poor performers with significant capital, purchasing credits and also include the issue that the sale price on the alternative market for the credits is not guaranteed to achieve a positive financial return, with the outcome being that the costs associated with gaining the credits in the first place outweighs the return, resulting in uncertainty.

Greyson (2007) explores the application of insurance levies with a focus on managing the waste into recycling streams prior to a products manufacture or 'precycling'. This concept allows for producers to pay premiums for the effective management of their product's associated waste without arranging their own re-use/recycling system or processes.

Greyson identifies significant positives associated with the introduction of a precycling insurance system that includes; the addition of economic vitality and providing an investment stimulus, reducing product prices via the sharing of costs associated with recycling, flexibility in its application across various industries, fair and equitable, reduction of a financial burden on companies, the reduction of regulation numbers and prescriptiveness, a reduction in compliance costs and insurers will audit to ensure that their exposures are managed effectively. Precycling insurance

also allows for; the impact of ‘hybrid’ products, where ecological and technical materials are used for the one product, are accurately costed with the applicable cost of the waste allocated to the producer prior to production of said product occurs.

A significant benefit to the precycling insurance model is that producers of products that are lineal in nature and as such are un-recyclable would pay higher premiums whereas those that have a negligible ecological impact via waste generation would be expected to attract negligible premiums.

However the following issues that could impact on the effectiveness and uptake of a ‘precycling’ scheme includes; the reduction in a governments ability to create a revenue stream to support those impacted by the associated price increases and zero waste research and development is reduced, significant revenue leaves the country with insurers likely to be foreign owned, insurers will have the ability to dictate insurance premiums based on their own industry objectives and subsequently will be driven by non-waste management market factors. Other risks include; the potential for insurance companies to delay or oppose paying out via court rulings or that they could collapse leaving waste unmanaged with the costs ultimately being funded by the end-user. Also as indicated by Greyson (2007), there would have to be a legislated requirement for businesses to have precycling insurance in a manner similar to the compulsory 3rd Party vehicle insurance required to register a vehicle in Australia. Other identified risks include: the potential for variances in the required elements and the application of the precycling insurance between insurers, with further variances in levels of risk acceptance between insurers.

Finally, a rather significant risk is that it is reasonable to expect significant limitations in its application to imported products from foreign countries where

precycling insurance is not mandated and as such gives foreign companies an unfair competitive advantage.

Traditional taxation methods as economic instruments to incentivise waste management have the potential to be effective change merchants, as they incentivise via the application of direct monetary inducement benefits as they are; non-optional, can reasonably be expected to deliver desired results quicker and the greater part of the required resources already exists within taxation departments. However they are more likely to be ineffective due to; associated complexity (Greyson, 2007), usually allow for loopholes, potentially increases the likelihood of inappropriate and illegal dumping of wastes (Dr. J. Morgan Williams, 2006) if not applied appropriately.

Another significant barrier associated with traditional taxation formats as applied to waste management, is that they are usually inflexible in nature which subsequently results in unfairly punishing those industries / organisations that generate negligible or nil waste. Traditional tools designed to address taxation inequality have been complex and cumbersome (i.e. submission of tax returns, etc.). Taxation is also likely to be seen as revenue gathering by the public if it is not visibly re-invested into improved waste management processes, research and development initiatives and impact support initiatives for those members of society affected by the applied tax.

Alternatively another format of economic tool that should be investigated further is one that combines producer taxation with that of the precycling insurance model. It is envisioned that such a tax would be similar to that of a goods and services tax in form and application (i.e. paid when a product is purchased), however it would be producer/importer focussed and tiered in such a manner as to be reducible as critical

elements of the zero waste technical and ecological cycles are achieved - resulting in taxation being applied in a manner that better reflects a producers waste profile. For example if a product has either only ecological or technical component(s) then the tax would be reduced by 50% and can be reduced further with the introduction of further waste minimisation and product stewardship initiatives.

A producer waste generation tax (WGT) in effect combines the power of legislated taxation systems with the flexibility and fairness of the precycling insurance concept, which therefore allows for industries and producers to have the flexibility to design their product appropriate processes to minimise waste and subsequently the WGT component.

Other benefits associated with a WGT model include:

- the requirement for and provision of accurate data to assist with determining a comprehensive analysis of waste profiles at provincial, state, national and potentially global levels.
- improved consumer understanding as the WGT associated with a product being displayed on receipts educates consumers on the ecological cost associated with their product when it becomes waste and subsequently allows consumers to effect greater change via modifying their buying habits.
- the provision of appropriate subsidies to those industries and producers that currently generate zero or negligible waste by significantly reducing or removing the WGT to be applied; whilst encouraging those producers (and

importers) who do not meet the requirements of the WGT to instigate / improve their product stewardship to be able to maintain market competitiveness.

- the potential to stimulate economic growth rather than inhibit it with an increase in ‘industry supporting’ businesses such as consultancy firms, research and development organisations, material collection businesses and an increase in resources associated with compliance and performance auditing; resulting in more skilled and unskilled employment opportunities, etc.
- limits the financial impact associated with the introduction of an economic tool via the requirement for businesses to remain competitive and the WTG being non-cumulative in nature as producers and importers pay tax on the waste associated with their products not the retailers. Costs to meet the outcomes of each zero-waste element by producers, which could reasonably be expected to be offset by the reduction in the associated WGT with significant long-term financial returns.
- as per existing goods and services taxation models, it includes imported products. Which in turn should influence change within countries exporting products with high waste profiles. It would be reasonable to suggest that as the uptake of a WGT taxation model expands across borders the influence on change on producers worldwide would exponentially grow.

- supports the economy by encouraging research & development, up-skilling & training and compliance & assurance industries to grow in number and size via the inherent desire of businesses and industries to improve their competitiveness within the market.
- illegal dumping of wastes could reasonably be expected to reduce significantly as the amounts of waste materials produced will reduce until they cease entirely as producers reduce their product's waste profiles.
- recycled materials will be able to be competitive against virgin materials as they would cost more to acquire under the WGT model.
- a positive tension occurs between a governments desire to maximise the associated revenue intake and the producers desire to reduce production costs.
- there should be no requirement for the establishment of new, or the manipulation of existing international conventions or agreements as required under other strategies.
- Reduces the complexity associated with existing 'incremental' approaches and piecemeal legislation.

Identified challenges to the implementation of a WGT styled taxation model include:

- a possible conflict with free trade agreements. Although this risk would be minimised due to the retained ability of nations to apply a comprehensive non-import specific taxation model, as exemplified by the goods and services taxation model. Preferably a waste generation taxation model would be introduced at an OECD level to maximise the influence on non-OECD countries.
- as the uptake of a WGT model occurs there will be a requirement for the development of an international standard and monitoring methodology. However as the elements are outcome based, as opposed to process based, and based on the elements of the zero-waste model of technical and ecological cycles, comparatively speaking this should enhance the likelihood for agreement to occur succinctly.
- it would be reasonable to conclude that it will initially drive up prices for industries and producers of materials that cannot be modified due to technical constraints, materials that would fall into this category would include radioactive materials used in medical procedures or non-destructive testing activities.

- it would take a considerable amount of public education and consultation to prepare society for the transition.

- payment of a higher percentage WTG by an industry or producer could be construed as purchasing a “right to pollute” (Dr. J. Morgan Williams, 2006). This may be mitigated by government monitoring, the application of fines (on top of the WTG) and potential prosecutions where proven waste reduction methodologies are not introduced due to anti-competitive behaviours such as industry wide collusion.

- the WTG would have to be set at a level that modifies consumption and waste generation without applying undue hardship to elements of society such as low-income earners or beneficiaries. This barrier could potentially be offset by an initial increase in government support for those on low incomes funded via the collected WGT. As the WGT intake decreases so does the financial support.

- there is the possibility that the application of a WGT styled model would be complicated for producers of significant numbers of products. This issue could be mitigated via the bracketing of similar products and applying the WGT for the highest impacting product within that bracketed group.

- a significant increase in appropriately skilled resources with zero waste management knowledge would be required within the taxation department to police / manage the taxation process. This is potentially a positive as it

would require the employment of people resulting in the societal and financial benefits discussed earlier in this paper.

- disposal levies would have to remain to influence consumers ‘post-use’ behaviours until zero-waste has being fully realised.

Within the New Zealand context there are significant barriers to the application of economic instruments with the Parliamentary commissioner for the Environment stating in 2006 that there are barriers “that prevent central and local governments using them. Some barriers are unintentional and some are deliberate policy choices”. These barriers include; insufficient guidance from central government to regional authorities regarding the application of economic instruments for waste management (Dr. J. Morgan Williams, 2006), an unjustified focus on gross domestic productivity (GDP) as the ‘crude’ definer of a countries wealth in conjunction with a society that is very much focused on consumption driven economic growth (Levitzke, 2012).

It could reasonably be argued that past and current New Zealand governments have pushed towards incremental changes to reducing the levels of wastage within New Zealand. This approach is exemplified by the introduction of the Waste Minimisation Act 2008 where waste tariffs have been applied at the point of disposal or ‘end-of-pipe’ and are ultimately paid for by the end-consumer (not the producer of the waste) and further evidenced by the current governments focus on voluntary producer/importer focused initiatives such as the voluntary glass levy and other product stewardship schemes. This piecemeal & altruistic approach to change is further exemplified by the minister for the environment, the honourable Dr Nick

Smith (2010), writing within the 2010 New Zealand Waste Strategy foreword. “*encouraging* businesses to develop product stewardship schemes, particularly for products that *may* have a harmful effect on the environment “(Smith, 2010) and further exemplified by the ‘non-prioritisation’ of identifying and establishing of economic instruments by the Ministry for the Environment (Dr. J. Morgan Williams, 2006).

Within New Zealand, the introduction of the waste disposal levy has ultimately contributed to an increase in the cost of waste disposal for the consumer, which according to the New Zealand Ministry for the Environment , (2010) “*may* encourage more recycling and other waste minimisation activities”. As the term ‘may’ is not exactly definitive, it would be reasonable to interpret that the Ministry does not believe that any significant impact on waste generation will occur or that there is a significant lack of intent to effect meaningful change within the Ministry’s leadership group. At this point it is important to note that the use of waste disposal levies is back-end thinking or using a cup to prevent the bath from overflowing rather than tuning the tap off (Connett, 2013). Such an approach to reducing waste is fundamentally flawed as it does not address the underlying issue of the poorly regulated production and importation of wasteful materials and is instead only focused on modifying the consumers disposal behaviour, which could reasonably be argued potentially encourages illegal dumping of waste by consumers due to the increase in disposal costs. ‘Front-end’ thinking would entail producer driven initiatives for change with the New Zealand Government modifying consumers waste generating behaviours by enforcing required behaviours of designers/producers to effect a significant reduction in waste generation.

As identified within the above paragraphs, it is reasonable to state that the New Zealand Government has and for the foreseeable future, will continue to, subscribe to the ‘incremental’ rather than the ‘preventive’ approach to manage waste generation and waste management. This is disappointing 45 years of application suggests that the incremental approach is significantly flawed and is obviously not working (Greyson, 2007) and as such it has resulted in significant complexity and un-workability. The waste management industry’s successful challenge of the application of waste levies by councils under section 544 of the Local Government Act 1974 (Dr. J. Morgan Williams, 2006) as the ability of an industry body to successfully challenge legislation when it is applied highlights the limitations and flaws generated by the ‘incrementally induced’ complexity and disjointed nature of New Zealand environmental legislation. As the ‘piecemeal’, end-of-pipe approach is obviously insufficient to achieve meaningful change regarding waste, it is argued at this point that a comprehensive ‘holistic’, producer inclusive approach is required to ensure that effective change occurs throughout a products ‘lifecycle’ to prevent waste occurring.

To conclude, we all know that taxation, rates, etc. are essential for ensuring the effective functioning of the nation, state & regional authority and is generally considered as ‘paying our way’. However if these taxes and rates were voluntary would we still give away a significant portion of our pay packet each week? Would a piecemeal/voluntary approach to paying taxes gather the same amount of revenue? It would be reasonable to suggest that such an approach would not result in an appropriate revenue stream for governments – hence, with few exceptions, taxation on incomes or purchases is compulsory in the majority of countries. Subsequently the

following question needs to be asked? Is the long-term survival of our species (and many others) more important than the short-term revenue gained from existing taxation methodologies? How can we tax goods and services (GST) when society is no longer able to consume products? As a society we need to ask such questions and subsequently reset our goals. We need to be prepared to pay for our waste at all stages of a products lifecycle and design our products with zero waste cycles in mind, just as the New Zealand Health and Safety at Work Act 2015 requires producers to understand the impact of a products design on safety (New Zealand Ministry of Business, Innovation and Employment, 2015). We must renew our mindsets around waste generation, provide existing and future generations with a sense that things are not hopeless and empower & encourage our youth to engage in society and the creation of solutions. As stated by the American 16-year-old climate change activist Xiuhtezcatl Martinez (Australian Broadcasting Authority (ABC) , 2017) "Young people have a huge responsibility to be a part of creating [environmental] solutions. If we look at just the problems it's going to disempower people and make them hopeless". An as a society we must ensure that our youth have hope, as a society we need to understand, and pay for, the ecological and societal costs associated with consumption. As a society we need to educate ourselves about the zero waste cycles and how a products design impacts on the waste generated by a product. As a society we need to understand that producers are not paying for the waste they generate and that the subsequent ecological harm they are creating, both societally and ecologically, will impact on us all. Revamping our societal goals “invite[s] renewed mindsets and world views, which are the strongest possible interventions in complex systems” (Greyson, 2007).

New Zealand as a society has some significant examples of leading global change. Examples include the emancipation of women and the introduction of the New Zealand Nuclear Free Zone, Disarmament, and Arms Control Act (1987), which courageously led the banning of all nuclear warships and weapons (including those of our most powerful ally). This societal driven change occurred because statistically 52% of New Zealanders were supportive of the Act. (Ministry for Culture and Heritage, 2015).

As established, society must change its consumption behaviours from the lineal model currently in existence to the cyclical consumption models proposed within the zero waste frameworks. This change has to occur not only for improved societal benefits and for our species very survival. For this change to occur it is critically important to understand that the existing ‘altruistic consumer’ and ‘incremental change’ focussed approaches are ineffective and add additional societal and legislative confusion and application inconsistencies. It is also important to understand that a traditional taxation framework dose not allow for the required flexibility as the ‘one size fits all’ approach is not likely to be appropriate to allow for industries and organisations to appropriately tailor their methodologies against their waste profile. Compulsory ‘outcome based’ taxation frameworks such as the proposed producer waste generation tax introduces a flexible economic tool that could reasonably be expected to address the two behaviour modifying missing ingredients of taxation and subsidies that are required to effect significant change (Greyson, 2007) by providing incremental tax reductions, that is effectively a form of subsidisation for those producers who are working towards achieving the sustainable zero waste cyclical consumption model.

References

- Agenda 21 (UN). (1992). *Agenda 21 The United Nations Programme of Action from Rio*. United Nations. Rio de Janeiro: United Nations.
- Australian Broadcasting Authority (ABC) . (2017, February 6). *Triple J Hack - All*. Retrieved February 7, 2017 from ABC Triple J Hack: <http://www.abc.net.au/triplej/programs/hack/xiuhtezcatl-martinez-suing-us-government-over-climate-change/8245370>
- Boulding, K. (1966). The economics of the coming spaceship Earth. In H. Jarrett, *Environmental quality in a growing economy, resources for the future* (pp. 3-14). Baltimore: Johns Hopkins University Press.
- Connett, P. (2013). *The zero waste solution: Unrashing the planet one community at a time*. White River Junction, VT: Chelsea Green Publishing.
- Dr. J. Morgan Williams, P. C. (2006). *Economic Instruments*. Parliamentary Commissioner for the Environment;
- Green Alliance. (2014, February). *More Jobs, less carbon: why we need landfill bans*. London, United Kingdom: Park.
- Greyson, J. (2007). An economic instrument for zero waste, economic growth and sustainability. *Journal of Cleaner Production* , 15, 1382-1390.
- Gutberlet, J. (2010). Waste, poverty and recycling. *Waste Management* , 30, pp. 171-173.
- Hawken, P., Lovins, A., & Hunter Lovins, L. (1999). *Natural Capitalism - Creating the Next Industrial Revolution*. Boston: Little Brown and Company.
- Keil Centre. (2016). *Human Factors & Behaviour Modification Materials*. Retrieved Jan 16, 2017 from Keil Centre: <http://www.keilcentre.co.uk/about-us/our-approach/>
- Levitzke, V. (2012). *Foreword*. In S. Lehmann & R. Crocker (Eds.), *Designing for zero waste*. London: Earthscan.
- Ministry for Culture and Heritage. (2015, March 13). *Nuclear-free legislation*. Retrieved January 04, 2017 from New Zealand History online: <https://nzhistory.govt.nz/politics/nuclear-free-new-zealand/nuclear-free-zone>
- New Zealand Ministry for the Environment . (2010). *The New Zealand Waste Strategy*. New Zealand Government, Ministry for the Environment. Wellington: Ministry for the Environment.
- New Zealand Ministry for the Environment. (n.d.). *Product Stewardship*. From Ministry for the Environment: <http://www.mfe.govt.nz/waste/product-stewardship/accredited-voluntary-schemes>
- New Zealand Ministry of Business, Innovation and Employment. (2015). *Health and Safety at Work Act 2015*. *New Zealand Health and Safety at Work Act 2015* . Wellington: New Zealand Government.

- Phillips, P. S., Tudor, T., Bird, H., & Bates, M. (2011). A critical review of a key waste strategy initiative in England: zero waste places projects, 2008-2009. *Resources, Conservation and Initiatives* , 55, 335-343.
- Smith, H. D. (2010). *Foreword - The New Zealand Waste Strategy*. New Zealand Government, Ministry for the Environment. Wellington: Ministry for the Environment.
- Morris, J. (Producer), Stanton, A. (Writer), & Stanton, A. (Director). (2008). *WALL.E* [Motion Picture]. United States: Disney Entertainment.
- UN Conference on the Human Environment. (1972). Draft Declaration on the Human Environment. *UN Conference on the Human Environment*. United Nations Environment Programme.
- United Nations. (1992). *Report of the United Nations Conference on Environment and Development*. United Nations, Department of Economic and Social Affairs, Rio de Janeiro.
- Wilson, D. C., Araba, A. O., Chinwah, K., & Cheeseman, C. R. (2009). Building recycling rates through the informal sector. *Waste Management* , 29, 629-635.
- Wilson, D. C., Velis, C., & Cheeseman, C. R. (2006). Role of informal sector recycling in waste management in developing countries. *Habitat International* , 30, 797-808.