IMPLEMENTATION OF SOLID WASTE POLICY OBJECTIVES IN NEW ZEALAND

A thesis presented in partial

fulfilment of the requirements

for the degree

of Masterate in Philosophy

in Environmental Planning at

Massey University

Kathryn Ann Mayes

1995

ABSTRACT

The purpose of this thesis is to evaluate various instruments available for implementing waste policy, in order to determine the most suitable set of policy instruments for achieving solid waste policy objectives in New Zealand. The thesis will also examine the Government's current waste policy before proceeding with the evaluation of the implementation instruments.

"Waste" and related terms have not been adequately defined in New Zealand policy or legislation making it difficult to define the boundaries of the issue. Definitions of "waste" and "solid waste" are therefore proposed.

The Government's waste policy is critiqued and amended to provide a policy basis for this thesis and a suggested policy for the Government to adopt. The current policy is considered to be lacking in that it does not clearly set out intended goals and objectives. A new objective is proposed of ensuring that policy and action is focused on areas of highest risk and/or impact through the collection of reliable data on all types of waste.

Data on various waste streams are currently sorely lacking. As a result, the Government's waste policy has focused on domestic waste and packaging, as two areas with the highest profile and most reliable data, without determining whether this is the most appropriate action to take.

Aspects of the waste policy framework are reviewed, namely: current legislation, development of the current waste policy and the current policy work carried out by the Ministry for the Environment. It is found that the focus of waste policy in the 1970s moved from addressing issues of packaging and limited landfill space, to considering waste as a misplaced resource in the mid-1980s. The change in focus was largely due to the economic climate although it coincided with moves to collect data about waste streams, raising awareness of waste streams which had previously been largely ignored. The Resource Management Act 1991 again altered the focus of waste policy with the emphasis on the "effects" of activities. The risk and/or impact of materials on the environment is now particularly relevant, highlighting the need for adequate information regarding these effects.

Although base-line data is necessary, a warning is given to the Ministry for the Environment that this should not lead policy back to "end-of-pipe" solutions. This approach would be inappropriate given the approach of the Resource Management Act 1991 and the inclusion of the waste hierarchy in the Government's waste policy.

Each party's perception of their role and responsibility and the roles of the other parties in waste policy decisions were determined by conducting interviews with members of industry and central and local government, and by holding three discussion groups with members of the public of differing ages. From these discussions a national postal survey of householders was undertaken.

The survey aimed to identify attitudes and behaviour relating to packaging and resulting waste in New Zealand. Packaging and packaging waste were chosen as the topics of the discussion groups and subsequent survey owing to the amount of resources that has been directed by Government at this segment of the waste stream and the perception that packaging is considered by the public to cause one of the biggest problems in the waste stream.

This thesis primarily studies instruments to implement waste policy objectives as it is considered that this aspect is currently not being adequately addressed by the Government's waste policy, the decision-making environment and by the parties involved in waste policy decisions.

Implementation instruments for waste policy fall broadly into four groups: Regulation, Economic Instruments, Voluntary Initiatives, and Education and Information. Those instruments that are used most often around the world are critiqued and their potential application to New Zealand is evaluated.

The instruments examined in detail are subsidies, deposit-refund schemes, product charges, user charges, purchasing policies, waste reduction targets, environmental labelling schemes and cleaner production programmes. A number of other instruments are reviewed in less detail.

The evaluation of specific instruments' potential application to New Zealand is carried out against the steps of the internationally recognised waste hierarchy, the hierarchy being: Reduce, Reuse, Recycle, Recover, Residual Management, as this is an accepted objective of the waste policy. This evaluation enables a review of the actions currently being undertaken by central and local government, industry and the public in this area.

Instruments which have the potential to most greatly affect the level of achievement of waste policy in New Zealand are considered to include:

i) Regulation clarifying the desired outcomes, objectives and implementation instruments of the waste policy;

ii) Regulation defining more of the roles and responsibilities of the parties involved in waste policy decisions;

iii) Existing subsidies directed towards cleaner production programmes and 'Waste Analysis Protocol'[1] landfill surveys;

iv) User charges for all waste collection, treatment and disposal services;

v) Negotiated targets with industry sectors to reduce the amount of waste produced and disposed of;

vi) Education and information to ensure that the philosophy of the waste hierarchy is practiced by individuals and organisations.

Using a range of instruments covered in this thesis to implement the waste hierarchy will result in a significant move towards the achievement of the accepted goal of the waste policy, that of maximising net benefits to New Zealand.

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[1]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

ACKNOWLEDGMENTS

There are many without whose help I could not have written this thesis.

Firstly, I would like to thank Dr Margaret Bailey for the numerous hours she spent helping me learn, supporting me, finding information and passing on a little of her wisdom. I am also grateful to Dr Lin Roberts who read and commented on a draft while under a deadline of her own. Dr Murray Patterson also provided critical input into drafts.

A number of people at the Ministry for the Environment provided valuable discussion throughout the preparation of my thesis. In particular Dave Brash, Ellen Blake, Tui Gilling, Melanie Carter, Bruce Chapman and Jill King all gave me food for thought, friendship and a greater insight into the issues surrounding waste policy.

I am grateful to Margaret and Peg Wadsworth who pored over the final draft for errors and now know more about solid waste than they ever anticipated.

Finally I would like to thank my partner, Craig, for encouraging me to believe in myself and supporting me throughout writing this thesis.

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CHAPTER 1 - INTRODUCTION

1.1 THESIS GOALS AND OBJECTIVES

The purpose of this thesis is to evaluate various instruments available for implementing solid waste policy objectives, in order to determine the most suitable set of instruments for implementing solid waste policy in New Zealand. The thesis will also examine the Government's current waste policy before proceeding with this evaluation of the implementation instruments.

The Government's waste policy is:

"1. To ensure that as far as practicable, New Zealand's waste generators meet the costs of the waste they produce, and

2. To encourage the implementation of the internationally recognised hierarchy of reduction, reuse, recycling, recovery and residual management by all involved in waste generation in New Zealand"[1].

The Government's waste policy is undeveloped and the policy framework within which the policy should be implemented is also skeletal. Central government, local government, industry and the public - the four major parties involved in waste policy decisions - need their roles and responsibilities better defined. Currently central government is not recognising its role in providing for the "social good" aspects of waste policy; local government has defined its role narrowly to focus on service delivery; industry is operating in a climate with sometimes competing objectives; and the public is unaware of the policy objectives so do not exercise their role effectively. As a result of these problems, some aspects of waste policy formulation and implementation are being overlooked or avoided by parties. Other aspects are not necessarily being dealt with in the most appropriate manner, or by the most appropriate party. One such gap is the lack of focus on the implementation of waste policy goals and objectives.

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[1]Ministry for the Environment, "The Government Waste Policy and Ministry for the Environment Waste Work Programme August 1992". Waste Management Institute Newsletter. Issue 4, Septmeber 1992.

This thesis therefore seeks to address the gap in waste policy implementation by identifying aspects which are not being adequately dealt with, and instruments which could be used to achieve policy goals more effectively.

The Government's waste policy currently affects hazardous waste and solid waste. The control of hazardous waste is currently being reviewed under the Hazardous Substances and New Organisms Bill, making it inappropriate to evaluate this area at present. Other types of waste are regulated in different ways, making "waste" too diverse a subject to look at in any detail. This thesis therefore concentrates on solid waste.

Solid waste is also the area where the most resources have been directed by local government and some agencies at a central government level. The fact that this thesis takes this focus should not be contrued as implying that the author shares the opinion that solid waste is necessarily the waste stream which creates the biggest risk and impact on the environment. As discussed in this thesis, other types of waste may be causing greater problems and may require strategies to be developed to promote the benefits of reduced resource use, thereby decreasing the impact of waste on human health and the environment. Despite this, many opportunities exist to reduce the impact of solid waste and these are examined in this thesis.

The overall goal for this thesis is therefore:

To examine how solid waste policy in New Zealand can most effectively be implemented; given the range of legislative, financial, voluntary and educational instruments and the constraints of the policy environment.

The specific objectives, in the order they will be addressed in this thesis, are:

1. **To critically review the current state of solid waste policy in New Zealand; specifically focussing on the Government's waste policy objectives, the current legislative framework and the perceived roles of key stakeholders (Part I);**

2. **To evaluate the various instruments available for achieving solid waste policy goals and objectives (Part II);**

3. **To identify and discuss the most suitable instruments for implementing the waste hierarchy (Part III).**

1.2 DEFINITIONS OF WASTE

Solid waste has not been defined in New Zealand Government policy or legislation. It is not an exclusive category of waste as it overlaps with hazardous waste which can be solid, liquid or gaseous. A distinction is made between these two categories of waste in this thesis because hazardous waste requires additional control or management in all stages of its use in order to achieve environmentally sound waste management practice. However, too great a distinction would be artificial as can be demonstrated by the example of products such as batteries and aerosol cans.

In this thesis, solid waste generally refers to non-hazardous waste arising from commercial, industrial or trade, and household activities, known as domestic solid waste. Hazardous waste includes substances classified by Organisation of Economic Cooperation and Development Decisions and the Basel Convention, March 1989 and categories of toxic substances as set out in the Toxic Substances Regulation 1983/130.

Various definitions affecting New Zealand's management of solid waste exist in international treaties and national codes of practice. Many of the definitions relate to the management of hazardous waste as this is seen to pose a greater threat to the environment than non-hazardous solid waste.

The following is a brief description of definitions having a bearing on New Zealand's management of solid waste.

1.2.1 ORGANISATION OF ECONOMIC COOPERATION AND DEVELOPMENT (OECD)

The Organisation of Economic Cooperation and Development (OECD) has concentrated on the treatment and disposal of hazardous waste. Waste is only defined in relation to movements of hazardous wastes between states by an inclusive list of hazardous materials. International agreements for the disposal of wastes into marine bodies and for the transportation of materials also contain lists of hazardous wastes. Most member countries of the OECD have issued lists of potentially hazardous wastes; however, no two lists are identical[2].

The OECD has devised a system for cross-referencing among the lists, known as the 'Core Lists of Hazardous Wastes'[3]. The 'Core List' contains 17 generic types of wastes and 27 constituents of wastes. This list contains between 85% and 90% of the wastes that are legally defined as hazardous by Organisation of Economic Cooperation and Development member countries and 90% of the wastes that are prohibited or restricted from disposal at sea.

Wastes in the 'Core List' are subject to control if they exhibit certain characteristics - for example, if they are explosive, flammable, toxic or corrosive. The approach is in line with moves around the world to focus on the effects of materials and activities, as opposed to controlling the materials and activities themselves. The Resource Management Act 1991 in New Zealand is at the forefront of these moves.

The OECD has also devised a uniform classification system, known as the 'International Waste Identification Code' (IWIC)[2]. The Code was developed for the Council Decision on the Transfrontier Movements of Hazardous Wastes C(88)90 (Final). The system differs slightly from that of the Basel Convention developed a year before. The OECD Waste Management Policy Group has considered changing the IWIC tables to make the two sets of tables compatible, but a final decision on this has yet to be made.

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[2]Organisation of Economic Cooperation and Development, Monitoring and Control of Transfrontier Movements of Hazardous Wastes. Paris: Organisation of Economic Cooperation and Development, May 1990. (Organisation of Economic Cooperation and Development. Environment Monograms; Number 34)

[3]Organisation of Economic Cooperation and Development, Core Lists of Hazardous Wastes. Paris: Organisation of Economic Cooperation and Development, May 1990.

1.2.2 UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

The United Nations Environment Programme's (UNEP) 'Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes'[4] specifies that any material prescribed as waste by a country is classified as waste[5]. The definition overcomes differences between European countries where transfrontier movements are common in order to treat and dispose of hazardous wastes. The 'Cairo Guidelines' also contain a definition of hazardous wastes concentrating on their characteristics.

Tables of waste groups are given in the 'Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal'[6] formulated in March 1989. New Zealand ratified this Convention in 1994 with The Import Control (Wastes) Conditional Prohibition Order 1994, which entered into force on 28 February 1995. This prohibits the importation into New Zealand of wastes except under the authority of a permit granted by the Minister of Commerce. Permits can be granted where wastes can be treated and/or disposed of in New Zealand and not in the exporting country.

1.2.3 WORLD BANK

The World Bank has a working definition of waste[7], although it too has been formulated with regard to the management of hazardous wastes[8]. The World Bank adopts the definition of hazardous wastes given in UNEP's Cairo Guidelines but suggests a different classification system linking wastes to varying degrees of risk.

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[4]United Nations Environment Programme. Cairo Guidelines and Principles for the Environmentally Sound Management of Hazardous Wastes. Decision 14/30 of the Governing Council of UNEP, Environmental Law Guidelines and PRinciples 8. Nairobi: United Nations Environment Programme, June 1987.

[5]"Wastes means any materials considered as wastes or legally defined as wastes in the State where they are situated or through or to which they are conveyed."

[6]United Nations Environment Programme, Basel Convention onthe Control of Transboundary Movements of Hazardous Wastes and Their Disposal Final Act. Nairobi: United Nations Environment Programme, March 1989.

[7]Waste is "a movable object which has no direct use and is discarded permanently". Bailey Dr ML, Producing Less Waste. Wellington: Ministry for the Environment, May 1991.

[8]World Bank. The Safe Disposal of Hazardous Wastes - The Special Needs and Problems of Developing Countries. Washington, DC: The World Bank. Edited by Batstone R. and others.
(World Bank. World Bank Technical Paper. Volume 1; Number 93).
Cited in Bailey Dr ML, Producing Less Waste. Wellington: Ministry for the Environment, May 1991.

Three main categories of waste are proposed:

Category 1 - includes wastes of priority concern known to contain significant concentrations of constituents that are highly toxic, mobile, persistent or bioaccumulative.

Category 2 - contains most other wastes which require special control.

Category 3 - contains mainly high volume/low density wastes and some putrescible wastes.

Elements of this third category, such as putrescible wastes and polyethylene terephthalate (PET) plastics, overlap with solid wastes which are managed in a less controlled manner.

1.2.4 NEW ZEALAND

The Import Control (Wastes) Conditional Prohibition Order 1994 defines waste in line with the United Nations Environment Programme. Under the Order waste means[10]:

"any substance or object -

(a) That is intended to be disposed of by any of the methods specified in the Third Schedule to this order; or

(b) That is required, by any law of New Zealand, to be disposed of by any of the methods specified in the Third Schedule to this order".

This inclusive definition enables control over wastes imported for treatment and/or disposal but does not provide guidance as to what characterises non-hazardous waste. Constituents and quantities of waste streams also cannot be determined. Hazardous wastes are defined by the Order according to their characteristics, in line with international moves.

The Resource Management Act 1991 also avoids defining or dealing specifically with waste, incorporating its management in the objective of "avoiding, remedying or mitigating" effects (s.5), land use consent requirements (s.9) and the term "contaminants" (s.15).

The Hazardous Substances and New Organisms Bill follows international trends, defining hazardous waste according to its characteristics. This Bill brings together a number of Acts relating to the control of hazardous wastes in New Zealand.

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[10]cl.2 The Import Control (Wastes) Conditional Prohibition Order 1994.

The New Zealand Chemical Industry Council's (NZCIC) revised Code of Practice, 'Guidelines for Waste Management Practice in New Zealand'[10] provides a definition of both "waste"[11] and "hazardous waste", adopting the IWIC as its classification system. This classification system has also been adopted in the Ministry for the Environment's 'Waste Analysis Protocol'[12] and in the Centre for Advanced Engineering's (CAE) 'Our Waste: Our Responsibility'[13]. The definitions in these publications stress that waste is a misplaced resource. One shortcoming is that they do not cover matter that does not require treatment or disposal, such as some gaseous wastes.

1.2.5 PROPOSED DEFINITIONS

The definition of waste proposed in this thesis draws heavily on the definition of waste adopted by Victoria, Australia in the Environment Protection Act 1970[14]. The term "discharged in the environment" used in the Victorian definition is consistent with sections dealing with contaminants in the Resource Management Act 1991. The use of the term is not consistent with the opinion of the Ministry for the Environment given in 1991[15] which seeks to distinguish between wastes and pollutants. While the distinction between wastes and pollutants is necessary, the differences can be dealt with by looking at the effects of the discharge, which is the focus of the Resource Management Act 1991.

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[10]New Zealand Chemical Industry Council, Guidelines for Waste Management Practice in New Zealand. Wellington: New Zealand Chemical Industry Council, March 1991.

[11]Waste is "broadly defined as unavoidable materials for which there is currently or no near future economic demand and for which treatment and/or disposal is required."

[12]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

[13]Centre for Advanced Engineering, Our Waste: Our Responsibility. University of Canterbury: Centre for Advanced Engineering, December 1992.

[14]s.2 Environment Protection Act 1970. Waste is:

"(a) any matter whether solid, liquid, gaseous or radio-active which is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment;

(b) any discarded, rejected, unwanted, surplus or abandoned matter;

(c) any otherwise discarded, rejected, abandoned, unwanted or surplus matter intended for;

(i) recycling, reprocessing, recovery or putrification by a separate operation from that which produced the matter; or

(ii) sale; and

(d) any matter prescribed to be wastes."

[15]Ministry for the Environment, Directions for Better Waste Management in New Zealand - a Discussion Paper. Wellington: Ministry for the Environment, December 1991.

The definition incorporates all matter that becomes post-consumer waste by including material diverted from the waste stream for reuse and recycling and matter discharged into the environment. Incorporating all types of waste is more appropriate than only considering matter discharged into the environment as waste because all post-consumer waste is a wasted resource. Markets also change for various wastes making it inappropriate to distinguish between discharged matter and reused or recycled material.

The term "matter" used in the Victorian definition is more appropriate than "material" used in the New Zealand definitions as the latter term does not necessarily cover gaseous wastes such as paint fumes.

The term "discharged in the environment" also incorporates the emission of wastes which are not "treated" or "disposed of" (such as many gases) and does not need a conscious decision on the part of the emitter of the waste.

The term "surplus" includes matter such as paint vapours which are not necessarily considered when emitted. All other terms used in the Victorian, New Zealand Chemical Industry Council and the Centre for Advanced Engineering definitions require a conscious decision on the part of the emitter. The term also incorporates matter that is recognised as having a value but cannot be used for the time being. An example is materials for which there is a current oversupply, for example, some grades of waste paper.

For the purpose of this thesis the following definitions of waste and solid waste are therefore adopted:

> **Waste is "any unwanted, discarded or surplus matter whether solid, liquid or gaseous, but not radio-active, which is discharged into the environment or intended for recycling, reprocessing, recovery or putrification by a separate operation from that which produced the matter".**
>
> **Solid waste is "solid waste arising from commercial, industrial, trade and household activities that does not need to be treated separately in order to achieve environmentally sound waste management practice".**

These definitions are qualified by the following points:

i) Radio-active waste is excluded from the definition of waste as it is controlled under separate legislation[16];

ii) The definition does not incorporate a direct reference to the effects waste have on the environment. This is because there will be instances, such as the storage of non-biodegradable material for further treatment, where the effects may be negligible. The material should still be considered to be waste however and treated as such;

iii) The terms "rejected" and "abandoned" used in the Victorian definition of waste are consequences of matter being "unwanted". It is therefore not necessary to also include these former terms in the definition;

iv) The definition incorporates matter diverted for reuse, recycling and recovery as well as matter discharged into the environment.

[16]Radiation Protection Act 1965; New Zealand Nuclear Free Zone, Disarmament, and Arms Control Act 1987; Resource Management Amendment Act 1994; Maritime Transport Act 1994.

1.3 CONSTITUENTS OF THE WASTE STREAM

The absence of clear definitions relating to waste of all categories makes it difficult to give exact figures as to how much waste is produced in New Zealand. Work is being undertaken by the Ministry for the Environment, some local authorities and other organisations to collect quantitative data on waste streams. This analysis uses the 'Waste Analysis Protocol'[17] as collecting data on waste streams is obviously fundamental in order to determine appropriate steps to manage New Zealand's waste.

As a result of the lack of base data, there is a great disparity between estimates of solid waste produced. It is telling that no figure is given in any of the national policy documents relating to waste, despite the issue of solid waste being addressed directly since at least the 1970s and the Government adopting the current waste policy in August 1992.

It has been estimated from studies in Auckland that domestic solid waste constitutes a major part of New Zealand's solid waste stream (49%)[18]. This figure can be compared to percentages for industrial waste (28%) and commercial waste (23%).

The most common domestic solid waste figure given is that of 3.5 million tonnes per annum[19], although it is unclear from its subsequent usage whether this figure relates to waste produced or to waste landfilled, thereby ignoring waste that is reprocessed and underestimating

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[17]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

[18]Tong & Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

[19]This figure is derived from the Health Department landfill surveys and used in:

i. Northland Regional Council, Draft Regional Waste Management Plan. Northland Regional Council, November 1990. N.B. No waste figures were carried through into the Plan.

ii. Wane J, "Where Will All Our Rubbish Go?" Listener and TV Times. 29 June 1992.

iii. "Where There's Muck There's Brass" Metro. December 1992.

the actual amount of waste produced. In contrast, a figure of 2.2 million tonnes can also be derived from various estimates[20].

The constitution of domestic solid waste is also uncertain, although figures derived from a study of domestic waste created in the Auckland area[21] are as follows (by volume):

Table 1: **DOMESTIC WASTE PROPORTIONS**

MATERIAL	PROPORTIONS (%)
Kitchen Waste	40
Paper non-packaging	20
Packaging:	40
- Glass	25
- Paper/Plastic Film	24
- Cardboard	20
- Plastic Container	19
- Steel	12

These figures may not reflect the situation in the rest of the country as results from local authorities using the 'Waste Analysis Protocol' are beginning to demonstrate[22]. However, they provide an indication of the constitution of domestic solid waste.

No similar proportions exist for commercial or industrial waste. Consistent data are required for these and other waste streams. Waste policies and management decisions can then focus on those areas which have the greatest risk and/or impact on the environment. This focus is

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[20]i. Ministry for the Environment, Packaging in the New Zealand Environment: Issues and Options - a Discussion Paper. Wellington: Ministry for the Environment, November 1987.

ii. Auckland Regional Council, Effective Waste Management in the Auckland Region. Auckland: Auckland Regional Council, updated August 1992.

iii. Manawatu - Wanganui Regional Council, Solid Waste and Hazardous Substances Management. Palmerston North: Manawatu - Wanganui Regional Council, 1992.
(Manawatu - Wanganui Regional Council. Draft Regional Policy Statement. Working Paper No. 16)
N. B. No waste figures were carried through into the Policy Statement.

[21]Tong & Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

[22]Agriculture New Zealand, Analysis of Christchurch City Waste. Christchurch: Christchurch City Council, May-June 1994.

not necessarily occurring at present. For example, the largest proportion of the total waste stream in the Netherlands is created by the building sector (22%)[23]. This figure is likely to be similar in New Zealand given the similarity in the bases of the two economies. Despite this, no attention is being given to this area.

Current estimates of recycling rates in New Zealand have been given by the packaging industry, although it is not clear from the context in which they have been used what forms of recycling have been taken into account. The recycling rates given are as follows[24]:

Table 2: **RECYCLING RATES IN NEW ZEALAND**

MATERIAL	RECYCLING RATES (%)
Glass	37
Paper	37
Aluminium	46
Steel	15
Plastics	14

Information given in Section 1.3 highlights the lack of consistent data which exists about solid waste. Data on the constitution and quantities of waste streams is essential in order to determine which waste streams or elements of waste streams have the highest risk and/or impact. In some cases, information exists but is held by a number of organisations. This information needs to be assembled so that studies do not duplicate work that has already been done.

Before comprehensive data collection can be undertaken in New Zealand, waste needs to be defined and categories of waste clearly specified so that materials are not double-counted or overlooked. Consistent methodologies also need to be used for gathering waste data, such as the 'Waste Analysis Protocol'[25] for commercial waste delivered to landfills.

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[23] Adriaanse Dr A, Environmental Policy Performance Indicators. S-Gravenhage: Sdn Uitgeverij Koninginnegracht, April 1993.

[24] i. "Plastics Manufacturers try to Clean Up Their Own Industry" National Business Review. 7 May 1993;
ii. "Rinse and Recycle" Recycle Today. March/April 1994;
iii. "Who's Got the Best Waste Management Solution?" Warburton Dr D, Waste Observer. May 1993.

[25] Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

CHAPTER 2 - METHODOLOGY

2.1 LITERATURE REVIEW

A literature review was carried out to study the background, theory and rationale underpinning the application of various instruments used to manage waste. Reports and other literature relating to operations of various parties involved in waste policy decisions in New Zealand and overseas were also reviewed. These included:

i) Central government reports;

ii) Regional and local government reports, plans etc.;

iii) Industry reports and plans;

iv) Legislation;

v) Organisation of Economic Cooperation and Development (OECD) reports and papers;

vi) Overseas government reports;

vii) National and international journals.

2.2 DISCUSSION GROUPS

The objectives of conducting the discussion groups were to identify attitudes and behaviour of householders relating to packaging and packaging waste in New Zealand and to identify issues to be investigated in a subsequent postal survey of householders.

The rationale for choosing packaging and packaging waste as the topic for the discussion groups was based on a number of factors:

i) A literature review had highlighted the attention given to packaging issues by central government;

ii) The majority of instruments in use or suggested for use in New Zealand focus on packaging;

iii) Packaging has been given as making up 40% of domestic waste[1];

iv) Packaging has a high profile owing to its use in marketing products and the profile of recycling schemes which collect predominantly packaging materials;

v) It was perceived that the public considered packaging to be one of the elements in the waste stream causing the biggest problems.

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[1]Tong & Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

Three discussion groups were conducted between 18 April and 6 May 1993. Group 1 had nine participants, Group 2 had ten, and Group 3 had seven. Group 1 consisted of young mothers with pre-school children, Group 2 was made up of mothers with teenage families and Group 3 consisted of retired people with a similar number of male and female participants.

Discussion Group 1 was held in a private home in Takapuna, Auckland on 6 May 1993. The second Group was held in a private home in Palmerston North on 18 April 1993. Discussion Group 3 was held at participants' club rooms in Palmerston North on 27 April 1993.

The groups were moderated by the author and were tape recorded with the full knowledge of the participants. They were later transcribed to assist in the compilation of results. Each group lasted for approximately 60-90 minutes.

2.3 POSTAL SURVEY

The objective of the survey was to identify attitudes and behaviour of householders relating to packaging and packaging waste in New Zealand.

The rationale for choosing packaging and packaging waste as the topic for the survey was the same as that of the discussion groups which had confirmed that packaging was considered to be one of the elements in the waste stream causing the biggest problems.

1000 households were chosen using a systematic random selection process from listings in the New Zealand telephone book. 550 responses were received. This represented a 55% response rate.

The survey was addressed to "The Householder" and was completed by any member of the household aged 18 and over. Reminders and another copy of the survey were sent to those who had not responded within three weeks of the first survey being sent.

Surveys were sent on 4 October 1993. Reminder letters and another copy of the survey were sent on 28 October 1993.

2.4 INTERVIEWS

A series of interviews were conducted with various players involved in waste policy decisions in New Zealand to discuss their perceptions of roles of themselves and other players in waste management, and the development of waste management over the past 15 years. A list of those interviewed is set out below:

(i) Ministry for the Environment staff, 1993-1994.

(ii) Dr Margaret Bailey, Principal Analyst, Ministry for the Environment, 25 August 1994.

(iii) Ellen Blake, Policy Analyst, Ministry for the Environment, May 1994.

(iv) Dave Brash, Manager, Ministry for the Environment, 15 June 1994.

(v) Bruce Chapman, Senior Policy Analyst, Ministry for the Environment, 6 July 1994.

(vi) Paddy Gresham, Manager, Ministry for the Environment, 25 March 1993.

(vii) David Bentham, Refuse and Recycling Officer, North Shore City Council, 2 December 1992.

(viii) Jan Cotterall-Fisher, Programme Co-ordinator Waste Management, Auckland Regional Council, 7 December 1992.

(ix) Angela McErlane, Environmental Promotions Officer, Dunedin City Council, 31 May 1994.

(x) Tony Miguel, Public Health Service Manager, Waitakere City Council, July and December 1992.

(xi) Roger Mills, Manager Special Projects, Auckland City Council, December 1992.

(xii) Ken Mulholland, Manager Customer Services Department, Wellington City Council, 25 March 1993.

(xiii) Peter Bierens, Operations Manager, Northern Disposal Systems, 7 December 1992.

(xiv) Don Armstrong, Environmental Officer, BHP New Zealand Steel, 8 December 1992.

(xv) Michael Baines, Executive Officer, Retail Association, 25 March 1993.

(xvi) Mervin Bennett, General Manager for Marketing and Recycling, Comalco, 4 May 1993.

(xvii) Ian Lockey, Manager Recycled Fibre, NZFP Pulp and Paper, 11 December 1992.

(xviii) Chris Pynenburg, Manager Environmental Affairs, Tetrapak, 5 May 1993.

(xix) Vinko Rakich, Financial Controller, Edwards Enterprises Ltd, 3 March 1993.

(xx) Steve Sutherland, Product Manager - Leisure Beverages, NZ Dairy Foods Ltd, 30 April 1993.

(xxi) David Warburton, Executive Director, Packaging Industry Advisory Council, 14 December 1992.

(xxii) John Webber, Manager Environmental Affairs, ACI New Zealand Glass Manufacturers, 11 December 1992.

2.5 WORK EXPERIENCE

Information for this thesis was also drawn from work experience in central and local government and a private consultancy firm. A total of 8 months was spent working as a Policy Analyst in the Hazards and Waste Policy Directorate of the Ministry for the Environment between May 1993 and June 1994. Much of the work related to cleaner production although issues such as packaging and battery recycling were also handled. This time was followed by a six week contract with the Wellington City Council establishing a Cleaner Production Programme and a two week contract with the Taranaki Regional Council writing a report about domestic solid waste composition in New Plymouth District. Six months' experience has also been gained as a Resource Management Planner with a private engineering consultancy.

This range of experience allowed a more in-depth investigation and discussion of issues than would have been possible by merely relying on published reports, interviews and the like.

2.6 JUSTIFICATION OF A QUALITATIVE APPROACH

A primarily qualitative approach is employed in this thesis to critique the policies and instruments used to manage solid waste in New Zealand. This approach is more relevant to the assessment of social agendas than a purely quantitative methodology[2] owing to[3]:

i) The interconnectedness of roles;

ii) The interconnectedness of decisions relating to waste policy;

iii) The importance of relationships between the parties;

iv) The political nature of the situation.

Policy decisions and examinations of their effectiveness must, however, have reliable quantifiable information as a base. As this thesis will display there is a significant lack of data relating to quantity and composition of New Zealand's waste stream; costs of waste treatment and disposal currently do not reflect their true costs in many parts of the country; and costs of some projects are absorbed into larger programmes making it difficult to assess their value.

A quantification of the costs and benefits of New Zealand's waste policy and an evaluation of its financial efficiency is therefore hindered. A quantitative approach can however help describe the framework within which decisions are made and can support other performance measurements of the Government's waste policy.

Interconnectedness of Roles

The Government's waste policy provides a broad framework in which the affected parties - central government, local government, industry, and the public - must operate. Owing to the skeletal nature of the framework, it is relevant to examine the roles each party sees itself performing. This is one measure of the effectiveness of the Government's waste policy as duplication of tasks and/or lack of implementation of various elements of the waste policy reflects an inefficient use of resources and a failure to achieve desired outcomes.

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[2]Guba EG and Lincoln YS, Effective Evaluation. San Fransisco: Jossey-Bass Publishers, 1981.

[3]Cronbach JL & Associates, Towards Reform of Program Evaluation. San Fransisco: Jossey-Bass Publishers, 1980.

Interconnectedness of Waste Policy Decisions

Decisions relating to social policy are necessarily inter-related. Any policy must be achieved by utilising various methods, sometimes in combination with one another. The effect of these methods cannot be viewed in isolation, nor can they be viewed only in a quantitative manner. Policies will incorporate sometimes conflicting values reflecting parties' beliefs, bias and self-interest, and a degree of uncertainty as to the effects of employing certain policies, the appropriate path to follow to achieve a better outcome and, in some cases, the desired outcome itself. These conflicts and uncertainties need to be explored in order to fully understand the significance of policy decisions.

Importance of Relationships

In the area of waste policy, as with many other issues, the Government is pursuing a cooperative approach with industry to achieve mutually desired outcomes. As a result, personal relationships between individuals are significant. This is especially so in a small country such as New Zealand where individuals often know each other in both a personal and professional capacity.

Interviewing players and drawing on work experience with players is crucial in order to determine these relationships. It also enables one to concentrate on the claims, concerns and issues raised by each group that may not be expressed in a public setting[4].

Political Nature of Situation

Waste policy decisions are often made in a political climate where quantitative factors will not be the only considerations. Public opinions and the degree of political risk will also generally be considered[4]. Quantitative assessment of roles individuals play and official goals of various parties is therefore not sufficient. To explore these relationships and the effects they have on parties' roles and indeed, on policy itself, a qualitative approach is also needed[5].

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[4]Guba EG and Lincoln YS, Effective Evaluation. San Fransisco: Jossey-Bass Publishers, 1981.

[5]Chen H, Theory-Driven Evaluations. Newbury Park: Sage Publications, 1990.

PART I - WASTE POLICY FRAMEWORK

Part I of this thesis sets out the Government's waste policy and the environment in which policy decisions are made. This environment includes the legislative framework, previous and current work carried out in waste policy development as well as parties' perceptions of their roles and responsibilities, all of which influence each other to varying degrees.

Goals and objectives of the waste policy have been set by Government (albeit deficiently) so that some direction has been given as to the desired direction for action. Despite this, the implementation phase of the waste policy has not been accorded sufficient importance by the parties involved in waste policy decisions for their actions to work towards the achievement of these goals and objectives.

Part I therefore looks at the current waste policy environment in order to identify areas where the policy environment fails to provide the necessary framework and areas where waste policy implementation could be occurring more effectively.

CHAPTER 3 - WASTE POLICY ENVIRONMENT

3.1 SCOPE OF CURRENT WASTE POLICY

The waste policy impinges on solid waste, including hazardous solid waste. Other waste types are regulated by a number of pieces of legislation and policies although it is unclear whether, at a policy level, agricultural waste is intended to be covered by the current waste policy.

Hazardous waste

The current waste policy arose out of the hazardous waste policy set out in 1985 and agreed to by the Government in 1987[1] and now incorporates both hazardous and non-hazardous wastes. However, owing to their nature, hazardous wastes are subject to a number of stricter controls regarding use, treatment and disposal than non-hazardous wastes. These include the consent procedure and District and Regional Policies and Plans under the Resource Management Act 1991. Hazardous wastes are also currently controlled by a wide range of legislation such as the Pesticides Act, Toxic Substances Act, Dangerous Goods Act which will be brought together in the Hazardous Substances and New Organisms Bill, and by agreements such as the Basel Convention which New Zealand ratified in 1994[2].

Implementing instruments often involve a command and control approach due to the level of risk and the irreversible nature of environmental damage. As such, the translation of policy into action has already been made by controlling agencies in some cases. Changes suggested to the Government's waste policy in Chapter 4.2 would allow policy to be implemented in other areas of hazardous waste management as well.

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[1]Bailey Dr Margaret, Principal Analyst, Hazards and Waste Policy Directorate, Ministry for the Environment, pers. comm. 25 August 1994.

[2]The Import Control (Wastes) Conditional Prohibition Order 1994 which entered into force on 28 February 1995.

Agricultural waste

As stated, it is unclear whether agricultural waste is intended to be covered by the Government's waste policy. Agricultural waste is not controlled by other Governmnet waste policies and is being considered in the current financial year by the Ministry for the Environment cleaner production work programme[3]. Certainly some of the objectives of the current waste policy are relevant to the management of agricultural wastes, especially those of securing the economic advantage of New Zealand's green image and minimising resource use. This latter objective may be better achieved through a concept such as Total Quality Management (TQM) rather than through the waste hierarchy.

The uncertainty regarding the scope of the current waste policy should be removed in order for agricultural wastes to be controlled in a consistent and effective manner. It would be more appropriate to deal with agricultural waste as a separate policy area as, although issues and objectives relating to agricultural waste will be similar to those contained in the Government's waste policy, a different set of implementation instruments will be needed to achieve the objectives.

3.2 LEGISLATIVE FRAMEWORK

3.2.1 GENERAL OVERVIEW

The framework of solid waste management is primarily affected by the Resource Management Act 1991 and the Local Government Act 1974. The enactment of the Resource Management Act 1991 significantly altered the focus of waste management decisions by establishing the philosophy of using natural and physical resources in a sustainable manner. The Act also focuses on the effects of activities and processes on the environment, with an objective of "avoiding, remedying, or mitigating" those effects. Waste treatment and disposal is now controlled by the consent process under the Act, giving consent authorities the ability to regulate aspects of operations. The Act also establishes a range of offences which extends liability from those contained in previous legislation.

[3]Brash Dave, Manager, Hazards and Waste Policy Directorate, Ministry for the Environment, pers. comm. 15 June 1994.

The Act does not refer to waste management specifically. The terms "waste", "waste management" and so on are not defined, instead controlling waste through the objective of "avoiding, remedying or mitigating effects" of activities[4], the land use and discharge consent procedure, and by using the term "contaminants"[5].

The Local Government Act 1974 sets out the functions and organisational and procedural structures of territorial authorities. Functions given to territorial authorities include those of refuse collection and disposal, trade waste, and sewage and stormwater drainage[6].

Statutory duties relating to waste management for the three tiers of government are outlined briefly below. These do not differ significantly from roles undertaken prior to the law reform, except for the Resource Management Act obligation to prepare policies and plans.

3.2.2 TERRITORIAL AUTHORITIES

Local Government Act 1974

Part XXXI of the Act empowers territorial authorities to collect, treat and dispose of "refuse". This includes operating recycling schemes and landfills as well as composting and incineration facilities and so on[7]. It should be noted that this is not a mandatory requirement.

Territorial authorities are also empowered to make bylaws regulating all stages of the waste management operation and prescribing charges to be paid in respect of recycling and refuse disposal[8].

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[4]s.5 Resource Management Act 1991.

[5]s.15 Resource Management Act 1991.

[6]Parts XXXI, XXVIII, & XXVI Local Government Act 1974 respectively.

[7]This is clarified in cl.539 Local Government Law Reform Bill.

[8]ss. 544, 684 Local Government Act 1974.

Health Act 1956

Part II of the Act places a duty on territorial authorities to promote public health in its district. This includes specific provision for solid waste management (see ss.23,25,28). Territorial authorities are also required to provide "sanitary works" which includes works for the collection and disposal of refuse. The Ministry of Health has an overview role to ensure that territorial authorities fulfil these duties.

Resource Management Act 1991

This Act gives territorial authorities the ability to establish and operate landfills, with regional councils having control over waste disposal practices as they relate to leachate control and other discharges. Operators of all landfills must have applied for resource consents by 1 April 1995[9].

Solid waste is generally managed by a District Plan which is required to state the significant resource management issues of the district and to set out objectives and methods by which the issue will be dealt with[10]. This approach is in line with the functions of territorial authorities which is to achieve integrated management of the effects of the use of land in their districts[11].

Express permission is given for territorial authorities to impose charges and other financial incentives to achieve solid waste management where this is appropriate[12].

3.2.3 REGIONAL COUNCILS

Resource Management Act 1991

Under this Act, regional councils are charged with granting water and discharge permits. As previously stated, this allows them to have some control over waste disposal operations of territorial authorities and private operators.

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[9]cl.2(1) Resource Management (Transitional Provisions) Regulations 1994.

[10]s.75(1) and cl.6 Second Schedule Resource Management Act 1991.

[11]s.31 Resource Management Act 1991.

[12]s. 32(1) Resource Management Act 1991.

Although this is the only specific legislative function given to regional councils in the area of solid waste, they are given broad authority to achieve integrated management of resources in their region and to be involved with land use where this is of regional significance[12]. One way in which to achieve this is by including waste management policies in a Regional Policy Statement.

Regional councils are not referred to as a major party involved in waste policy decisions as they are not generally involved in using implementation instruments to achieve waste policy objectives, other than those stated above.

3.2.4 CENTRAL GOVERNMENT

Health Act 1956

Among the principal functions given to the Ministry of Health are those of advising local authorities, carrying out research and publishing reports on matters of public health[13]. In relation to solid waste, this was achieved by conducting 5-yearly surveys on landfills. These received some criticism over the methodology and the lack of consistency in reports made by landfill engineers. They were also primarily concerned with engineering matters, rating landfills according to the suitability of each site for solid waste disposal and the standard of the landfill operation. The last completed and published grading was carried out in 1982 and the surveys were formally abandoned in 1991 with the enactment of the Resource Management Act 1991. This Act passed the responsibility of managing landfills entirely to territorial authorities. The Ministry of Health is currently reviewing the grading surveys and plans to produce guidelines concerning health and broad engineering aspects of landfills in 1995[14].

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[12]s.30(a)&(b) Resource Management Act 1991.

[13]s.7(b),(d),(e) Health Act 1956.

[14]Prendergast Paul, Senior Advisor, Public Health Regulatory Services, Department of Health, pers. comm. 12 December 1994.

The Ministry for the Environment is planning to undertake surveys of landfills in the 1994-1995 financial year similar to the Ministry of Health surveys to measure landfills against the criteria contained in the 'Landfill Guidelines'[15]. The Ministry of Health may be involved, however details of these surveys have not yet been determined[16].

Resource Management Act 1991

By enacting this legislation, the Government has made it clear that they see the primary responsibility for solid waste management, particularly waste collection and disposal, falling on territorial authorities. The Government is able to direct strategies through its waste policy and work undertaken by the Ministry for the Environment. The Government is also able to issue a National Policy Statement looking at waste, although it is unlikely to do this at least for some time given current priorities.

The Government can prescribe regulations establishing national environmental standards and methods by which to achieve these standards[17]. Regulations could be used to control treatment and disposal methods for classes of waste and so on.

Environment Act 1986

The Environment Act 1986 established the Ministry for the Environment. The Ministry has been identified by Cabinet as the lead agency for waste policy at a national level. The Ministry is a policy unit, distinguishing it from government agencies which also have operational aspects. It has been established[18] to provide advice to government, its agencies and other public authorities on, among other things:

i) Pollution control and the co-ordination of the management of pollutants in the environment;

ii) The control of hazardous substances.

Pollution is defined as any process resulting in the introduction of any contaminants into the environment. A contaminant includes gaseous, liquid or solid waste.

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[15]Ministry for the Environment, Landfill Guidelines. Wellington: Ministry for the Environment, November 1992.

[16]Brash David, Manager, Hazards and Waste Policy Directorate, Ministry for the Environment, pers. comm. 15 June 1994.

[17]s.43 Resource Management Act 1991.

[18]s.31 Environment Act 1986.

The Ministry therefore helps develop the waste policy framework within which decisions are made. Some work is also carried out developing and evaluating implementation instruments.

3.2.5 RELATED LEGISLATION

As well as these Acts, a number of other pieces of legislation impinge on aspects of waste policy and management. These include quality controls, controls on advertising claims and controls to protect human health. A brief overview of some of this legislation is given below.

i) **Litter Act 1979** makes it illegal to litter in a public place. An individual may be fined $500 and a body corporate $2,000. The Act allows territorial authorities to appoint a litter control officer, issue infringement notices and control litter through bylaws. The Act also recognises Keep New Zealand Beautiful Incorporated (KNZB) as the agency responsible for the promotion of litter control in New Zealand. The KNZB programme is outlined in Chapter 7.1.

ii) **Fair Trading Act 1986** controls misleading and deceptive conduct, false representations and unfair practices and consumer information standards. The Act affects claims made about products and packaging, as well as claims about commercial waste service operations.

iii) **Medicine Act 1981** regulates the type of containers and packages which can be used to contain medicines. The Act affects the ability to use materials such as recycled plastic in containers.

iv) **Dangerous Goods Act 1974** licences the packing, marking, handling, carriage, storage and use of dangerous goods.

v) **Toxic Substances Act 1979** establishes a Toxic Substances Board which recommends policies and regulation relating to the import, manufacture, labelling, sale, disposal and general handling of toxic substances.

These last two Acts are likely to be repealed or amended by the Hazardous Substances and New Organisms Bill. The purpose of the Bill is to reduce risks from hazardous substances and new organisms in order to protect people and the environment by ensuring a consistent approach by a single authority[20].

3.3 DEVELOPMENT OF THE CURRENT WASTE POLICY

Much of the background to the current waste policy was undertaken as part of the hazardous wastes programme. Non-hazardous wastes were not considered separately at a policy level until 1990 although a series of discussions and reports on solid waste was undertaken from the mid-1970s onwards. These commenced by focussing on packaging[21] before generally moving on to broader waste issues.

The packaging debate culminated in the report 'Packaging and the New Zealand Environment - Critical Aspects of Resource Use and Waste Management'[22]. This report looked at the issues involved in packaging and further, set out a plan of action for the sectors involved in packaging, ie. central government, regional and territorial authorities, the packaging industry, community groups and the general public.

The report led the Labour Government to adopt a number of measures in 1990 which focussed on the reduction of the amount of household waste being disposed of in landfills. The primary measure was the call by the Associate Minister for the Environment, Peter Dunne, for a 20% target in the reduction in waste from 1988 levels by 1993. It is doubtful that this target was ever seriously considered as it was mooted just before the 1990 election and was not supported by suggested instruments for achieving the target.

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[20]Ministry for the Environment, The Hazardous Substances & New Organisms Law Reform (information sheet). Wellington: Ministry for the Environment, April 1994.

[21]For example:

i. Department of Trade & Industry, Beverage Containers - Possibilities for Re-use & Recycling. Wellington: Department of Trade & Industry, 1976.

ii. Department of Internal Affairs, The 1.25 litre-No Deposit Soft Drink Bottle. Wellington: Department of Internal Affairs, 1977.

[22]Denne T and others, Packaging and the New Zealand Environment - Critical Aspects of Resource Use and Waste Management. Wellington: Ministry for the Environment, October 1989.

Although the target was never adopted by the National government after the election in 1990, it was referred to on various occasions. Industry initiatives such as the New Zealand Milk Corporation's "Return All Plastics" (RAP) scheme and Carter Holt Harvey's plastic recycling operation were taken[23] to avoid regulation which the industries thought would follow. The target was subsequently formally abandoned as there is insufficient baseline data to measure the reduction.

A 'Waste Reduction Strategy'[24] was produced shortly after the call for a 20% waste reduction target in August 1990 although it had grown primarily out of issues identified in the hazardous waste area by the Hazardous Waste Task Group. The Strategy promoted the waste hierarchy, set out the roles of the parties involved in waste policy decisions and promoted the establishment of kerbside recycling schemes by territorial authorities across the country. Much of the Strategy merely formalised the existing roles of parties, taking into account most of the resource management and local government legislative reforms occurring at this time.

Roles have remained similar despite a change in Government, enactment of the Resource Management Act 1991 and the adoption of the current waste policy in August 1992. The biggest change has come about as a result of the policy and plan regime in the Resource Management Act 1991. Territorial authorities are required to prepare district and annual plans setting out proposed waste management strategies and practices. Regional councils can influence these plans by incorporating waste policies into Regional Policy Statements and Plans.

Central government's role was viewed in the 'Waste Reduction Strategy' as to be that of providing the framework in which local authorities were to operate. This was to be achieved through legislation, development of standards and codes of practice, the

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[23]Cole Jenny, New Zealand Milk Corporation, "Return All Plastics' Programme" (speech). Waste Management Institute Conference, 1990;
Lockey Ian, Manager Recycled Fibre, NZFP Pulp and Paper, pers. comm. 11 December 1992.

[24]Ministry for the Environment, Waste Reduction Strategy. Wellington: Ministry for the Environment, August 1990.

establishment of a clearing house for information in the Ministry for the Environment, and a Waste Management Task Group (taking over from the work of the Hazardous Waste Task Group). The Government also looked at establishing a National Recycling Trust but this proposal was not developed owing to the change in Government a few months later.

Most responsibility for waste management fell on regional and territorial government. Regional councils were required to prepare waste management plans, while territorial authorities were responsible for the collection of waste and the control of waste management facilities such as recycling plants and landfills.

Alongside the adoption of the strategy, the Centre for Advanced Engineering chose waste management as its major project for 1991. A Steering Committee was established with members from various areas of the waste management field. Four Task Groups were set up to undertake the work in January 1991 which had as their areas of concern - waste minimisation, hazardous waste technologies, landfill engineering guidelines and waste management in relation to water supplies. The topics were chosen as they were seen as areas that had not previously received adequate attention in New Zealand.

The work of the project was presented in a report 'Our Waste: Our Responsibility'[25] and has been described as the most significant study looking at the management of waste in New Zealand[26]. Some aspects of the report relating to waste minimisation will be discussed in Chapter 10.

A number of publications were also produced discussing the future of waste management in New Zealand[27]. A discussion document regarding waste and its production and control was produced and submissions received, the discussion document highlighting gaps and inconsistencies in responsibilities of parties involved in waste policy decisions.

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[25]Centre for Advanced Engineering, Our Waste: Our Responsibility. University of Canterbury: Centre for Advanced Engineering, December 1992.

[26]Bailey Dr ML, "Cleaner Production Initiatives" Waste Observer. August 1992.

[27]i. Bailey Dr ML, Producing Less Waste. Wellington: Ministry for the Environment, May 1991;
ii. Ministry for the Environment, Directions for Better Waste Management in New Zealand - a Discussion Paper. Wellington: Ministry for the Environment, December 1991;
iii. Ministry for the Environment, Directions for Better Waste Management in New Zealand - Summary of Submissions. Wellington: Ministry for the Environment, March 1992.

By this stage, the focus had largely moved from packaging to the broader context of waste management. This change in focus was due, in part, to the existence of household waste data which demonstrated that packaging made up only a small part of waste being disposed of at landfills and to a change in emphasis on the problem being addressed. Up to this time, the problem was seen primarily as being that of limited landfill space, requiring waste to be minimised and placing emphasis on diverting materials from landfill. Packaging had a high profile as it makes up a large proportion of material reused and recycled by households.

More recently waste has been viewed as a misplaced resource, largely because of the economic climate of the late 1980s-early 1990s. It therefore became relevant to examine all wastes for their potential economic value. These concepts have been carried through into the current waste policy, adopted in August 1990.

The Resource Management Act 1991 changed the emphasis of environmental management to that of "effects". The Act took the spotlight off packaging, placing it instead on materials such as hazardous wastes that had tended to be insufficiently controlled in some areas. The principle of sustainable management is also being increasingly accepted with the enactment of the Resource Management Act 1991 and international moves such as 'Agenda 21'[28].

The themes of sustainability, ensuring the wise use of resources and focusing policy on those areas with the largest risk and/or impact on the environment have been carried through into the Government's 'Environment 2010 Strategy'[29] where broad goals, issues, risks and actions are identified for the next fifteen years. In the area of waste the Government's waste policy is reiterated and an overview of the current work plan of the Ministry for the Environment and existing implementation instruments is given.

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[28]United Nations Conference on Environment and Development, Rio de Janiero, June 1992.

[29]New Zealand Government, Environment 2010 - A Statement of the Government's Strategy on the Environment. Wellington: Ministry for the Environment, October 1994.

3.4 CURRENT WASTE POLICY WORK OF THE MINISTRY FOR THE ENVIRONMENT

The 1991 discussion document 'Directions for Better Waste Management in New Zealand'[30]and comments received[31] formed the basis of the current waste policy which was adopted in August 1992. The Ministry for the Environment is the lead agency at central government level.

The Ministry, in conjunction with the Ministry of Commerce, has been directed to negotiate waste reduction targets with business sectors. Targets will encourage sectors to reduce the amount of waste produced and to recover as much waste as is viable for reuse and recycling. Background work has been done studying targets and processes used overseas for reducing packaging waste. Discussions are currently underway with the plastics industry. Work with other packaging sector groups may follow. The Ministry has also worked with the oil industry to establish a national collection system for used oil.

The Ministry has been instructed to investigate regulatory and economic instruments in the event that voluntary initiatives fail to sufficiently internalise the costs of waste. Only a small amount of work on these mechanisms has been carried out.

The Ministry has developed a national system for collecting information on the waste stream, known as the 'Waste Analysis Protocol' (WAP)[32]. The Protocol was released in December 1992. Corresponding computer database software is currently being developed. A national waste database is also planned in conjunction with the Department of Statistics. The Protocol currently deals with three types of waste although more sections can be added at any stage. These sections are i) Business waste, ii) Domestic waste, and iii) Waste measurement at a disposal facility.

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[30]Ministry for the Environment, Directions for Better Waste Management in New Zealand - a Discussion Paper. Wellington: Ministry for the Environment, December 1991.

[31]Ministry for the Environment, Directions for Better Waste Management in New Zealand - Summary of Submissions. Wellington: Ministry for the Environment, March 1992.

[32]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

National landfill guidelines for the siting, operation and aftercare have been developed based on the Centre for Advanced Engineering's work[33]. Surveys are planned for the current financial year to measure landfills against criteria contained in the Guidelines. The surveys will also enable the Ministry to determine the effect of the transitional provisions of the Resource Management Act 1991 requiring consents to be applied for for landfills by 1 April 1995[34].

As a follow-up to work done on waste minimisation practices in 'Our Waste: Our Responsibility', the Ministry established a Cleaner Production programme. The programme has resulted in the publication of 'Cleaner Production Guidelines'[35] which assists local authorities in establishing cleaner production projects with local businesses and documents a range of projects and successes. The cleaner production programme is critiqued in Chapter 10.

A handbook on the management of waste hazardous substances has also been produced for local authorities[36].

Work areas in the current financial year appear to concentrate on the environmental "bottom line", ie. standards, pollution emissions, and information for State of the Environment monitoring and reporting[37]. This is necessary to establish base-line data in order to understand the impacts of human activity on the environment and will enable the framework to be established within which policy decisions are made. However there is a danger that this will lead policies back to focussing on "end of pipe" solutions. This focus would be inappropriate given the philosophy of the Resource Management Act 1991 and the inclusion of the waste hierarchy in the Government's waste policy.

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[33]Ministry for the Environment, Landfill Guidelines. Wellington: Ministry for the Environment, November 1992.

[34]cl.2(1) Resource Management (Transitional Provisions) Regulations 1994.

[35]Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

[36]Ministry for the Environment, Hazardous Waste Management Handbook. Wellington: Ministry for the Environment, June 1994.

[37]Brash David, Manager, Hazards and Waste Policy Directorate, Ministry for the Environment, pers. comm. 15 June 1994.

CHAPTER 4 - CRITIQUE OF THE GOVERNMENT'S WASTE POLICY

4.1 CURRENT GOVERNMENT WASTE POLICY

The current waste policy was adopted by Government in August 1992. This policy is as follows[1]:

"1. To ensure that as far as practicable, New Zealand's waste generators meet the costs of the waste they produce, and

2. To encourage the implementation of the internationally recognised hierarchy of reduction, reuse, recycling, recovery and residual management by all involved in waste generation in New Zealand".

This chapter critiques the Government's waste policy in New Zealand. The two aspects of the policy are looked at in some detail as both are recognised to be useful components of waste policy. However they do not in themselves provide sufficient guidance as to the desired outcomes of the policy. The Government's waste policy is therefore developed further in this chapter in order to provide what is considered to be the necessary direction for those involved in waste policy decisions.

4.2 CRITIQUE OF THE CURRENT WASTE POLICY

4.2.1 GOALS AND OBJECTIVES

No goal is stated in the policy. In fact, the only explicit statement of the goal is given in an information paper publicising the policy where the goal is stated to be "to maximise net benefits to New Zealand"[1]. This is accepted as a desirable goal as it can incorporate sustainable management and equity issues.

Three objectives are then given in the information paper:

i) Promoting economic efficiency gains from reduced resource use through waste reduction, resource recovery, reuse and recycling;

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[1]Ministry for the Environment, "The Government Waste Policy and Ministry for the Environment Waste Work Programme August 1992". Waste Management Institute Newsletter. Issue 4, September 1992.

ii) Avoiding environmental and health risks created by increasing volumes of waste requiring disposal;

iii) Securing the economic advantage of New Zealand's green image.

These objectives clearly demonstrate the lack of development of the policy. The first objective refers to the internationally recognised waste hierarchy. This is an appropriate objective as it ensures the wise use of resources. However, in the information paper the waste hierarchy is stated in a different order to that contained in the policy itself and recognised around the world (a critique of the waste hierarchy is given in Chapter 4.4).

The only benefit recognised from reducing resource use is that of economic efficiency. This ignores benefits such as decreased impacts of human activities on the environment. Decreasing impacts on the environment is fundamental to the management of waste in New Zealand with the major piece of legislation controlling waste, the Resource Management Act 1991, being based on the principle of sustainable management.

The second objective makes the assumption that the volumes of waste requiring disposal in New Zealand is increasing. This is despite the fact that insufficient data exists on which to base this assumption. At the time that the policy was adopted, many local authorities had reported that volumes had actually decreased in the past few years, primarily owing to the down-turn in the economy[2].

It also infers that environmental and health risks are only associated with waste disposal. This inference obviously does not hold true, with risks being part of every stage of resource use including extraction of resources, processing and reprocessing of materials and the use of products.

The third objective again focuses on the economic aspects of the goal. Whilst this may be relevant to this particular objective, it highlights a narrow focus. This focus is inappropriate in the area of waste as many of the external costs and benefits are borne by the environment.

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[2]"Garbage on Rise Again" The New Zealand Herald. 9 March 1994; "What's Down There?" The New Zealand Herald. 27 November 1993.

The Government's waste policy incorporates only one aspect of the objectives set out in the information paper, that of the waste hierarchy. This will affect both the first and second of the objectives listed, as quantities of waste being disposed of will be kept to the minimum level practical, thereby decreasing the level of environmental and health risk.

One objective which is not stated but is sorely needed, is that of focussing action on areas of highest risk and/or impact by collecting reliable data on all types of waste. This objective is discussed in more detail below.

The goal and objectives of the waste policy should therefore be as follows:

The goal of the waste policy is to maximise net benefits to New Zealand by:

i) **Promoting the benefits of reduced resource use through the internationally recognised waste hierarchy of reduction, reuse, recycling, resource recovery, and residual disposal;**

ii) **Avoiding, remedying or mitigating the environmental and health risks associated with waste;**

iii) **Securing the economic advantage of New Zealand's green image;**

iv) **Ensuring policy and action is focused on areas of highest risk and/or impact through the collection of reliable data on all types of waste.**

This is used as the suggested policy basis for this thesis. As such, it accepts the principles within the current waste policy as being necessary elements, but develops the policy further to include specific goals and objectives.

4.2.2 IMPLEMENTATION INSTRUMENTS

The second aspect of the Government's waste policy is an adoption of the Polluter Pays Principle. The Principle is an implementation instrument rather than a goal or objective. Other instruments which can be drawn from surrounding documents are those relating to central government activities contained in the Ministry for the Environment's work plan, a voluntary approach for achieving waste reduction and the consents procedure in the Resource Management Act 1991 which regulates aspects of the treatment and disposal of waste.

All of these instruments are appropriate for implementing waste policy although they do not provide a complete picture of how the policy should be implemented. A critique of the Polluter Pays Principle is given in section 4.3. Generally, it is an appropriate method for bearing costs of waste production although other social factors may well need to be taken into account to ensure everyone has the ability to pay. The actions in the Ministry for the Environment's work plan have been discussed in Chapter 3.4.

A voluntary approach to waste reduction is appropriate in a small country such as New Zealand where there are few key players and most know each other on a professional and personal basis. A command and control approach does not find favour in New Zealand and a less regulated approach is used in most policy areas.

The consent procedure in the Resource Management Act 1991 involves a well developed set of criteria for ensuring the effects of activities are acceptable. The consent procedure relates primarily to waste treatment and disposal as the creation of waste can only be regulated to a very minor degree via conditions in consents.

4.2.3 NEED FOR DATA COLLECTION

Data about volumes, constituents and environmental effects of various wastes is severely lacking. Until this is collected, it is difficult to see how waste policy can effectively focus on areas where there is the greatest level of risk and/or impact on the environment. As with any issue, managing a problem is difficult, if not impossible, where the boundaries of the problem are not defined and the extent of the problem is not known. Trying to operate in this sort of environment means that decision makers are relying on their own bias and perceptions of where problems lie.

Agricultural waste is one area where effects may be being overlooked because of lack of data. Agricultural waste has been recognised as being one of the largest areas of waste and potential sources of water pollution[3]. Despite this little emphasis is being put into minimising waste and related pollution. Other areas where there is insufficient control may be those of building and demolition wastes and industrial wastes. Until more information is collected regarding waste types, it will be difficult to demonstrate whether this is indeed an area of need.

The components of commercial and industrial waste have not been determined. Significant resources have therefore been put into tackling domestic waste as more is known about this waste stream, without knowing if this is the most problematic area of the solid waste stream.

One result of the focus on domestic solid waste is that instruments are still focussing on packaging, despite some moves away from this at the end of the 1980s. For example, the New Zealand report to the United Nations in December 1991[4] singled out packaging as being the element in the domestic waste stream causing the largest problems and packaging is one of only two areas singled out by the Ministry for the Environment for waste reduction targets, with others as yet being unspecified.

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[3]Centre for Advanced Engineering, Our Waste: Our Responsibility. University of Canterbury: Centre for Advanced Engineering, December 1992.

[4]Ministry for the Environment, New Zealand's National Report to the United Nations Conference on Environment and Development: Forging the Links. Wellington: Ministry for the Environment, December 1991.

Packaging is said to make up approximately 40% of domestic solid waste (by volume)[5]. It has a high public profile due to its high visibility in litter[6] and its profile in recycling schemes. As a result packaging has, for many people, come to represent the epitome of our "throw away society".

This opinion ignores the fact that domestic waste makes up only approximately 40% of total solid waste (by volume)[7] and that packaging makes up only a proportion of commercial and industrial waste. Packaging therefore makes up a smaller proportion of the total solid waste stream.

4.2.4 CONCLUDING COMMENTS

In conclusion, the waste policy is deficient in many respects. The goal of the policy needs to be explicit and all objectives need to be catered for. A fourth objective of focussing on areas of highest risk and/or impact also needs to be incorporated in the policy.

Implementation instruments do not have a place in the waste policy. It is inappropriate to include one implementation instrument in the policy, confusing it with an objective. Instead, a comprehensive discussion of available instruments and their potential application should be set out alongside the policy. Roles and responsibilities should also be defined and clarified at this time.

Urgent action needs to be taken to collect reliable data on which policies can be based. Too much emphasis is being placed on packaging, domestic waste and landfills at the expense of potentially more serious problems for our environment and New Zealand's level of economic efficiency.

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[5]Tong & Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

[6]Packaging has been estimated to make up 70% of litter by piece count. Ministry for the Environment, Packaging and the New Zealand Environment: Issues and Options - a Discussion Paper. Wellington: Ministry for the Environment, November 1987.

[7]Tong & Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

4.3 THE POLLUTER PAYS PRINCIPLE

The Polluter Pays Principle is the first of two building blocks of the Government's waste policy. It is often referred to in New Zealand as the "generator pays" principle due to the perception that the former term implies that polluters have the right to pollute if they are able to compensate for the pollution.

There has also been an effort on the part of the Ministry for the Environment to distinguish pollutants from wastes[8]. The rationale for this is that wastes need not be pollutants, although they become so if not properly handled.

Formulated by the Organisation for Economic Co-operation and Development (OECD) in 1972[9], the Polluter Pays Principle is directed at allocating costs to the polluter or user of a resource in order to encourage the rational use of resources and avoid environmental externalities.

It therefore contains an efficiency requirement (internalisation of external effects), with an equity requirement (charging the cost to the responsible party). It draws on the concept of "pareto efficiency" of neoclassical economic theory.

The Principle states that the polluter should bear the expenses of preventing and controlling pollution decided upon by local authorities to ensure the environment is in an "acceptable state"[9]. If the Principle was applied thoroughly, it would involve all costs of pollution control including monitoring, administration, research and development of pollution technology and so forth. This is often unrealistic as a polluter's proportion of these costs cannot always be quantified.

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[8]Ministry for the Environment, Directions for Better Waste Management in New Zealand - a Discussion Paper. Wellington: Ministry for the Environment, December 1991.

[9]Organisation for Economic Cooperation and Development, Guiding Principles concerning the International Economic Aspects of Environmental Policies. Paris: Organisation for Economic Cooperation and Development, May 1972.

The only situations recognised by the OECD where the Polluter Pays Principle may not be appropriate[10] are those of transitional aid; where it would jeopardise social and economic policy objectives of developing countries; and where specific aid to promote research and development would not be inconsistent with the Polluter Pays Principle.

The Polluter Pays Principle can be applied through direct controls where the polluter meets the costs of complying with standards; economic instrument such as taxes, payments, subsidies, incentives, and charges; and pollution rights. It does not matter whether the polluter absorbs these costs or passes them on. If costs are passed on, the price of goods or services will give all levels of consumers information regarding the goods or services' environmental effects.

The polluter is anyone whose production or consumption of goods or services results in pollution. In practice, the Principle is often targeted at the party who has the ability to abate the pollution the most. This may not be the original polluter. By placing costs too far away from the point where decisions are made about environmental effects of goods or services, there is no incentive to alter behaviour.

It is more effective to make polluters pay for pollution prevention rather than for damage after it has been caused. Some effects of pollution are irreversible and assessment of damage can be difficult due to the long-term nature of effects, lack of knowledge about effects and the accumulative nature of pollution on the environment. Resources are also conserved and activities are more efficient.

The Polluter Pays Principle has found favour in most OECD countries where direct control and economic instruments are being used to control the production and treatment of waste. The similar "user pays" principle is also being used in New Zealand as an efficiency instrument in other policy areas such as health and education.

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[10]Organisation of Economic Cooperation and Development, The Polluter Pays Principle. Paris: Organisation of Economic Cooperation and Development, 1975.

Application to New Zealand

In the area of waste in New Zealand, the Polluter Pays Principle has not been sufficiently implemented. Charges for discharges to the environment in the processing and manufacturing of products are artificially low. A large proportion of solid waste collection and disposal costs are financed through rates. Charges included in rates are flat fees and do not depend on the quantity of waste that a household creates. Marginal costs for householders of increasing the amount of waste created is therefore practically zero.

Local authorities are increasingly charging for disposal of waste at landfills and in trade waste systems. Charges are presently too low to cover the social cost of waste treatment and disposal in almost all areas of the country. Individuals and businesses therefore have little incentive to decrease the amount of waste they create and too much waste is created as a result.

The divergence between private and social cost must be removed in order to achieve an efficient resource allocation where an appropriate level of waste minimisation, reuse, recycling and resource recovery occurs. This is reflected in the second aspect of the Government's waste policy.

Social costs of creating and disposing of waste differ from private costs because there are many elements of environmental services which are unpriced. As such they are not accounted for in market decisions. Because the environment provides free goods, market failure occurs. This failure takes the form of inefficient resource allocation which in turn results in environmental degradation.

Social costs associated with the creation and disposal of waste are numerous and varied in form. These include transportation and labour costs and costs associated with operating and eventually closing a landfill.

As well as these service costs which are partly accounted for, there are external environmental costs relating to odour and contamination of air, land and water which are not generally valued at all by the market. Mitigation costs are then borne entirely by local authorities/ratepayers and the residual effects are borne by the environment.

Not all waste is properly disposed of and there is a resulting decrease in aesthetic pleasure and increase in the effects on ecosystems from littering. Aesthetic costs include odour and the visual impact of the litter while the effects on ecosystems are influenced by how quickly the litter will bio-degrade and the damage that its components will have on the receiving environment.

Other costs include environmental damage caused by the extraction and processing of raw materials, health effects caused by pollution from waste, the opportunity cost of land used for landfills, the disamenity caused by increased traffic from living close to a landfill and the opportunity costs associated with under-utilising recycled waste and resource recovery of waste because they are under-valued.

Until more of these costs are taken into account in accordance with the Polluter Pays Principle, the second aspect of the Government's waste policy cannot be fully achieved. Many externalities relate to waste disposal, making landfilling waste artificially cheap. Proper price signals also need to be sent to waste producers to provide them with an incentive to reduce the amount of waste created at source.

4.4 THE WASTE HIERARCHY

The waste hierarchy adopted in the New Zealand Government's waste policy is commonly accepted around the world[11]. The aim of the hierarchy is to ensure sound use of resources and to prevent or minimise pollution by concentrating on reduction at source.

The waste hierarchy was first developed in the United States and included in legislation in the Resource Conservation and Recovery Act 1976[12]. The Solid Waste Disposal Act 1965 was amended in the same year to include resource conservation as a purpose of the Act for demonstration, technical and financial assistance and research[13]. This meant that both major Acts controlling waste in America contained the waste hierarchy as objectives.

Other countries and organisations from around the world soon followed America's lead as the waste hierarchy was becoming recognised in waste policy theory. The waste hierarchy is now recognised in Denmark, some states in Australia, the European Community, the Netherlands and the OECD to name but a few places. It was also adopted at the United Nations Conference on Environment and Development at Rio de Janiero, June 1992 (Agenda 21).

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[11]Denmark adopted the waste hierarchy as objectives in:
(i) Act on the Recycling of Paper and Beverage Containers and the Reduction of Waste 1978;
(ii) Act on Recycling and Reduction of Waste 1986.

South Australia adopted the steps of the waste hierarchy in the South Australian Waste Management Commission Act 1979.

Victoria adopted the waste hierarchy on 1 November 1990 as part of the waste policy adopted under the Environment Protection Act 1970.

The European Community adopted the waste hierarchy in its action plan A Community Strategy for Waste Management SEC/89/934.

The Netherlands adopted the waste hierarchy in 1979 (Ministry of Housing, Physical Environment and Planning, Waste. The Netherlands: Ministry of Housing, Physical Environment and Planning, 1991).

The waste hierarchy has also been adopted by the Organisation for Economic Cooperation and Development. See for example, Organisation for Economic Cooperation and Development, Guidelines for the Application of Economic Instruments for Managing Packaging Waste. Paris: Organisation for Economic Cooperation and Development, May 1992.

Bailey Dr Margaret, Principal Analyst, Pollution and Risk Management Directoriate, Ministry for the Environment, pers. comm. 8 July 1994.

[12]s.1003 Resource Conservation and Recovery Act, United States of America 1976.

[13]s.202(b) Solid Waste Disposal Act, United States of America 1965.

The hierarchy is made up of five stages and is commonly known as the "Five R's":

i) REDUCE the amount and toxicity of waste created;
ii) REUSE products and resources;
iii) RECYCLE products and resources;
iv) RECOVER energy and other resources;
v) RESIDUAL waste properly treated and disposed of.

Application to New Zealand

The waste hierarchy was adopted in the Government's waste policy in August 1992. In practice it is often referred to in New Zealand as a three-tiered hierarchy:

i) Reduce the amount and toxicity of waste created;
ii) Reuse, recycle or recover as much of the waste stream as possible;
iii) Treat and dispose of the remaining waste in a satisfactory manner.

The amalgamation of three stages into the middle tier of the hierarchy has primarily come about because of the debate surrounding the environmental effects of bottle refilling systems and of incineration and other energy recovery methods. These issues will be touched on in later chapters.

The waste hierarchy is consistent with the objective in the Resource Management Act 1991 of "avoiding, remedying, or mitigating" any adverse effects of activities on the environment[14].

[14]s.5 Resource Management Act 1991.

Although the waste hierarchy states that residual management of waste is the final step, most effort and resources have been put into this stage in waste policy implementation at all levels of government in New Zealand. This focus on "end of pipe" solutions to problems has been recognised in the Resource Management Act 1991 as being ineffective in terms of achieving sound resource use and an acceptable state of receiving environments, by the shift in focus to "effects" of activities. Under the Act, conditions that are aimed at stages prior to discharge can be placed on activities, such as the provision of management plans for resource use and mitigation measures to help prevent or reduce effects.

All players in waste policy have yet to fully realise the change in philosophy brought about by the Resource Management Act 1991. Insufficient information exists about the environmental effects of products and their production and service activities. Central and territorial government are still allocating most resources to deal with residual management. Industry is slow to embrace cleaner production despite the clear financial (and environmental) benefits flowing from adopting cleaner production techniques. The public is unwilling to purchase products which have less impact on the environment than their competitors', reuse containers and other products within the home, conserve resources such as water and energy, and so on.

Resources being put into implementing waste policy in New Zealand must begin to reflect the priority given to each step by the waste hierarchy. All parties need to change their attitudes and behaviour in order for this to happen. Without this change, it will be difficult to take many significant steps towards more efficient resource use and to lower the effects of human activities on the environment.

CHAPTER 5 - PERCEIVED ROLES IN WASTE MANAGEMENT

The lack of development of the waste policy and the skeletal nature of the waste framework has led to a number of differing perceptions of the roles of the four major parties involved in waste policy decisions, namely central government, local government, industry and consumers/the public. As previously stated, this has resulted in some aspects of the waste policy being overlooked and other objectives not being implemented in the most appropriate manner.

Regional councils' roles are not dealt with in this section as they have less direct control over waste policy decisions. Involvement is generally limited to controlling discharges from landfills via resource consents and incorporating waste objectives in policy statements and plans.

Parties' perceptions also differ owing to the responsibilities they have in implementing waste policy and the impact that factors within the decision-making environment have on the parties. These factors include the level of statutory obligations, the ability to influence these obligations, the impact of the market and the level of knowledge regarding implementation instruments, to name but a few.

This chapter gives an overview of the perception of each party's roles within the waste policy framework in order to highlight the conflicting perceptions and the effect that this has in the possible level of achievement of waste policy objectives. Perceptions and attitudes have been drawn from a series of interviews with players involved in waste policy decisions, surveys of consumer behaviour and attitudes and relevant legislation and policy documents. Individual players and comments are not identified as interviews were conducted on this understanding. This was considered necessary owing to the small number of players involved in waste policy decisions and the political nature of the decision-making environment.

Interviews were held with the following people:

(i) Ministry for the Environment staff, 1993-1994.

(ii) David Bentham, Refuse and Recycling Officer, North Shore City Council, 2 December 1992.

(iii) Jan Cotterall-Fisher, Programme Co-ordinator Waste Management, Auckland Regional Council, 7 December 1992.

(iv) Angela McErlane, Environmental Promotions Officer, Dunedin City Council, 31 May 1994.

(v) Tony Miguel, Public Health Service Manager, Waitakere City Council, July and December 1992.

(vi) Roger Mills, Manager Special Projects, Auckland City Council, December 1992.

(vii) Ken Mulholland, Manager Customer Services Department, Wellington City Council, 25 March 1993.

(viii) Peter Bierens, Operations Manager, Northern Disposal Systems, 7 December 1992.

(ix) Don Armstrong, Environmental Officer, BHP New Zealand Steel, 8 December 1992.

(x) Michael Baines, Executive Officer, Retail Association, 25 March 1993.

(xi) Mervin Bennett, General Manager for Marketing and Recycling, Comalco, 4 May 1993.

(xii) Ian Lockey, Manager Recycled Fibre, NZFP Pulp and Paper, 11 December 1992.

(xiii) Chris Pynenburg, Manager Environmental Affairs, Tetrapak, 5 May 1993.

(xiv) Vinko Rakich, Financial Controller, Edwards Enterprises Ltd, 3 March 1993.

(xv) Steve Sutherland, Product Manager - Leisure Beverages, NZ Dairy Foods Ltd, 30 April 1993.

(xvi) David Warburton, Executive Director, Packaging Industry Advisory Council, 14 December 1992.

(xvii) John Webber, Manager Environmental Affairs, ACI New Zealand Glass Manufacturers, 11 December 1992.

Personal communication was conducted with Simon Upton, Minister for the Environment, 26 July 1994.

The following surveys were also referred to:

(i) National Research Bureau Ltd, Recycling Attitudes and Behaviour. Wellington: National Research Bureau Ltd, October 1990.

(ii) Discussion groups, April - May 1993.

(iii) Mayes K, Attitudes Towards Packaging Waste (survey). n.p. October 1993.

5.1 CENTRAL GOVERNMENT

Most calls from local authorities for central government involvement in waste matters are for regulation, although it is unclear exactly what steps central government is expected to take. Calls range from an increase in the plastics levy from $2.00 to a mandatory $20.00 per tonne of virgin resin, introduction of German-style packaging legislation, mandated minimum recycled content for paper, a re-establishment of a national waste register, financial incentives to develop new products using recycled material, deposit-refund schemes for beverage containers and subsidies to establish recycling schemes.

Industry's expectations of central government differ markedly from that of local government in that they would like less rather than more regulation. This would allow industry to undertake recycling only where it is economically viable to do so. Negotiated agreements between government and industry are seen as being more effective in managing waste. Industry is then able to participate in the decision-making process, ensuring a more satisfactory proposal is reached. Many instruments proposed by local government are seen as being extremely difficult to impose equitably, especially product charges and minimum recycled content mandates. Industry is also strongly opposed to German-style legislation mandating recycling because of the costs it would impose on all parties.

Although industry is not uncomfortable with the Polluter Pays Principle, many players assert that the polluter is actually the consumer and that industry should not be penalised for producing what the consumer demands. Others point to moves such as those listed in Chapter 8 as proof that industry is already incorporating many of the environmental costs of its activities.

Central government's role is seen by the public as being one of controlling aspects of waste, especially overpackaging and recyclability of products and packaging. Controls suggested include direct regulation such as standards; and economic instruments such as penalties for overpackaging, a tax on non-recyclable products and packaging, incentives for manufacturers not to overpackage products, product charges and deposit-refund schemes. As such, most controls are directed at industry. The public also considers that industry would be acting more responsibly by making products and packaging recyclable, and by not overpackaging products as is currently perceived to be the case.

5.2 TERRITORIAL AUTHORITIES

Central government expectations of local government have been set out in the Resource Management Act 1991 and the Local Government Act 1974. Territorial authorities' role is largely seen by central government as one of service delivery and managing effects arising on a local scale from human activities. Regional councils are given authority to control some aspects of waste through consent procedures, and through policies and plans.

Many territorial authorities have commented on the perceived responsibility of recycling that has been placed on them. The main criticism is that this responsibility has come with a host of others under the Resource Management and Local Government reforms which have often not been accompanied by any resources with which to carry them out. With many territorial authorities floundering with collected materials that they cannot find recycling markets for, they are turning to central government for leadership.

Some territorial authorities have defined their role in implementing waste policy very narrowly owing to the proscriptive nature of the Local Government Act 1974. This Act empowers territorial authorities to collect and dispose of refuse[1]. Although the intention of the Act was to incorporate the operating of landfills as well as recycling schemes, composting schemes, incineration facilities and so on, some territorial authorities are reluctant to undertake this latter type of operation and have been uncertain as to their powers to charge for services. This is being clarified by the Local Government Law Reform Bill.

Industry views territorial authorities' roles as one of service delivery and education. Territorial authority kerbside recycling schemes are generally criticised as being expensive and ineffective in reducing the amount of waste disposed of. There is a general belief that the public is ill-informed of the costs of recycling and that territorial authorities and some industries are wrong to give in to public pressure to operate recycling schemes where they are not economically viable.

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[1] s. 538 Local Government Act 1974.

As well as making the public aware of the costs of recycling, industry considers that territorial authorities should be informing them of broader environmental issues, especially those which affect purchasing decisions such as the relative benefits of biodegradability and of the various packaging materials.

The public has a narrow view of territorial authorities' role in waste management with the responsibility being merely one of operating refuse and recycling schemes.

5.3 INDUSTRY

Industry is expected by central government to take responsibility for the waste it creates through the Polluter Pays Principle although this has only partially been implemented.

Many instruments suggested by local government are aimed at the packaging industry. Central government has also singled out this industry with its waste reduction targets. There is a perception that the packaging industry is dragging its heels in accepting responsibility for its products and their environmental impacts. In response to this perception, the industry points to moves such as recycling schemes for various packaging materials (discussed in Chapter 10); the levy on plastics manufacturers and fillers; the levy for Keep New Zealand Beautiful Incorporated (both discussed in Chapter 8); and lightweighting which has occurred in many types of packaging. For instance, a 27% reduction in packaging weight is claimed to have been achieved during the past twenty years by decreasing the thickness of packaging walls[2].

Consumers are only partially aware of the potential influence they hold over manufacturers' decisions. For example, comments made by consumers regarding overpackaging by manufacturers were generally not followed by an understanding that consumers can, to a certain extent, avoid these particular products. Incentives and penalties are seen by the public as being useful instruments for influencing manufacturers' behaviour, thereby passing this responsibility onto central government. Examples of industry for which these instruments were suggested included those which overpackage and those which do not include a sufficient recycled content in products and packaging.

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[2]Warburton Dr D, "Who's Got the Best Waste Management Solution?" Waste Observer. May 1993.

5.4 PUBLIC

Little emphasis is placed on the role of consumers/the public by central government although consumers' purchasing power is recognised in instruments such as the "Environmental Choice" labelling scheme (discussed in Chapter 9).

Territorial authorities see the public as participants in waste services. Information aimed at the public is therefore largely limited to information regarding municipal recycling and refuse schemes.

Many industry players recognise that consumers potentially have the largest influence over manufacturers' behaviour. In a chicken-and-egg situation, some manufacturers state that they are unable to use more simple packaging for some products because of consumers' expectations. The question is always who leads whom, as consumers feel that they are not able to choose simple packaging, thereby demonstrating their preference, because some products are too highly packaged.

Consumers also have little awareness of the need to "close the loop" by purchasing products which incorporate recycled content. Participation in recycling schemes is seen to be sufficient to fulfil the public's responsibility in waste decisions. This avoids any change to behaviour and lifestyle by the public.

5.5 CONCLUSION

As is clear from the varying perceptions of parties' roles, the party which is seen as needing to take the most responsibility is that of industry. This is partly due to a perception that industry has dragged its heels in the past and partly due to a recognition that current Government policy relies on minimal Government intervention, thereby leaving many decisions to the market.

Parties have often conflicting perceptions of roles. This is highlighted by the suggested uses of economic instruments by the various parties. Whilst there is general agreement over the goal of the waste policy, objectives are given different priorities by the parties. This is perhaps partially due to the degree of importance placed on economic considerations as opposed to social, environmental and/or political considerations. It is also influenced by the fact that the objectives of the waste policy are not clearly defined.

It is also clear that all four parties have a role to play in achieving the objectives of waste policy. Whilst these roles do not necessarily need to be defined in regulation, the responsibility of determining the most appropriate party for implementing aspects of the waste policy falls on central government as it is at this level that the waste policy framework is put in place. Parties can then often determine the most appropriate instrument or mix of instruments to implement the waste policy objectives.

PART II - IMPLEMENTATION INSTRUMENTS

In Part II, the methods which can be used to implement the proposed waste policy will be discussed. These fall broadly into four categories:

i) Regulation;
ii) Economic Instruments;
iii) Voluntary Initiatives;
iv) Education & Information.

A range of implementation instruments from these categories need to be applied together in order to achieve an effective outcome as no instrument incorporates every aim of the waste policy objectives. As recognised by the Organisation of Economic Cooperation and Development, "a variety of tools are often needed, used in combination, and tailored to the specific circumstances of the problem and the special social, cultural and institutional conditions that exist in a country[1]."

Some instruments will focus on altering behaviour, some will incorporate costs not currently taken into account, some will be aimed at protecting the assimilative capacity of the receiving environment, while others will control activities themselves. All combine in an effort to achieve the overall goal of the proposed waste policy, that of maximising net benefits to New Zealand.

Instruments used overseas will not necessarily be applicable to the waste policy situation in New Zealand. Aspects which set New Zealand apart include the small number of players in decision-making, the low population density and the availability of land, the agricultural base of the economy, the lower level of regulation than many European countries, the political climate, the Treaty of Waitangi and the existence of the Resource Management Act 1991. This list is by no means exhaustive.

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[1]Organisation for Economic Cooperation and Development, Environment Directorate staff paper ENV/EPOC (94)3, 7 February 1994.

Part II focuses on the most common instruments being used around the world to implement waste policy which are most relevant to New Zealand. Waste reduction targets are covered in some detail as the New Zealand Government is considering using this instrument for the first time. Targets are also being used increasingly around the world, both on a voluntary and regulatory basis. A number of instruments are not covered. These include tradeable permits, virgin materials taxes, tax differentiation, consumer-based purchasing guides, and so on. Instruments used specifically in countries based on different economic systems are also not included. Each of the four major categories of instruments will be reviewed in turn.

CHAPTER 6 - REGULATION

6.1 CRITIQUE

Regulation has the advantage of being certain, of giving Government direct control over those dealing with waste and enabling a specified environmental standard to be reached if the standard is properly set and if the relevant rules are not violated. It is particularly effective in preventing irreversible effects of pollution. However there are problems associated with implementation of this type of regulation.

The first difficulty is setting the environmental standard at an appropriate level. This requires a detailed understanding of the effects that waste creation and disposal is having on the environment, in turn involving the gathering of much information. As stated earlier, insufficient information exists regarding the constitution and quantities of various types of waste and the impact of waste on the environment.

Much work has been undertaken around the world to determine the environmental impacts of various products, using techniques such as life-cycle analysis. This technique attempts to identify and quantify the environmental effects involved in each stage of a product's production, use and disposal. Owing to the complexity of stages and the number of products with different mixes of material inputs, life-cycle analysis is not yet sufficiently developed to provide a reliable method for measuring these impacts. Difficulties also lie in determining where to draw the boundaries of relevant costs and benefits, and the weightings to be placed on the use of various materials and resources. Scarcity of resources, the level of pollution and acceptable environmental standards are all factors which will differ between countries and over time. As discussed in later chapters, techniques such as life-cycle analysis should be developed further as, in theory, they provide a consistent method for determining environmental effects of products.

The use of regulation setting environmental standards means that, once the specified environmental standard is reached, there is no incentive to further reduce the quantity of waste being produced. In order to improve environmental quality, the standards must be increased and suitable technology must be available so that the standards can be conformed with. This may be difficult as there has also been no incentive to develop waste treatment processes to deal with potential future standards.

Mandating processes and/or equipment also has an inherent problem that results are often cost-inefficient as those dealing in waste are not able to decide for themselves appropriate methods of treatment, depending on available resources, marginal costs and so on.

Effective regulation involves the continuous monitoring of effects in order for standards to be altered if necessary. Monitoring can involve a substantial time-lag, during which time damage may occur to the environment. Monitoring of effects of activities on the environment is undertaken by central government for State of the Environment reporting and reporting requirement to organisations such as the United Nations. Regional councils are responsible for monitoring discharges to the environment and territorial authorities are responsible for monitoring land use and local effects under s.35 Resource Management Act 1991. Local government can make businesses responsible for monitoring their own activities via District Plans and resource consent conditions.

These issues should not be overstated as they can generally be taken into account when deciding on the most appropriate form of regulation. Regulation may not always be the most appropriate instrument for achieving waste policy objectives, as has been increasingly recognised over the past 20 years with a corresponding move towards economic instruments and, more recently, towards voluntary initiatives.

Central government regulation implementing waste policy objectives in New Zealand and related legislation have been set out in Part I. Local government regulation in the form of by-laws govern waste collection, treatment and disposal services[2]. These may include controls on waste recepticles, charging policies, controls on incineration and so on.

As has been pointed out, much central government legislation fails to implement the objectives of the current waste policy. Roles and responsibilities of parties involved in waste policy decisions defined by regulation also ignore waste policy objectives in many cases.

[2]ss. 538, 540, 541 Local Government Act 1974.

Although not all roles need to be defined by regulation, more direction needs to be given by central government as to the appropriate parties for implementing various aspects of waste policy, the expectations of parties' responsibilities and actions, and the desired outcomes of waste policy. Regulation is one method of achieving this.

6.2 BANS

Products can be banned by regulation where the environmental impacts of products are considered unacceptable. Bans are relatively simple to put in place and administer and can be effective when dealing with a specific product or product type.

All products have a number of impacts on the environment throughout their life-cycle. These impacts must be judged against their function, improvement of quality of life for their users and so on. Determining that the environmental impacts outweigh these benefits and that impacts of certain products are worse than other products' is difficult given the lack of knowledge and information regarding many of the impacts.

Despite this, consumers and legislators in various countries have called for bans to be placed on products with impacts on the environment which they consider to be unacceptable. In some cases the threat of bans has been sufficient for products and packaging to be redesigned to take these concerns into account. Products which have faced bans include various batteries, for example in various OECD member countries, and products which do not contain a required recycled content. Packaging which has been banned in certain places includes aluminium cans, non-recyclable packaging, tear tabs, six pack rings and polystyrene packaging.

The most common reason for banning products and packaging has been to support products which can be reused or recycled. For example, several states in America have passed minimum content legislation for newspapers, other types of paper, and plastic[3], effectively banning products which do not comply with this requirement.

[3]Wingerter EJ, "Urgent Responses by the States" EPA Journal. Volume 18, No. 3, July/August 1992.

Maine has also prohibited the sale of products in packaging deemed to be unrecyclable. This effectively banned multi-layer containers[4]. Another example is Denmark's ban on aluminium for beverage packaging. This ban complements a beverage container charge on glass, plastic and cardboard containers and promotes the use of returnable beverage packaging and recycling[5].

Other products have been banned because of their impact on the litter stream and on marine animals. For example, tear-tab cans have been banned in places such as South Australia and six-pack rings have also faced opposition in many places[6]. Polystyrene packaging has been banned in various counties in America, including those of Fairfax, California and Suffolk County, New York.

Application to New Zealand

Very few solid waste products or packaging types have been banned in New Zealand owing to their environmental impact, although various hazardous substances including PCBs and TBT have been banned. Garden waste is starting to be banned from some landfills to support municipal composting operations. Consumer pressures both within New Zealand and overseas have led to the modification of products including cans which previously used detachable tear tabs and six-pack rings, thereby providing an effective way to influence product and packaging design.

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[4]Boerner C and Chilton K, "False Economy: The Folly of Demand-Side Recycling" Environment. Volume 36, Number 1, January/February 1994.

[5]Nordic Council of Ministers, The Use of Economic Instruments in Nordic Environmental Policy. Copenhagen: Nordic Council of Ministers, 1991.

[6]Department of Environment & Planning, South Australian Beverage Container Act 1975: a summary of its function and success. Victoria: Department of Environment & Planning. Beverage Container Unit, June 1990.

CHAPTER 7 - ECONOMIC INSTRUMENTS

7.1 INTRODUCTION

Various moves have been made to compliment regulation and to provide direct incentives for producers of waste to decrease the quantity being produced, for consumers to alter their purchasing behaviour and, as a result, to place less of a burden on the environment. As the majority of decisions regarding production and consumption involve the market, one of the most effective ways to influence these decisions is via price signals. In the area of waste management, price signals will affect the mix of raw materials and product design chosen by producers of products, the efficiency of production processes, and treatment and disposal choices.

Price signals should reflect the social costs of various behaviours and should thus internalise the externalities associated with the creation and disposal of waste. It follows that social costs must be determined for appropriate signals to be given. One way for this to be achieved is for social cost to be determined centrally by Government and then incorporated into the cost of goods and services. This is done via the use of "economic instruments".

Economic instruments are a broad group of policy tools which use the price mechanism to transmit precise information on the relative costs of various actions to producers and consumers. Characteristically economic instruments involve:

i) The involvement of Government authorities;

ii) The existence of a direct financial incentive;

iii) The intention of directly or indirectly maintaining or improving the quality of the environment.

Some economic instruments also have the purpose of raising revenue for Government although this is often stated to be a secondary consideration to that of affecting behaviour.

Those dealing in waste are then able to decide for themselves the most appropriate action as they are provided with the information concerning the total costs of their activities. This means that each waste producer can choose the most cost-efficient method of minimising, reprocessing, treating and disposing of waste. There is a permanent incentive to improve

the methods used as this will result in a corresponding decrease in producers' costs. As technology improves and the waste being disposed of is both lessened in quantity and in the degree of damage being caused, the quality of the environment will increase and the external costs associated with waste disposal will decrease.

Economic instruments have the advantage that they can be related to all types of waste. They can also be imposed at many stages of the waste stream according to where they are the most effective and simplest to administer. For example product charges are imposed at source as inputs can be most easily identified and monitored at this stage whereas user charges are imposed when waste is collected.

This chapter looks at the four most common economic instruments used around the world[1] and determines their potential use in New Zealand. The economic instruments looked at are:

i) Subsidies;
ii) Deposit-refund schemes;
iii) Product charges;
iv) User charges.

7.2 SUBSIDIES.

The term "subsidies" covers various forms of financial assistance. In the area of waste management these can include:

i) Suspensory loans which are provided if specific measures are taken to reduce the amount of waste that is created;
ii) Soft loans for capital investment of waste minimisation or treatment equipment whereby the interest rate is set far lower than the market rate;
iii) Tax allowances or exemptions favouring those investing in cleaner production or using recycled products;
iv) Accelerated depreciation of capital equipment used for decreasing the amount of waste that is created and disposed of.

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[1]Within the OECD deposit-refund schemes and product charges account for 60% of all economic instruments used. Subsidies have been used for a number of years, especially in those countries with a higher degree of central planning. User charges are being increasingly applied around the world.
"OECD Environment Policy Committee Special Session January 1993", cited by Lindsay Gow, Deputy Secretary for the Environment, Ministry for the Environment, "The Use of Economic Instruments for Resource Management" (speech). Address to the Fifth New Zealand Coal Conference, 21 October 1993.

Subsidies are generally easy to administer and are politically acceptable in many situations. They can be used where the cost of the subsidy is less than the social cost of simply disposing of the waste or waiting for a business to be able to afford improvements. Because they only affect a small group and can be defined in terms of their purpose, subsidies are often referred to in terms of correcting a distortion elsewhere in the market. It should be noted that granting subsidies is also creating a market distortion and that the two effects will rarely cancel each other out. Where possible it is more appropriate to look at means of correcting the original distortion, thereby preventing the need for intervention.

Despite the often stated advantages of subsidies, many drawbacks exist. If subsidies are provided to help install a specific piece of equipment the same problems arise relating to cost-inefficiencies as arise with mandatory equipment required by regulation. Specification of subsidised equipment also presumes that Government is able to know what equipment is best suited to each waste producer. If they are to qualify for the subsidy, producers of waste have no choice as to how to best deal with the waste and no account is taken of differing marginal costs. A flat rate subsidy can therefore entail payments of more than is needed to induce the desired activity.

The possibility of qualifying for subsidies can also lead to strategic behaviour by waste producers. Windfalls can be gained if producers would have acted without the subsidy but can qualify for financial assistance. Although usually intended as a temporary measure, subsidies can often become relied upon and therefore politically difficult to alter or withdraw with businesses claiming that removing the subsidy would cause financial hardship. However, if subsidies are not removed once their purpose has been fulfilled, many inefficient operations are maintained and there is a strong tendency for capital-intensive investments to be made.

Application to New Zealand

Subsidies aimed at solid waste management have been in place in New Zealand since 1985 when Waste Management Grants were established. It should be noted that the grants scheme emphasised hazardous wastes, this being a priority of the Government at that time. The Waste Management Grants were available in a series of three grants for the successive stages of developing waste management plans for the disposal of hazardous wastes. The three stages were seen to be:

i) Waste surveys;
ii) Site investigations;
iii) Land use, management and operational plans.

The grants scheme was aimed at a regional level as an attempt to coordinate waste management plans. Although much information regarding the quantity of waste was obtained, this information was not always useful as no consistent methodology and classification system had been used when collecting the data. In some cases, the third stage of the process was also not completed so that regions lacked specific actions to manage waste and a timeframe in which these were to be undertaken.

Waste Management Grants were superseded by the Resource Management Subsidy Programme which increased the ambit of funding assistance for regional government to enable regional and unitary councils to carry out new and devolved responsibilities under the Resource Management Act 1991. Funding for carrying out associated responsibilities under the 1990 local government reforms was also available.

In the area of waste, Resource Management Subsidies were primarily used by regional and territorial authorities including the Taranaki Regional Council, Christchurch City Council and Manukau City Council to obtain data on waste quantities and composition using a consistent methodology adopted in the 'Waste Analysis Protocol'[2].

[2]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

The subsidies were refocussed in 1994 in line with the priorities identified in the Government's 'Environment 2010 Strategy'[3]. Priorities for the 1994/1995 financial year include cleaner production programmes, waste stream information using the 'Waste Analysis Protocol'[4], agricultural waste and environmental management systems. The scope of funding assistance has been broadened to include businesses. This is particularly suited for cleaner production programmes and waste stream studies as the frameworks and methodologies have been established by the Ministry for the Environment, thus ensuring that results are consistent both with projects undertaken by other organisations and with the Government's environmental goals identified in the 'Environment 2010 Strategy'.

This new grants scheme provides a useful mechanism for enabling the 'Cleaner Production Guidelines'[5] and the 'Waste Analysis Protocol'[6] to be adopted throughout the country. Other benefits of the scheme are:

i) That it is flexible as businesses and local authorities are able to determine the most appropriate areas to focus on;

ii) Grants are awarded for a defined time period and for a specific purpose which ensures that organisations do not become dependent on the grant;

iii) Grants are awarded for between 30-50% of the cost of a project to ensure that organisations are committed to a project;

iv) By divesting responsibility to local government and businesses, the Ministry for the Environment is able to work on other waste areas which are best coordinated at a national level.

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[3]New Zealand Government, Environment 2010 - A Statement of the Government's Strategy on the Environment. Wellington: Ministry for the Environment, October 1994.

[4]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

[5]Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

[6]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

7.3 DEPOSIT-REFUND SCHEMES.

Deposit-refund schemes have been used extensively for a number of years. They involve a charge being placed on certain products, especially those which are recognised as being very environmentally damaging, to cover benefits of reusing or recycling products. These benefits include reduced disposal costs, reduced resource use and the like. As such they only directly affect the behaviour of consumers of products rather than producers. Production patterns may be altered indirectly, for example, fewer types of materials may be used in production to enable products to be more easily recycled.

The objectives of deposit-refund schemes are to decrease litter and waste and to promote the use of refillable and recyclable containers.

The deposit-refund charge is refunded if the product is returned to a recognised facility in order for it to be reused or recycled. Because the charge is only borne by purchasers of such products, deposit-refund schemes are compatible with the Polluter Pays Principle.

Deposit-refund schemes contain similar elements to product charges in that they attempt to internalise the environmental costs of products and influence consumer behaviour by presenting them with information about a product's costs via its price. However no internalisation of cost occurs where products are not returned. Some differences to the product charge are the deposit-refund charge's refundable nature, the responsibility it places on retailers to collect and administer the scheme, the responsibility placed on producers to use an appropriate mix of virgin and recycled materials and its sole focus on consumers rather than influencing both producers and consumers. Product charges encourage producers to use inputs and product mixes that impose the least costs on disposal facilities, thereby making their product cheaper and more attractive for consumers. Deposit-refund schemes on the other hand primarily influence consumers at the point of disposal rather than the point of purchase.

Deposit-refund schemes have been applied successfully to various products including beverage containers in USA and many European countries and batteries and oil in countries such as Norway and Finland. They have also been suggested for the collection of car tyres and CFCs from products such as refrigerators. Return rates have been reported as being extremely high with around 80-90% of beverage containers being returned in USA[7] and 99% of beverage containers being returned in Denmark. Denmark also claims to have an average trippage rate of 40 uses[8].

In some cases deposit-refund schemes have been made mandatory through legislation. Examples of this are the car hulk recovery schemes in Sweden and Norway and many of the so-called "Bottle Bills" of USA. The success of these schemes must be certain when established as it is far more difficult to terminate a mandatory scheme if it becomes uneconomic. Government intervention need not extend this far however. Many schemes are entirely operated by businesses and industries where it is beneficial for them to use recovered materials as opposed to virgin materials. Private schemes can occur to an optimal level if moves are made to eliminate externalities associated with earlier stages of the production-consumption cycle.

As can be seen by looking at the types of products that deposit-refund schemes have been applied to, products must be robust enough to withstand an entire production and consumption cycle and must also be consumed in large enough quantities so that manufacturers are ensured a regular return supply and it is worth their while investing in facilities to store and treat returned products. Collection and storage of products such as batteries and car tyres needs to be regulated and monitored to ensure that they are held safely and that contaminants do not leach into the surrounding environment. Other products need not involve any monitoring thus making the scheme cheaper and easier to operate.

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[7]United States Environmental Protection Agency, Plastic Wastes: Management, Control, Recycling and Disposal. United States: Noytes Data Corp, 1991.

[8]Bailey Dr ML, Overseas Waste Management Practices. Wellington: Commission for the Environment, August 1985.

Encouraging the return of products is obviously only worthwhile if reusing or recycling the product is cheaper than producing the product from virgin materials. Much of the debate that has surrounded deposit-refund schemes has focussed on this issue and conflicting opinions exist, cf. Organisation of Economic Cooperation and Development figures[9] with Australian studies[10]. The discrepancy arises firstly because of different valuations of the relevant costs and benefits associated with producing products from recycled and virgin materials and secondly from figures being based on different trippage rates. Trippage refers to the number of times a product is returned and is relevant as an operation may only be worthwhile if products can be reused or recycled a certain number of times. This is because a large amount of initial energy or materials is required to make the product but subsequent reuse or recycling generally uses a smaller quantity of these inputs, for example, glass bottles[11]. Energy costs and amount of pollution created in the production and transportation of both reusing and recycling products or using virgin materials must also be considered.

Measuring costs and benefits is extremely difficult as they are affected by a number of factors. These include distortions to prices of inputs such as tax differentiation for virgin materials as well as the fact that the process involves many different agencies, making co-ordination of information as to relevant costs difficult to obtain.

The weighting placed on the various costs and benefits will be determined by the stated objectives of the scheme. The weighting affects evaluation because these objectives may be in conflict with one another. For example, the more successful the scheme is in relation to the proportion of products returned, the less successful the scheme can be in recovering the costs of administering the scheme.

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[9]Organisation for Economic Cooperation and Development, Economic Instruments for Environmental Protection. Paris: Organisation for Economic Cooperation and Development, 1989.

[10]Studies cited in Denne T and others, Packaging and the New Zealand Environment - Critical Aspects of Resource Use and Waste Management. Wellington: Ministry for the Environment, October 1989.

[11]Organisation for Economic Cooperation and Development, Beverage Containers - Re-use or Recycling. Paris: Organisation for Economic Cooperation and Development, 1978.

The expected benefits of deposit-refund schemes include those of decreased littering as consumers have a direct incentive to return products, decreased use of raw materials due to products being reused and recycled and a decrease in the quantity of waste being disposed of for the same reasons. The operation of deposit-refund schemes for beverage containers, for example, has been said to have resulted in an approximate 5% decrease in the amount of waste being disposed of in USA[12] and Australia[13] (calculated by weight).

One crucial element in determining the viability of deposit-refund schemes is the measurement of disposal costs associated with various products. As with all other economic instruments this must be determined by Government unless there are no external costs involved. The setting of the disposal cost of each product will vary between each region depending on factors such as the availability of disposal sites as well as varying over time, with available sites becoming fewer and technology hopefully decreasing the environmental costs associated with waste disposal. These difficulties are compounded by the fact that there is no way of knowing at the time of imposing the charge where or when a product will be disposed of.

Because imposing a refundable charge equal to the disposal cost is impossible in all practical senses, it follows that a situation where the private costs correspond exactly to the social costs cannot be attained. In neo-classical economic terms this means that an entirely efficient allocation of resources will not result. This should not detract from the fact that an approximate figure can be reached, thereby resulting in a much closer reflection of social cost than is the case where no attempt is made.

Various ways of approximating the disposal costs are available. For example, charges can be based on the average landfill fee around a country or other defined region (presuming landfill charges reflect disposal costs, a situation that does not presently exist in New Zealand). The useful life-span of a product can also be estimated and used to project the corresponding disposal cost for that future date.

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[12]The Economist. 24 February 1990.

[13]Studies cited in Denne T and others, Packaging and the New Zealand Environment - Critical Aspects of Resource Use and Waste Management. Wellington: Ministry for the Environment, October 1989.

The level of the refundable charge is important not only for reflecting the disposal costs but also because it influences consumers' behaviour. The margin between returnable products and competing non-returnable products therefore becomes crucial. Obviously if non-returnable products are cheaper than the net cost of those carrying a deposit, consumers will prefer the former. This situation is unlikely to arise as products will not be reused or recycled if this is more expensive than using virgin materials. Likewise, if the charge results in competing materials being comparatively cheaper, producers will alter their material inputs to the extent that this is possible. In cases where the scheme is economically viable, the refundable deposit must lead to a sufficiently small margin to ensure that consumers will purchase the returnable products and yet, at the same time, be large enough to provide an incentive for consumers to return the product.

The difficulties relating to the valuation of cost and benefits should not be over-stated. Many methods can be used to at least decrease uncertainties if not remove them altogether. As previously stated, intervention with an acceptable margin of error may well be better than no intervention at all.

Perhaps a more serious problem associated with deposit-refund schemes is that of administration costs. The problem is deciding on the appropriate group to pay for administering the scheme.

If the costs are added into the refundable charge, consumers of the various products will carry the costs. This situation may be acceptable if the scheme covers products that are widely used so that the costs of the scheme are distributed throughout society but this will not be the case for many products. The situation may also have the effect of making the margin between returnable and non-returnable products weigh in favour of non-returnable products.

If the deposit-refund scheme is operated entirely by manufacturers, incorporating the administrative costs into the price of the product can result in a windfall to them when products are not returned. In many cases such a significant windfall may not be considered appropriate and a more equitable distribution of unredeemed deposits may have to be investigated.

If it is considered that costs should be distributed throughout society on the basis that everyone ultimately benefits from the decreased quantity of waste being disposed of, it may be appropriate to cover the administrative costs through a Government subsidy as this would be recovered via general taxes. This option may be especially appropriate if the scheme is designed so that the Government receives any unredeemed refunds. These can then be set against the costs of administering the scheme.

In conclusion, deposit-refund schemes provide direct incentives to consumers to return products for reuse or recycling. They can be used to cover a wide range of products and are compatible with the Polluter Pays Principle as the consumers of products bear the cost of their disposal. Deposit-refund schemes are particularly appropriate where the production and disposal of products cause major pollution.

Deposit-refund schemes have the advantage that they can be entirely self-funding and that most need little or no monitoring once they are established depending on the type of product involved. They should only be used when the costs of the scheme are outweighed by the benefits. Measuring these costs and benefits is therefore an important prerequisite for establishing a scheme. Although it may not always be possible to determine these exactly, good estimates will be sufficient in most cases as it can still be seen whether or not the scheme is viable.

Application to New Zealand.

Private deposit-refund schemes for steel cans and glass bottles have operated in New Zealand, although these were largely terminated in the late 1970s due to:

i) High administrative costs;

ii) Amalgamation of small local plants;

iii) An increase in the quantity of products which did not carry this charge, namely plastic and aluminium packaging and imported products.

Exceptions are lead-acid batteries which retained a deposit-refund charge until 1992[14] and milk bottles which are collected for reuse in a few parts of the country.

Part of the reason the schemes in New Zealand broke down was because the full costs of disposing of the various items were not fully appreciated. Improvements in reprocessing facilities over the past few years will also have altered the equation. It would be worth re-calculating the costs and benefits of deposit-refund schemes now that it is realised[15] that the only region which may be adequately covering its current waste disposal costs is Auckland, and even here there is extensive debate as to the appropriate charge to levy on landfill users. As previously stated, it is not appropriate to introduce deposit-refund schemes to encourage refilling and recycling operations unless these can be shown to be cost-effective.

All parties benefiting from the scheme should be involved although specific roles will vary according to individual products and their characteristics. For example, local authorities may benefit from products being collected in a controlled manner, central government and the public may benefit from the "public good" aspect of more efficient resource use, industry may benefit from lower costs of reprocessing products, and so on.

If deposit-refund schemes are considered, New Zealand should look at broadening the product base of the returnable beverage schemes of the 1970s to include products such as tyres, oil, and certain hazardous materials which require a degree of control in their treatment and disposal.

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[14]Chapman Bruce, Senior Policy Analyst, Pollution and Risk Management Directorate, Ministry for the Environment, pers. comm. 13 February 1995.

[15]Office of the Parliamentary Commissioner for the Environment, Local Authority Solid Waste Reduction Initiatives. Wellington: Office of the Parliamentary Commissioner for the Environment, August 1993.

7.4 PRODUCT CHARGES.

Product charges are charges placed upon products to equate the price of the products with the social costs of collection and disposal of waste and treating any residual damage to the environment. The charge should vary for each product in order for it to reflect the costs that it imposes on society. Product charges therefore differ from user charges which do not generally distinguish between the types of products being disposed of and, as such, are more akin to deposit-refund schemes, although no refund is available for consumers if products are returned for reuse or recycling.

Ideally the charge should cover all products entering the waste stream as all impose costs. However this is generally impractical owing to the enormous number of products that exist.

Product charges have been imposed on beverage containers in countries such as Finland, Sweden and Norway to support refillable bottle systems[17]. They have also been suggested for paper and all non-paper packaging products[18]. Product charges are being used to the greatest advantage to ensure safe disposal and reprocessing of waste oil in many European countries[19]. Many product charges have been implemented for revenue-raising purposes rather than being set high enough to provide an incentive to change products and purchasing behaviour[20].

The easiest point to impose such a charge from an administrative point of view is at production as products become more widely distributed past this stage in the production-consumption cycle. Product charges can then be added to other taxes being imposed on products and do not need a separate administrative system. The trade-off for this ease is

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[17]Organisation for Economic Cooperation and Development, Economic Instruments for Environmental Protection. Paris: Organisation for Economic Cooperation and Development, 1989.

[18]Butlin J, ed. Economics and Resources Policy. London: Longman, 1981.

[19]Organisation for Economic Cooperation and Development, Economic Instruments for Environmental Protection. Paris: Organisation for Economic Cooperation and Development, 1989.

[20]Institute for Public Policy Research, Green Taxes. United Kingdom: Institute for Public Policy Research, no year given.
(Institute for Public Policy Research. Green Paper Number 2)

that the charge will be less finely tuned than a charge imposed closer to the time of disposal as it cannot be established at the time of production where or when consumption and disposal will take place. This problem is the same as faces deposit-refund schemes and, as already discussed in some detail in the previous section, can be mitigated in several ways.

Where product charges are imposed, it is necessary to look at the impacts the charge will have on imports and exports. So as not to penalise exporters, products being exported should be exempt from the charge. This exemption can be justified on the grounds that the products are not being collected and disposed of in New Zealand. Exempting exported goods is only appropriate if the product charge is designed to only cover collection and disposal costs and not any social costs imposed by a product's production (as is the case with the majority of proposed product charges as it is considered better for externalities of the production phase to be dealt with by other means)[20]. Exemptions could easily be achieved as details relating to all exports are available. Similarly, a tariff would need to be imposed if local products are to compete evenly with those from overseas.

The rate of the charge should take account of the reprocessed content of a product to encourage an appropriate degree of reuse and recycling. This can be achieved by producers furnishing data on the proportion of various inputs and receiving rebates equal to the amount of recycled material used or by the secondary content being estimated before the charge is imposed. This requirement would obviously increase the administrative load on manufacturers and should be made as simple as possible to ensure that furnishing the required data is worthwhile.

By internalising the social costs of products, producers will have an incentive to use the least environmentally damaging inputs and product mixes so as to minimise their costs as well as investing in technology to make production more efficient. Producers are given a further incentive to capture the consumers' dollar by producing the cheapest product as the charge can be passed on to consumers.

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[20]Rose D, The Possible Use of Product Charges in New Zealand. Wellington: Commission for the Environment and Department of Trade and Industry, 1981.

Product charges also influence consumers' behaviour, providing the charge is sufficiently large, as they will be deterred from purchasing products which are more expensive than competing products (assuming adequate choice exists). Some debate exists over whether product charges do actually provide a sufficient incentive for this to occur[22]. The reason for this is that, if product charges are based on a common unit such as weight, the charge will not increase the price of a product sufficiently to make an impact. One example of this is the plastic milk container currently used throughout New Zealand. Studies estimate that imposing the appropriate product charge would only lead to a 5c increase in the price of the container[23]. Aluminium and lighter plastic products would have even smaller price increases.

Perhaps the most difficult issue to deal with is the appropriate basis of the charge. As stated previously the charge is designed to incorporate the social costs of collection, disposal and mitigation treatment of products into their price. It follows that the charge should be based on all characteristics of the product which affect the social costs.

As discussed in the previous chapter, techniques such as life cycle analysis are not yet sufficiently developed to provide a reliable method for measuring the environmental impacts of a product's production, use and disposal. More study needs to be undertaken in this area, not just for product charges but, more fundamentally, for eliminating externalities in the pricing of resources and in the creation of pollution.

An extensive charging system may also be too costly and cumbersome to be practical. Basing the charge on one element such as weight, however, will not be adequate as this penalises heavier products such as those made of glass which may not be more costly in terms of their effects on the environment than some lighter products.

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[22]See for example the discussion in Organisation for Economic Cooperation and Development, Economic Instruments for Environmental Protection. Paris: Organisation for Economic and Development, 1989.

[23]Studies cited in Denne T and others, Packaging and the New Zealand Environment - Critical Aspects of Resource Use and Waste Management. Wellington: Ministry for the Environment, October 1989.

As a compromise, some form of categorised charge may have to be introduced which takes account of elements such as weight, amount of various harmful inputs, biodegradability and ease of disposal, with the onus being on producers to show that products have been incorrectly categorised. Whilst this would involve substantial resources initially, the system would not need many resources once it had been established. By having specific categories of relevant elements of the charge, each could be altered reasonably easily if social costs change.

The final issue is that of how the revenue generated from the product charge would be applied. In New Zealand, collection and disposal of waste is the responsibility of territorial authorities. While it is often not optimal to earmark taxes for specific purposes, some measure should be taken to ensure that territorial authorities receive the benefits of the product charge. If this does not happen, territorial authorities would be forced to cover the deficit of providing their services via rates or user charges for landfills, thereby leading to individuals paying twice for the service. This situation is almost certainly not a politically acceptable situation and some more suitable arrangement would be needed.

In conclusion, product charges have been implemented to a far lesser degree than one might expect at first, considering the amount of research carried out on their applicability. Product charges accord with the Polluter Pays Principle as consumers pay for the costs they impose on society and the environment with their purchasing and disposal choices. Because product charges may in some cases be too low to influence these decisions, the greatest advantage of the product charge may be that of its revenue-raising ability. Significant amounts of revenue have been reported in many cases where product charges operate, leading to improved disposal services and environmental quality[24].

[24]Rose D, The Possible Use of Product Charges in New Zealand. Wellington: Commission for the Environment and Department of Trade and Industry, 1981.

Application to New Zealand.

The theoretical and practical difficulties of establishing a basis for the charge and including a sufficiently large range of products so as not to discriminate against some, are substantial and more work needs to be done in this area before product charges can be adopted in New Zealand. Manufacturers in New Zealand are strongly opposed to the idea of introducing product charges[25] and their reaction is likely to have a major impact on all political decisions regarding waste management. To some extent their reaction can be countered by the argument that, as the product charge can be passed onto the consumer, manufacturers will not be bearing the major burden of the charge. Manufacturers will be involved in modifying product design and inputs.

Although it is not considered that New Zealand is in a position to adopt product charges at present, study should be undertaken in developing techniques such as life cycle analysis. Once environmental costs are determined product charges, at least in theory, provide an equitable, efficient way of incorporating the social cost component of a product into its price.

7.5 USER CHARGES.

User charges are a per unit charge which can be applied to cover waste services. The charge generally incorporates collection, transportation and disposal of waste at landfills as well as any treatment such as shredding, incineration and so on. User charges accord with the Polluter Pays Principle as households only pay for the quantities of waste they produce. Because payment corresponds directly to the costs that are being created, user charges provide an incentive to be responsible with waste, not purchasing products which generate a lot of waste, reusing products within households where this is possible and recycling where facilities exist to do so.

Revenue from user charges can be applied directly to the provision of waste services so it can be clearly seen how households' money is being spent and if the charge is adequately covering the various aspects of the service.

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[25]See for example the submissions made by manufacturers in Rose D, The Possible Use of Product Charges in New Zealand. Wellington: Commission for the Environment and Department of Trade and Industry, 1981. Also, interviews with various industry players listed in Chapter 4.5.

Numerous reports exist of user charges resulting in a significant reduction in residual household waste collected[26].

A user charge for waste services would not lead to an absolutely efficient allocation of resources owing to the fact that waste is treated as being homogenous. Despite this, user charges provide an incentive to decrease the amount of waste generated and the charge captures all products and is relatively easy to administer.

Application to New Zealand

In countries such as New Zealand where territorial authorities are responsible for providing waste collection, treatment and disposal services, user charges offer an alternative method of payment to an average rates charge for households. Rates are based on property prices of an area and, as such, are not designed to be a payment corresponding to the provision of specific facilities and services. Currently, only treatment of commercial waste is generally charged for using a user charge. Some territorial authorities do have user charges to cover the costs of providing domestic waste services, for example, North Shore City Council. Others have user charges for bags put out for refuse collection over a specified limit, for example, New Plymouth District Council and Palmerston North City Council. Remaining costs are covered by a flat charge within rates. Although this provides some incentive to reduce waste to this limit, there is no incentive to reduce the amount of waste created past this point.

The result of covering waste services via rates is that households pay the same amount for having their waste taken away regardless of how much they create. There is therefore no incentive to make better use of products by reusing or recycling them or to alter purchasing behaviour to decrease the quantity of waste being created.

[26]von Schoenburg A, "Pay-as-you-throw Charges in Germany" Warmer Bulletin. Issue 41, May 1994.

This incentive is greater where waste services are paid for on a per unit basis. Households are then aware of the costs of producing waste and have the opportunity to alter their behaviour if they consider that reducing the quantities of waste produced is worth the savings which would result. This is especially true for decisions regarding further uses of products rather than for initial purchasing decisions as user charges are generally placed too far away from initial decisions for these to be affected.

A user charge for waste services should be imposed at the point of collection so it can easily be linked to the household that produces the waste. Because the waste would be transported to a known disposal site, costs associated with the transportation and disposal can be determined reasonably easily. Methods of assessing disposal costs have been discussed in previous sections of this chapter.

To be workable, collection and transport costs would need to be charged at an average rate within a territorial authority's district as it would be overly-complex to work out the marginal cost associated with collecting waste from households at varying distances from the disposal site. This charging structure would not lead to major inequities as territorial authorities are only responsible for relatively small geographic areas.

Once the relevant cost of providing the service is broken down into its various aspects, charges can be easily altered when necessary. A billing method similar to that used for other amenities such as electricity and telephones could be adopted, making administration no more difficult than for these other services.

The most difficult aspect of the user charge is determining an appropriate basis for the charge. In theory, user charges should reflect not only the costs of collection which are affected by factors such as the weight and volume of waste, but also the costs to the environment of various products. However, determining the composition of individual rubbish bags is not practical and the collected waste must therefore be treated as being homogenous for the purpose of the charge. This aspect is the biggest disadvantage of the user charge.

If the charge is based solely on volume, households may invest in compacting or incineration equipment to reduce the amount being charged for. This situation may well not be appropriate as other aspects, such as the overall effect on the environment, will be the same as for non-treated waste. This would not be adequately covered by those households compacting or incinerating their waste.

A compromise that is used already for commercial waste services is to use a standardised container and either to include the collection and disposal costs in the initial price of the container or to charge for these costs each time the container is put out to be collected. The charging system is then workable whilst still providing an incentive to minimise the quantities of waste being created.

A user charge based on a standard container could be introduced in New Zealand without many difficulties. The majority of territorial authorities already specify that a standardised container must be used for waste for the ease of collection so that no changes need be made to containers or collection methods. Control is maintained over the quantities of waste created as containers such as paper or plastic sacks, for example, will only hold so much waste in volume and will rip if too heavy.

One possible disadvantage of imposing user charges is that it may encourage illegal dumping of waste and littering so as to avoid incurring the charge. However this is not borne out by evidence from various territorial authorities which have imposed some form of landfill charge[27]. Often more significant to the degree of dumping that occurs are factors such as active enforcement for the first few months after introducing the charge, maintaining adequate operating hours at transfer stations and landfill sites, the degree of pride held by a community about its surroundings and the size of penalties associated with dumping waste.

[27]Butlin J, ed. Economics and Resources Policy. London: Longman, 1981.

Another issue that must be considered is the fact that many of the collection and transport costs are not subject to major economies of scale. Decreasing the amount of waste collected will therefore only result in overall savings to a certain degree. Once the amount of waste collected drops below the crucial amount needed to fund these fixed costs, the charge would have to be raised in order to break even. This results in a situation where the same amount is paid for a quantity of waste just above the crucial level and for a quantity below the crucial level.

Because of this, it may well be more efficient to have two parts to the charge, as is the case with many other services including electricity and telephones. A fixed charge would then be imposed to cover administration, collection and transport costs that do not decrease in proportion to decreases in the quantities of waste being dealt with. A user charge could then be imposed for the actual amount of waste that each household creates.

In conclusion, user charges provide a far more efficient system of paying for domestic waste services provided by local authorities than the situation persisting in many districts. Via legislation, central government has explicitly invited territorial authorities to recover the costs of providing services such as waste collection and disposal[28]. Revenue can then be generated directly from the waste producer, thereby partially fulfilling the Polluter Pays Principle.

User charges for waste services have already found favour in the commercial sector. Their successful application in this area lends strong support to user charges being extended not only to cover all waste services, but to the provision of other services operated by public authorities.

A two-part charge is recommended as being the most appropriate and practical charging system. Territorial authorities are able to cover their costs while still providing an incentive to decrease the quantity of waste being produced. The charge should be placed on a standardised container as this makes the system workable and accounts for both the volume and weight of objects.

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[28]s.538 Local Government Act 1974 and the Local Government Law Reform Bill.

There is therefore every reason to extend the use of user charges in New Zealand to cover domestic waste as this would result in a far bigger proportion of waste services being funded by more efficient means.

7.6 RECOMMENDATIONS

Social costs of producing and disposing of waste far exceed the costs being borne by the producers and consumers of products making up the waste stream. As a result, inefficient resource allocation and undesirable environmental degradation is taking place.

Economic instruments have a major role to play in internalising the social costs associated with the production and disposal of waste. Study needs to be undertaken to determine the relevant costs and benefits before social cost parallels private cost. Study needs to include establishing appropriate disposal charges throughout the country and reviewing them regularly to ensure they include the social costs of the service.

Economic instruments also have a role in encouraging adherence to the Government's waste hierarchy. Adherence is achieved by presenting producers and consumers with correct information of the costs involved with various actions, thereby influencing them to deal with their waste in the most appropriate manner. This encouragement will need broader tools than just economic instruments as a significant change in attitude is needed to alter current waste patterns.

Insufficient detailed evaluation of the application of various economic instruments overseas is available. Any proposed adoption of economic instruments would also have to be investigated to ensure that they are designed for the economic, social and political situation that exists in New Zealand.

The most attractive economic instrument for dealing with waste in New Zealand at present is that of the user charge. One advantage of the charge is that it can be applied easily by territorial authorities to domestic waste services and does not require a major change to the current waste collection and disposal operations. User charges are already applied successfully to commercial waste services. It is therefore recommended that the charge be

extended to cover domestic waste. The charge should be based on a standardised container for ease of collection and administration. A two-part charging system should be adopted with a fixed charge to cover administration and operating costs, and a per unit charge imposed on waste generated.

User charges can be complimented by deposit-refund schemes where these are economically viable. The two policy instruments would not detract from each others' operation as deposit-refund schemes are simply a means of diverting products from the waste stream so that less waste remains to be disposed of. More information is needed on the viability of deposit-refund schemes for various products as the costs and benefits of such schemes has changed markedly in the twenty years since they were last operated. The product base for which deposit-refund schemes are considered should also be expanded to include tyres, oil and certain hazardous materials which require a degree of control in their treatment and disposal.

Subsidies are appropriate for specific purposes. One area where they should be applied is that of encouraging capital investment and research and development into cleaner production techniques. Subsidies should however be used warily so as to ensure that they do not result in further inefficiencies. The revised environmental grants scheme administered by the Ministry for the Environment can be used for this purpose.

Product charges are not considered suitable owing to the complexity of establishing all relevant costs for the vast range of products which end up in the waste stream. Simplifying the system and imposing the charge only on certain types of products has the problem that it can lead to discrimination between products and therefore inefficient results. Techniques such as life cycle analysis need to be further developed so as to be able to identify and quantify the environmental impacts of products. If this, and an appropriate charging system was established, the imposition of product charges should be seriously considered as, in theory, they provide the most efficient and equitable method of charging for waste services.

CHAPTER 8 - VOLUNTARY INITIATIVES

8.1 RATIONALE

Voluntary initiatives cover a broad range of instruments that can be initiated by government, industry and the public. Most are agreements to act in a certain manner. The rationale behind using voluntary agreements is that, by involving parties in decisions affecting their behaviour, they will feel more inclined to follow the decisions reached. Decisions should also be able to accommodate more of the concerns of the parties, thereby leading to a more effective outcome.

Voluntary agreements may be an alternative to legislation as parties can then be at least partly self-regulating. The different approaches to setting packaging waste reduction targets is a clear example of this, as will be discussed in Chapter 8.3.

A degree of cooperation and communication is required between parties for voluntary initiatives to be effective. This is easier to achieve where parties are working towards similar outcomes. Some voluntary initiatives are supported by the threat of action by one party if an acceptable outcome is not achieved. Again, overseas packaging waste reduction targets are an example of this.

Government initiatives include voluntary agreements with public and private organisations such as procurement policies for government agencies (though this may be regulated as it is in certain states in America[1]). These are discussed in the following section. Other examples are cleaner production demonstration projects implemented with the assistance of central or local government and waste reduction targets negotiated between government and industry.

[1]For example, California has price preferences for paper with a recycled content, compost, glass, oil, solvents, paint, tyres and glass products. See Wingerter EJ, "Urgent Responses by the States" EPA Journal. Volume 18, Number 3, July/August 1992.

Examples of industry initiatives include codes of practices, eg, the New Zealand Chemical Industry Council's Responsible Care Code, accreditation programmes such as the ISO 9000 series and the "Environmental Choice" labelling scheme (discussed in Chapter 9.2), the Keep New Zealand Beautiful Incorporated Society programmes and the levy placed on members of the Plastics Institute of New Zealand (PINZ) (both discussed below).

Public and consumer initiatives can include boycotting of products, collections of reusable material by community groups, and so on.

Application to New Zealand

Much of the Government's waste policy depends on voluntary initiatives by other parties. These include industry implementing cleaner production projects and using the "Environmental Choice" labelling scheme, industry sectors negotiating waste reduction targets with the government and local authorities using the 'Waste Analysis Protocol'[2] to measure waste. This is in line with other aspects of New Zealand society, which is not as regulated as many European countries, or as regulated as New Zealand was until the second half of the 1980s.

Some of these initiatives may need to be supported by other measures, such as providing financial support to territorial authorities to employ the 'Waste Analysis Protocol'. Measures must ensure that support is equitable between parties. In the case of the Protocol, the contestable environmental grants scheme administered by the Ministry for the Environment should be used to ensure that data are collected from areas where councils are under-resourced to entirely fund the adoption of the Protocol.

As with initiatives overseas, waste reduction targets will need to be supported by an understanding that other measures may need to be used if the targets do not lead to a sufficient decrease in the amount of targeted wastes created. The incentive to cooperate in the negotiation process is that a more suitable outcome will be attained than if regulatory measures are used.

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[2]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

As will be discussed in Chapter 9.2, the Government may need to provide financial support for the "Environmental Choice" labelling scheme if it considers it to be a sufficiently effective mechanism for influencing manufacturers' and consumers' behaviour. The "Environmental Choice" scheme is the only government-based labelling scheme in the world which does not currently receive government financial support.

Cleaner production projects differ from many other voluntary initiatives in that no threat of other measures need be used. Many businesses are undertaking projects without the support of Government as there are financial and other benefits to businesses from adopting cleaner production. Cleaner production programmes are needed to educate businesses as to the benefits of employing cleaner production techniques and to help overcome inertia within businesses.

Voluntary initiatives have also been undertaken by industry. One example of this is the voluntary funding of Keep New Zealand Beautiful Incorporated (KNZB) by packaging and manufacturing industries along with local authorities. KNZB is given primary responsibility for the promotion of litter control in New Zealand under the Litter Act 1979. It is also involved in beautification campaigns, environmental care, and enhancement of civic/national pride and operates 75 programmes at a local level.

Another example of industry initiatives is that of the Plastics Institute of New Zealand's (PINZ) levy. All members of the Institute pay a levy based on tonnage of plastics dealt with. Suppliers of resin pay a fee equal to twice their annual subscription to the Plastics Institute. Manufacturers pay a fee of $2.00 per tonne of plastic imported. Until recently, the levy has been used for education purposes such as resource kits, talks to organisations and so on. The levy is now being directed, at least for the time being, into an Environmental Research Fund.

The fund is being managed by the Environmental Research Foundation, under the direction of the Plastics Institute. The Foundation is currently carrying out a mass balance survey for the use of all types of packaging in New Zealand. The survey highlights trends of the past few years and will provide much of the information needed to draw up strategies with sectors of the packaging industry to reduce the amount of packaging waste created.

The plastics industry has also set an informal target to recycle 25% of all plastics in New Zealand by 1995. The target has not been formalised as there is some doubt as to whether this figure can be achieved. Some players are including the reprocessing of manufacturing wastes in the target, thereby improving the likelihood that the target can be met.

Voluntary initiatives are a necessary and useful set of instruments for parties to use to achieve compatible waste management outcomes. They complement other types of instruments and are especially useful in a country like New Zealand where a command and control approach does not find favour and there are relatively few key players, all of whom are well known to each other.

8.2 PURCHASING POLICIES

The rationale of purchasing policies is that they provide information about products, specifically indicating which products have lower environmental impacts than their competitors. Those affected by the policies can then exercise their purchasing power to lessen the environmental impact of their activities, consequently influencing the development of products.

Purchasing policies have been developed by various countries, states and organisations. Objectives of the policies have been to support products with lower environmental impacts than competitors' and to provide a market for recycled products. This purchasing power can have a considerable effect. For example, it has been stated[3] that government agencies' expenditure in America represents an estimated 12% of the gross national product.

All American states have legislation encouraging state agencies to buy paper containing recycled paper[4]. A number of states and counties require a certain percentage of paper purchased to contain recycled content. Many also have price preferences, in particular for paper but also for compost, glass, oil, solvents, paint, tyres and glass products.

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[3]Sudol F, "A 'Buy Recycled' Program that Works" American City & County. August 1992.

[4]Wingerter EJ, "Urgent Responses by States" EPA Journal. Volume 18 Number 3. July/August 1992.

Application to New Zealand

The Ministry of Commerce has produced purchasing guidelines that may be used by Government agencies. The guidelines contain a very small section on energy efficiency and environmental criteria. However, environmental aspects of purchases are only covered in limited detail and the guidelines are not used by all Government agencies.

The Ministry for the Environment has produced a 'Going Green'[5] package giving examples of office practices which reduce environmental impacts. The package is aimed at a very general level and only covers very simple measures. The Ministry has also produced guidelines for businesses to develop environmental policies[6]. Some territorial authorities are also developing purchasing policies though none are yet complete[7].

Currently there are no thorough guidelines which government agencies can use to assist in reducing their environmental impacts via purchasing decisions. Purchasing Guidelines should be developed by Government for all organisations. Government agencies should be required to follow these Guidelines. Private sector initiatives should also be encouraged.

Until the methodology of life-cycle analysis has been developed further and all environmental costs are able to be taken into account, purchasing policies need to remain flexible. At present, there is insufficient information regarding certain products to warrant their preference over competitors'. This does not negate the positive effects purchasing policies can have. Other benefits from creating and supporting markets for certain products can also be gained.

Where life-cycle analysis is not sufficiently developed, a price preference for certain products could be put in place to allow for external environmental costs which are recognised but which cannot yet be adequately quantified. This would need to be a conservative estimate of external costs so as not to support products which are actually more damaging than others.

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[5]Ministry for the Environment, Going Green: Your Easy Guide to an Environmentally Friendly Office. Wellington: Ministry for the Environment, January 1992.

[6]Ministry for the Environment, Company Environmental Policies: Guidelines for Development and Implementation. Wellington: Ministry for the Environment, August 1993.

[7]For example, Wellington City Council.

8.3 OVERSEAS PACKAGING WASTE REDUCTION TARGETS

The following section outlines strategies taken by countries around the world to decrease the amount of packaging waste created and disposed of via the setting of targets[8]. Targets are being increasingly used, and fall into two categories - those where a cooperative approach has been adopted to negotiate targets, and those where targets have been imposed through legislation. This latter category includes the European Community and European countries which are following moves taken by Germany in establishing the mandatory recycling of packaging. Both categories will be looked at in turn as they are both relevant in determining the appropriate method for establishing waste reduction targets in New Zealand.

Although targets established overseas focus on recycling rates, it is generally accepted that recycling is just one way in which to achieve the overall goal of reducing the amount of waste created. As a result, the targets set in some countries should more correctly be referred to as waste reduction and recycling targets.

Targets in all cases deal with particular packaging materials as opposed to merely setting an overall goal for a decrease in waste being disposed of, with the exception of Canada.

Specifically, packaging targets have been applied to the following:

i) Glass;
ii) Aluminium cans;
iii) Steel cans;
iv) Paper/cardboard;
v) Liquidpaperboard;
vi) Plastics.

Targets have also been set for individual grades of plastic or groups of plastics in order to achieve the overall plastics target. See Table 3 overleaf packaging waste reduction and recycling targets from around the world.

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[8]Mayes K, International Packaging Reduction Targets (unpublished report). Wellington: Ministry for the Environment, October 1993.

Table 3: **WASTE REDUCTION AND RECYCLING TARGETS FOR PACKAGING MATERIALS**

MATERIAL	PERCENTAGE (%)								
	Australian Govt	Australian Industry	The Netherlands	Germany	Sweden	Belgium	Wallonia	Austria	Italy
Glass	45	45	80	70	>80	80	75	>75	50
Aluminium	65	65	75	70	>80	80	80	-	50
Steel	25	40	75	70	70	60	25	-	-
Liquidpaperboard	20	20	-	60	-	-	-	-	-
Paper	71	40	60	60	65	-	-	-	-
Newsprint	40	71	-	-	-	60	30	-	40
Plastics	25	23	50	60	65	-	-	-	-
-HDPE		50							
-PET		30			90				
-PVC		15	65						
-Polypropylene		15							
-Polystyrene		10							

8.3.1 NEGOTIATED TARGETS

Australia

The Australian Government has addressed the issue of reducing packaging waste with a two-tiered approach. The first of these, embodied in the 'National Packaging Guidelines'[9], has the overall aim of reducing the amount of packaging waste reaching the landfill on a progressive basis by the year 2000. In order to achieve this, targets have been set in the 'National Strategy on Waste Minimisation and Recycling'[10] for each industry sector involved in packaging. These targets focus on national recycling rates as a major way in which packaging can be diverted from the landfill.

Regulation will only be considered if inadequate measures are taken to achieve the goals of the two documents.

National Packaging Guidelines

The 'National Packaging Guidelines' were developed by the Australian and New Zealand Environment and Conservation Council (ANZECC) in 1990-1991, based on recommendations of a Packaging Task Force. This consisted of representatives from government, industry, consumer and conservation groups. These Guidelines focus on the amount of packaging material being landfilled and set cumulative goals to reduce this amount for the whole of Australia. This allows States and Territories to aim towards different targets and to operate individual waste management initiatives. Targets set by the individual States and Territories will differ according to factors such as density of population and distance from markets.

Similar targets are given for domestic waste and for industrial waste. This latter category contains commercial, industrial and construction/demolition packaging refuse. The targets developed require domestic packaging waste requiring disposal to be reduced by 50kg per capita (from 1991 levels) and industrial packaging waste requiring disposal to be reduced by 50% (from 1992 levels), both by December 31, 2000.

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[9]Australian and New Zealand Environment Council (ANZEC), National Packaging Guidelines. Victoria: Australian and New Zealand Environment Council, July 1991.

[10]Commonwealth Environment Protection Agency, National Strategy on Waste Minimisation and Recycling. Victoria: Commonwealth Environment Protection Agency, June 1992.

Targets are measured on the basis of weight as weighbridges are widely available with which to provide accurate data. Although it was recognised that volume was also relevant, it was considered that there were not adequate systems in place to provide this form of measurement. Targets will be reviewed annually to ensure adequate progress is being made towards them.

National Waste Minimisation and Recycling Strategy

This Strategy, developed by the Commonwealth Environment Protection Agency (CEPA), includes the setting of sector targets for recycling on a national level. Implicit in the use of the term "recycling targets" is the understanding that targets apply to waste minimisation as a whole. This allows for methods such as lightweighting to occur and recognises that recycling is not an end in itself but, rather, is part of the overall strategy of decreasing the amount of waste that is created and subsequently disposed of.

The CEPA Strategy was developed in June 1992 to provide specific means to achieve the 'National Packaging Guidelines'. Kerbside recycling schemes and drop-off points are being established to support the Strategy.

The final national targets established in the Strategy and the various industry targets are given below. Some industry targets are lower than those contained in the Government's Strategy as agreement could not be reached on appropriate targets.

Table 4: **AUSTRALIAN NATIONAL RECYCLING TARGETS**

MATERIAL	TARGETS (%)	DETAILS
Plastic containers	25	
Glass	45	
Aluminium cans	65	
Steel cans	25	by 1996 (40% by 2000)
Liquidpaperboard	20	
Newsprint	40	
Paper packaging	71	to be secondary fibre

These targets are to be achieved by 1995 and apply both to imported goods and to goods produced and purchased within Australia. Exported goods are excluded.

Table 5: **AUSTRALIAN INDUSTRY RECYCLING TARGETS**

MATERIAL	TARGETS (%)	DETAILS
Plastic containers	23	rigid & semi-rigid packaging
HDPE	50	
PET	30	
PVC	15	
Polypropylene	15	
Polystyrene	10	
Glass	45	
Aluminium cans	65	
Steel cans	16	50% by 2000
Liquidpaperboard containers	5	20% by 2000
Newsprint	40	
Paper packaging	71	to be secondary fibre

The Netherlands

In October 1988 the Dutch Government developed a 'Memorandum Regarding the Prevention and Recycling of Waste Materials'[11]. This memorandum established targets for the prevention and recycling of 29 waste streams, including packaging.

The targets established general goals to be reached by the year 2000. For packaging the targets are:

i) No increase in the amount of packaging generated;

ii) The elimination of landfilling of packaging waste;

iii) An increase in recycling from an estimated 25% of packaging in 1986 to 60% in 2000;

iv) Qualitative waste reduction by removing such "harmful materials such as heavy metals and PVC" from the waste stream.

In order to implement this strategy a covenant was signed between the Dutch Government and the Foundation for Packaging and the Environment on June 6, 1991. The Foundation represents all industry sectors affected by the covenant. The accord reaffirms the targets of the 1988 memorandum. Other obligations include:

i) Reduction of packaging waste
   - Quantity of packaging put onto the market to be less than 1986 levels at least by 2000 (target of 90% reduction);
   - Packaging put onto the market by 1997 to be at least 3% less than 1991 levels (target of 10% reduction).

ii) Recycling of packaging waste
   - 40% of packaging waste to be recycled by 1995 (target of 50%);
   - 60% of packaging waste to be recycled by 2000;
   - Industry to take back at least 90% of packaging material by 2000.

[11]Ministry of Housing, Physical Planning and Environment, Waste. The Netherlands: Ministry of Housing, Physical Planning and Environment, 1991.

Specific material recycling targets have been set in order to achieve the 50% target by 1995. These are as follows:

Table 6: **THE NETHERLANDS' RECYCLING TARGETS**

MATERIAL	TARGETS (%)	DETAILS
Glass	80	One-way glass
Metals	75	
Paper/Cardboard	60	Dry paper/cardboard packaging
Plastics	50	Bottles & flasks of high grade plastic as well as 50% of clean foil from offices, shops & the service sector

Industry sectors have developed implementation plans setting out methods to achieve the objectives. These are to be reviewed annually and will include a summary of results achieved during the previous year. If industry fails to comply with the terms of the covenant its specific obligations can be enforced in court. Parliament will also enact legislation to enforce the goals of the agreement if necessary.

Canada

The 'National Packaging Protocol'[12] was developed by a Government appointed task force. It consists of six policies and progressive targets to manage packaging. Announced in April 1990, it contains the following targets:

National Targets

By December 31, 1990: Nationally coordinated data collection programme to be in place in order to monitor targets.

By December 31, 1992: Packaging waste requiring disposal reduced by at least 20% from 1988 levels.

[12]Canadian Council of Ministers of the Environment, National Packaging Protocol. Canada: Canadian Council of Ministers of the Environment, April 1990.

By December 31, 1996: Packaging waste requiring disposal reduced by at least 35% from 1988 levels.

By December 31, 2000: Packaging waste requiring disposal reduced by at least 50% from 1988 levels.

50% of these diversions are to be achieved through source reduction and reuse initiatives. Recycling programmes are to make up the remaining 50%.

Standards and regulations have been developed to reduce waste from packaging materials. These will only be employed if the national government and industry targets are not achieved.

8.3.2. LEGISLATIVE TARGETS

European Union

The European Union has developed a draft Council Directive on Packaging and Packaging Waste which is due to come into effect in 1995[13]. The Directive aims for an overall recovery rate for packaging of 50% by recycling, composting and energy recovery. Recycling targets of 15% have been set for each type of packaging material. Ten years will be given in which to fully implement the Directive, giving Member States an opportunity to establish waste management plans, systems for collecting used packaging and so on.

The Directive is similar to moves taken by Germany in this area. Some other European countries have already implemented their own initiatives in line with the EC Directive.

Germany

Packaging Ordinance

In June 1991, the German Government implemented the Ordinance on the Avoidance of Packaging. The general principle embodied in this Ordinance is that those who create packaging are responsible for accepting its return for reuse and recycling. This applies both to local manufacturers and to importers of products.

[13]Italian Trade Commission, pers. comm. 22 July 1994.

Responsibility for packaging entered into force in three stages, based on the three categories of packaging:

i) transport packaging, eg. pallets;

ii) secondary packaging, eg. outer cartons;

iii) sales packaging, ie. the wrapping immediately around the product.

The first stage of responsibility began on December 1 1991 with distributors and manufacturers being responsible for collecting and reclaiming packaging used in transportation.

The second stage of the Packaging Ordinance came into force on April 1 1992. This stage involves an obligation on distributors to accept secondary packaging of products at the point of sale. Distributors can then return the packaging to the manufacturer.

Since the beginning of 1993, distributors have also been obliged to take back, at the point of sale, the sales packaging from packaged products. Distributors can also return this packaging to the manufacturer.

RESY symbol

Manufacturers and processors of corrugated board have concluded a contract with RESY GmbH, which involves the use of the RESY symbol on transport packaging. The contract provides an undertaking to produce and process only recyclable transport packaging. Paper manufacturers have guaranteed to take back and recycle transport packaging identified by the RESY symbol.

Green Dot System

The manufacturer and distributor can be relieved of their obligation to accept returned secondary and sales packaging if they take part in a comprehensive system to collect packaging directly from the consumer. Using an alternative system is only permitted if certain collection, sorting and recycling targets are met by the particular system. These targets originally increased over a 2½ year period and result in recycling targets at 1 July 1995 of 64%-72%, depending on the type of packaging material. Owing to problems experienced in finding markets for the collected material, these targets have had to be

reduced and the deadline for achieving the targets extended to 1 January 1988. Targets will then be between 60% and 70%. The new targets also allow packaging waste to be incinerated, but only in combustion plants with an efficiency of over 75%. At present, no German plants are this efficient, putting pressure on overseas incineration facilities[14].

A table setting out the revised recycling targets is given below. If the targets are not reached, it will be necessary to revert to the obligation of accepting returned packaging at the point of sale.

Table 7: **GERMANY'S RECYCLING TARGETS**

MATERIAL	TO 1/1/96 (%)	TO 1/1/98 (%)	AFTER 1/1/98 (%)
Glass	40	70	70
Tinplate	30	70	70
Aluminium	20	70	70
Board, card, paper	20	50	60
Plastics	10	50	60
Composites	10	50	60

The majority of manufacturers have subscribed to a system of collection, sorting and recycling of packaging operated by the private company Duales System Deutschland GmbH (DSD) in order to avoid the obligation of dealing directly with their packaging waste.

On subscribing to the DSD system, manufacturers are granted a licensing symbol known as the Green Dot to display on their packaging. This indicates to consumers that the packaging will be collected and recycled by DSD. Licence fees are used to operate the scheme and are graded according to the weight of the packaging. Fees for plastics packaging and composite packaging have been significantly increased owing to the severe problems DSD is experiencing in finding markets for these types of packaging.

[14]Rose M, "German Packaging in the Melting Pot" Warmer Bulletin. Issue 41, May 1994.

To ensure that collected packaging is actually recycled, an independent company, TUV (Technische Uberwachungsverein), has been contracted to monitor the transfer of materials.

No discussion was entered into with industry over the enactment of the Packaging Ordinance or over its contents. This includes the setting of recycling targets for sales packaging.

A critique of the German Packaging Ordinance is given in the following section.

France

Targets

Recycling targets have applied to glass and to PVC since 1979 although only the glass targets have been achieved.

Packaging Decree

Owing to relatively low recycling rates for materials other than glass and ferrous metal, France has enacted a Packaging Decree similar to that of Germany. Coming into force in April 1992, the Decree aims to achieve a recovery rate of 75% of packaging waste by 2000. This figure includes targets of 50% recycling and 25% energy recovery.

An overview of the French system is given below[15]:

i) Local authorities maintain the responsibility to collect and treat packaging material within their refuse and recycling schemes. This means that retailers are not involved in the scheme.

ii) Manufacturers pay an average fee of $NZ0.01 for every packaging unit put onto the market. The fee is not differentiated between materials.

[15]New Zealand Embassy, Paris, pers. comm, 2 June 1993; Probert Dr J and Jones C, "Eco-Emballages: A Flexible Body Takes Shape" Warmer Bulletin. Issue 43, November 1994.

iii) The fee is put into a specific fund administered by a state approved company, Eco-Emballages, and is used to help fund source separation programmes of packaging waste. Transport and secondary packaging are currently being addressed.

iv) Eco-Emballages, made up of industry representatives, licenses its members to apply a logo to packaging similar to Germany's Green Dot.

v) Germany will accept products carrying the French Green Dot symbol and vice versa.

vi) Manufacturers who do not contribute to the fund are obliged to take their own packaging back and to recycle it.

vii) Guarantees have been given by Eco-Emballages that the recovered material will be recycled by the industries.

Recovery targets were included in the first draft of the Decree (50% by 1997, 75% by 2002) but these were not carried into the final text. Instead, targets will be imposed in conjunction with the industry agency.

Sweden

Sweden adopted legislation in July 1993 giving producers responsibility for the collection, recovery and recycling of used packaging. The legislation entered into force on January 1, 1994[16].

The requirements and goals have been set and are to be reached before January 1, 1997. These are set out in Table 8 overleaf. Present recovery levels are given in square brackets.

[16]Better Waste Management - a Global Challenge. 1993 International Solid Waste Association (ISWA) Annual Conference Proceedings. Sweden: RVF, 1993; and Cushing Graham, Marketing and Promotions Manager, Carter Holt Harvey Ltd, pers. comm. 28 July 1994.

Table 8: **SWEDEN'S RECYCLING REQUIREMENTS AND GOALS**

MATERIAL	REQUIREMENTS (%) [CURRENT RECOVERY LEVELS (%)]	GOALS (%) [CURRENT RECOVERY LEVELS (%)]
Glass (beverages)	95 [95]	
Glass (wine, spirit)	90 [65]	
Glass (other)	70 (45)	
Aluminium (cans)	90 [85]	
Corrugated Cardboard	65 [65]	
Plastic (PET bottles)	90 [?]	
Plastic (other)		65 [5]
Paper, Cardboard		65 [5]
Steel (tin cans etc)		70 [5]
Aluminium (not cans)		70 [5]

Belgium

The three regions of Belgium have set recycling targets for packaging waste[17]. Within an overall collection target of 70% of all packaging by the year 2000, the aim is to recycle the following percentages:

Table 9: **BELGIUM'S RECYCLING TARGETS**

MATERIAL	TARGETS (%)
Glass	80
Metals	80
Plastics	60
Paper & Board	60

By 1995 Wallonia plans to recover the following percentages:

Table 10: **WALLONIA'S RECYCLING TARGETS**

MATERIAL	TARGETS (%)
Metals	80
Glass	75
Plastics	30
Paper & Board	25

The Brussels and Walloon Regions are working together to study further measures.

[17]New Zealand Embassy, Brussels, pers. comm. 18 June 1993.

The Flemish Regional Government has signed a 'Basic Agreement Concerning Prevention and Recycling of Packaging Waste'. This was signed on June 26 1990 by the Flemish executive and 17 private sector associations representing producers, distributors, users and recyclers of packaging. The Agreement sets up a non-profit organisation with the signatories as members to develop policies concerning packaging materials.

Specific objectives were not established in the Agreement but were specified in an action programme, along with binding commitments by the industries concerned. The action programme, signed on March 26 1991 was developed and financed by the industry groups.

Austria

On August 7 1990 the Austrian Government issued a Decree setting goals for reuse and recycling of beverage containers. It should be noted that energy recovery is included in the reuse concept. The goals, to be achieved by December 31 1993, were as follows:

Table 11: **AUSTRIA'S RECYCLING TARGETS**

CONTAINERS	TARGETS (%)
Beer & Mineral Water	90
Non-alcoholic Beverages	80
Fruit Juice	40

A Packaging Ordinance following the EC Draft Directive also entered into force on October 1, 1993[18]. The legislation follows the German definitions of transport, sales and secondary packaging and encourages the establishment of a private system for the collection, recycling and disposal of packaging waste in conjunction with the public refuse collection system.

Materials covered by the Ordinance are:

i) Paper, cardboard, paperboard and corrugated board;

ii) Glass;

iii) Wood;

[18]Cushing Graham, Marketing and Promotions Manager, Carter Holt Harvey Ltd, pers. comm. 28 July 1994.

iv) Ceramics;

v) Metals;

vi) Textile fibre materials;

vii) Plastic materials;

viii) Compound materials;

ix) Other packaging materials, in particular those with a biological base.

The legislation sets up a Packaging Commission with Government and industry representatives to advise on the implementation of the Ordinance.

A private organisation, ARA (Altstoffrecycling Austria), will deal with the recycling of packaging waste. This is an umbrella organisation for the Austrian recycling associations covering all the major types of materials. ARA will licence the use of the same symbol as the German DSD System, but without the words "Der Gruene Punkt".

The charges have deliberately been set to make the handling of plastic packaging very expensive as Austria has limited opportunities for recycling plastic material.

Italy[19]

Legislation enacted in 1988 set targets for the recycling of beverage containers. Targets, which were to be achieved by January 1 1993, are as follows:

Table 12: **ITALY'S RECYCLING TARGETS**

MATERIAL	TARGETS (%)
Glass	50
Metals	50
Plastics	40

In the case of plastics, at least half of the 40% had to be recycled; the rest could be burned if the energy is necessary.

[19]New Zealand Embassy, Rome, pers. comm. June 1993.

By May 1993 the following recycling rates had been obtained: 46% of glass, 20% of aluminium and 5% of plastic. One reason for the targets not being met is that local authorities would not guarantee that recyclable products would be collected using different containers for each material as the Government had envisaged when setting the targets.

If the targets were not met a product tax was initially proposed for non-refillable containers. This was to be introduced as of April 1993, however the tax has been abandoned. Italy now plans to wait for the European Union directive aimed at increasing recycling rates of all types of packaging to come into force and to translate it into Italian law[20].

8.4 CRITIQUE OF GERMAN PACKAGING ORDINANCE

The German Packaging Ordinance and similar moves being taken by other European countries are a bold attempt to increase the level of recycling and "close the loop". In practice however the German legislation has resulted in significant problems, not just for Germany but for other countries whose recycling markets have been swamped by Germany's packaging waste.

The Ordinance is critiqued in this section even though it is not a voluntary initiative as there have been calls to adopt a similar system in New Zealand. European countries have also followed Germany's lead in this area and their approach contrasts strongly with the direction currently being taken in New Zealand.

Criticisms of the German Packaging Ordinance are many and varied. One criticism is that it does not promote waste minimisation which should be the first step in the waste hierarchy. Another criticism is that it has mandated recycling rates which are unrealistic as they do not take account of the environmental and financial costs of recycling.

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[20]Cushing Graham, Marketing and Promotions Manager, Carter Holt Harvey Ltd, pers. comm. 28 July 1994.

Many of the problems being experienced are the result of more packaging being collected than anticipated. This is especially so when Germany's capacity to recycle the packaging waste remains at less than 50% of what is required[21]. A large proportion of Germany's packaging waste is being transported to other countries for processing. Although packaging is collected for recycling, attempts to "close the loop" and develop products from recycled material are not meeting the supply of the packaging waste.

Related to this are criticisms relating to the financial costs of operating the scheme. These costs have been estimated at $NZ8,000 million[22]. This equates to costs for each individual of approximately $NZ75 per annum. As a result DSD, the organisation operating the Green Dot system, is facing a financial crisis. At the end of 1993, the organisation received approximately $NZ800 million from industry groups to "cover deficits and provide a capital base". The Government has also been asked to contribute the equivalent of $NZ560 million to help DSD avoid bankruptcy.

These costs have been estimated to have achieved only a 3.1% decrease in the amount of packaging used in Germany in 1992 compared to 1991[23].

The deadline for achieving recycling targets has had to be postponed because of these difficulties and targets have had to be lowered. Energy recovery, which was previously not permitted under the Ordinance, is now permitted although restrictions on the efficiency of combustion plants mean that this currently cannot occur within Germany[24].

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[21]400,000 tonnes of packaging waste is being collected per year, and the German recycling facilities can deal with only 125,000 tonnes of this. "Germany's DSD Gets $500 million" Waste Management and Environment. November 1993.

[22]Schnurer Dr Helmut, Ministerial Manager, Head of the Domestic Waste Branch, Ministry for the Environment, Nature Conservation and Reactor Safety, Germany, pers. comm. March 1993.

[23]"Packaging in the Spotlight" Warmer Bulletin. Issue 39, November 1993.

[24]Rose M, "German Packaging in the Melting Pot" Warmer Bulletin. Issue 41, May 1994.

The effects of the German Packaging Ordinance on New Zealand have been felt primarily in two areas. Products exported to Germany now have to use packaging that can be recycled and exporters have to make arrangements for the packaging waste to be collected. However, the area where the Ordinance has had the most wide-spread impact is that of New Zealand's recycling markets. Paper and plastic wastes previously exported from New Zealand to Asia for recycling are now competing (often unsuccessfully) with large quantities of German packaging wastes. In some cases, German waste exporters are prepared to accept a reduced price for material as this is preferable to the penalties which would be imposed if recycling targets are not met.

Given the numerous problems that have resulted from the German Ordinance, it is surprising that calls for similar legislation are still being made in New Zealand. Although such legislation would increase the level of recycling, the costs - both environmental and financial - would be enormous. More effective methods exist to implement the Polluter Pays Principle and to ensure that trying to solve one problem does not lead to a series of others.

8.5 APPLICATION OF PACKAGING WASTE REDUCTION TARGETS TO NEW ZEALAND

As part of the Government's waste policy announced in August 1992, the Ministry for the Environment has been directed to develop targets in consultation with industry sectors. This will be complimented by other sector initiatives and economic instruments where this is appropriate.

The plastics industry is one of two sectors being addressed in the 1994-1995 financial year[25]. Background work has been done looking at targets set overseas and preliminary discussions are underway with the plastics industry. This sector is being concentrated on first as most other packaging sectors have more comprehensive methods of decreasing packaging waste.

[25]Work has been carried out with the oil industry to establish a national collection system for used oil.

The setting of waste reduction targets provides an incentive to manufacturers of packaging to decrease the amount of packaging produced and to put in place methods to decrease the amount of packaging subsequently disposed of. Waste reduction targets implement the waste hierarchy adopted in the Government's waste policy and can provide a useful mechanism to deal with many materials in the waste stream.

It has become clear that some members of the packaging industry are reluctant to become involved in the negotiation process. Reasons given[26] include the feeling that Government has not acknowledged the degree of lightweighting that has occurred especially over the past ten years; the perception that packaging has been unfairly singled out as a problem in the waste stream; and a feeling that recycling schemes should not be increased unless they are economically viable.

Whilst these are valid concerns, they are not significant enough to warrant adopting a different approach. Lightweighting can be recognised if figures are provided by industry demonstrating what has already been achieved and what can realistically be achieved in a given timeframe. Industry is able to determine how to meet the targets set. Recycling schemes will be only part of the probable plan so that they can be utilised to the extent that they are economically viable.

A cooperative approach has been adopted as it recognised that this will result in a more acceptable and realistic outcome. This is appropriate as programmes can be developed by industry to meet the targets in a more efficient manner than if targets have been set by Government. Industry can have regard to waste reduction and recycling initiatives already in place, the current state of recovery and recycling technology and the potential problems that will be encountered in trying to achieve the targets. Industry is seen by the public to be taking responsibility for the waste they have helped create, in line with the "generator pays" principle adopted in the Government's waste policy.

The approaches taken by Australia, Canada, and the Netherlands are particularly relevant as targets set in these countries have been set in conjunction with industry.

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[26]Warburton Dr David, Executive Director, Packaging Industry Advisory Council, pers. comm. 14 December 1992.

In these countries discussions have taken place in various forms between government, relevant industry sectors, grocery associations, and major consumer and environmental organisations. Draft targets have been developed as a result of this discussion and finalised in conjunction with the agreement of details as to how the targets are to be achieved. These details have been set out in plans submitted by each industry sector. In this way, each sector can adopt the methods most appropriate to their situation.

Industry plans generally include methods to achieve targets as well as a summary of results of the previous year. This allows for actual performance to be measured against the proposed targets and enables targets to be modified where necessary.

Despite committing itself in the Corporate Plan to having packaging targets in place by the end of the 1994 financial year, the Ministry for the Environment has not decided on many fundamental aspects of the targets. Unless it directs sufficient resources towards negotiations and puts a process in place, it will fail to have targets in place before the July 1 1995 deadline.

8.6 RECOMMENDATIONS

The use of negotiated targets is a useful way to deal with certain segments of the waste stream. It is more appropriate than legislating targets in a country such as New Zealand which is not as regulated as many European countries. Legislating targets for recycling of packaging materials has also involved substantial costs for all parties. For example, the cost of the collection and sorting scheme in Germany has been put at DM8,000 million[27]. The system will cost each individual more than NZ$75 per annum. This cost has been estimated to have achieved only a 3.1% reduction in the amount of packaging used in Germany in 1992 compared to 1991[28].

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[27]Schnurer Dr Helmut, Ministerial Manager, Head of the Domestic Waste Branch, Ministry for the Environment, Nature Conservation and Reactor Safety, Germany, pers. comm. March 1993.

[28]"Packaging in the Spotlight" Warmer Bulletin. Issue 39, November 1993.

The Ministry for the Environment should continue with a negotiated approach with the packaging sector. Packaging targets should deal with individual packaging materials rather than setting one target for packaging as a whole. Targets should be negotiated with individual industry groups. Involvement of the Packaging Industry Advisory Council (PIAC) should be at the request of those groups. This is because PIAC does not represent all industry parties which will be involved.

Packaging materials that should be covered by targets are:

i) Glass;
ii) Aluminium cans;
iii) Steel cans;
iv) Liquidpaperboard containers;
v) Paper packaging;
vi) HDPE containers;
vii) PET containers;
viii) PVC material;
ix) Polypropylene material;
x) Polystyrene material.

It is considered more appropriate to determine separate targets for the various plastic types as each involves different manufacturers and suppliers. The plastics industry is not sufficiently cohesive to determine each parties' contribution without meditation from an outside party such as the Government. This is demonstrated by the fact that many suppliers of plastics resins and other companies involved in the importation of plastics do not belong to the Plastics Institute of New Zealand. Plans for various types may also differ according to their properties.

Another segment of the waste stream that can be dealt with in a similar manner is non-packaging paper. This not only makes up 20% of domestic waste and a large proportion of commercial waste[29], but is produced by defined industry groups making it practical to discuss issues and propose solutions.

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[29]Tong and Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

Individual products that cause specific problems in the waste stream can also be addressed by the used of negotiated targets. Examples include various battery types, tyres and other hazardous wastes.

A timeframe for developing targets needs to be set by Government. The process should be known before discussions begin to ensure that all parties have the same expectations of the process and are working within the same framework.

Industry should develop plans for achieving targets. As long as satisfactory progress is being made towards relevant targets, regulation should not be used. In the event that targets are not being met, a cooperative approach should be taken to determine the reasons for this. If it is considered that targets are unattainable, targets may need to be renegotiated. Regulation should only be imposed if the Government considers that industry sectors are not willing to perform their obligations.

A formal reporting process should be established to enable issues to be discussed as they arise. This would help ensure that the failure to meet targets is not presented as a fait accompli by industry when targets are due to be achieved. It is considered that the reporting and monitoring process of the Netherlands is overly complex for New Zealand. A more informal structure could achieve similar outcomes as, in New Zealand, there are fewer parties involved and a less regulated approach is generally practiced.

The process of establishing voluntary waste reduction targets, especially for packaging, needs to be developed to a much greater degree in order for the Ministry for the Environment to meet its deadline of having targets in place by July 1 1995 and for the instrument to be implemented effectively for a number of materials in the waste stream.

CHAPTER 9 - EDUCATION AND INFORMATION

Application to New Zealand

Although many information and education campaigns are currently aimed at the public, education of all parties about waste policy is needed. Regulators can benefit from learning about waste types and quantities and the effects of their policies, industry can benefit from learning about cleaner production techniques and all parties can exercise their purchasing power more effectively.

In the area of waste, education and information campaigns aimed at the public are seen as being primarily the role of local government[1]. Information is needed to support territorial authority operations such as landfill management and, where they are operated, recycling schemes.

Industry is also taking the initiative to educate consumers by providing information about various products on labels. One programme that relies on manufacturers' involvement is the "Environmental Choice" labelling scheme discussed in the following section. Briefly, the "Environmental Choice" scheme is endorsed by Government and operated by an independent agency, Telarc. It supplies consumers with information that products meet certain criteria regarding their environmental impact throughout their life-cycle.

Central and local government are both taking responsibility to educate businesses about cleaner production, although this role has now largely been divested to territorial authorities.

More education is needed about the level of resource use occurring in today's society. There is a perception that this has increased markedly in recent years, with older members of society who grew up during the Depression of the 1930s and World War II in the 1940s often being critical of younger members who grew up when resources appeared to be more abundant, commenting that the level of wastage of products has increased significantly since their childhood[2].

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[1]Mayes K, Attitudes towards Packaging Waste (survey). n.p. October 1993 and interviews listed in Chapter 5.

[2]Discussion Group Number 1, 27 April 1993.

Part of this perception is due to a higher profile of environmental issues with more information available and the public becoming more involved in decision-making. Education by all parties should be directed at issues of sustainability and the availability and use of resources via cleaner production programmes for businesses, education programmes in schools, media reports, environmental organisations and so on.

Issues relating to recycling of waste also need to be dealt with via education and information programmes. In particular, the public needs to understand about the financial viability of recycling certain materials and the barriers preventing a higher demand for recycled products. Education should be the responsibility of all parties, although it is territorial authorities which are bearing the brunt of the public's disappointment when it discovers markets for recyclable materials have fallen over[3]. Information is therefore needed about steps after recyclable material is collected and about the costs of collection and transportation. Until the public is better informed about these issues, it will continue to pressure territorial authorities and central government to operate recycling schemes, not realising that recycling is not necessarily the most appropriate waste management option.

Education and information are instruments which are difficult to separate from other instruments and actions of society. The benefits are difficult to quantify as they are often used to complement other instruments and are not always able to be seen in a measurable way. It is often impossible to determine how much of changes to behaviour and attitudes are the result of particular education and information methods and how much is attributable to other changes in decision-making environments.

Despite this, it is obvious that education and information are essential to help alter people's attitudes and behaviour. In a society which is not heavily regulated such as New Zealand, they are an effective instrument for conveying the rationale for adopting certain policy instruments and allowing individuals to take more responsibility for their activities.

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[3]For example:

i. "Can Mountain Grows" North Shore Times Advertiser. 2 June 1992;
ii. "Future of Cardboard Recycling Placed at Risk" Otago Daily Times. 26 June 1993;
iii. "Recycling Still Problem" Southland Times. 3 July 1993;
iv. "Recycled Paper is Dumped" North Shore Times Advertiser. 28 January 1994.

9.1 ENVIRONMENTAL LABELLING SCHEMES

9.1.1 RATIONALE

The rationale for environmental labelling schemes is that some products within a product group place less of a burden on the environment. Providing information identifying those products will promote the development of products which have a reduced impact on the environment and provide consumers with the information to make informed purchasing decisions. This recognises the potential impact of consumers' purchasing power which must complement regulation and other instruments in order to lead to more environmentally sound production and service activities.

The desired goals of environmental labelling schemes include[4]:

i) Improving the sales or image of a labelled product;

ii) Raising the awareness of consumers;

iii) Providing accurate information;

iv) Directing manufacturers to account for the environmental impact of their products;

v) Protecting the environment.

This last goal is the ultimate benefit of labelling programmes.

9.1.2 OVERSEAS ENVIRONMENTAL LABELLING SCHEMES

Environmental labelling schemes are operating in many parts of the world. Germany's "Blue Angel" scheme was established in West Germany in 1978. Schemes in Canada, Japan and Norway followed in 1988. Others in Australia, Singapore, New Zealand and the European Union are in their infancy. In addition to these schemes which have/had Government involvement, private schemes also operate in countries such as Sweden and the United States.

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[4]Organisation for Economic Cooperation and Development, Environmental Labelling in OECD Countries. Paris: Organisation for Economic Cooperation and Development, May 1991.

Most programmes operating overseas have similar features:

i) Products are tested by independent organisations;

ii) Labels are awarded for specified times before being reconsidered;

iii) Criteria focus on the need for products to be environmentally sound and to compare favourably with other products in the same product group;

iv) Product categories are similar. Common categories are:
- households cleaners;
- products made from recycled materials (eg. paper, plastics, etc);
- batteries;
- paints;
- products containing no chlorofluorocarbons (CFCs).

Some labelling schemes are life-cycle based although all necessarily focus on aspects which are of greatest concern in the natural and physical environment in a particular country.

The success of environmental labelling schemes can be measured against the goals stated earlier. These can be grouped broadly into:

i) The extent of change in manufacturers' behaviour;

ii) The extent of change in consumers' behaviour;

iii) The benefit to the environment.

Successes in the latter two categories are extremely difficult to measure. In fact, the Organisation of Economic Cooperation and Development has admitted that "To date, there have been no studies of labelling programmes that quantify the effect of environmental labels on product sales or the subsequent environmental impact"[5]. It is also difficult to separate the impact labelling schemes have had from other factors such as the world-wide rise in environmental awareness, the Packaging Ordinance in Germany, changes to raw material prices and so on. However, consumers are apparently supporting the schemes sufficiently for Governments to allow them to continue to operate.

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[5]Organisation for Economic Cooperation and Development, Environmental Labelling in OECD Countries. Paris: Organisation for Economic Cooperation and Development, May 1991.

With regard to manufacturers' behaviour it is telling that most labels awarded have been in very few category groups. For example, over half the labels issued in Germany have been awarded in only four product categories from a total of 60, and over half the labels issued in Japan have been in only three categories from a total of 22[6]. Labelling schemes have not had a significant impact in other product groups. Where environmental aspects of these other products are being advertised, this is being done through other media, irrespective of environmental labelling schemes.

9.1.3 "ENVIRONMENTAL CHOICE" LABELLING SCHEME

As a result of increased public awareness regarding products' impacts on the environment, an independent certification programme was launched in New Zealand in 1990 known as "Environmental Choice". The aim of the programme is "to provide a clear, credible and independent guide to consumers on the environmental soundness of products"[7].

The concept of the Environmental Choice programme was developed by the Government and is to be operated on a 5 year basis by the independent agency, Telarc (Testing Laboratory Registration Council of New Zealand).

The scheme uses a label which can be displayed on products which meet certification requirements. These requirements are set by the Telarc Council after receiving recommendations from a broad-based advisory group, made up of industry, consumer and scientific representatives. Criteria have been set for a number of product groups including various types of batteries and detergents. Specifications are based on a "cradle to grave" philosophy.

Telarc is currently working with Standards Australia to try to ensure that certification requirements and standards being developed for an Australian environmental labelling scheme are consistent with those of "Environmental Choice". The Australian scheme was

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[6]Organisation for Economic Cooperation and Development, Environmental Labelling in OECD Countries. Paris: Organisation for Economic Cooperation and Development, May 1991.

[7]Memorandum of Agreement between Her Majesty the Queen and Telarc. 17 September 1990.

originally launched by the Australian Government at a similar time to that of New Zealand's "Environmental Choice" but experienced a number of difficulties. As a result, certification requirements focussed on one aspect of a product. This focus was found to be unsuccessful and States withdrew their funding. The scheme has now been given by the Australian Government to Standards Australia to develop and the scheme is now moving back to a life-cycle based approach, as was originally intended. Telarc would benefit from having complementary schemes as many products are on both New Zealand and Australian markets. The number of products carrying the environment label should therefore increase, thereby raising the label's profile.

The Government, in developing the "Environmental Choice" concept, always expected the scheme to be financially self-sufficient. This self-sufficiency distinguishes the scheme from other Government-based environmental labelling schemes around the world which all receive varying degrees of Government funding. The expectation was supported by the fact that the Government did not see itself in a profit-making role and did not consider it appropriate for the scheme to be administered by central government. Its main role has therefore been to officially endorse the "Environmental Choice" scheme.

The "Environmental Choice" scheme also differs from many overseas labelling schemes in that it does not aim at having only 20% of a market carrying the environmental label. This is wise in a small country such as New Zealand which has a relatively small market. One outcome of aiming the eligibility requirement at the top 20% of the market is that 80% of a product type will necessarily not carry the environmental label. Manufacturers of these products will invest in other forms of advertising which some contend will be less expensive and more effective.

In this instance, the labelling scheme fails to provide a direct incentive to improve the environmental quality of a product. Environmental improvements would only be made if the market share of products carrying the label was significantly affected, with a strong message from consumers that they will not purchase products which are seen to be lagging behind product leaders. However, other factors such as price and quality continue to influence purchasing decisions[8]. It is likely that manufacturers can retain their market share by relying on one of these factors to appeal to a different segment of the purchasing public.

A balance needs to be achieved between allowing only elite product brands to be eligible for certification and setting requirements so low that they can be achieved relatively easily by most manufacturers. The scheme would achieve no credibility if this were the case as no distinction could be drawn between the levels of compliance for various products. There would also be little incentive to improve the environmental quality of products.

Specifications of the "Environmental Choice" scheme are valid for three years. Requirements will be increased over time as products are developed. The rationale is that manufacturers with the label can then retain a competitive advantage, and that this provides an ongoing incentive to manufacturers to improve the quality of products so that they are eligible to be certified. The "Environmental Choice" scheme will therefore only succeed if it can gain credibility among consumers, much as the "Woolmark" label has done for wool-based products.

A risk for manufacturers is that licences may not be renewed for a product if certification requirements are increased at three-yearly intervals owing to development of technology or a competitors' product. Manufacturers are given 12 months notice of proposed changes in order to decrease this risk. Losing the label's status would be a huge cost to a manufacturer as packaging and advertising campaigns would all need to be changed. There may also be a loss of credibility with consumers, with a perception that a product has become less "environmentally sound" than it was previously. Manufacturers would also incur costs in reapplying for certification once improvements were made to the product.

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[8]Mayes K, Attitudes towards Packaging Waste (survey). n.p. October 1993.

Although the first set of criteria for the "Environmental Choice" scheme were produced in April 1992, only two companies have so far used the scheme to certify a product[9]. Other product specifications are in varying stages of development.

The slow response by manufacturers to the scheme is due to a number of factors. There is a widespread feeling among industry[10] that the $1,000 application fee for certification, including funding laboratory testing, outweigh any benefits such as increases in market share. There is also an annual certification licence fee based on the declared annual net sales of the licensed product. The fee scale ranges from $3,000-$15,000.

Indeed, some manufacturers are sceptical that any benefits would result as they do not believe that consumers are prepared to pay extra for an environmentally sound product[11]. (This assumes that there would be increased costs not covered by increased sales that need to be passed on to consumers).

Telarc contends that the scheme will be successful once a few manufacturers can be persuaded to certify products. Telarc believes manufacturers have adopted a "wait and see" approach and that many will use the scheme once a certain momentum has been gained.

One problem is that, until Telarc receives certification fees, it cannot afford to advertise the scheme. It also considers that advertising will be less successful at this stage than it would be once a number of products are certified. However manufacturers are reluctant to involve themselves in the scheme without advertising as this is the primary means of increasing sales. The unwillingness of either side to commit themselves too heavily to "Environmental Choice" points to fundamental flaws in the development of the scheme.

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[9]Levene Paint Ltd licensed its Wall and Ceiling Acrylic Paint in April 1993 and Feltex Tufted carpet was licensed in July 1994.

[10]Information regarding manufacturers' and Telarc's views were obtained from pers. comm. with John Wydenbach, Group Manager, Product Certification, Telarc, 4 May 1993.

[11]Wydenbach J, "Environmental Labelling: who do you trust?" Recycle Today. March/April 1994.

One of these was that Telarc did not rely on any specific research regarding the intended outcome of the scheme. The Government's aim[12] in promoting the "Environmental Choice" scheme was to provide consumers with information about various products, focussing on household items with significant environmental impacts. Consumers would then be capable of exercising their preferences, influencing manufacturers to produce goods which are more "environmentally sound".

The belief that consumers will act in this manner was based on a number of factors:

i) Consumer groups have been lobbying Government and manufacturers for information regarding products to be more specific;

ii) Challenges have been made to products broadly defined as "environmentally friendly";

iii) Public interest in environmental issues in general has grown significantly, especially during the 1980s;

iv) Recycling had taken off and had been hailed by some as "the answer" to waste problems;

v) There is a growing emphasis within the commercial sector to conserve material and use resources more efficiently.

However what was obviously not appreciated by Telarc (or by the Government) was that none of these factors necessarily suggest that environmental concerns have overtaken other traditional factors in purchasing decisions. In fact, it has been found[13] that price and quality are still the most important purchasing factors, despite the increase in environmental consciousness and studies[14] showing that the majority of consumers support the concept of an environmental labelling scheme. About half would be prepared to pay more for a product carrying a Government-approved label concerning the product's environmental impacts. Typically, those consumers would pay between 5c and 20c more for such a product costing $2.00. Some would be prepared to pay up to $1.00 more.

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[12]Gresham Paddy, Manager, Environment Policy Directorate, Ministry for the Environment, pers. comm. 25 March 1993.

[13]Discussion Groups, April - May 1993.
Mayes K, Attitudes towards Packaging Waste (survey). n.p. October 1993.

[14]Gresham Paddy, Manager, Environment Policy Directorate, Ministry for the Environment, pers. comm. 25 March 1993.

It was also not established that a product's market share would increase as a result of acquiring the "Environmental Choice" label to a greater degree than by using other forms of advertising regarding environmental aspects of products.

It is unclear whether a cash injection for advertising would be sufficient to convince manufacturers that it is worthwhile to participate in the scheme. Some industry members feel that the peak of the environmental wave has passed and that, without qualitative information regarding consumer preferences, "Environmental Choice" certification would be an unwise investment. At present the Government does not intend to lend assistance to Telarc[15], nor do industry groups feel "Environmental Choice" will have sufficient benefits to warrant financial support.

9.1.4 CONCLUSION

The current state of the "Environmental Choice" scheme looks precarious. Telarc has stated its commitment to the scheme until the review period in September 1995 and has invested heavily in setting up the certification requirements, determining the appropriate laboratory testing methods and carrying out some promotional work. Telarc and the Government will need to determine whether it is worth continuing the scheme and, if so, what strategies need to be adopted to increase its chance of success. The scheme has until this period to prove itself as a viable programme for the manufacturers for whom the scheme is directed at. Unless several manufacturers alter their current position that there is insufficient advantage to be gained from acquiring certification and apply for licences before September 1995, "Environmental Choice" will collapse, with Telarc carrying a large loss and the Government losing face after developing the concept and pushing for an agency to operate the scheme.

Environmental labelling schemes such as "Environmental Choice" can influence manufacturer and consumer behaviour to a certain extent. The environmental benefits of the schemes are less clear. The benefits are dependent on product criteria correctly assessing environmental impacts and these impacts not being transferred from one form to another.

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[15]Chapman Bruce, Senior Policy Analyst, Pollution and Risk Management Directorate, Ministry for the Environment. pers. comm. 8 July 1994.

Labelling schemes do not eliminate the need for regulation and other instruments to affect the type of products made and processes used to produce them. Overseas experiences show that financial assistance from the Government is necessary to maintain labelling schemes. There is no clear evidence to demonstrate that such schemes achieve the required objectives more effectively and efficiently than other instruments. Environmental labelling schemes have only been effective in altering behaviour within limited product groups. They do however accord with the objective of the waste hierarchy by assisting in preventing or minimising impacts of human activities on the environment at source and ensuring sound management of resources.

PART III - IMPLEMENTATION OF THE WASTE HIERARCHY

The third Part of this thesis examines the current waste policy situation in New Zealand and discusses where instruments could be used to implement the waste policy objectives more effectively. As the aim of the waste hierarchy objective is to ensure the sound use of resources and to prevent or minimise pollution, the achievement of the objective also results in a significant move towards the achievement of the goal of the waste policy.

As instruments can be used to achieve many or all of the steps of the waste hierarchy, instruments are discussed where they are of particular relevance to one of the steps. This highlights both the inter-relationship of instruments and decisions and the steps in the waste hierarchy. The degree of emphasis given to each step of the waste hierarchy in each chapter is a reflection of the current emphasis on recycling and residual management. This fact should not be construed as implying that the current emphasis should necessarily be maintained, hence the emphasis in Chapter 10 on waste reduction at source. In order to achieve the waste hierarchy objective, the amount of resources and energy being put into waste policy implementation must begin to reflect the priority given to each step by the waste hierarchy. Each of these steps is discussed in the following chapters according to this priority.

CHAPTER 10 - ACHIEVING THE REDUCTION POLICY OBJECTIVE

10.1 INTRODUCTION

The first step in the waste hierarchy is waste reduction at source. Other terms which are used to describe this concept include "waste minimisation", "source reduction", "pollution prevention" and "cleaner production". Some of these terms more obviously incorporate the use of resources such as energy and water as well as materials. However, it should be noted that both material and resource use create waste. The concept will therefore apply equally to material and resource use where these are being considered. Waste reduction has also sometimes been associated solely with solid waste. However, the concept of waste reduction applies equally to solid, gaseous and liquid wastes.

Waste reduction is the first step of the waste hierarchy as wastes which are not produced do not use resources, do not create pollution in their extraction, production or use and do not need to be disposed of. Waste reduction therefore accords with the objectives of policy instruments such as the Resource Management Act 1991 of avoiding, remedying or mitigating adverse effects of human activities.

Waste reduction is the antithesis of the "end of pipe" solutions advocated during the 1980s and is still suffering from being under-valued in many aspects of waste policy implementation. This is especially so where territorial authorities have used the Local Government Act 1974 to define their roles narrowly to focus on service delivery such as refuse and recycling collections. This narrow focus forecloses evaluating whether these are the most effective ways in which to be dealing with these materials and wastes. As touched on in Chapter 3, much of the resources in the waste area of the Ministry for the Environment are also being directed into "end of pipe" instruments.

Territorial authorities also need to reassess contracts for waste collection, treatment and disposal services to ensure that contractors have an incentive to reduce waste. This incentive can be achieved by requiring the waste collection contractor to pay for landfill charges rather than having a contract which is volume-based.

The public is far more aware of waste disposal issues than waste reduction, with many defining the problems relating to waste in terms of finding land suitable for waste disposal, the ability of products and packaging to biodegrade, and so on[1].

This chapter looks at two instruments being used to achieve waste reduction in various types of activities. Other instruments which affect the level of waste reduction include those of waste reduction targets, purchasing policies and environmental labelling schemes. These are discussed in Chapters 8 and 9 as they also impinge on other steps of the waste hierarchy. Waste reduction as it applies to industrial and commercial operations is discussed first in this chapter as this is probably the area where the most significant benefits can be achieved. User charges are then looked at as a vital instrument for ensuring that waste producers have direct incentives to reduce the amount of waste they create and ensuring that the Polluter Pays Principle is applied.

10.2 CLEANER PRODUCTION

10.2.1 APPLICATION TO NEW ZEALAND

One of the four project areas studied in 'Our Waste:Our Responsibility'[2] was that of waste minimisation practices. The study noted that waste minimisation could best be achieved in the commercial and industrial sectors by adopting "cleaner production".

The concept of cleaner production was formulated under the auspices of the United Nations Environment Programme (UNEP), and is defined as "the conceptual and procedural approach to production that demands that all phases of the life-cycle of a product or process should be addressed with the objective of prevention or minimisation of short and long-term risks to humans and to the environment"[3].

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[1]Mayes K, Attitudes towards Packaging Waste (survey). n.p. October 1993.

[2]Centre for Advanced Engineering, Our Waste:Our Responsibility. University of Canterbury: Centre for Advanced Engineering, December 1992.

[3]Cited in Mayes K and Bailey Dr ML, Cleaner Production at Work - Case Studies from New Zealand Industry. Wellington: Ministry for the Environment, August 1993.

It is commonly described[4] as:

i) Using resources and energy efficiently;

ii) Avoiding or reducing the amount of waste produced;

iii) Producing environmentally sound products and services; and

iv) Achieving less waste, fewer costs and higher profits.

Cleaner production therefore incorporates waste minimisation, as well as energy efficiency, resource conservation, good housekeeping, material reuse and recycling, product reformulation, process modification and workplace reform.

The Centre for Advanced Engineering report contained a number of waste minimisation case studies. Case studies demonstrating energy management have also been prepared under the Energy Management Demonstration Programme which has been inherited by the Energy Efficiency and Conservation Authority.

In August 1992 the Ministry for the Environment established Cleaner Production as a separate work programme. Consultants were commissioned to research the methodology for implementing cleaner production and for establishing demonstration projects. Eight companies were chosen from around the country to undertake cleaner production projects with advice from the Ministry. These companies represented a number of sectors involved in manufacturing and processing and were used to demonstrate the benefits of adopting cleaner production techniques.

The work programme culminated in the development of 'Cleaner Production Guidelines'[5] by the Ministry for the Environment for local authorities to establish cleaner production programmes and work with local businesses to establish cleaner production projects. A series of workshops was held by the Ministry in May 1994 to motivate local authorities to initiate

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[4]For example:

i. Mayes K and Bailey Dr ML, Cleaner Production at Work - Case Studies from New Zealand Industry. Wellington: Ministry for the Environment, August 1993;

ii. Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

[5]Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

cleaner production programmes. A small budget has been provided in the 1994-1995 plan for the Ministry to work with the tourism sector to establish projects, and to provide advice to local authorities. Articles and a booklet have also been written to encourage other businesses to establish projects[6].

Seven of the eight demonstration companies established projects and most have had a large degree of success. Project reports have been included in various publications produced by the Ministry for the Environment. These reports and successes of other companies which have undertaken cleaner production projects have been seen by local authorities and industry leaders.

Some local authorities had established cleaner production programmes prior to the publication of the 'Cleaner Production Guidelines'[7] and workshops in May 1994 encouraging local authorities to develop programmes. These included Christchurch City Council, Dunedin City Council, Hamilton City Council, Manukau City Council, North Shore City Council, Northland Regional Council, Rotorua District Council, Wellington City Council and Waitakere City Council. A number of these became involved after the Ministry held introductory workshops in May 1993, using the Ministry's material.

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[6]i. Cleaner Production Association, Cleaner Production Network. Issue 1, July 1993; Issue 2, December 1993; and Issue 3, April 1994;

ii. Ministry for the Environment, "Projects will Demonstrate Benefits of Cleaner Production Techniques" Environment Update. Issue 31, February 1993; "Cleaner Production Techniques Introduced through Workshops", and "Council launches Workplace Pride" Environment Update. Issue 33, June 1993; "Cleaner Production Achieves Savings" Environment Update. Issue 37, February 1994; and "Now Comes the Real Work of Cleaner Production" Environment Update. Issue 38, April 1994;

iii. Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

[7]Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

The work being undertaken by the Ministry for the Environment was given as a factor by a number of Councils for establishing programmes. Other factors were that the Councils had been approached by industry for assistance in finding markets for wastes; Councils had already been working with businesses that were having difficulties meeting their discharge consent requirements; and Councils were concerned about the amount of waste being disposed of at landfills[8].

As a result of the work undertaken by the Ministry for the Environment, as at August 1994[9], only three regional councils and four district councils were not planning any cleaner production initiatives. Most district councils are not implementing cleaner production, primarily owing to lack of resources.

These figures demonstrate a high degree of success of the cleaner production programme. The methodology has been established for both small and complex businesses, enabling cleaner production programmes to be implemented without an on-going commitment to overseeing the programmes at a national level.

Costs of operating cleaner production programmes need not be substantial. At least one staff member would need to have responsibility for the programme but it is up to local authorities to determine how to operate the programme. For example Hamilton City Council has set aside $5,000 to find information for businesses to assist them in cleaner production projects; Christchurch City Council and Rotorua District Council have one part-time staff member responsible for visiting businesses that express an interest in establishing projects and assisting them in choosing and implementing projects; Manukau City Council has one staff member setting up a waste register for businesses to use; while Northland Regional Council has produced cleaner production booklets for a number of industry groups.

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[8]Interviews and pers. comm. with Christchurch City Council, Hamilton City Council, Manukau City Council, Rotorua District Council and Wellington City Council.

[9]Bailey Dr Margaret, Principal Analyst, Pollution and Risk Management Directorate, Ministry for the Environment, pers. comm. 10 January 1995.

A proportion of the benefits flowing from cleaner production projects will be experienced by territorial authorities. Reduced amounts of waste being created will mean less material needs to be disposed of at landfills; reduced quantities and/or toxicity of discharges means less pollution reaching the receiving environment and needing to be controlled in trade waste systems; and increased efficiencies should result in a better business image for the district.

The Ministry for the Environment has now put the framework in place in which cleaner production programmes can operate. The reason for territorial authorities now taking responsibility for assisting businesses with cleaner production projects is twofold.

The foremost is that territorial authorities are in the best position to work with local businesses. This is because:

i) They have access to information about a business through trade waste charges, occupational safety and health information, planning consents, etc;

ii) They have information about suppliers of materials and local markets for wastes produced by a business;

iii) They can maintain contact with a business as they are geographically close;

iv) They are aware of any resource and/or pollution problems in their region.

The second reason for the Ministry for the Environment decreasing its involvement in cleaner production is that of lack of funding, in part, because the production of the 'Cleaner Production Guidelines'[10] is seen as providing a sufficient framework within which local authorities and businesses can carry out cleaner production programmes[11].

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[10]Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

[11]Brash David, Manager, Hazards and Waste Policy Directorate, Ministry for the Environment, pers. comm. 15 June 1994.

Figures spent on promoting cleaner production in New Zealand can be contrasted with those of countries such as Denmark where approximately NZ$10 million was spent each year between 1986 and 1989 on demonstration projects in the wood and furniture, metalworking and food industries[12]. This figure increased in 1990 and 1991 with approximately NZ$48 million being spent on 168 projects, mainly in the manufacturing sectors. Funding was again increased for 1993 to 1997 and equates to approximately NZ$24 million per year, totalling approximately NZ$120 million.

Programmes in other countries such as the Netherlands, Canada, the United Kingdom, Australia and some states in the United States are similar to that of Denmark. The focus of the programmes is on the development of new technology to increase efficiencies and to reduce the impacts of producing goods and services on the environment.

Massachusetts and Oregon have promoted the concept of cleaner production through regulation. Both states have set up reporting and planning responsibilities for businesses which handle certain chemicals in amounts greater than is prescribed. Plans must be made which set goals for reducing the use of the chemicals, and strategies to achieve this reduction[13].

Using regulation would be a cumbersome and expensive way to achieve cleaner production in New Zealand. Certainly the Government is not in a position to specify what environmental technology is appropriate for various operations. It is not appropriate to focus on one aspect of cleaner production in New Zealand where, as yet, there are no specific resource or pollution issues that warrant such attention. There are also fewer large businesses in New Zealand. Smaller businesses would find it difficult to fulfil the information requirements and many would only be handling relatively small quantities of any material.

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[12]Bailey Dr ML, Producing Less Waste. Wellington: Ministry for the Environment, May 1991. Updated by pers. comm. with Noergaard Jens Peter and Poulsen Tomas, January 1993.

[13]Gleisner K, "The Greening of Industry - Making the Transition to a Sustainable Economy" Technology Review. August/September 1991.

Funding assistance for carrying out cleaner production programmes in New Zealand can be sought by local authorities and businesses from the Ministry for the Environment's revised environmental grants scheme. In relation to cleaner production, the purpose of the grants is to enable to the 'Cleaner Production Guidelines'[14] to be adopted throughout the country.

Limited funding for cleaner production projects can be sought indirectly from the Government through the Business Development Programme administered by the Ministry of Commerce and the Technology for Business Growth Programme administered by the Foundation of Research, Science and Technology. Neither of these programmes are designed primarily for environmental purposes.

The Business Development Grant Programme provides financial assistance through three grant schemes, two of which can provide assistance in the environmental technology and cleaner production spheres:

Business Development Investigation Grant - This scheme can provide assistance for applicants wishing to investigate new environmental technology, including new cleaner production techniques.

Expert Assistance Grant Scheme - This scheme provides assistance to small to medium-sized businesses looking to improve their competitiveness by improving management performance. Assistance is available in product design, development of a total quality management (TQM) system, adoption of certification programmes such as the ISO 9000 series, operations management and research and development management.

[14]Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

10.2.2 RECOMMENDATIONS

Cleaner Production Grants

New Zealand's position of having comparatively few large businesses sets New Zealand apart from those countries mentioned above. As a result, New Zealand should be investing in research and development of new technology appropriate to the scale of business in New Zealand. Many projects can be done without large expenditure, especially during the first stages of implementing cleaner production.

Changes should be made to existing programmes such as the Business Development Programme and the Technology for Business Growth Programme to assist develop environmental technology appropriate for the New Zealand business environment. At present, emphasis is given to job creation opportunities and bringing new types of businesses into a region without due regard for the environmental effects of that business. Amending the schemes would therefore be consistent with the philosophy of the Resource Management Act 1991 as well as the reliance of New Zealand's businesses and products on a "clean, green" image overseas.

Local authorities and businesses should utilise the environmental grants scheme as cleaner production has been identified as a priority by the Ministry for the Environment for the 1994/1995 financial year. This status should be carried over to the next financial year to give territorial authorities an opportunity to undertake cleaner production programmes once they have fulfilled the obligations of preparing policies and plans under the Resource Management Act 1991.

Ministry for the Environment

The Ministry for the Environment should act as an information house, gathering and disseminating information on cleaner production projects and technology. The Ministry should also continue to work with various industry sectors which have not yet been involved in cleaner production initiatives and support local authorities and businesses which have programmes in place by providing advice and information from relevant organisations.

Energy Efficiency and Conservation Authority

The Energy Efficiency and Conservation Authority (EECA) should continue to promote energy efficiency across all sectors of the economy. Work also needs to be carried out to assess the capacity of renewable energy sources such as wind, biomass and solar power. EECA's work received a boost in the 1994/1995 Budget with an allocation of $8.45 million over the next three years[15]. Proposed strategies therefore have the potential to achieve significant results.

It is unfortunate that the Ministry for the Environment has not received funding of a similar magnitude with which to achieve its outputs. This is despite the fact that one of these outputs, cleaner production, incorporates more than just the concept of energy efficiency, thereby having a greater potential to lead to efficiencies of various kinds.

The situation reflects the difference in priority placed on economic and environmental issues by the current Government. This is despite a growing awareness, obvious in moves such as the enactment of the Resource Management Act 1991, that sustainable management is essential in order to maintain a healthy economy. The situation is also a reflection of current economic theory which fails to take into account externalities, many of which are at the expense of the environment. These aspects need to change in order to achieve not only an efficient waste policy, but also an efficient level of resource use in human activities.

Regional Councils

Regional councils are generally not involved in operational activities in the waste area. They can however support cleaner production in a number of ways:

i) Objectives can be incorporated in policies and plans to encourage cleaner production. For example, objectives could include reducing waste and water use; adopting the waste hierarchy; and avoiding, remedying, or mitigating the risk and adverse effects to the environment and human health from activities.

[15]Energy Efficiency and Conservation Authority, Government Energy Efficiency Initiatives 1994-1997 (information sheet). Wellington: Energy Efficiency and Conservation Authority, 1994.

ii) Rules can also be incorporated in plans governing resource consent applications. These could require information similar to that of an audit of input materials, resources and wastes to accompany resource consent applications, thereby ensuring that businesses recognise the costs and level of wastage involved in their activities. Differences in the size and complexity of businesses need to be borne in mind. These differences could be catered for in a similar manner as the requirements of assessments of effects in s.88(4)(b) of the Resource Management Act 1991, with the level of detail of assessment of inputs and outputs being related to the scale of the activity.

As well as information requirements about a business, plans could require that a certain number of strategies for implementing cleaner production projects be set out in consent applications. This requirement would increase the likelihood of projects actually being implemented as audits in themselves do not necessarily provide sufficient motivation for businesses to make changes to their activities.

iii) Conditions can be included in resource consents to encourage cleaner production. For example, the concentration levels of discharges could be controlled to ensure that businesses investigate decreasing the quantity discharged as opposed to being able to dilute the concentration to an acceptable level.

iv) Regional councils can ensure that charges for services such as monitoring programmes, clean-up operations and so on reflect the actual costs (both financial and environmental) of the service.

v) Penalties for non-compliance of consents can be regularly enforced and set sufficiently high so that it is not cheaper for a business to discharge contaminants than it is to prevent the discharge. Linked to this is the need to ensure that all discharges are properly regulated, for example, that they have resource consents where necessary. This ensures that the responsibility of mitigating effects of illegal discharges is borne by the business.

Territorial Authorities

Territorial authorities should establish cleaner production programmes where they have the resources to do so. The most significant benefits for businesses can often be gained from working with small businesses as they do not have the resources to step back from their operations and look at possible improvements. Larger businesses often employ engineers and environmental scientists who can implement cleaner production projects. Large businesses are also influenced by moves overseas towards improved environmental performance and better corporate citizenship. However in some regions, especially where there is one major polluter, the most significant benefits may be gained from concentrating on this business.

Territorial authorities should also look at ways to provide incentives and rewards for businesses undertaking cleaner production. This could be done through publicity of successes. It could also be done through rating differentials[16] and performance conditions as part of resource consents[17].

Businesses

Businesses of all types should implement cleaner production techniques. Cleaner production is consistent with total quality management (TQM) and accreditation systems such as the ISO 9000 series of international standards. Implementing cleaner production projects has consistently shown significant reductions in waste, emissions, and costs. Projects need not require large amounts of resources - considerable savings can be achieved simply by implementing good housekeeping practices.

[16]s. 180 Rating Powers Act 1988.

[17]s.108(1)(b) Resource Management Act 1991.

10.3 USER CHARGES

User charges are in line with the Polluter Pays Principle (discussed in Chapter 4.3) and are an effective instrument for internalising some of the costs of waste production. User charges are able to incorporate the costs of "collection, disposal, recycling and composting services, accurate valuation of landfill space, (and) anticipation of future landfill replacement and aftercare costs"[18].

The application of user charges for the collection, treatment and disposal of rubbish in New Zealand will be covered in Chapter 14. In brief, user charges have only been applied by certain territorial authorities. Application needs to be much more widespread in order to internalise environmental costs and accord with the Polluter Pays Principle.

One of the results of failing to apply user charges to the bottom end of the waste hierarchy is that the public is not receiving the correct message through pricing signals that the creation of waste imposes large costs for Government, the public and the environment. Both industry and households thus lack the incentive to minimise the amount of waste created.

Application to New Zealand

Public acceptance of generator pays for refuse collection and disposal is divided. In two recent public surveys[19], 42% and 48% of respondents respectively preferred a generator pays system to a flat charge administered through rates. By far the most common reason given for preferring a generator pays system was that this would provide an incentive to decrease the amount of waste created.

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[18]Office of the Parliamentary Commissioner for the Environment, Local Authority Solid Waste Reduction Initiatives. Wellington: Office of the Parliamentary Commissioner for the Environment, August 1993.

[19]i. Gendall P and others, New Zealanders' Attitudes to the Environment (survey). Palmerston North: Department of Marketing, Massey University, 1993.
(Massey University. Department of Marketing. International Social Survey Programme)

ii. Mayes K, Attitudes towards Packaging Waste (survey). n.p. October 1993.

In the second survey, most respondents preferring rates charges were unable to give reasons for their preferences and responses were often not consistent with answers given elsewhere in the survey. Some respondents considered that industry should be subject to a generator pays system but favoured a flat charge for households. Another anomaly was that some small households preferred a flat charge, even though this would mean they were subsidising larger waste producers.

These results indicate a mistrust of current Government policy which is using user pays to help achieve outcomes in a number of policy areas. A number of people are sceptical that a similar system for rubbish collection and disposal will lead to an improved situation[20]. They perceive that rates will not decrease to compensate for a different charging system so that householders will be penalised twice, and that there will be increases in administration and policing costs and in the level of illegal dumping. This last perception is not borne out by territorial authority experiences[21]. The former criticisms are valid concerns but can be dealt with in the individual situation.

User charges should be applied by territorial authorities to all waste collection, treatment and disposal operations as they have one of the biggest potential to achieve the waste policy objectives. User charges can also take the form of performance standards as conditions of resource consents. All methods provide an incentive to reduce the amount of waste produced. No significant impediments exist to user charges being adopted and the benefits result from the internalisation of costs relating to managing waste.

[20]Discussion groups, April - May 1993.

[21]Office of the Parliamentary Commissioner for the Environment, Local Authority Solid Waste Reduction Initiatives. Wellington: Office of the Parliamentary Commissioner for the Environment, August 1993.

CHAPTER 11 - ACHIEVING THE REUSE POLICY OBJECTIVE

Reusing materials and resources is the second step of the waste management hierarchy. It has received little attention, often being grouped together with recycling. However it differs from recycling in that materials and resources are used in their same state, rather than being reprocessed.

Part of the reason for the low level of attention received by the "Reuse" step may be society's fascination with convenience and new products. Deregulation has led to cheaper imports being available for many products owing to the low cost of labour in some countries. The full cost of resource use, water use, trade waste services and landfill operations are also not accounted for in many situations. These factors combine to make it cheaper in some cases to discard items rather than repairing and reusing them.

11.1 INSTRUMENTS

11.1.1 CLEANER PRODUCTION

Businesses benefit from adopting cleaner production practices as wastes can become valuable materials in another process or product. Reusable containers and transport packaging can be used instead of one-trip items.

Businesses can also recover heat and water from processes. This is occurring increasingly as energy is often one of the largest costs for a business and realistic charging systems are being put in place for trade waste discharges. Costs of water supply still lag behind in most parts of the country although this will need to be reconsidered as increasing demand is placed on existing catchment areas.

As is recommended in Chapter 10 all businesses should adopt cleaner production programmes as they have a positive impact on all aspects of a business' operation. Local authorities and agencies such as the Energy Efficiency and Conservation Authority should be involved in raising the profile of reusing resources, supporting the development of technology and encouraging efficient resource use.

11.1.2 WASTE REGISTERS

Waste registers at national, regional or local levels would help provide a system for matching up one person's waste with another's need for materials. A national waste register was maintained by the Department of Trade and Industry until the Department was disbanded in 1987. The waste register operated on an as-needed basis with industry contacting the Department with quantities of wastes or orders for materials when required. A filing system was kept by the Department to match details.

Some industry groups have also banded together to utilise each others' wastes, although this tends to happen primarily in larger businesses. Waste registers maintained by local government would provide an opportunity for the numerous small businesses in the country to also exchange wastes.

Ad hoc waste registers are operated by some regional councils, for example, Southland and Auckland Regional Councils. Some territorial authorities are considering establishing them, for example, Manukau City Council. More local authorities should establish waste registers. Doing so on an as-needed basis is perfectly satisfactory. It would also be necessary to advise businesses of the service. The benefits to territorial authorities of maintaining waste registers are that fewer wastes are being disposed of in trade waste systems and landfills. As experience shows with the Department of Trade and Industry register, the system need not be costly or time-consuming to operate.

11.1.3 EXCHANGE AREAS

Separate areas for reusable materials can be maintained by territorial authorities at landfills and transfer stations. Items can then be sold or given away. The area can be operated on a similar basis to recycling areas, with a low level of supervision and therefore cost. Exchange areas have been operated at various stages by territorial authorities but have not become more wide-spread.

Part of the reason for this has been the view of scavenging as being unhygienic and therefore something that should not be encouraged. This perception may alter with the introduction of transfer stations where exchanges can take place in a more hygienic environment.

Another reason for exchange areas not being more widespread is that many territorial authorities see their role as purely one of service delivery. Action taken to reduce, reuse or recycle waste is only seen as worthwhile in terms of how much material the actions divert from disposal. This ignores the "social good" benefits of reduced resource use and pollution. Even then, costings of landfill operations do not always take into account the savings from diverting materials. This must be addressed by all territorial authorities in order to achieve the objectives of the waste policy and ensure that reuse of materials and resources occurs to an optimum level.

11.1.4 DEPOSIT-REFUND SCHEMES

The primary instrument used to support reuse is that of deposit-refund schemes. These apply generally to beverage containers and are used in numerous countries in Europe and states in America. The rationale and application of deposit-refund schemes is discussed in Chapter 7.3.

Owing to the energy requirements and the durability of glass, containers of this material are the most commonly refilled. Glass containers are currently refilled by four companies around New Zealand. Glass was refilled to a greater extent before deregulation of the beer and milk industry in 1986 when there were a greater number of small fillers. Most industries now involve only a few large fillers. Distances for the bottles to travel to be refilled are therefore greater, increasing transportation costs. There is some debate as to the relative benefits of refilling glass containers as opposed to breaking them into cullet and recycling them. In general, refillable bottles contain more materials than one-way bottles so as to ensure that they are strong enough to complete many trips. Water is also used to clean and sterilise the bottles. Benefits depend on trippage rates, resulting in lower resource use.

Many costs and benefits need to be taken into account including energy requirements of transportation, washing, sorting and processing; water usage of washing and processing; cost of raw materials; use of materials; and associated pollution. It is inappropriate for choices between reuse and recycling to be made by Government as there is insufficient information available to it regarding these costs and benefits. The Government should be involved by ensuring that materials and resources are accurately priced.

CHAPTER 12 - ACHIEVING THE RECYCLING POLICY OBJECTIVE

12.1 INTRODUCTION

Recycling is the third step of the waste hierarchy although it possibly has the highest public profile, in part, because all individuals can participate in recycling and feel they are lessening the effects of consumerism. As such, some people see recycling as the answer to our waste problems. This assumes that New Zealand's waste problems stem from the disposal of waste as opposed to the level of resource use associated with human activities.

Recycling involves reprocessing materials into new products. As such, it is not generally as desirable as reusing materials as it may involve using more energy, water and other resources. It should be pointed out that recycling is not complete until materials have been made into new products which can be sold and used again - merely collecting recyclables is not sufficient.

Two main methods of collecting materials for recycling exist, these being (i) centralised collection or drop-off points where the public takes the material and generally sorts the material into various categories, and (ii) kerbside collection where the public leaves materials at the kerbside for collection.

Drop-off centres collect an average of 25% of recyclable material[1]. They rely on individuals using their resources to deposit the materials. In order to capture a larger proportion of recyclable material, kerbside collections are necessary as they are more convenient for householders. For example, the North Shore City Council's kerbside recycling scheme has decreased waste being disposed of by 50%[2]. It has been able to achieve recovery rates of 95% for glass and 96% for newspapers[3].

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[1]25% is commonly given in overseas literature and is used in Haskell D, "An Ecological Answer to Effective Recycling" Recycle Today. Summer Issue, Volume 1, Number 1, 1991; and Roger Mills, Manager, Special Projects, Auckland City Council, pers. comm. December 1992.
These figures compare with 30% given for Tawa, Inder R, "Tawa Recycling Success an Inspiration for City" City Voice. 15 July 1993.

[2]Wane J, "Where Will All Our Rubbish Go?" Listener & TV Times. 29 June 1992.

[3]Haskell D, "An Ecological Answer to Effective Recycling" Recycle Today. Summer Issue, Volume 1, Number 1, 1991. Supported by figures given in literature of the North Shore City Council, eg. "North Shore Recycling Scheme", "A North Shore Success Story". No date given.

12.2 TERRITORIAL AUTHORITY RECYCLING SCHEMES

The main responsibility for operating recycling schemes falls on territorial authorities. This responsibility has been made explicit by the Government through its legislative reforms, although there has been a softening of the previous Government's opinion[4] that this should necessarily involve kerbside recycling schemes given the costs involved and the difficulty in establishing markets for collected materials.

Territorial authorities fund recycling schemes either through a separate charge within rates, a charge within refuse collection charges, for example, North Shore City Council, or through subsidising the scheme through waste disposal charges. For example, Waitakere City Council partially subsidises the recycling scheme through profits made from the Council's baling station.

Another example of this final type of charge is the Auckland Regional Council's $6 recycling levy. Until 30 June 1992 the levy was placed on every tonne of refuse being disposed of in the Council's landfills. The levy went towards operating the Council's recycling facility in Constellation Drive. The rationale for the levy was that the recycling facility was designed to cater for all of Auckland's recyclables so that all territorial authorities should help support the facility. The levy was abandoned after authorities including the Auckland City Council refused to pay. The refusal was on the basis that it was not using the facilities at Constellation Drive and it was not prepared to subsidise the North Shore City Council who was using the facility.

Recycling charges cover the collection, transportation and sometimes sorting of materials. Some councils also have facilities to maintain. The charge can cover education and publicity campaigns through newsletters and telephone information services. There is generally no charge for the materials themselves in order to encourage householders to recycle.

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[4]New Zealand Government, Waste Reduction Strategy. Wellington: Ministry for the Environment, August 1990.

Eighteen local authorities from around the country operate or planned to operate recycling collection schemes during 1994[5]. Of these, 12 were to be involved in kerbside schemes. These schemes represent about 500,000 households. Materials collected are usually glass, aluminium, steel and certain grades of plastic. Paper has been collected privately for a number of years and this will generally continue.

12.3 INDUSTRY RECYCLING SCHEMES

As well as recycling schemes operated by territorial authorities, there are a number of schemes operated by industry groups and charities. Clothing, toys and other household items are collected by charities at drop-off points. As mentioned, paper has been collected by private businesses for a number of years throughout New Zealand. This looks set to continue although there are problems in finding markets for lower grade paper.

Steel cans are now being processed by BHP New Zealand Steel. Baling presses have been supplied by the Steel Can Association of New Zealand (SCANZ) to two territorial authorities[6], and more are expected to follow. Where local authority recycling collections service a smaller number of households, local contractors are used or steel is transported to sites with baling presses. Steel cans were recycled previously by Pacific Metal Industries but this was abandoned owing to problems with the level of tin in the cans. SCANZ has also set a recycling target of 25% (by tonne) by 1996[7].

Glass is collected in bottlebanks and from commercial facilities, broken into cullet and recycled by ACI New Zealand Glass Manufacturers. The company has operated collection schemes for many years. Since January 1993, 18 principal suppliers throughout the country are responsible for collections in their areas and are provided with a financial incentive to increase the amount collected.

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[5]"Rinse and Recycle" Recycle Today. March/April 1994, p.19.

[6]Chapman Bruce, Senior Analyst, Pollution and Risk Management Directorate, Ministry for the Environment, pers. comm. 8 July 1994.

[7]Gledhill B, "Catch as Catch Can or Purposeful Programme?" Waste Observer. May 1994.

Aluminium cans are collected for recycling from commercial facilities, drop-off facilities and from a "Cash for Cans" programme initiated in 1991 by Comalco. Comalco recovers more than 60% of aluminium cans sold in New Zealand[8]. Under the "Cash for Cans" programme, the public can feed aluminium cans into machines around the community with the chance of winning prizes. The programme therefore operates somewhat like a deposit-refund scheme although there is no set return price. Most aluminium cans are sold to markets in Japan. Comalco produces aluminium cans but does not reprocess them as the company only operates a primary smelter.

Plastics are a more diverse group of materials and are being dealt with according to their composition rather than as a homogenous group. Only a few types of plastic are currently able to be recycled in New Zealand. PET, HDPE and LDPE containers are the most commonly collected from post-consumer waste.

The New Zealand Milk Corporation launched a programme known as "Return All Plastic" (RAP) in June 1990. The programme was aimed at primary schools and collected HDPE milk containers, PET soft drink bottles and other plastics. Schools were paid for plastics recovered. A total of 550 school from Taupo to Warkworth were involved in the scheme. The programme incorporated a large education element.

The New Zealand Milk Corporation stated that the programme was undertaken in response to the Government's expectation of industry taking responsibility for the reuse and ultimate disposal of products it produces[9], ie. the Polluter Pays Principle. A recovery goal of 25% from the programme was set for the Milk Corporation's 2 litre HDPE milk bottles. The goal was in line with Government calls for a 20% reduction in the waste stream.

The Milk Corporation was also under pressure from consumers after introducing the HDPE milk bottle in 1987. Deregulation of the industry around this time had led to milk production becoming centralised to a few large producers. Many household delivery services were abandoned, resulting in a shift away from glass milk bottles.

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[8]Haskell D, "An Ecological Answer to Effective Recycling" Recycle Today. Summer Issue, Volume 1, Number 1, 1991. Supported by figures given in literature of the North Shore City Council, eg. "North Shore Recycling Scheme", "A North Shore Success Story". No date given.

[9]Cole J, New Zealand Milk Corporation, "'Return All Plastics' Programme" (speech). Waste Management Institute Conference, 1990.

The RAP programme cost the Milk Corporation approximately $1 million every year[10]. The co-mingled plastic was stockpiled and dumped as markets could not be found for it. Co-mingled plastic has been said to make up more than half the collected plastic[11].

New Zealand Milk Corporation has admitted that taking all grades of plastic was a mistake, stating that they relied on indications from plastic recyclers that all grades could be processed[12].

A three year agreement was signed with the Auckland Regional Council in 1993 regarding the processing of the collected plastic. The material was then transported to the Council's recycling facility and sorted before being sent to Australia for recycling, removing the problem of finding markets for the material from the Milk Corporation.

The RAP programme was taken over in February 1994 by the Kaekariki Trust and renamed Project Kaekariki. In order to break even, the Trust cut payments to schools by 66% to 10 cents per kilogram and will only take PET and HDPE bottles as these are the plastic types with relatively stable markets. Many schools have dropped out of the programme as a result saying that it is not worth the effort that pupils and parents put into supporting the scheme[13]. The continuation of the scheme looks extremely shaky, although it is too early to determine its future.

Carter Holt Harvey Plastics Products ran a PET plastics recycling operation from December 1990 which subsequently failed owing to incomplete assessment of the likely costs and the inability to receive consistent quantities of material.

One of the oldest post-consumer plastics recycling ventures in New Zealand has operated in Otaki since 1978. Versatile Recyclers has produced a wide range of products over the years from various grades of plastics although it has suffered at times from swings in world virgin resin prices and inconsistent supply.

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[10]"RAP Recycled" Recycle Today. March/April 1994.

[11]"Where There's Muck There's Brass" Metro. December 1992.

[12]Sutherland Steve, Product Manager - Leisure Beverages, NZ Dairy Foods Ltd, pers. comm. 30 April 1993.

[13]"Changes to Recycling Programme Irking Many" The New Zealand Herald. 23 March 1994.

The recycling of PET plastic has received a boost lately with the introduction of recycling technology that will allow soft drink bottles to contain one layer of recycled material in between layers of virgin material. The technology overcomes restrictions on using recycled plastics for food and beverage packaging. Recyclable material is sent to Australia for processing before being used in production by Nexus Packaging Systems in Auckland.

12.4 BARRIERS TO RECYCLING

There are two main types of barriers to recycling, namely technical and economic. The first of these relates to contamination of received material. Operators have only limited control over both the quantity and quality of material collected, especially from households. Only a small element of foreign material is needed in a load of recyclable materials to make it unsuitable for recycling. The whole load then has to be dumped.

The second main barrier is the supply and demand for material. Recycling markets for many materials are highly unstable in New Zealand. Prices for recyclable materials tend to follow below world virgin prices so are vulnerable to external influences. Quantities collected make it uneconomic to recycle some materials in New Zealand. Overseas markets are difficult to maintain because of the competition from other countries also looking overseas to recycle their waste. The best example of this is with recyclable plastics and paper where New Zealand's markets have been flooded with German waste as a result of Germany's Packaging Ordinance[14].

Owing to fluctuating supply of materials, the timeframe for returns on capital investments and operating costs can vary greatly. The risks are therefore higher for operators within the recycling industry than in some other industries.

Beyond the risks associated with the processing of material are the difficulties in establishing markets for recycled products. There is still a degree of resistance from consumers towards recycled products, making it difficult for manufacturers to "close the loop". For example, individual consumers still shy away from rerefined oil despite numerous tests demonstrating that it is of comparable quality to virgin oil, and bottle fillers shy away from using recycled coloured glass bottles despite being cheaper to produce.

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[14]See for example "Excess Waste Paper to be Dumped" The New Zealand Herald. 9 September 1993.

Current costs for territorial authorities operating recycling schemes are generally greater than income made from on-selling recyclable material and savings made from less waste being disposed of at the landfill. Operating costs of at least $200 per tonne are common[15]. Territorial authorities must therefore have a mandate from ratepayers that they are prepared to support recycling schemes if the shortfall is made up through rates and householders if subsidised charges are used.

This begs the question of whether, given that kerbside recycling schemes are costing territorial authorities and ultimately ratepayers and householders money, territorial authorities should be operating such schemes. Territorial authorities need to look closely at the rationale for operating recycling schemes in order to answer this. Recycling is not always the appropriate waste management option, even where waste is produced and cannot be re-used[16]. In cases where the environmental and financial costs of recycling outweigh the benefits, local authorities should move on to other steps in the waste hierarchy and recover and/or dispose of the waste.

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[15]
i. Stewart C, "Recycling Better if Everyone Joins" Daily News. 6 December 1993, p;
ii. Wellington City Council, Proposed Strategy for Solid Waste Management - Public Discussion Document. Wellington: Wellington City Council, February 1992;
iii. "Kerbside Recycling Costing Too Much" Marlborough Express. 3 September 1993;
iv. Haskell D, "An Ecological Answer to Effective Recycling" Recycle Today. Summer Issue, Volume 1, Number 1, 1991;
v. Roger Mills, Manager Special Projects, Auckland City Council, pers. comm, December 1992.
vi. Young D, "Kerbing Our Excesses? Recycling at Kerbside" Waste Observer. October 1994.

[16]Collins C, Wastepaper Recycling in New Zealand: recycling wastepaper and using virgin wood fibre, comparison of life-cycle environmental impacts. Rotorua: PAPRO New Zealand, Forest Research Institute, 1992.

12.5 INSTRUMENTS

12.5.1 USER CHARGES

A number of instruments can be used to support recycling and help overcome some of the barriers associated with recycling where this is considered appropriate. The most effective instrument is that of user charges for rubbish services[17]. User charges give a direct incentive to householders and businesses to divert waste from the waste stream. They have already been discussed in Chapters 7.5 and 10.3.

12.5.2 EDUCATION

Education and promotion is important to ensure a consistently high quality of recyclable materials and to keep the public motivated. Awards such as the "Neat Street" campaign run by North Shore City Council are useful to raise the profile of the recycling scheme, inform householders of details about the scheme and reward those who have participated well. Newspaper articles, leaflets for each household and displays in public areas can also be used to promote recycling.

12.5.3 PURCHASING POLICIES

Purchasing policies can support recycled products, helping to "close the loop". These have been discussed in Chapter 8.2 and can be used where the benefits of using recycled products have been determined. Individuals can also support recycling by using recycling schemes properly and buying recyclable and recycled products. Consumers' use of purchasing power can have a significant influence on the types of products developed.

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[17]This is supported by evidence from North Shore City Council where rubbish being disposed of has decreased by 50% since the introduction of a kerbside recycling scheme and a generator pays system for rubbish collection and disposal, and by comments from a discussion group of North Shore residents held 6 May 1993.

Evidence from overseas also supports this conclusion:

i. Hong S and others, "An Economic Analysis of Households Recycling of Solid Wastes: the Case of Portland, Oregon" Journal of Environmental Economics and Management. Issue 25, 1993;

ii. Friedman N, "Recycling: Five Communities that do it right" American City & County. October 1992;

iii. Institute for Self-Reliance, Beyond 40% - Record Setting Recycling and Composting Programs. Island Press, n.p. 1991.

12.5.4 VOLUNTARY WASTE REDUCTION TARGETS

Voluntary packaging waste reduction targets will have a positive effect on the level of recycling, especially as many items recycled from domestic waste are packaging materials. Voluntary targets are an especially appropriate instrument to use to encourage an efficient level of recycling, as recycling takes place in the context of the waste hierarchy rather than being considered in isolation as is currently occurring in some situations. A discussion of waste reduction targets is given in Chapter 8.

12.5.5 CLEANER PRODUCTION

Local authorities and businesses should adopt cleaner production programmes. This will increase the level of recycling and assist in incorporating recycled content into products where this is viable, although this is only a small aspect of cleaner production. Industry can also be involved in supporting recycling by identifying the recycled content of products. This not only raises the profile of recycled products, it also gives consumers an opportunity to support these products in their purchases. Industry should also avoid labelling products as recyclable when no market is likely to exist for the product.

12.5.6 DEPOSIT-REFUND SCHEMES

Deposit-refund schemes are a popular instrument for encouraging the return of materials for reuse and recycling. Comalco's "Cash for Cans" programme is the only scheme currently operating that resembles a deposit-refund scheme. As has been discussed in Chapter 7.3, costs involved with transportation and administration may well outweigh the benefits of recycling the materials. To this end, it is more appropriate that deposit-refund schemes are left for industry to operate where they are considered viable. Industry not only have access to better information regarding costs and possible benefits but can also be more responsive to changes in the operating environment.

12.5.7 RECYCLED CONTENT MANDATES

Recycled content legislation is a popular instrument in the United States to ensure markets exist for recycled material. Federal agencies in the United States have been required to purchase paper with a minimum of 20% recycled content since the beginning of 1994, rising to 30% in 1995[18]. As of January 1993, 24 American states had also passed minimum recycled content legislation. The majority are directed at newspapers with a few covering telephone directories, glass containers, fibreglass insulation and rigid plastic[19].

Mandates regarding recycling rates are not appropriate in New Zealand. Too many fluctuations in prices and quantities supplied occur to allow operations to be efficient if they are tied to minimum recycled figures. It is more appropriate to pursue waste reduction targets with industry sectors as this will lead to increased use of recycled material without confining businesses to a structure that is too inflexible to cope with changes in operating environments.

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[18]"Feature: Waste Paper" Warmer Bulletin. Issue 40, February 1994.

[19]Boerner C and Chilton K, "False Economy: the Folly of Demand-Side Recycling" Environment. January/February 1994; and Wingerter EJ, "Urgent Responses by the States" EPA Journal. Volume 18, Number 3, July/August 1992.

CHAPTER 13 - ACHIEVING THE RECOVERY POLICY OBJECTIVE

13.1 INTRODUCTION

Recovery of materials and resources is often omitted as a step in the waste hierarchy. The step generally refers to recovering energy from waste and, as such, is still a relatively new concept on a commercial scale. The recovery of methane from landfills is an even more recent development. Composting is sometimes thought of as a recycling operation but it is covered in this chapter as it deals with a natural resource rather than a processed material.

Methods of material and resource recovery are covered only briefly in this chapter as most issues relate to the technology used. The level of recovery will primarily be affected by policy instruments which set the framework for ensuring proper pricing structures for resources and services. This affects all stages of the waste hierarchy as well as related issues such as the level of consumption and the acceptable level of impacts on the environment from human activities. As such, it is important that economic theory is developed to be able to cater for current externalities. Some instruments designed to incorporate externalities have been dealt with in other chapters of this thesis. Other aspects of this topic are far too complex and wide-ranging to deal with in this thesis, but it is important to bear in mind that waste policy does not exist in a vacuum and is heavily influenced by the existing economic and political framework.

Another issue related to waste recovery is that of discharges and their control. This is more appropriately dealt with in a detailed critique of the Resource Management Act 1991.

13.1 COMPOSTING

Organic material makes up about 40% of household waste discarded to municipal refuse collections[1]. It also makes up over 50% of waste delivered by households directly to landfills[2]. Composting schemes therefore enable large quantities of materials to be diverted from the landfill.

Composting deals with a larger proportion of the domestic waste stream than recycling operations and reprocesses organic material into a valuable product. Fewer problems may be experienced with "closing the loop" as compost is already an established product and new uses do not have to be found. Apart from these aspects, the feasibility of territorial authorities operating composting schemes is subject to much the same issues as municipal recycling schemes, ie. cost of collection, storage, sorting, reprocessing and marketing versus the income from reprocessed product, nutrients returned to the soil, potential cover for landfills, accordance with the waste hierarchy and savings to landfill operations from having material diverted.

As this last saving is the most substantial financial benefit of compost schemes for territorial authorities, it is essential that these savings are estimated and taken into account when assessing the feasibility of a municipal scheme. Savings can also be passed on, at least in part, to operators of private composting schemes. Passing savings on provides an incentive for such schemes to be established and operated and means that all the benefits do not accrue to one party, namely the territorial authority.

Relatively few composting operations are currently operated in conjunction with municipal landfills. Those operated in the past were often closed owing to problems such as odour and poor quality product.

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[1]Tong and Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

[2]i. Agriculture New Zealand, Analysis of Christchurch City Waste. Christchurch: Christchurch City Council, May-June 1994.

ii. Taranaki Regional Council, Analysis of Kerbside Refuse Composition New Plymouth Urban Area. Stratford: Taranaki Regional Council, October 1994. (Taranaki Regional Council. Technical Report 94-11)

Many territorial authorities are investigating establishing schemes and this is encouraged by a recent report of the Parliamentary Commission for the Environment[3]. All territorial authorities should consider establishing composting schemes as a way to divert a significant proportion of material from landfills.

Private composting schemes also exist and territorial authorities should evaluate whether it is more practical and economical to support these schemes by passing on some of the savings currently being gained by the territorial authority. This is appropriate for those territorial authorities which see themselves performing only a core service delivery role and those which do not have the expertise or extra resources to operate composting schemes as efficiently as by supporting private ventures.

13.3 METHANE UTILISATION

Recent developments in landfill engineering have made it possible to capture a significant proportion of methane gases released by degrading items in the landfill. Landfills can also be managed to change the amount of methane produced by controlling the mix of components entering the landfill. Removing the gases makes the landfill more stable as the gases are flammable. The gases can then be used to generate electricity or be used directly as fuel.

Methane is being recovered from a few landfills around the country, for example, in Auckland and Wellington, and proposals for new landfills generally include plans for methane recovery, for example, Palmerston North City Council. Power generation is not substantial but it has the potential to enable landfill sites to be self-sufficient and provide excess power for use by others.

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[3]Office of the Parliamentary Commission for the Environment, Local Authority Solid Waste Reduction Initiatives. Wellington: Office of the Parliamentary Commission for the Environment, August 1993.

Constantly improving standards for landfills and improving technology will make methane utilisation increasingly viable in the future. This economic consideration of current and future costs and benefits will always be a consideration in deciding whether to recover the resource, especially in a country such as New Zealand where power prices are currently so low. However, incorporating methods for capturing methane gases should be a consideration in the design of all new landfills. Not only does it improve the safety conditions of the landfill, but it also utilises a potential resource.

13.4 INCINERATION[4]

Converting waste to energy is another form of waste recovery. Wastes are burnt to produce electricity or steam, thereby utilising a resource and reducing the amount of waste needing to be disposed of.

Steam has been recovered from the incineration of waste in Europe and USA on a commercial scale since the 1960s. The steam is generally used for electricity generation and for space heating in buildings. Incineration-boiler plants are generally not very efficient. There are also often problems with the residual ash as this can contain toxic elements.

Waste is also used as a substitute for solid fuel in industrial-style furnaces and is referred to as refuse-derived fuel (RDF). Waste is generally pretreated to remove non-combustible elements, thereby increasing its efficiency.

Waste-to-energy plants using RDFs were constructed especially on the east coast of the United States of America during the 1970s owing primarily to a perceived lack of sites for future landfills. This perception, combined with the oil shocks of the 1970s and the relatively high cost of electricity supply in America, made waste-to-energy plants look particularly attractive.

However energy prices dropped markedly in America during the 1980s, making plants less viable. Various tax advantages in place during the 1970s were also withdrawn. Environmental standards increased putting pressure on the quality of emissions from plants and leading to public opposition to the operations. As a result, very few new RDF plants

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[4]Barton A, Resource Recovery and Recycling. New York: John Wiley & Sons, 1979.

are proposed in America and many are standing idle. This is despite the increasing landfill charges which were anticipated, making alternative methods of treatment more attractive.

A third form of incineration is that of pyrolosis where combustible waste is chemically decomposed by heat in the absence of oxygen or in an oxygen controlled environment. This process has been used for hundreds of years, including for the conversion of coal to coke for the iron making industry. Pyrolosis generally decreases the volume of waste by 80-90% and results in minimal air discharge. The process requires high capital investment and a suitable composition of waste.

Waste-to-energy plants are common in Europe, USA and Japan. The concept of the recovery of waste energy is now being incorporated into European packaging waste reduction targets and is often referred to as valorisation.

Application to New Zealand

Incineration plants are used in New Zealand to treat hospital and certain hazardous wastes. The first proposal of any substance to establish an RDF waste-to-energy plant for solid waste did not come until the 1990s. This can largely be explained by the availability of landfill sites, under-valued waste services by local authorities, low energy prices and public feeling against incineration.

Waste-to-energy plants can generally be established if they meet health and environmental standards of a particular region under the Resource Management Act 1991. Consent authorities need to be sure that, by diverting waste from a landfall and utilising a resource, problems are not created in other media. Potential problems include the production of CO_2 gases, the toxicity of the resulting ash and the effects on surrounding environs. These potential problems highlight the need for all levels of Government to have well-developed policies and objectives in place in order to balance these competing issues and to ensure that environmental effects are not merely passed from one media to another.

CHAPTER 14 - ACHIEVING THE RESIDUAL MANAGEMENT OBJECTIVE

14.1 INTRODUCTION

Residual management or waste disposal is the final step of the waste hierarchy. It should therefore only be used where the previous steps cannot deal with the waste effectively. At present resources being put into waste policy are in an approximate inverse proportion to that suggested by the hierarchy. Waste disposal has received attention at a central government level with the development of the 'Waste Analysis Protocol'[1] and the 'Landfill Guidelines'[2], outlined below. Although these were intended to be the last major pieces of waste work by the Ministry for the Environment dealing with the environmental "bottom line", the Ministry's 1994-1995 work plan appears to focus again on establishing base-line criteria and standards[3]. Although this work is necessary, it should not be allowed to lead policy back to an "end of pipe" mind-set. This approach was moved away from in the late 1980s and a new philosophy established with the Resource Management Act 1991.

The Local Government Act's focus on service delivery means that territorial authorities' role in implementing waste policy is often seen as being limited to collecting, treating and disposing of refuse and, in some areas, operating recycling schemes. Territorial authorities do not generally make provision for the savings to landfill operations from diverting waste to be reprocessed. The only recovery of resources which is generally taken into account is the utilisation of methane gases, where this occurs.

The vast majority of territorial authorities do not evaluate whether operations aimed at earlier stages of the waste hierarchy would be more effective in managing waste than treatment at landfills or in trade waste systems. For example in many cases, cleaner production programmes could decrease the quantity and toxicity of waste being treated, thereby making disposal operations easier to operate than by investment in treatment and disposal technology and more advanced landfill engineering.

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[1]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

[2]Ministry for the Environment, Landfill Guidelines. Wellington: Ministry for the Environment, November 1992.

[3]For example, air and water quality standards, contaminated sites, and landfill surveys.

The narrow view some territorial authorities and regional councils have of their responsibilities needs to be altered to incorporate the objectives of the waste policy. The benefits from conserving resources and minimising pollution should be taken into account as these increase up the steps of the waste hierarchy. As such, waste disposal should not be looked at in isolation.

One example of a narrow focus on waste disposal is the use of mobile garbage bins (MGBs)[4] in various parts of the country. It has been determined[5] that this will increase the amount of waste collected in Auckland City by 40-50% . The increase is said to be waste which was previously not disposed of at landfills, approximately 90% of it being garden waste which was previously left in gardens, composted by households or collected by private garden waste contractors. A small part of the increase is material which was previously recycled.

No incentive to minimise the amount of waste produced and/or disposed of is provided in Auckland City, where increased available capacity is coupled with a flat collection and disposal charge. This ignores the waste hierarchy objective, focussing almost exclusively on operational advantages of using MGBs for residual management. Large producers of waste are also being subsidised which is generally inconsistent with the "generator pays" principle.

The public also relates waste management to that of waste disposal[6]. Most people see the amount of waste created as being a problem because it takes up space in landfills and many components do not degrade. Much less thought is given to how waste could be avoided and the resulting benefits of reduced resource use and pollution.

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[4]Mobile garbage bins are plastic rubbish bins on wheels, designed for automated pickup by collection trucks. They are designed with a 120 and 240 litre capacity.

[5]Waste Minimisation Network, The Impact of Mobile Garbage Bins (MGBs) on Waste Minimisation and Recycling in Auckland. n.p. September 1993.

[6]i. Discussion Groups, April-May 1993;
ii. Mayes K, Attitudes towards Packaging Waste (survey). n.p. October 1993.

14.2 INSTRUMENTS

14.2.1 REGULATION

Litter Act 1979

This Act makes it illegal to litter in a public place. The degree of enforcement of the Act has an impact on the level of illegal dumping of municipal waste as well as of individual items.

Bans

s.544 Local Government Act 1974 allows territorial authorities to ban items from landfills via by-laws. This could be done where an item is considered to impact on the landfill in an unacceptable manner and to support alternative treatment or disposal methods. These methods need to exist to prevent the waste being illegally disposed of.

Various American states have banned yard waste from landfills to support composting operations. Other materials banned from landfills in America include materials for which municipal recycling schemes exist, tyres and batteries[7]. Bans on yard waste are being considered by some territorial authorities in New Zealand as it makes up a significant proportion of landfilled waste. However it may be more appropriate to provide financial incentives for diverting materials, including yard waste, to be reprocessed by having realistic disposal charges at landfills. Materials can be collected for reprocessing for less or no charge to provide an incentive for householders to separate materials.

Where appropriate treatment and disposal options exist, bans can be used for hazardous wastes which should be dealt with in a more controlled manner. In other situations, bans are of limited effect as they do not influence purchasing behaviour and merely result in illegal dumping of wastes.

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[7]"The State of Garbage in America" Biocycle. Issue 32(5), May 1991.

Landfill Consents

Territorial authorities and private operators are required to have applied for resource consents for operating landfills by 1 April 1995[8]. Resource consents control discharges such as leachate and ensure that certain environmental standards are met. Many older landfills are incurring substantial costs in order to reach the required standards. Public and private landfills are expected to reach the same standards, placing a premium on territorial authorities of correctly valuing waste services.

14.2.2 ECONOMIC INSTRUMENTS

User Charges

User charges have been discussed in some detail in Chapter 7.5 and have been touched on in relation to all stages of the waste hierarchy. These points will not be stated again here. The following section briefly sets out the methods by which territorial authorities can impose user charges on waste collection, treatment and disposal services.

User charges can be applied under both the Resource Management Act 1991 and the Local Government Act 1974. Industrial and commercial waste producers can be required to make financial contributions to waste collection and treatment services through District Plans. Contributions can be linked to the level of waste produced[9].

Performance bonds can also be required[10] to ensure that waste is properly managed. Enforcement provisions of the Resource Management Act 1991 can be used to penalise especially businesses which treat and/or dispose of waste contrary to provisions in resource consents or otherwise in an illegal manner.

The Local Government Act 1974 allows territorial authorities to use user charges to recover the costs of providing waste services. The Local Government Law Reform Bill aims to clarify this provision by referring to recycling operations in the term "waste management facilities"[11].

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[8]cl.2(1) Resource Management (Transitional Provisions) Regulations 1994.

[9]s.108(1)(a) Resource Management Act 1991.

[10]s.108(1)(b) Resource Management Act 1991.

[11]Part XXXI Local Government Law Reform Bill.

Bylaws can also be used to set out landfill charges[12].

Landfill Valuation

Landfill valuation in New Zealand is currently inadequate, making waste disposal appear artificially cheap. This has been highlighted in a recent report of the Parliamentary Commission for the Environment[13]. This situation needs to be rectified so that territorial authorities can accurately assess the costs and benefits of residual management.

Some of the consequences of making waste disposal appear artificially cheap are that:

i) Previous steps in the waste hierarchy are undertaken to a lesser degree than is optimal;

ii) There is a higher level of resource use than is necessary as waste reduction at source is undervalued;

iii) Pollution occurs to a higher degree than is necessary from the extraction, manufacture, use and treatment of products and packaging and from insufficient aftercare of landfills.

With regard to landfill valuation, the main recommendations of the Parliamentary Commissioner for the Environment's report are supported. It is therefore inappropriate to repeat many of the matters contained in the report. The report recommends that territorial authorities include the following costs when valuing landfills:

i) Land values;

ii) The value of landfill space;

iii) The cost of managing environmental effects;

iv) Aftercare for closed landfills (including leachate and methane control).

At present each of these costs are reported to be taken into account in descending degrees. Private landfills can be made to take these costs into account through standards and performance requirements in resource consents.

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[12]s.544 Local Government Act 1974.

[13]Office of the Parliamentary Commission for the Environment, Local Authority Solid Waste Reduction Initiatives. Wellington: Office of the Parliamentary Commission for the Environment, August 1993.

14.2.3 VOLUNTARY INITIATIVES

Landfill Guidelines

The Ministry for the Environment and the Centre for Advanced Engineering have developed national guidelines for the siting, design, operation and aftercare of landfills[14]. The Guidelines also include a statement of current Government waste policy and the relationship of the Guidelines with various pieces of legislation and a practical recycling case study. Other sections can be added to the Guidelines such as a section on the economics of landfill operations. The Guidelines were distributed to all local authorities and are being widely used[15].

The Guidelines are a useful mechanism for ensuring that standards of landfill operations are similar around the country. They can assist territorial authorities improve aspects of landfill operations where this is necessary in order to apply for resource consents. As such, territorial authorities should refer to the 'Landfill Guidelines'[14] when making decisions regarding landfill management.

Waste Analysis Protocol

In order to obtain data of various waste streams, the Ministry for the Environment produced the 'Waste Analysis Protocol'[16] (WAP) in December 1992. The Protocol is a system for collecting consistent and reliable information. It is expected that this will be carried out by territorial authorities as the operators of the majority of landfills. Development of the computer software that supports the Protocol is currently underway.

The 'Waste Analysis Protocol' has three modules, with slightly different methodologies for each one. This ensures that the data collected is in the most suitable form.

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[14]Ministry for the Environment, Landfill Guidelines. Wellington: Ministry for the Environment, November 1992.

[15]Blake Ellen, Policy Analyst, Hazards and Waste Policy Directorate, Ministry for the Environment, pers. comm. May 1994.

[16]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

The three modules are:

i) Business waste;

ii) Domestic waste;

iii) Waste measurement at a disposal facility.

Some territorial authorities have expressed the view that using the Protocol is too costly given the resources of the territorial authority[17]. Funding assistance for adopting the 'Waste Analysis Protocol'[18] is available through environmental grants administered by the Ministry for the Environment. The current priority status given to waste analysis projects should be carried over into the next financial year as the collection of waste data is necessary in order to be able to make sound resource management and policy decisions.

The Protocol focuses on waste being disposed of at landfills, thereby providing information primarily about domestic and commercial waste. Other waste streams do not as yet have a similar system in place for collecting data about quantity, composition and so on, although other modules can be added to the Protocol.

Systems similar to that of the 'Waste Analysis Protocol' need to be developed for all waste streams. This will provide the information necessary to ensure that the waste stream is managed appropriately and that areas of high risk and/or impact on the environment are able to be identified.

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[17]Blake Ellen, Policy Analyst, Hazards and Waste Policy Directorate, Ministry for the Environment, pers. comm. May 1994.

[18]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

14.3 RECOMMENDATIONS

Until charging and valuation systems are adequate throughout the country, waste disposal will continue to occur to a greater degree than is optimal. Insufficient signals will be given to all parties of the need to implement steps earlier in the waste hierarchy. Correcting price signals and incorporating environmental costs at this end of the waste hierarchy is therefore one of the most important steps in allowing the waste policy objectives to be achieved.

Data collection and analysis of all waste streams is also essential in order for waste policy decisions to focus on those areas of highest risk and/or impact. Data collection should follow a system similar to that developed in the 'Waste Analysis Protocol'[19] to ensure that data are compatible and a complete picture of New Zealand's waste streams can be obtained.

Local authorities should utilise the Ministry for the Environment's environmental grants in order for the 'Waste Analysis Protocol' to be adopted throughout the country.

A wide range of instruments need to be considered in order to achieve environmentally sound residual management, ranging from bans on hazardous wastes in landfills and engineering practices such as those contained in the 'Landfill Guidelines'[20] to enforcement procedures for illegal duping of wastes.

All levels of Government need to reassess their obligations in terms of implementing waste policy objectives. This reassessment is being invited by moves such as the proposed amendment to the Local Government Act 1974 and the philosophy of s.32 and s.75 of the Resource Management Act 1991 with parties determining the most effective implementation instruments to achieve waste policy objectives rather than looking at each step of the waste hierarchy discreetly.

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[19]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

[20]Ministry for the Environment, Landfill Guidelines. Wellington: Ministry for the Environment, November 1992.

CHAPTER 15 - CONCLUSIONS & RECOMMENDATIONS

This thesis has discussed the current waste policy and framework and highlighted many areas which are considered to be deficient. Until the policy is developed further, it will be impossible to achieve an effective outcome with regard to waste policy and other aspects of human activity.

Waste needs to be adequately defined and waste data collected so that parameters of the problem being dealt with can be identified. Proposed definitions of waste and solid waste are contained in Chapter 1 of this thesis. The definitions draw on those used in other countries as well as taking into account the operating environment that exists in New Zealand.

The proposed definitions are as follows:

> **Waste is "any unwanted, discarded or surplus matter whether solid, liquid or gaseous, but not radio-active, which is discharged into the environment or intended for recycling, reprocessing, recovery or putrification by a separate operation from that which produced the matter".**
>
> **Solid waste is "solid waste arising from commercial, industrial, trade and household activities that does not need to be treated separately in order to achieve environmentally sound waste management practice".**

Data on all waste streams are essential. Without these data it is impossible to ensure that the elements of the problem are being dealt with in an appropriate manner. Attention is currently focussed on domestic waste, and packaging in particular. This focus may not be appropriate when compared to the degree of risk and/or impact on the environment of other waste types. This is relevant given the focus on "effects" in the Resource Management Act 1991 and in the State of the Environment monitoring and reporting work currently being undertaken by the Ministry for the Environment.

Existing data needs to be assembled so that it is not unnecessarily duplicated. Consistent methodologies need to be developed for classifying and measuring waste streams. Materials will then not be double-counted or overlooked. Extra modules should be added to the 'Waste Analysis Protocol'[1] where waste streams treated and/or disposed of at a facility are generally homogenous. Assessments of the risk and/or impact of waste streams or elements of waste streams also need to be undertaken.

Resources and attention are also currently being spent in an approximate inverse proportion to that suggested by the waste hierarchy. This results in an insufficient level of waste reduction at source and a focus on "end of pipe" solutions. It is also contrary to the philosophy of sustainable management contained in the Resource Management Act 1991 as it results in a higher degree of resource use and pollution than is appropriate.

The current waste policy is also deficient in that it does not clearly set out intended goals and objectives. The waste policy itself does not include any goal, instead containing one objective (the waste hierarchy) and one implementation instrument (the Polluter Pays Principle). Whilst these are appropriate elements of the policy, they do not in themselves provide sufficient information as to the desired outcomes.

Some detail of the goals and objectives is set out in an explanatory document. However this is not widely used to accompany the policy and the information contained in the document is not generally known. As discussed in Chapter 4 the objectives contained in the explanatory document are also not sufficiently developed, often focussing on only some of the aspects which are relevant to waste policy.

Proposed goals and objectives are therefore contained in Chapter 4 and are as follows:

The goal of the waste policy is to maximise net benefits to New Zealand by:

i) **Promoting the benefits of reduced resource use through the internationally recognised waste hierarchy of reduction, reuse, recycling, resource recovery, and residual disposal;**

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[1]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

ii) **Avoiding, remedying or mitigating the environmental and health risks associated with waste;**

iii) **Securing the economic advantage of New Zealand's green image;**

iv) **Ensuring policy and action is focused on areas of highest risk and/or impact through the collection of reliable data on all types of waste.**

Partially owing to the lack of development of the current Government waste policy, the framework within which waste policy decisions are made is extremely skeletal. As such, it does not provide sufficiently clear guidance as to the roles and responsibilities of the four major parties, namely central government, local government, industry and the public/consumers. Aspects of the waste policy are therefore being avoided or dealt with in a manner which is not the most appropriate. This necessarily results in ineffective implementation of waste policy objectives.

The waste policy framework needs to be developed to set out the roles and responsibilities of the major parties in relation to the implementation of waste policy objectives. All parties also need to have a higher degree of awareness of the objectives. They are then able to take them into account when making waste policy decisions. This involves:

i) Maintaining a voluntary approach, supported by regulation and/or economic instruments where necessary;

ii) Education of the public (and other parties), so consumers can exercise their purchasing power effectively;

iii) Reassessing legislation such as the Local Government Act 1974 and the Resource Management Act 1991 to ensure all costs and benefits are taken into account in waste policy decisions;

iv) Reassessing the use of policies and plans under the Resource Management Act 1991 to ensure adequate account is taken of waste policy objectives;

v) Central government funding and the priorities of the Ministry for the Environment and other central government agencies reflecting the priorities of the waste hierarchy so that correct signals are given to other parties as to the intended outcomes of using various implementation instruments.

In conjunction with the collection of data on the various waste streams, this will allow resources and attention to be focussed effectively on those areas of highest risk and/or impact on the environment.

Implementation instruments from various categories need to be applied together to achieve an effective outcome as no instrument incorporates every aim of the waste policy objectives. The most important instrument to achieve the overall goal of the waste policy is the development of economic theory to allow for proper pricing of resources and waste services. Much of that topic is beyond the scope of this thesis. However, various aspects of waste policy implementation discussed in this thesis highlight the need for price signals to reflect the true costs and benefits of particular actions.

Many of the other instruments discussed are designed to incorporate externalities at least in part. For example, user charges are designed to reflect the true costs of providing waste services although this is not always necessarily occurring at present. Regulatory instruments such as the resource consent and enforcement provisions of the Resource Management Act 1991 also aim to make waste producers take responsibility for their activities. The use of these instruments is encouraged by the inclusion of the Polluter Pays Principle in the waste policy and is recommended as an implementation instrument in the waste policy suggested in this thesis.

Other instruments are designed to influence behaviour through other means. This is the case with many voluntary instruments and with education and information. For these instruments to be successful it is essential that the parties are aware of the goals and objectives being sought. Parties can then alter their behaviour to assist in reaching these goals.

Recognition also needs to be given to the fact that various factors set New Zealand apart from other countries. Instruments applied overseas will therefore not necessarily be appropriate or successful in New Zealand's operating environment. The feasibility of adopting instruments should therefore always be investigated to ensure that they will assist New Zealand in moving towards the goals and objectives of the waste policy.

Instruments not considered suitable for use in New Zealand include recycled content mandates and product charges. Major recommendations for increasing the degree of implementation of waste policy objectives are given below. These include areas where further study is needed to determine the viability of instruments and to enable all relevant factors to be taken into account in waste policy decisions in New Zealand.

All Parties

i) Reassess roles and obligations in implementing waste policy objectives;

ii) Use education to compliment other instruments and to increase the level of knowledge of issues such as resource use;

iii) Purchase recycled and recyclable products where these have recognised benefits over virgin products;

iv) Be prepared for resource consent applications for new waste collection, treatment and disposal technology.

Central Government

i) Direct existing subsidy schemes such as the environmental grants scheme, Business Development Programme and Technology for Business Growth Programme towards cleaner production initiatives and the use of the 'Waste Analysis Protocol'[2];

ii) Extend the use of voluntary waste reduction targets from the oil and packaging sectors to include materials such as non-packaging paper, various battery types, tyres and other hazardous wastes;

iii) Establish a clearing house of information regarding cleaner production within the Ministry for the Environment;

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[2]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

iv) Broaden the range of targeted programmes utilising the increased funding to the Energy Efficiency & Conservation Authority (EECA) to include every aspect of cleaner production;

v) Broaden the scope of existing funding programmes such as the Business Development Programme and the Technology for Business Growth Programme to assist in the development of environmental technology appropriate for the New Zealand environment;

vi) Continue to promote energy efficiency through EECA;

vii) Assess the potential for using renewable energy sources in New Zealand through EECA.

Regional Councils

i) Encourage businesses to adopt cleaner production practices by methods such as objectives and rules in policies and plans, conditions on resource consents, user charges for monitoring and enforcement provisions;

ii) Establish waste registers on an as-needed basis;

iii) Utilise existing material such as the 'Hazardous Waste Management Handbook'[3].

Territorial Authorities

i) Draw up waste service contracts so that contractors have an incentive to minimise the amount of waste handled;

ii) Establish user charges for all waste services, including domestic waste;

iii) Establish cleaner production programmes;

iv) Provide incentives for businesses to adopt cleaner production;

v) Establish waste registers on an as-needed basis;

vi) Undertake recycling schemes only where economically viable (based on total costs);

vii) Consider the viability of establishing composting operations;

viii) Incorporate technology to capture methane gases from new landfills;

ix) Do not use mobile garbage bins (MGBs) for domestic waste collection;

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[3]Ministry for the Environment, Hazardous Waste Management Handbook. Wellington: Ministry for the Environment, June 1994.

x) Utilise performance bond and enforcement provisions to ensure waste is properly handled;

xi) Utilise existing material such as the 'Cleaner Production Guidelines'[4], 'Waste Analysis Protocol'[5], 'Landfill Guidelines'[6] and 'Hazardous Waste Management Handbook'[7].

Businesses

i) Adopt cleaner production practices;

ii) Establish waste registers on an as-needed basis;

iii) Undertake recycling schemes only where economically viable (based on total costs);

iv) Utilise existing material such as the 'Cleaner Production Guidelines', 'Waste Analysis Protocol', 'Hazardous Waste Management Handbook' and 'Company Environmental Policies: Guidelines for Development & Implementation'[8].

Areas of Further Study

i) Existing waste data needs to be assembled so that further data collection does not duplicate existing material;

ii) Data needs to be collected for the remaining waste streams and elements of waste streams using a consistent methodology;

iii) Areas of highest risk and/or impact needs to be assessed so that waste policy can focus on these areas;

iv) Life-cycle analysis and similar techniques need to be developed further so that all relevant costs and benefits of various activities and products can be determined;

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[4]Bailey Dr ML and Mayes K, Cleaner Production Guidelines. Wellington: Ministry for the Environment, May 1994.

[5]Ministry for the Environment, Waste Analysis Protocol. Wellington: Ministry for the Environment, December 1992.

[6]Ministry for the Environment, Landfill Guidelines. Wellington: Ministry for the Environment, November 1992.

[7]Ministry for the Environment, Hazardous Waste Management Handbook. Wellington: Ministry for the Environment, June 1994.

[8]Ministry for the Environment, Company Environmental Policies: Guidelines for Development & Implementation. Wellington: Ministry for the Environment, August 1993.

v) Purchasing Guidelines should be developed for Government and private agencies to encourage design of products which takes account of all environmental costs;

vi) Landfills need to be properly valued and valuations need to be regularly reviewed to ensure that all costs and benefits are taken into account in providing waste services;

vii) The viability of deposit-refund schemes should be investigated for a range of products including hazardous materials;

viii) Research needs to be carried out to develop cleaner production technology on a scale which is appropriate to New Zealand.

New Zealand is in a fortunate position of being able to avoid significant degradation of the environment from waste due to the short timespan industrial development has occurred, a low population density and people's attitude towards the environment. The challenge for all parties involved in waste policy decisions is to ensure that this situation is recognised and that the policy and policy framework are put in place to maintain this position for future generations.

APPENDIX 1 - DISCUSSION GROUP RESULTS APRIL - MAY 1993

The objectives of conducting the discussion groups were to identify attitudes and behaviour of householders relating to packaging and packaging waste in New Zealand; and to identify issues to be investigated in a subsequent postal survey of householders.

The rationale for choosing packaging and packaging waste as the topic for the discussion groups was based on a number of factors:

i) A literature review had highlighted the attention given to packaging issues by central government;

ii) The majority of instruments in use or suggested for use in New Zealand focus on packaging;

iii) Packaging has been given as making up 40% of domestic waste[1];

iv) Packaging has a high profile owing to its use in marketing products and the profile of recycling schemes which collect predominantly packaging materials;

v) It was perceived that the public considered packaging to be one of the elements of the waste stream causing the biggest problems.

Three discussion groups were conducted between 18 April and 6 May 1993. Group 1 had nine participants, Group 2 had ten and Group 3 had seven. Group 1 consisted of young mothers with pre-school children, Group 2 was made up of mothers with teenage families and Group 3 consisted of retired people with a similar number of male and female participants.

Discussion Group 1 was held in a private home in Takapuna, Auckland on 6 May 1993. The second group was held in a private home in Palmerston North on 18 April 1993. Discussion Group 3 was held at participants' club rooms in Palmerston North on 27 April 1993.

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[1]Tong & Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

The groups were moderated by the author and were tape recorded with the full knowledge of the participants. They were later transcribed to assist in the compilation of results. Each group lasted for approximately 60-90 minutes.

Results

All participants considered that the amount of packaging used is a problem in New Zealand because of the volumes disposed of. Little discussion was had about the use of resources that are used, and wasted, in creating packaging and other products.

Participants appreciated that packaging is used to help market products. Many saw a conflict between this marketing aspect and environmental costs, with about half the participants stating that **overpackaging** was the major contributor to the amount of packaging waste created. Examples of overpackaging given by participants included blister packs and packaging used especially for small products with a cardboard backing and a plastic front.

Plastic was immediately identified as the material which causes the biggest problem, largely because of the number of products that it is used to package. Plastic was the only material which participants considered was used to overpackage products. Glass was the most favoured packaging material because it was seen as keeping the product clean and can be reused and recycled. This was followed by aluminium.

There was a wide variation as to the **proportion packaging makes up of participants' household rubbish**. The average was over 50% for each discussion group with many participants stating that packaging made up 80% and 90% of their rubbish.

Price was the most important factor for all discussion groups when making **purchasing decisions**, with convenience also being important. Older consumers were the only group that were brand oriented. Environmental aspects of products were not considered very often by participants when making purchasing decisions.

"Environmentally friendly" products most commonly bought were concentrates of fruit juice and cleaners (by over half the participants), recycled paper products (50%), "fottles" (by 50%), and unbleached toilet paper (33%). No products were avoided because they were damaging to the environment. Nearly all participants recycled paper and cardboard, aluminium, glass and PET and HDPE plastic bottles.

Older participants considered **recycled paper** to be of inferior quality to virgin paper and only bought it for gifts such as stationery. Some said that they would not buy it for other older people as it was not widely accepted within that age group. Recycled products other than paper products were not widely considered by participants.

There was a large degree of confusion and scepticism over **environmental claims** made about products and the true environmental benefits. Many examples were given of where so-called "environmentally friendly" products cost more than other products and there was a general feeling that manufacturers were trying to capitalise on consumers "doing the right thing".

Following from this was the belief that a Government-approved **environmental label** would be beneficial as it would provide consumers with credible information about the product. Almost all participants stated that they would be prepared to pay more for a product with such a label, generally between 5c and 50c for a product costing $2.00.

Participants considered that consumers were given insufficient **choice** between types of products and packaging. The issue of overpackaging was again raised in this context.

The issue of **milk bottle packaging** and delivery was mentioned by all the discussion groups. Other issues that were mentioned that related to waste were those of newspapers, junk mail and disposable nappies.

The discussion group held on Auckland's North Shore had a much better awareness of the issues surrounding **recycling** such as the economics, the availability of markets and which products could contain a recycled content. All spoke knowledgeably about how the kerbside recycling scheme in their area operated and all used the scheme. The group considered it now a way of life. The majority of reasons given for participating in the recycling scheme were altruistic. The fact that most households had reduced the amount of rubbish disposed of by about half was generally seen as a benefit from participating as opposed to the motivating factor. There was a general feeling that the media is only reporting bad news and trying to discredit waste reduction and recycling initiatives and ignoring success stories.

Linked to this was a sharp difference in opinion between groups as to the most appropriate method of **funding waste collection and disposal**. Opinions supported the method of charging currently used in their area.

It was not clear from discussions whether habit was the primary reason for preferring waste services being provided for by charges in **rates** (as they are in Palmerston North) as conflicting justifications were given. Older participants in Palmerston North were especially in favour of rates covering waste services although they were not able to give reasons for their preference.

These comments contrasted with those of the discussion group held on the North Shore where all participants strongly favoured a **generator pays** system as they had found from experience that it provided an incentive to minimise and recycle waste. Comments were made that all parts of the country should have a generator pays system - many were surprised that such a system was not more widespread as the benefits seemed very obvious to them.

Education of the public was seen as the most important instrument to decrease the amount of waste created. Consumers could then make informed purchasing decisions affecting manufacturers' packaging decisions. Educating the public was primarily seen as central and local government's role.

One example given where education could be used was that of informing consumers about the environmental and financial benefits of using mottled glass instead of having to separate glass of different colours. Although participants were a little resistant to the idea to buying beverages in mottled glass bottles, they acknowledged that this was not a logical response and that education about the benefits would help overcome their resistance. Participants talked about milk bottles and their expectation of being able to see the beverage. This ignores the fact that many beverages cannot be seen as they are packaged in coloured glass or other packaging types which are generally not transparent.

Central government's role in decreasing packaging waste was seen as incorporating many types of instruments as well as education. Financial incentives to manufacturers and consumers to behave in certain ways were seen as especially important. Other instruments that were mentioned included either a product tax to cover the costs of treating and disposing of waste or a levy on producers for education programmes, procurement policies for government agencies and support for the "Environmental Choice" labelling scheme.

Deposit-refund schemes were not considered an effective instrument to encourage consumers to reduce waste or increase the level of recycling. The perceived lack of convenience meant that deposit-refund schemes were seen as being important only for schools and scout groups collecting funds for specific projects.

Kerbside recycling was also seen as important with participants from Palmerston North commenting that they would be prepared to pay an extra $5.00 per year on their current waste services charge to have a kerbside recycling scheme in their area.

Industry was seen as being only interested in maximising sales without being concerned about the amount of packaging used to achieve those sales. Participants felt that industry should take more responsibility with the amount of packaging used by participating in the "Environmental Choice" labelling scheme and in setting voluntary waste reduction targets. Many participants were sceptical that industry would comply with the targets unless there was a threat of penalties.

APPENDIX TWO - SURVEY

ATTITUDES TOWARDS PACKAGING WASTE, OCTOBER 1993.

2.1 METHODOLOGY

The objective of the postal survey was to identify attitudes and behaviour of householders relating to packaging and packaging waste in New Zealand.

The rationale for choosing packaging and packaging waste as the topic for the survey was based on a number of factors:

i) A literature review had highlighted the attention given to packaging issues by central government;

ii) The majority of instruments in use or suggested for use in New Zealand focus on packaging;

iii) Packaging has been given as making up 40% of domestic waste[1];

iv) Packaging has a high profile owing to its use in marketing products and the profile of recycling schemes which collect predominantly packaging materials;

v) The discussion groups had confirmed that packaging was considered to be one of the elements of the waste stream causing the biggest problems.

1000 households were chosen using a systematic random selection process from listings in the New Zealand telephone book. This ensured a representative sample from throughout the country although there was an element of bias primarily against those in the lower socio-economic group who did not have telephones. The survey was addressed to "The Householder" and was completed by any member of the household aged 18 and over. Reminders and another copy of the survey were sent to those who had not responded within three weeks of the first survey being sent. 550 responses were received within the timeframe allowed.

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[1]Tong & Associates Ltd, The Differential Environmental Impact of Packaging in New Zealand (unpublished report). Wellington: Ministry for the Environment, November 1988.

2.2 EXECUTIVE SUMMARY

93% of respondents considered that the amount of packaging used in New Zealand is a problem, largely because there is so much of it to dispose of and it represents a waste of resources.

The group who did not consider that we have a problem with the amount of packaging we use in New Zealand was made up of more older, retired respondents than the total group of respondents (45% were 55 years and over). This group generally had only one or two members in a household. Packaging made up to 30% of their rubbish (by volume) for over half this group, although some respondents stated that packaging made up to 100% of their rubbish. This group was made up of respondents from all socio-economic groups and from all around the country.

Responses given throughout the survey indicated that the problem of waste is seen primarily as being one of difficulties in disposal, rather than relating to inefficient use of resources and costs of human activities on the environment.

As a result, many respondents perceived that recycling packaging waste would greatly reduce the problem of waste. Only a few comments were made regarding "closing the loop" by creating markets for recycled products, and about the financial aspects of recycling schemes.

The other primary concern was that of overpackaging. Industry was perceived as consciously overpackaging products so as to be able to charge more for a product. Respondents stated that presentation of products was not an important factor in purchasing decisions, thereby placing little importance on more highly packaged products.

Plastic was seen by over 75% of respondents as causing the largest problems because of the amount used, the inability to recycle it, the inability of plastic to degrade and the perception that it is used to overpackage products. Some respondents commented that the amount of plastic used was a greater problem than the amount of packaging used as a whole.

Responses were very divided over whether rubbish collections should be funded by a set charge through rates or through a generator pays system and preferences were often not consistent with responses to other issues in the survey. Most respondents were not able to give reasons for their preference.

Some respondents from areas where generator pays systems are in place for rubbish collections commented on the success of the system in decreasing the amount of waste disposed of and providing an incentive to households to reduce their waste. In other areas, responses reflect a large degree of feeling against current Government moves towards userpays.

Demographic Profile of Respondents:
Respondents almost equally represented both sexes (48% male and 52% female). The age groups of respondents was well spread, with slightly more 55 years and over, and slightly fewer 15-24 year olds.

All parts of the country were well represented although only 35% of those sent the survey responded from Northland. This can be compared with an 82% response rate from Gisborne. There was no relationship between the response rate and geographical area.

Fewer responses were received from lower socio-economic and unemployed groups. This may have been due, at least in part, to the bias of using listings in the New Zealand telephone book for the selection process. Other groups were reasonably equally represented.

Responses were consistent throughout the survey except over the issue of charging for rubbish collection. This demonstrates a lack of understanding over certain matters and the depth of feeling against the current government policy of userpays.

There was no correlation between any demographic factors and attitudes and behaviour of respondents.

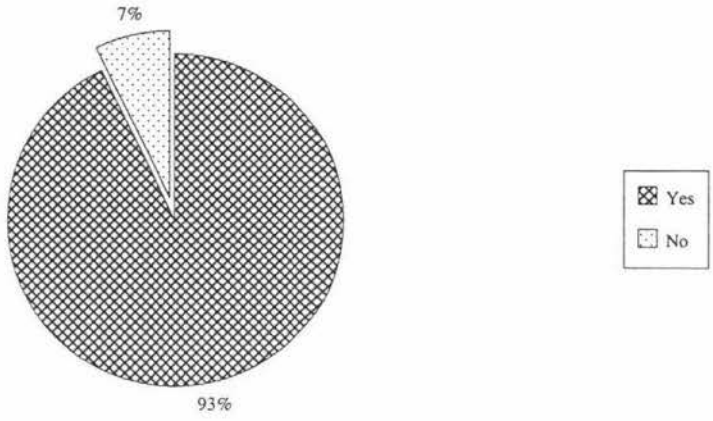
2.3 FINDINGS

2.3.1 Survey Results

Packaging quantities

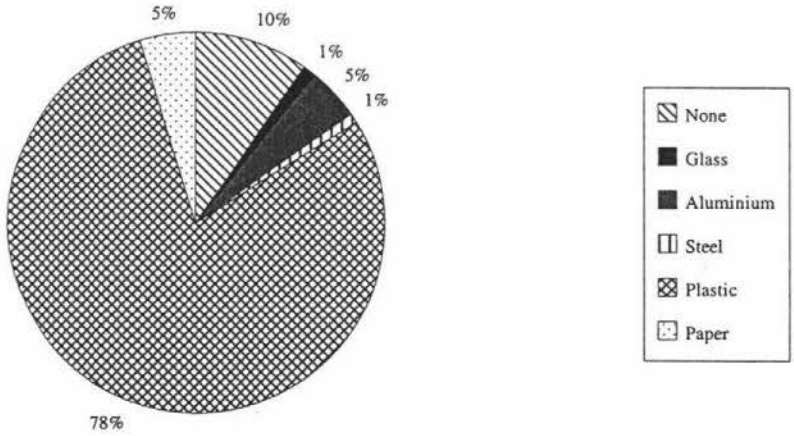
93% of respondents stated that the amount of packaging used in New Zealand is a problem. This was commonly because it was seen as taking up space in landfills and being a waste of resources.

Figure 1: Is the amount of packaging used a problem?



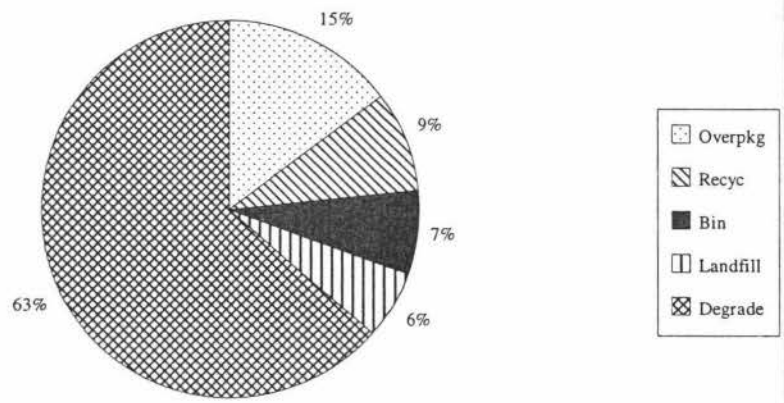
Packaging was stated to make up anywhere between 5% and 100% of households' rubbish (by volume). There was no correlation between the size or age of a household and the proportion of packaging in the waste stream.

Figure 2: Material which is the greatest problem



Over 75% of respondents stated that plastic causes the biggest problem, primarily because it does not degrade when disposed of (63%). Other reasons related to overpackaging and the volume of plastic waste created. All packaging materials were seen as causing the biggest problem by some respondents.

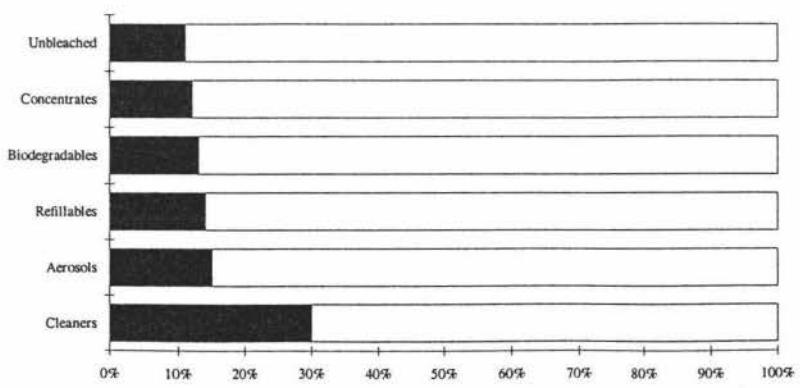
Figure 3: Reason that plastic the greatest problem



Purchasing decisions

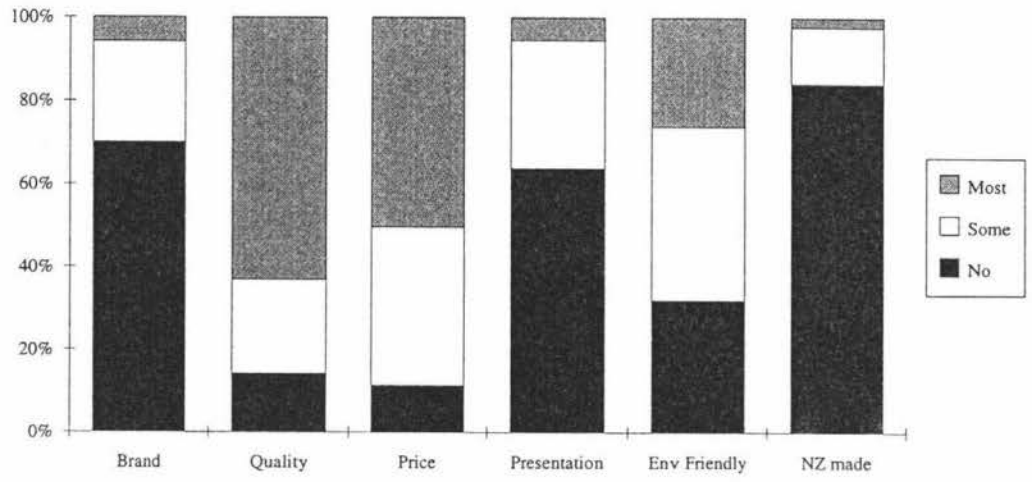
62% of respondents claimed to buy products because they are "environmentally friendly". However, many respondents only buy one or two types of products because of this reason, and the frequency of their purchase varies. Cleaning products were the most common product where environmental factors were taken into consideration (bought by 30% of respondents). This was followed by "ozone friendly" aerosols (15%), refillable containers (14%), biodegradable products and/or packaging (13%), concentrates (12%), and unbleached toilet paper (11%). Other products mentioned were recycled paper products, garden products, supermarket bags, and food bought from bulk bins.

Figure 4: Purchasing decisions



The most important factors in purchasing decisions were quality and price. Responses varied over whether environmental aspects were important, although 68% of respondents stated that it was of some importance. Brand names, presentation and whether a product was made in New Zealand were not such important purchasing factors.

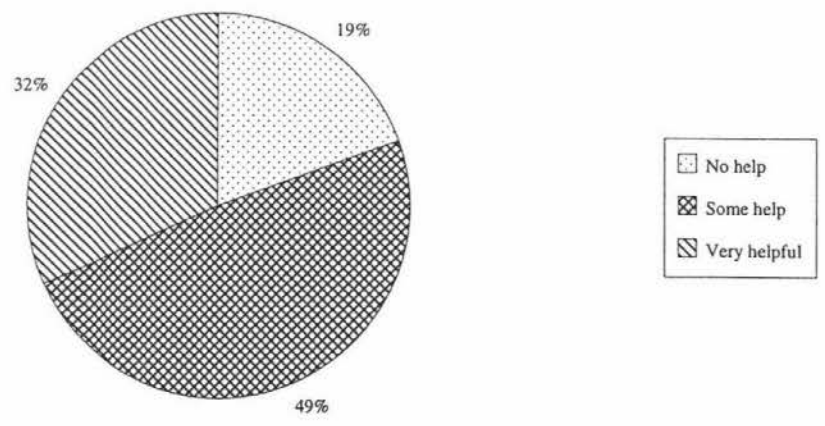
Figure 5: Purchasing Factors



Environmental labelling

81% of those who consider the amount of packaging we use is a problem stated that a Government-approved label recognising "environmental friendliness" would be useful in making purchasing decisions. 32% of respondents stated that it would be very useful.

Figure 6: Use of environmental label

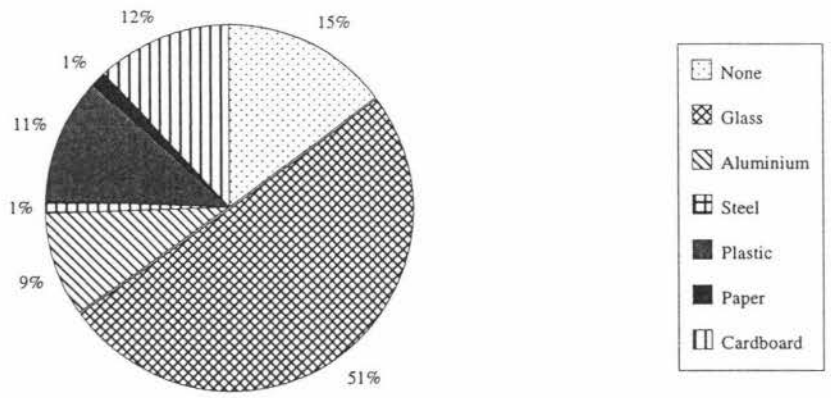


Almost half the respondents, including some who stated that a Government-approved label would aid purchasing decisions, would not be prepared to pay any more for a product with such a label. Most other respondents would be prepared to pay between 5c and 20c more, although some would be prepared to pay up to $1.00 more for a product costing $2.00 if it had a Government-approved label.

Preferred packaging materials

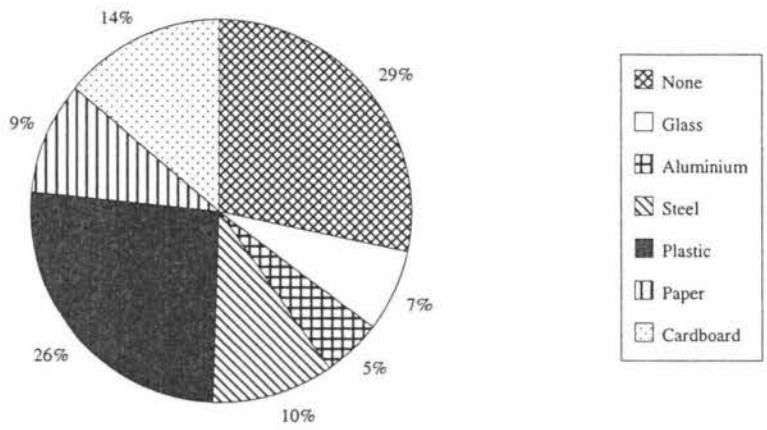
About half the respondents prefer buying their drinks in glass. Plastic bottles were also favoured by some respondents (11%). The most common factors affecting preferences in beverage packaging materials were their recyclability (35%) and taste of the beverage from the packaging material (22%), especially for glass and aluminium. The ease of use (9%) and disposal (10%) were also common reasons, especially for plastic bottles and cardboard cartons.

Figure 7: Preferred material



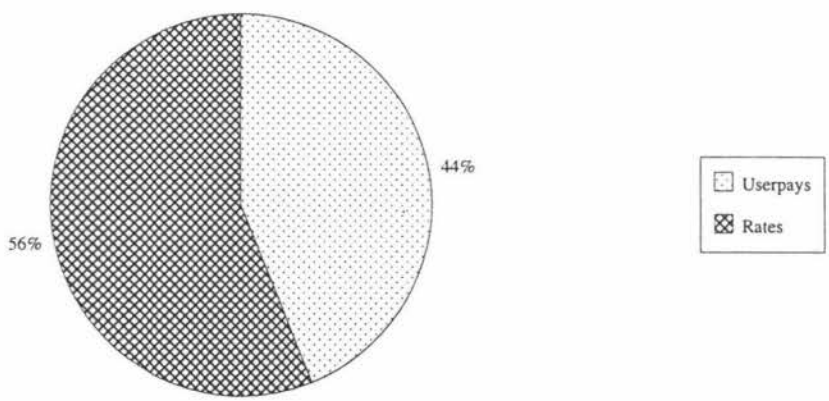
Plastic was the least preferred packaging material (35%). Cardboard cartons and steel were also less preferred (14% and 10% respectively). This was often because they could not be recycled in respondents' areas (15%). Other common reasons for not choosing packaging types were that materials such as plastic sachets were hard to use (9%), the taste of the beverage in most packaging types was altered (18%), and materials such as steel were hard to dispose of.

Figure 8: Least preferred material



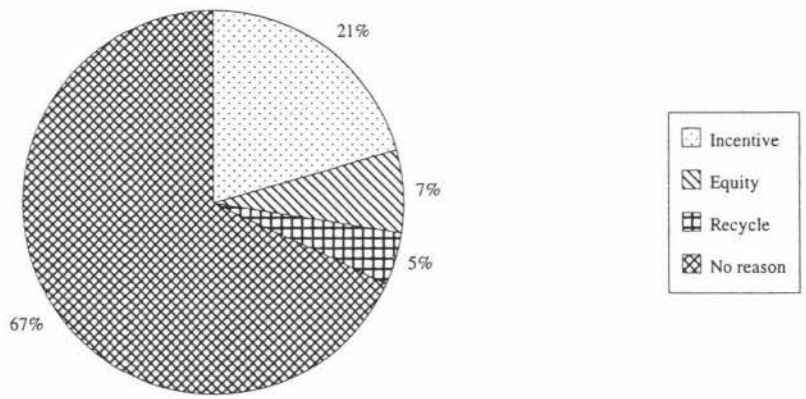
Charges for waste services

Figure 9: Preferred charge for waste services



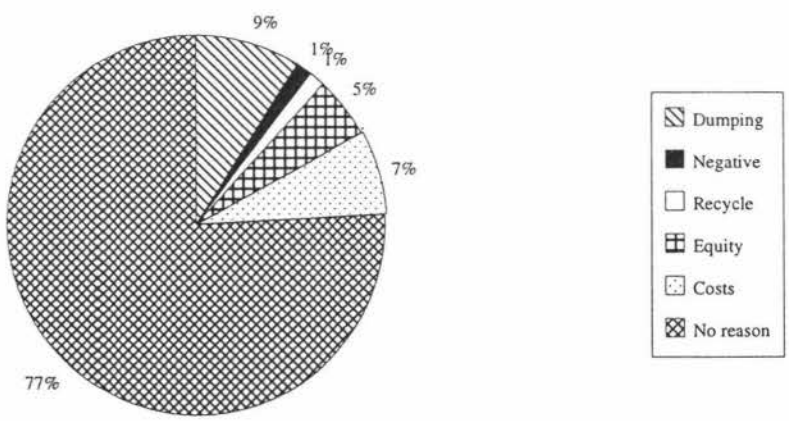
42% of respondents consider people should pay directly for the amount of rubbish they throw away although most (64%) did not state a reason for their belief. By far the most common reason given was that this would provide an incentive to decrease the amount of waste created (23%).

Figure 10: Reasons for preferring userpays



Many respondents chose the rates option because they do not want a generator pays system for rubbish collections. The majority of those who were in favour of paying a set charge through rates did not give any reason, although others mentioned that a generator pays system would increase administration and policing costs, and increase the level of illegal dumping of rubbish.

Figure 11: Reasons for not preferring userpays



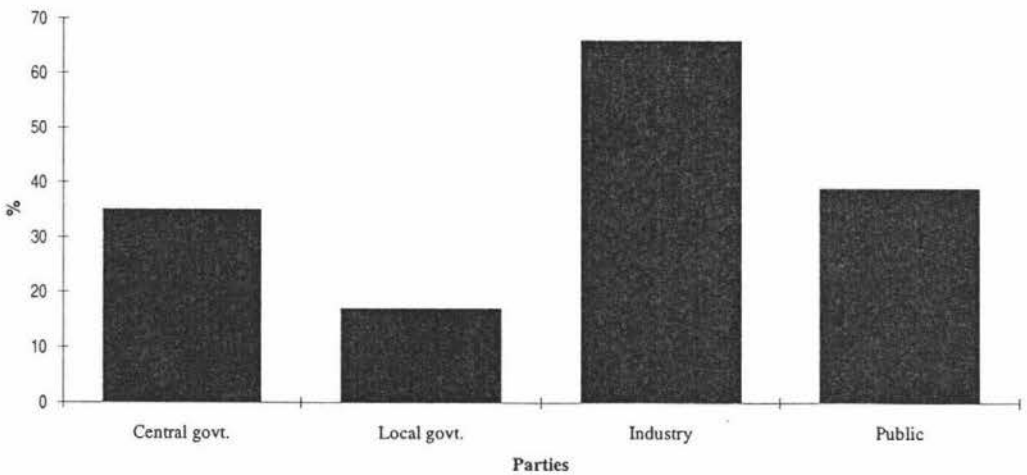
Responses on the issue of paying for rubbish collection were often contrary to responses given elsewhere in the survey. Although some respondents considered that industry should be charged for the amount of packaging waste they create, and that financial incentives were needed to reduce the amount of packaging waste created, this idea was not carried through to the public. Some smaller households preferred the flat charge, even though this would mean they were subsidising larger waste producers.

Roles of parties

Respondents generally felt that all parties had a responsibility to reduce the amount of packaging used. Industry was seen as having such a responsibility by the most respondents (66%).

Other parties were seen equally by groups of respondents to have a degree of responsibility although respondents 55 years and over were less certain in their responses. Local government was seen as having a responsibility by the fewest respondents (17%). Central government and the public were seen as having a responsibility by 35% and 39% respectively.

Figure 12: Responsibility for reducing packaging waste



Following this, most suggestions as to how the amount of packaging used could be reduced related to industry (265 responses). This was followed by suggestions relating to local and central government (156 and 155 respectively) and the public (74).

The two main areas of concern were that of recycling and overpackaging. Expectations of taking responsibility of these concerns fell mainly on local government and industry respectively. There is perception that industry is overpackaging goods (113 responses) and that it should be taxed for this overpackaging (11). Suggestions relating to recycling were that industry should make more or all packaging recyclable (48), central government should place a tax on non-recyclable products (13) and that local government should operate recycling schemes (101).

Local government was seen solely as dealing with recycling and refuse collection systems. The public was seen as having an ability to alter packaging through their purchasing power. Instruments for central government to help reduce the amount of packaging used were more varied. They covered direct control such as standards; economic instruments such as penalties for overpackaging, a tax on non-recyclables, incentives for manufacturers not to overpackage products, product charges, and deposit-refund schemes; and education.

Other comments

Other comments made by respondents fell into two groups. One of these related to recycling and various product groups such as glass milk bottles, newspaper and "junk mail", plastic and "environmentally friendly" products. Other comments related to the need for attitudes to change, industry to take more social responsibility and for financial incentives to influence behaviour (These comments were made despite the response to the issue of generator pays for household refuse collection services).

2.3.2 Findings of Respondents Who Did Not Consider the Amount of Packaging Used in New Zealand is a Problem

Description of group

The group who did not consider that we have a problem with the amount of packaging used in New Zealand was made up of more older, retired respondents than the total group of respondents (45% were 55 years and over). This group generally had only one or two members in a household. Packaging made up to 30% of their rubbish (by volume) for over half this group, although some respondents stated that packaging made up to 100% of their rubbish. This group was made up of respondents from all socio-economic groups and from all around the country.

Purchasing decisions

Fewer of this group buy products because of environmental aspects (40%). Products bought for this reason are the same as for those respondents who do consider the amount of packaging we use is a problem.

Environmental labelling

Fewer respondents considered that a Government-approved label recognising "environmental friendliness" would be useful in deciding which brand of product to buy and fewer would be prepared to pay any more for a product with such a label. 34% of respondents stated that a Government-approved label would be of no use.

Preferred packaging materials

The same packaging types were the most preferred, namely glass and plastic bottles. However, no packaging types were singled out as being preferred the least. Reasons for these preferences were reasonably evenly spread.

Charges for waste services

Responses concerning paying for rubbish collections were the same as for the total group of respondents, ie. 42% in favour of a generator pays system and 58% in favour of paying a flat charge through rates. This is despite the fact that, given the amount of rubbish respondents are throwing away, many would be subsidising larger waste producers by paying a flat charge. As with the total group of respondents, many respondents chose the rates option because they do not want generator pays for rubbish collections.

Those who would prefer a generator pays system do so because it would provide an incentive to reduce the amount of waste produced. Others felt it was inequitable for small waste producers to subsidise large producers of waste.

Roles of parties

A larger proportion of this group considered that the responsibility to reduce the amount of packaging used falls on industry (74%). The most common suggestion for reducing the amount of packaging used was to increase the level of recycling, especially by making all packaging recyclable. Fewer considered that other parties have a responsibility in this area (16% stated central government, 11% stated local government and 21% stated the public had a responsibility to reduce packaging).

2.3.3 Findings of Respondents Who Consider the Amount of Packaging Used in New Zealand is a Problem

Two areas where responses of this group differed more significantly from the total findings were those of charges for waste services and the roles of the parties involved in waste policy decisions.

Charges for waste services

Respondents were sharply divided over the issue of paying for rubbish collections. For example, respondents 44 years and less were equally divided over this issue, 63% of respondents 45-54 years old favoured generator pays, whereas only 33% of respondents 55 years and over favour generator pays. No explanation could be drawn from the responses as to people's attitudes.

Roles of parties

Respondents generally felt that all parties had a responsibility to reduce the amount of packaging used. Industry was seen as having such a responsibility by the most respondents (66%). Housewives and students stated this most frequently (78% and 80% respectively), while fewer respondents in the top income bracket agreed with this (57%).

Over half the respondents aged 55 years and over considered that the public has a responsibility to reduce the amount of packaging used. This compares to 40% of the total group of respondents which considered we have a problem and 21% of the group which did not consider there is a problem with the amount of packaging used. 60% of respondents near the top income bracket agree with this. This can be contrasted with 10% of respondents in the lower income bracket and 21% of housewives who consider the public has a responsibility in this area.

Suggestions as to how the amount of packaging use could be reduced and other responses are similar to those given by the total group of respondents.

APPENDIX THREE - PACKAGING SURVEY

1. Male ( )
   Female ( )

2. Age Group:

   15-24 years ( )
   25-34 years ( )
   35-44 years ( )
   45-54 years ( )
   55 years and over ( )

3. Number in household _____

4. Town/city _____

5. Occupation (or previous occupation if retired)

   _____

6. Is the amount of packaging we use in New Zealand a problem?

   No, not at all ( )
   Yes, a small problem ( )
   Yes, a large problem ( )

7. Why is the amount of packaging we use a problem?
   Tick the one you think is the most appropriate.

   It takes up space in landfills ( )
   It is a waste of resources ( )
   It adds unnecessary cost to products ( )
   Other (please specify) ( )

   _____

8. What packaging material causes the biggest problem?
   Tick one.

   None ( ) (Go to Question 10)
   Glass ( )
   Aluminium ( )
   Steel/tin ( )
   Plastics ( )
   Paper ( )

9. Why is this material the biggest problem?
Tick the one you think is the most appropriate.

It is used to overpackage products	( )
It is not being recycled in your area	( )
It is bulky in the rubbish bin	( )
It is bulky in the landfill	( )
It doesn't degrade	( )
Containers cannot be resealed	( )
Other (please specify)	( )

_____

10. How much of your household rubbish is packaging (by volume)?

5-10%	( )
10-20%	( )
20-30%	( )
30-40%	( )
40-50%	( )
50-60%	( )
60-70%	( )
70-80%	( )
80-90%	( )
90-100%	( )

11. How many paper rubbish bags, plastic rubbish bins etc. do you put out each week?

1	( )	Paper rubbish bags	( )
2	( )	Plastic rubbish bags	( )
3	( )	Wheelie bin	( )
4	( )	Other (please specify)	( )

_____

12. Do you buy any products because they are "environmentally friendly"? If so, please specify what products.

Yes	( )
No	( ) (Go to Question 14)

_____

_____

13. How often do you buy these products?

Occasionally	( )
Sometimes	( )
Most of the time	( )
Always	( )

14. What is important to you when buying a product?

	Most Importance	Some Importance	No Importance
Brand Name	( )	( )	( )
Quality	( )	( )	( )
Price	( )	( )	( )
Presentation	( )	( )	( )
Environmental friendliness	( )	( )	( )
Other (please specify)	( )	( )	( )

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15. Would a Government-approved "environmentally friendly" label be useful for you in deciding what brand of product to buy?

No, not at all	( )
Yes, some help	( )
Yes, very much	( )

16. For similar products worth $2.00, how much more would you pay for a product with a Government-approved label?

Nothing more	( )
5-10c	( )
10-20c	( )
20-40c	( )
40-60c	( )
60-80c	( )
80c-$1.00	( )
more than $1.00	( )

17. What type of packaging do you most and least prefer to buy your drinks in?

	Most preferred	Least preferred
Glass bottle	( )	( )
Aluminium can	( )	( )
Steel/tin can	( )	( )
Plastic bottle	( )	( )
Cardboard sachet	( )	( )

18. Please explain your choices in Question 17.

_____

_____

_____

19. Whose responsibility is it to take steps to reduce the amount of packaging used?

	Yes	No
Central Government	( )	( )
Local Government	( )	( )
Industry	( )	( )
Consumers/general public	( )	( )

20. What do you think should be done to reduce the amount of packaging used?

_____

_____

_____

_____

21. At the moment, most parts of New Zealand pay a set amount for their rubbish collection in their rates. Do you think it would be better, instead, for people to pay directly for the amount of rubbish they throw away? Why?

No ( )
Yes ( )

_____

_____

_____

22. Any other comments:

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