

A DEPOSIT AND REFUND SYSTEM IN IRELAND

*Commissioned by
Repak Ltd.*

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EXECUTIVE SUMMARY

1. INTRODUCTION – THE BRIEF

This report discusses the case for a deposit and return system in Ireland, based on a brief for a study being commissioned by Dept. of Environment, Heritage and Local Government (DoEHLG) into future waste management policy in Ireland. Although this report was commissioned by Repak, it does not solely focus on the impact on Repak: it considers more broadly the potential implications of a deposit return arrangement in Ireland.

The government's brief does not indicate specific objectives for a deposit, but the Environment Minister, John Gormley TD, is understood to see deposits as a way to tackle the litter problem and to boost recycling rates.

The brief does not indicate whether a deposit refill system is envisaged (in which bottles would be returned to the drinks producer for washing and reuse) or a deposit system for non-refillable packaging (which aims to ensure that containers are returned for recycling). This report discusses both options, but concentrates mainly on a deposit for non-refillable packaging, which we consider the more likely option.

2. METHODOLOGY

The first stage of the study was a review of selected mandatory deposit systems for non-refillable drinks containers in other countries. Based on that assessment, the market situation in Ireland was assessed and we considered how a deposit might be implemented tailored to Irish conditions. The report then considers potential implications and benefits of a deposit in Ireland.

3. LEGAL POSITION

Irish legislators would have to ensure that deposit legislation and the deposit system are in line with EU rules, particularly with the Directive on Packaging and Packaging Waste (94/62/EC), and relevant case-law of the European Court of Justice.

Refillable beverage containers have long since disappeared from the retail grocery trade in Ireland, as in many countries, and no country has mandated the re-establishment of a defunct refill system. Any such legislation, if proposed in Ireland, would almost certainly be challenged by the EU authorities or other member states as a breach of EU Single Market rules. It would be a barrier to trade to imported drinks, which are rarely supplied in refillables as it makes neither economic nor environmental sense to transport empty bottles back over long distances for refilling.

The Packaging Directive says that national systems for collecting and recycling packaging waste, including those involving a deposit, must be accessible to importers without discrimination and they must not give rise to trade barriers or distort competition. The same goes for economic instruments (such as a deposit) adopted by member states to meet the objectives of the Directive. Under EU rules, environmental protection can justify national measures that are a barrier to trade if the measures are "proportionate", i.e. the member state must consider whether the objectives could be achieved by measures that are less restrictive of Community trade.

4. INTERNATIONAL REVIEW OF MANDATORY DEPOSIT SYSTEMS – KEY FINDINGS

The report reviews mandatory deposit systems for non-refillable drinks containers in several European countries, in parts of North America and in South Australia. The analysis of the systems seeks to identify the factors that make them successful and the pitfalls that Ireland should avoid.

*We have identified the following **the success factors for a deposit for non-refillables, but conclude that none of them applies in Ireland:***

- ***Most mandatory deposits were introduced when refillables were still common in the retail trade.*** Refillables disappeared in Ireland a long time ago, so consumers have lost the habit of returning their empties to the store and retailers have no facilities to accept them. Only one jurisdiction (Hawaii) has imposed mandatory deposits in a market where there were no refillables in the retail grocery trade.
- ***Most mandatory deposits were introduced before the kerbside collection of recyclables was commonplace and before the introduction of producer responsibility for packaging.*** Kerbside collection is already established in Ireland, so many consumers have become used to the convenience of a kerbside bin. They may consider it a retrograde step if they now have to take their containers back to a grocery store or depot.
- ***Deposit systems work best where there are a small number of market operators, because this reduces operating costs and complexity.*** A comparison can be made between the successful Scandinavian deposit systems, where there are relatively few drinks producers and where grocery retailing is concentrated among a few large chains, and the problematic arrangements in Germany, where a large number of operators are involved in drinks production and distribution. Grocery retailing in Ireland is characterised by a high number of small independent operators.
- ***Deposit systems need the support of industry to be successful, because individual businesses need to make significant investment in infrastructure (return facilities etc) and adjusting production.*** While Scandinavian businesses saw the mandatory deposit on non-refillables as an extension of their existing refill arrangements, German business opposed the deposit and made imaginative use of a loophole in the law to reduce their costs. Irish business will also have to make significant investments to implement the deposit.
- ***Cross-border shopping can have a significant effect on deposit arrangements.*** Differences in retail prices and excise duties between neighbouring countries (as in Northern Ireland and the Republic) make drinks a popular cross-border purchase, so deposit containers are not always disposed of where they were purchased. Where retail prices are lower, the deposit system benefits from unredeemed deposits from exported drinks (Sweden benefits from personal exports by Norwegian consumers). Conversely, the Danish system suffers from having to refund the deposit on containers purchased across the German border but returned in Denmark. Cross-border purchase will make it essential for containers sold in RoI to be marked differently from those sold in N. Ireland.

5. THE CHALLENGES OF DESIGNING A MANDATORY DEPOSIT FOR NON-REFILLABLES IN IRELAND

Based on our international review of deposit systems, the report considers options for a mandatory deposit in Ireland. A successful deposit arrangement (i.e. one that achieves a good return rate at

reasonable cost) would have to be designed around Irish market conditions. This means that it would not be possible simply to copy deposit arrangements from another country.

5.1 The Irish market context

The structure of the drinks market is significant because the deposit must be charged by each producer or importer to his customers, through all stages of distribution to the final consumer. Thus, the greater the number of market operators, the more complex and expensive it is to operate a deposit, and the harder it is for the authorities to enforce. Furthermore small operators are less likely than large ones to have the financial and management resources to implement the deposit requirements correctly.

Grocery retailing in Ireland is characterised by a high number of small operators. According to the Irish Competition Authority, 55% of grocery outlets are operated by independent retailers, 40% by retailers affiliated to wholesalers, and only 5% by vertically integrated retailers (i.e. those who buy directly from producers).

Irish grocery stores are also characterised by their small size, with 80% of the vertically integrated and affiliated stores having a net sales area of less than 500 square metres. Consumers are more likely to return deposit containers when they drive to a supermarket to do a large shop, so large stores with a car park are more likely to receive deposit containers.

An analysis of the **supply context** – production and import of drinks - is also important to guide the design of a deposit arrangement suited to the Irish market. This includes the size of the market, by container type and drinks category, and the number/size of producers and importers, the significance of imports (EU implications) and an estimate of cross-border purchases with Northern Ireland. We were unable to undertake the full analysis we planned because comprehensive market data is not compiled for Ireland. We recommend that the Irish authorities undertake this analysis to guide the design of the system.

5.2. The options to be considered

It is not possible for national legislators to enact a simple regulation saying that a deposit must be charged on certain drinks containers. Experience in Germany, where market chaos followed the imposition of a mandatory deposit, shows how important it is to consider carefully how a deposit system will operate and to design corresponding legal obligations.

The aspects that need to be considered are set out below:

5.2.1. The scope of the deposit

The deposit must:

- *be clear to consumers and retail staff handling returns – if the scope is confusing, the deposit is unlikely to achieve good return rates;*
- *avoid competitive distortions between different pack types and drinks. There is a risk that consumers will choose a non-deposit alternative because the deposit will make deposit drinks look more expensive. Producers may also change pack type or reformulate drinks to avoid the deposit.*

a) *Container types*

Cans and PET bottles *are the most likely containers to be subject to a deposit.*

Non-refillable glass *may be included, because it is hazardous if littered. However because glass is also used for non-deposit products, consumers may also take deposit bottles to bottle banks and forfeit their deposit, so glass may not achieve good return rates. Glass is difficult for retailers to handle.*

Drinks cartons (*such as Tetra-Pak*) and laminated pouches *are rarely included in deposit requirements because they are unsuited to scanning in a standard reverse vending machine (RVM).*

b) *Drinks categories*

Beer, waters and carbonated soft drinks *are the most likely categories to be deposit-bearing. These drinks were traditionally sold in refillables and they are subject to all the mandatory deposits that we reviewed.*

Still soft drinks *may be included but the boundary between deposit/non-deposit drinks may be confusing and cause competitive distortions, because still and carbonated drinks compete. If still fruit drinks are included but juices are not, the boundaries may be unclear to consumers and shopkeepers.*

Milk, milk drinks, fruit juices and nectars *are less likely to be deposit-bearing because they are less associated with litter although milk shakes, fruit smoothies etc are often consumed “on-the-go”. There are hygiene implications if these containers are returned in-store (mould spores).*

Wines and spirits *are rarely included in a deposit arrangement. However alcopops often are deposit bearing, so they would have to be defined in legislation.*

Other drinks – *to avoid loopholes legislators will need to consider which other drinks should be included, such as ciders and perries.*

c) *Sales channels*

Should pubs and restaurants, which sell drinks relevant to the deposit, have to charge the deposit? At first glance perhaps not, as drinks are typically for on-premise consumption and including pubs in deposit obligations would greatly increase the number of market operators affected.

However exempting them would create a loophole - pubs could undercut supermarkets by selling drinks for off-premise consumption without the deposit. Moreover producers would then have to mark drinks supplied to exempt outlets differently from deposit containers for grocery retailers.

5.2.2. The level of the deposit

A low deposit of, say, 5 or 10 eurocent may not yield a high return rate because it represents a low proportion of the retail price of the drink. Now that many Irish consumers have convenient kerbside collection, the deposit must be a strong incentive to return containers in-store or at depot.

However a higher deposit of, say, 20-25 eurocent provides a greater incentive to fraudulent redemption so deposit containers must be stored securely during distribution and after return. It also increases the need for a clearing arrangement to avoid individual producers either gaining or losing significant amounts from imbalances between the amount of deposits charged and the amount

refunded. A high deposit also increases the competitive distortion with non-deposit drinks, so would create a stronger incentive for Irish consumers to buy drinks across the border in Northern Ireland.

5.2.3. Managing the deposit

Ireland would have to choose between a “simple” deposit and a centrally managed system:

- *A “simple” deposit, i.e. without an arrangement to clear imbalances when consumers buy deposit containers in one store and return them elsewhere. This is the cheapest way to operate a deposit as it avoids the cost of a system operator, and is common in the US. However because it can result in large windfalls or losses for individual operators, US legislation allows retailers to refuse containers of brands that they do not stock. This makes it hard for consumers to return containers, and such arrangements may be challenged by the European Commission, which objected to the German deposit system for that reason (among others).*
- *A centrally managed system, in which deposits are paid and then refunded via a system operator. Despite the cost of a system operator, this option has the benefits of ensuring co-ordination of the deposit system, and means that consumers can get their deposit refunded at any store.*

For Ireland, the most practical option would seem to be a centrally managed system, which handles deposit clearing, the flow of handling fees from producers/importers to retailers and the transport of returned containers from retailers to recyclers.

In Europe, deposits are operated by companies formed by the drinks producers and retailers affected. In North America, the state has a greater involvement in the system. The Irish authorities and industry would need to discuss who would act as system operator.

5.2.4. Return options

Would consumers in Ireland return deposit containers to retail stores (as in Europe), to return depots (more common in N. America) or through a combination of both?

Return in-store is the most convenient option for consumers so it is likely to yield the best return rate. However Irish retailers may be unwilling to provide facilities because of space and hygiene problems, particularly given the small average size of Irish grocery stores.

We reviewed return depots in countries where these operate, and we estimate the necessary number needed in Ireland at 300-400. Potential sites in Ireland include civic amenity sites (90), some of the 2,200 bring sites (those in secure locations), possibly some of the 53 waste transfer stations (which would need to be adapted), or new dedicated depots. More research would be needed to identify suitable sites and operators to determine the suitability of depots for Ireland.

6. COSTS

There would inevitably be significant costs involved in establishing and operating a deposit system. Many producers and retailers would have to pay the deposit system and also continue to pay Repak for non-deposit products. A deposit system will mean higher costs for Irish industry, part of which will inevitably be passed on to consumers as higher retail prices. Given the current economic climate in Ireland, the government will therefore need to satisfy itself that these additional costs are justified by the environmental benefit likely to be achieved.

- a) *Set-up costs – it is hard to project the cost of setting a deposit system in Ireland, partly because Ireland would be unique in setting up a system entirely from scratch, rather than building on an existing system for refillables. Such costs would include the establishment of a system operator, the costs for producers and retailers of adjusting to the deposit, and significant communications campaigns to explain the deposit to industry, retailers and consumers. Unredeemed deposits would provide some funding but that amount depends on the return rate – relying on this income sources relies on the system achieving low return rates, i.e. failing.*
- b) *Costs for producers would include registration fees to the system operator, and handling fees per container returned to retailers/depots. There would also be costs associated with marking containers for the Irish market and separate handling, including secure storage of the containers, and separate data reporting for deposit containers and other packaging.*
- c) *Costs for retailers would include registration fees, the cost of buying reverse vending machines (RVMs), staff time spent handling returns, separate data reporting for deposit and non-deposit packs, and the loss of some sales and stockroom space. Most large retailers prefer to automate the return/refund process by installing an RVM rather than handling returns manually, but these machines are expensive to buy and install (grants of up to DKK 0.5 million, i.e. EUR 67,000, were available per store to Danish retailers towards these costs). In all deposit arrangements except Germany, retailers/depots receive handling fees for each returned container, but each system structures these handling costs differently. In Germany retailers face the highest costs - of the estimated EUR 793 million annual cost in Germany, retailers bear EUR 699 m and producers EUR 94 m. DPG, the German deposit operator said that the cost per container was three times as much a household-based collection.*
- d) *Consumers bear the cost of the deposit until they return the containers, when they may purchase new containers and pay more deposits. If consumers do not return the containers, then they provide a permanent source of funding for the deposit system. The additional costs faced by producers and retailers associated with the deposit system will be passed on fully or partly to consumers as higher product prices.*

7. IMPLICATIONS FOR SMALL BUSINESS

The deposit could call into question the de minimis exemption from packaging requirements. Ireland currently exempts small producers (turnover below EUR 1 m and less than 10 tonnes of packaging) from recovery obligations. They cannot be exempted from the obligation to charge the deposit, which must be charged consistently on all specified containers. A deposit could result in small producers having to participate in both a deposit and in Repak, unless deposit-bearing containers were excluded from consideration for the producer responsibility thresholds. Producers just above the de minimis thresholds already have a competitive disadvantage compared with competitors below the thresholds, and there is a risk that the deposit could magnify this competitive distortion.

The deposit could put small retailers at a competitive disadvantage vis-à-vis large retail chains. It will be challenging to ensure that Ireland's many small independent retailers operate the deposit properly. However we do not recommend exempting small retailers from the return obligations. Small retailers could then lose business to their larger competitors because consumers would have to go to larger stores to get their deposit refunded and may buy their groceries there at the same time.

8. IMPLICATIONS FOR REPAK AND THE EXISTING RECYCLING REGIME

Kerbside/bring arrangements would collect less material and become more expensive, because deposit containers would be diverted into a parallel collection system. All kerbside schemes in Ireland now accept cans and PET, so less material would be collected on each kerbside collection round, and the cost per tonne collected would increase. Moreover drinks containers are among the easier pack types to recycle and have the highest secondary market values.

Repak would receive less fee income, because deposit containers would no longer participate in the Green Dot system (an estimated decrease of 16%). However some deposit containers would undoubtedly still end up in kerbside/bring collections, and would be subsidised by Repak without any fee having been paid. Thus, Repak may have to increase its fees in respect of non-deposit packaging.

A deposit would call into question Repak's shared fee structure, with each stage of the supply chain paying a share of the fees. How would producers other than "brandholders" calculate what share of their obligations related to deposit containers?

A deposit would call into question Repak's commitment to the Irish government to meet Ireland's targets. Repak estimates that its members represent only around 60% of Ireland's total packaging waste. Repak originally agreed to this commitment on the understanding that it is the only compliance organisation. If there were a deposit system, Repak's commitment would have to be reviewed with the government.

9. ENVIRONMENTAL BENEFITS AND IMPACTS OF A DEPOSIT

The potential environmental benefits that may be achieved through a deposit need to be balanced against potential adverse environmental impacts. Moreover Ireland will need to justify the introduction of a deposit to the EU because it will be proportionately more onerous for importers to operate than domestic producers (special marking requirements etc). After all, Ireland already has a functioning producer responsibility system (Repak) that has a successful track record in achieving national recycling targets for packaging waste.

a) *The environment benefits cited by the Minister are litter reduction and increased recycling:*

***Potential impact on litter** - The National Litter Survey for 2006 indicates that drinks containers (excluding cartons) represent 5.36% of total litter, with all packaging representing 13% of litter. This indicates that a deposit could reduce the incidence of drinks containers in packaging, but it would have little impact on total litter. Other litter surveys undertaken around the world have reached the same conclusion. Through Repak, Irish industry is already helping to combat litter, and it is unlikely that a deposit would result in significant cost savings for Irish local authorities on litter abatement activities.*

***Potential impact on recycling rates for packaging waste** - even though a deposit can achieve higher recycling rates for the drinks containers that it captures than when these containers are handled through general recycling systems, a deposit has little impact on overall recycling rates for packaging waste. This is because drinks containers typically represent only about 10% of all packaging and the recycling rate for beverage containers in general recycling systems is likely to be higher than the recycling rate for all packaging of the same materials.*

Thus the potential effect on Irish recycling rates would be no more than 10% of whatever improvement in the return rate is achieved by a deposit system. If deposit containers in Ireland were

to achieve a return rate of 70%, that would not raise Ireland's average recycling rate by 14% (from the 56% reported for 2005) but by no more than 1.4%.

Data submitted to the European Commission for 2005 shows that Belgium (no deposit) achieved the highest recycling rates in Europe. Although Germany (which has a deposit) was second, Ireland achieved higher recycling rates than deposit states Denmark, Sweden and Finland.

b) *Potential adverse environmental implications of a deposit:*

A deposit arrangement will also have its own environment impact and Irish policy-makers and stakeholders will need to minimise environmental impacts when they design a deposit system for Ireland. These impacts are:

- **Increased energy and carbon impacts** - deposit containers would be transported separately for recycling from other packaging. That would mean additional trucks, with increased energy and carbon impacts.
- **Inefficient use of resources** - deposit containers need to be kept whole until they have been counted (because the bar code must be legible). This means that they may need to be transported uncrushed (unless the depot or retailer has a sophisticated RVM that counts and crushes containers), so fewer can be transported on each truck, which is environmentally and economically inefficient.
- **Potential transport costs/social implications** - If Ireland opts for return at depots not at retailers, the depots would need to be accessible to consumers without a car – otherwise the environmental impact of driving to them could outweigh any environmental benefits. Ensuring that depots are accessible to consumers without cars is also important for social reasons. Otherwise, the “carless,” including the elderly and lower income groups, would find it difficult to get their deposit refunded.

10. CONCLUSIONS AND RECOMMENDATIONS

The analysis above suggests that a deposit on non-refillable containers in Ireland is not the optimum solution for Ireland:

The **factors associated with success** identified in the review of international deposit systems **do not apply in Ireland**. These include:

- *refillables have disappeared in the retail trade in Ireland so consumers and retailers are unfamiliar with deposits;*
- *kerbside collection is now well-established in Ireland and would compete with in-store return;*
- *deposits work best when the market has few operators – Ireland has many small independent retailers.*

The **environmental benefits would be marginal** – a deposit is unlikely to make a significant impact on reducing litter not would it result in a significant increase in recycling rates for packaging waste. These must be weighed against **adverse environmental implications**, including duplication of collection infrastructure and less efficient use of transport.

A deposit system is **complex and would need careful planning and implementation**.

There would be **high costs for producers and retailers** associated with establishing and operating a deposit, some of which would be passed to consumers in product prices.

If policy-makers still wish to proceed with a deposit, then we recommend the following preparatory steps:

- **Robust market research** - to establish the size of the market for drinks likely to be deposit-bearing and the number of operators likely to be affected. This is essential to assess the market implications and cost of the various deposit options.
- **Consumer research** - to determine consumer preference for returning deposit containers either in-store or to return depots. This exercise should also investigate whether those with access to kerbside collection would be willing to take containers elsewhere for deposit refund.
- An **environmental impact assessment**, including a carbon impact assessment, of each of the various deposit options compared with existing collection arrangements.
- **Discussions with the relevant sectors of Irish industry** on the deposit arrangements. Draft regulations should be devised around the arrangements agreed with industry.
- **Draft regulations** should then be put out to wide **consultation** in Ireland. Individual stakeholders may be able to highlight potential loopholes or other problems.
- **Acceptability to the EU** – Before the draft regulations are notified to the EU Commission, it would be advisable to sound out EU officials informally about the proposals and potential conflicts with EU requirements. The Irish authorities would no doubt wish to avoid any legal challenge, both because it would delay implementation of the deposit and because such actions are time-consuming and costly.

Given our conclusion that a deposit is not the optimum solution for Ireland, we also recommend **consideration of alternative means to achieve the objectives sought**. There are several examples from around Europe, where legislators recently considered introducing a deposit but opted instead for alternative measures:

- **Austria** – a voluntary agreement, adopted in 2004, set ambitious objectives for drinks containers, including a 50% recycling target for PET. An updated version has just been agreed, which adds a new commitment to reduce greenhouse gas emissions from drinks containers.
- **Netherlands** – a mandatory deposit is on the statute book but is not in effect. The government acknowledged that a deposit alone would not solve the litter problem. In 2006, as part of broader debate on producer responsibility for packaging, industry offered EUR 33 million over 3 years for litter abatement (67 eurocent per person) and agreed to ensure that 55% of small PET bottles are collected. Local authorities undertook to combat litter more actively.
- **Switzerland** – does not have to implement the Packaging Directive and has recycling targets only for drinks containers. A deposit was considered for PET when it failed to meet its 75% recycling target, but was rejected and existing collection arrangements were expanded instead. A dense network of “bring” facilities for at-home and away-from-home consumption has boosted the recycling rate to 90% for aluminium cans and 76% for PET bottles.

1. THE BRIEF

The Department of Environment, Heritage and Local Government (DoEHLG) is commissioning a consultant's study to review Ireland's waste management policy and to identify possible changes to policy and to Ireland's legal, institutional and organisational arrangements.

The terms of reference for the study suggests some specific areas that the study should consider, including "the desirability of further producer responsibility schemes, including in respect of deposit and refund". The brief also indicates that some elements of the study may be undertaken as discrete pieces of work and that some of these, particularly the work on deposit and refund (as well as the technology review), should be fast-tracked.

Repak has commissioned Percharads to undertake a study along similar lines to that envisaged by DoEHLG. The study for Repak will focus on the aspects of the study that are directly or indirectly relevant to Repak's role in relation to recycling packaging waste in Ireland.

This report discusses the specific issue of deposit and refund, which Repak has requested us to undertake as a separate piece of work in line with the priority given to this issue in the Department's brief.

Our consideration of the potential for a deposit and return arrangement in Ireland will not be limited to its direct impact on Repak. We will also consider, more generally, the role of deposits as a waste management tool and their potential implications for Irish industry, including producers, distributors and retailers, many of whom are Repak's members.

The Department's brief for the study is broad-ranging: "to assist Ireland to move towards a sustainable resource and waste policy including minimising the creation of waste and self-sufficiency in the reuse and recycling of materials". The brief does not indicate any specific objectives to be achieved by a deposit refund arrangement, although it is understood that it should contribute to achieving the general objectives of Irish waste policy, which includes recycling. Nor does the brief indicate what products might be covered by a deposit, so it is clearly part of the consultants' task to identify suitable items. However, the Minister for the Environment, Heritage and Local Government, John Gormley TD, has indicated in recent speeches and statements that he sees deposits as a way to reduce litter, and more specifically that beverage containers are a highly visible form of litter.

The purpose of a deposit and return system is to ensure that the items subject to a deposit are returned to an agreed collection point. Return arrangements therefore need to be in place to refund the deposit and these need to be convenient to consumers to ensure that most containers are indeed returned. Arrangements are also needed to transport the containers for refilling or recycling. Because of the cost involved in return arrangements, deposits usually apply to items that have some value, either durable items that can be reused or disposable items that can be recycled.

If Irish policy-makers decided to introduce a deposit on certain items, new legal obligations would have to be introduced to mandate it. All producers would be required to charge the deposit on the specified items and the legislation would also have to regulate the arrangements to refund the deposit, and mandate the reuse or recycling of the returned items.

The brief asks the consultants to consider international best practice, and in our assessment of the suitability of deposit and return, we will consider models in other countries that Ireland could follow. We will also consider the environmental, legal, economic and social implications of imposing a deposit on different items.

2. TYPES OF BEVERAGE CONTAINER DEPOSIT SYSTEMS

2.1 DEPOSIT SYSTEMS FOR REFILLING

Deposit refill are traditional systems, typically operated in the past by the majority of drinks producers in a given country, although participation is voluntary. All participating drinks producers use refillable glass bottles, often of standard size(s) and design(s) in a pool arrangement, for drinks distributed both to pubs and restaurants and to consumers through grocery retailers. Consumers can return the glass bottles to the grocery store, from where they are transported back to the beverage producers for washing and reuse. The level of the deposit in the traditional refill systems is not usually set by law,¹ and the level of the deposit is typically the replacement value of the empty container.

Such systems were common in western countries until the 1970s and 1980s. They suited traditional patterns of production and distribution with small to medium-sized regional producers selling beer, carbonated soft drinks and mineral water through independent grocery stores or specialist drinks retailers.

Then, new non-refillable packaging formats – the beverage can and the plastic drinks bottle – became available. The new pack types quickly gained popularity for retail distribution among beverage producers, retailers and consumers because they were better suited to new methods of marketing and distributing drinks and modern consumption patterns. They were cheaper for producers, who no longer needed washing equipment and who saved the cost of transporting used containers back from the retailer. The availability of the new type of containers coincided with the development of supermarket chains that sold all types of grocery products. The new containers were cheaper for these and other retailers, as they did not need to have arrangements to refund the deposit and sort the bottles, nor make space available in-store for the returned bottles. The popularity of the new containers among consumers reflected a shift in lifestyle away from families eating regular meals together and to increased consumption “on-the-go”.

In many western countries, such as the UK, France and Ireland, and in North America, refillables simply disappeared from the take-home trade, as the new non-refillable formats replaced them. Refillables continued to be used in the catering trade for on-premise consumption in these countries however, as they do in Ireland.

2.2 DEPOSIT SYSTEMS FOR NON-REFILLABLE BEVERAGE CONTAINERS

Deposit systems for non-refillables are a relatively new development. They aim to ensure the return and collection of one-way drinks containers for recycling. Such systems exist only where legislation *directly* or *indirectly* requires them to operate. Such legislation was introduced in some countries as a response to the market introduction of non-refillable containers.

- *Direct* legal requirements take the form of an obligation on drinks producers to charge a deposit on specified containers of specified drinks and on retailers to refund it. Such requirements exist

¹ Austria is an exception, where the legislation sets the deposit level so that all refillables are charged at a uniform rate. The same is true in Denmark, where the same deposit system, unusually, handles both refillables and non-refillables.

in some US states, in some Canadian provinces, South Australia and in Denmark, Estonia, Finland, Germany and Sweden.

- *Indirect* legal requirements include those that incentivise high return rates through taxes (as in Norway) and they are often linked to requirements that encourage the continued use of refillables. For example, in Norway and Finland, there are taxes on drinks containers with differentiated rates between non-refillable and refillable drinks containers. These taxes aim to protect refill systems by making non-refillables more expensive. In Finland the tax differential in the past was so high that it was uneconomic to use non-refillables; the tax rates have recently changed to put non-refillables in a deposit system on an equal footing, and non-refillable PET (with a deposit) was introduced for the first time in 2008.

It should be noted that national measures that aim to protect refill systems have not proved successful, and the market share of refillables has declined even in markets where there is legislative protection for refill. This has happened for example in Germany (see below), in Denmark (see below), and in Norway.

2.3 A DEPOSIT SYSTEM FOR REFILLABLES IN IRELAND?

The Minister may have in mind that the existing refill systems for drinks in the on-trade (i.e. pubs, restaurants etc) should be protected, or even that a refill system of drinks for home consumption would be re-established in Ireland. Such a system may be seen to fit into the objective of waste prevention.

2.3.1 Refillables in the catering sector

We understand that some Irish drinks producers continue to use refillable bottles in the on-trade for beer, carbonated soft drinks and waters, and have return arrangements in place, as shown in Table 1 below. However the market share of refillables is in decline in this sector. We were not able to obtain any data in evidence of this trend, but there is anecdotal evidence from several different market operators.

Table 1: Analysis of drinks by container type in the catering sector²

	Volume sold through licensed trade		Number of containers sold through licensed trade	
	million litres	%	million units	%
Packaged Beer				
Glass refillable	n/a		6.8	7%
Glass non-refillable	n/a		33.1	31%
Cans	n/a		66.0	62%
Total	n/a		106.0	

² These figures exclude draught beer and dispensed soft drinks.

	Volume sold through licensed trade		Number of containers sold through licensed trade	
	million litres	%	million units	%
Packaged CSDs				
Glass refillable	23.8	66%	132.9	87%
Glass non-refillable	0.5	1%	2.1	1%
Cans	3.3	9%	10.1	7%
PET	8.2	23%	7.2	5%
Total	35.9		152.3	
Packaged Water				
Glass refillable	0.0	0%	0.0	0%
Glass non-refillable	19.8	90%	37.0	94%
PET	2.3	10%	2.4	6%
Total	22.1		39.4	

Source: Industry estimates

There seem to be several reasons for this decline in refillables. One is that the retail price of beer in grocery stores has fallen since retailers have been free to set prices after the repeal of the Groceries Order. In some cases pubs can buy beer more cheaply from supermarkets than from their drinks wholesaler. Another factor is that more imported drinks are now available in Ireland. Although some foreign branded beer is brewed under licence in Ireland, many foreign drinks are imported and these are naturally in non-refillable pack types. A further factor is that rising labour costs and rents mean that some pubs are crushing glass bottles. Even though they forfeit the deposit, this is cheaper than sorting the bottles into the correct crates of each producer because it takes less staff time and reduces the storage space needed.

2.3.2 Refillables in the retail trade

Re-introducing refillables for the retail trade would be a very different proposition from maintaining the existing system in the catering trade. In countries where national policy-makers have adopted measures relating to refillables in the retail trade, the aim was to protect existing refill systems, not to introduce new ones. There is no precedent anywhere for legislation that mandates a return to using refillables in the take-home trade once they have disappeared from the market.

If Irish policy-makers want to protect refill arrangements in either the on-trade or to re-introduce them in the retail trade, we believe that they would have to legislate. The only direct legal requirement we can imagine would be that a specified proportion of all drinks or of specific drinks categories in either the on-trade or retail trade must be supplied in refillables (either glass or PET). Producers would have to meet these refill quotas and so would pubs and retailers. The legislation would probably also require retailers to accept returned refillable containers and to refund the deposit.

Irish policy-makers would have to decide whether imported drinks would also be subject to the quotas. It would make little sense to exempt imports, as this would only put Irish producers at a commercial disadvantage, and it would encourage retailers and pubs to source more of their drinks abroad. However if imports are included in the quotas, we would expect the legislation to be challenged at EU level, as discussed below. When member states have in the past notified proposals that aim to promote reuse, there have been numerous complaints from companies that import drinks to that country, and neighbouring member states have also challenged these proposals. Objectors argue that the proposals are a barrier to trade for imported drinks, because it makes neither environmental nor economic sense to transport empty containers over a long distance for refilling.

In any event, the Irish legislation would almost certainly have to exempt mineral water from reuse protection measures. A ruling from the European Court of Justice (ECJ) in 2004 relating to the German refill quotas for mineral waters³ said that the quotas were a barrier to trade for importers. Mineral waters are a special case because under EU rules on mineral waters,⁴ they must be bottled at source. In the case against Germany, the European Court found that the German deposit requirements were a barrier to trade for imported mineral water because they affect imported products more than domestically produced mineral water.

2.3.3 Compatibility of reuse requirements with European packaging waste law

Any new legislation that Ireland introduced that affect the type of drinks containers used and/or the systems that ensure their collection for reuse or recycling are governed by the EC Directive on Packaging and Packaging Waste⁵. Draft proposals would therefore have to be notified to the European Commission in advance, and three months allowed for the Commission or other member states to raise any objections.

Article 5 of the Directive says that member states *may* encourage reuse systems of packaging, which can be reused in an environmentally sound manner, in conformity with the Treaty. In other words, if member states choose to promote reuse, the national measures must not represent a barrier to trade, so they must not discriminate against imported products.

Further, Article 15 of the Packaging Directive says that in the absence of economic instruments at Community level to promote the implementation of the Directive's objectives, member states may adopt measures (such as deposits) provided that they are in line with Community environment policy and with obligations arising out of the Treaty.

National measures to impose mandatory deposits and to protect refill systems have proved very contentious. Such provisions have been the subject of many of the infringement proceedings launched in relation to the Directive, some of which have resulted in rulings by the ECJ.

A ruling from the ECJ in 1988 (so it pre-dates the Directive) involving Denmark is significant. In 1986 the Commission concluded that Danish measures mandating the use of refillable bottles of an approved design for carbonated drinks were a barrier to trade, and referred the case to the Court. In 1988 the ECJ ruled that environmental protection could be used to justify measures that were a barrier to trade. However, measures must be proportionate, i.e. the member states must consider whether the objectives sought could be attained by measures that were less restrictive of Community trade.

Thus although national measures that seek to promote reuse or to introduce a mandatory deposit may in principle be acceptable, the Commission would assess each individual proposal as to whether they gave rise to barriers to trade and whether the measures were proportionate.

If Irish policy-makers wanted to mandate the reintroduction of refillables for home consumption, drinks producers and retailers would have to make significant investment to handle refillables. Even if Irish producers already have some capacity to fill drinks in refillables for on-premise consumption, they would have to expand this capacity significantly to produce enough drinks for home consumption in refillables. They would have to purchase new bottles and crates, and invest in new filling and washing equipment. For example only 5.1% of beer produced in Ireland in 2004 was in

³ Case C-463/01, Commission vs. Federal Republic of Germany

⁴ Council Directive 80/777/EEC of 15 July 1980 on the approximation of the laws of the Member States relating to the exploitation and marketing of natural mineral waters (Official Journal No. L229, 30.8.80).

⁵ Directive 94/62/EC of 20 December 1994, OJ L365, 31.12.94, amended by Directive 2004/12/EC of 11 February 2004, OJ 18.2.2004.

refillable bottles.⁶ Fillers would also have to adjust their distribution arrangements to cope with the heavier bottles and the need to transport the empties back for washing and refilling.

The larger producers would be better placed than small producers to make the necessary investment because they have greater financial and management resources and better access to credit. Such requirements could therefore affect small producers disproportionately more than their larger competitors and could result in greater concentration in the production of drinks in Ireland.

Similarly, grocery stores would have to have to install return facilities and make space available to store returned containers, and this would also require significant investment. And as with the drinks producers, the large chains are better placed to do this than small independent stores. This could lead to greater concentration in grocery retailing in Ireland.

2.4 DEPOSIT RETURN SYSTEM FOR NON-REFILLABLE DRINKS CONTAINERS

Another option for Ireland would be require a deposit to be charged on certain non-refillable container types and certain drinks categories. New regulations would be introduced requiring producers and importers to charge a deposit to their customers and through all stages of the distribution chain to retailers. Arrangements would have to be made to return the containers, either to the retailer or to a return depot.

2.4.1 Compatibility with EU law of a mandatory deposit on non-refillables

The Packaging Directive (Article 7) requires all member states to ensure that return, collection and recovery systems are set up to ensure either the reuse of packaging or recycling of packaging waste. The Directive does not specify what form such systems should take, but it does say that they must be open to the participation of the economic operators concerned and that they must also apply to imported products under non-discriminatory conditions. Their tariffs must be set so as to avoid barriers to trade or distortions of competition.

A deposit is a form of economic instrument so it would also be subject to Article 15 of the Directive, as discussed in the section on deposit refill above.

Although there is no inherent incompatibility with a mandatory deposit for non-refillables and EU law, the Irish requirements and the market conditions arising from them would have to be assessed. Ireland's deposit requirements and arrangements would have to offer imports continued free access to the Irish market without distortions of competition.

Since the chaotic introduction of a mandatory deposit on selected non-refillables in Germany in 2003 (described in the international review below), the Commission would also want to satisfy itself that the conditions set out in the two rulings from the European Court in 2004 about the German deposit would be met.

In the case brought by the Commission against Germany, the ECJ ruled that there needed to be a sufficient transition period after the announcement that deposits would be imposed to allow industry to adapt production and management of the relevant containers to the new system.

⁶ Ireland has a significantly lower proportion of beer in refillable bottles than most other European countries, according to *Brewers of Europe*, 2004. This is largely explained by the popularity of draught beer in Ireland, which accounts for just over 70% of sales.

The second case, referred by the Administrative Court of Baden-Württemberg, was brought by two Austrian drinks producers.⁷ The producers *inter alia* challenged the requirement to participate in a deposit return system, arguing that they were already meeting their recycling obligations by participating in the Green Dot system, DSD. The ECJ found that, if a member state switches from a close-to-home system with a deposit return system, the member state is responsible for ensuring that there is an adequate number of return points and there must be a smooth transition to the new system so that producers can participate at all times and without discrimination.

2.4.2 Deposits for non-refillables – possible international models for Ireland

In Europe only six countries have a mandatory deposit in effect on non-refillable drinks containers: Denmark, Estonia, Finland, Germany, Norway and Sweden. In this report the systems in Denmark, Germany, Norway and Sweden are discussed.

A total of 11 US states have introduced a mandatory deposit on selected drinks containers. Nine of these mandated “bottle bills” have broadly similar and rather simple deposit arrangements (as does South Australia, the only Australian state with a deposit law). The other two US deposit states, California and Hawaii, introduced their legislation later, and they both opted for more complex arrangements.

In the USA, waste management and recycling systems are the responsibility of individual states, and there is no federal legislation in this area. Unlike Europe, there is no concept of an internal market for products in the USA, and individual states and provinces do not have to consider the impact of their rules on the markets in neighbouring states. There is however informal co-operation between some US states, such as those in the North East⁸.

In Canada, as in the US, environment policy is the direct responsibility of each of Canada’s ten provinces. However, unlike the US, there have been attempts to co-ordinate the waste policies of the Canadian provinces. There is a formal co-operation through the Canadian Council of Ministers of the Environment (CCME). A National Packaging Protocol was signed under the auspices of the CCME in 1990 with industry and environmental and consumer organisations.

There has been considerable discussion of the concept of “product stewardship” in Canada, and various national and regional agreements are in place governing different aspects of packaging. From the early 1990s there was an attempt through CIPSI (the Canadian Industry Packaging Stewardship Initiative) to introduce a more comprehensive arrangement whereby producers would contribute to recycling programmes nationwide, but this was unsuccessful (although a “Green Dot” arrangement was introduced in Ontario and may yet spread).

It was after the demise of CIPSI that eight provinces introduced deposit systems for beverage containers.

Deposits for non-refillables are managed in different ways in the above jurisdictions so there are several models that Ireland could follow. However all such systems have certain features in common:

- The filler or drinks importer who first places the relevant drinks on the market has a legal obligation to charge a deposit when he invoices his customer, the wholesaler or retailer. The

⁷ Case C-309/02, Radlberger and Spitz vs. Land Baden-Württemberg

⁸ Through the Coalition of North Eastern Governors, CONEG. This body was instrumental in a number of states setting heavy metal limits in packaging, later adopted in the EC Packaging and Packaging Waste Directive.

deposit is charged through all stages of the distribution chain to the final consumer. In traditional refill systems, it is also the filler who initiates the deposit.

- In all mandatory deposit systems for non-refillables except Germany, the filler/importer also pays a handling fee per unit to the retailer or return depot as compensation for the administrative cost of charging and refunding the deposit and of sorting and managing the returned containers.

The variations arise in how deposit monies and handling fees are managed, how consumers get their deposits refunded, how the returned containers are managed, and how the arrangements are funded. A key difference between the European arrangements and those we refer to below as the “simple” US deposit is that in Europe there is a centrally-managed approach whereas the US relies on individual market operators, with no deposit clearing arrangement.

In each European country with a mandatory deposit there is a system operator whose main role is to act as a clearing house for imbalances between deposits paid and deposits refunded. This is necessary if consumers are to get their deposit refunded at any retail outlet, not only where they bought the drink. Without a clearing arrangement, some market operators would end up refunding more deposits than they generate, i.e. they would be out of pocket, while others, conversely, would end up with windfall profits. If a high return rate is sought, it is generally considered essential to enable consumers to get their deposit refunded anywhere for maximum convenience.

So why have US producers in the “simple” bottle bill states not established a clearing arrangement? We believe this is mainly because the deposit in these states is low – only 5 ¢ (currently 3.5 eurocent), so losses and gains from deposit imbalances are correspondingly low. This, and the fact that none of the simple bottle bills sets a return target, make it less necessary to count returned containers accurately. Another reason may be that the deposit is mandated separately by each state but distribution networks usually cover several states, so a single distribution network may include states with different deposit requirements and non-deposit states. The fact that the deposit requirements are out of line with production and distribution patterns helps to explain why American drinks producers vehemently oppose the deposit. Their opposition has also made them unwilling to invest in a clearing arrangement, which would be particularly expensive given the varied legal requirements.

Another key difference is where consumers get their deposit refunded. In Europe consumers always return their deposit containers to the retail store, whereas in some US states containers are returned in store and in other they are returned to return depots operated by third parties. Return depots are particularly common in Canada and some provinces ban in-store return. South Australia provides for the possibility of in-store return, but in practice all returns are made to depots.

The key features of each system are set out below, with an analysis of the advantages and disadvantages. A more detailed description of each system can be found in the Annex.

2.4.2.1 The Swedish and Norwegian model

a) Key features:

- Centrally managed systems, with a private sector company in each country that manages money flows (deposits and handling fees) between fillers/importers, and acts as a clearing house for imbalances between deposits paid and refunded by different market operators. The systems also organise the transport and recycling of returned containers.

- Deposit rates are: in Norway NOK 1.00 (12 eurocent) for containers up to 0.5 litre, and NOK 2.50 (30 eurocent) for larger sizes. In Sweden, they are SEK 0.50 (5.3 eurocent) per unit for cans, SEK 1.00 (11 eurocent) for PET of 1 litre or smaller and SEK 2.00 (22 eurocent) for PET above 1 litre.
- Producers pay a one-off joining fee, a fee for each bar code registered (i.e. each product/pack combination), plus a fee for each pack placed on the market. However, Sweden does not charge a unit fee for aluminium cans, relying on the market value of the material, and it recently abandoned its bar code registration fee.
- The deposit on non-refillables was introduced when these first became available. The separate voluntary system for refillables continues to operate in both countries.
- A producer-funded packaging recovery system (Green Dot) for non-beverage packaging operates in each country, but was established later than the deposit system.
- Both systems handle cans and PET. The drinks affected are beer, waters and carbonated and still soft drinks, but not one-way glass, which is handled through the respective Green Dot system.
- Containers are returned to the grocery store. The use of reverse vending machines (RVMs) is widespread, and all deposit containers are marked with a logo and bar code unique to each country.
- Swedish return rates in 2007 were 85% for cans and 85% for PET. The Swedish system has never met its statutory return rates, which are 90% for cans and for PET. In Norway 92% of cans were returned and 82% of PET in 2007. Taxes on drinks containers in Norway are discounted according to the return rate achieved. The deposit system operator in both countries has complemented the deposit-refund arrangements with collection banks in locations designed to capture on-the-go containers. These include camp sites and ski resorts, and consumers using these facilities do not get their deposit refunded.

b) Assessment:

The Swedish and Norwegian deposit systems are often cited as the model to follow. This is because they achieve good return rates with low fees. There are three main reasons for this:

1. The systems are designed around the structure of food and drink retailing in these markets. Grocery distribution is highly concentrated in both countries – and a few large supermarket chains have a large market share. The brewers traditionally also produced waters and soft drinks, and they sold directly to the retailers, so there is no large wholesale trade. This means that the system requires the involvement of a relatively small number of market operators. This reduces administration costs, and makes it easier to minimise free-riding and to ensure that there is good network of return facilities.
2. The deposit for non-refillables was established alongside the existing deposit-and-return system for refillables. As a result, fillers and retailers were used to operating deposits and retailers already had a return infrastructure in place – this just had to be expanded and adjusted to handle non-refillables. Further, consumers were still accustomed to returning drinks containers in-store, and segregated collection of recyclables had not yet become commonplace.
3. Other factors, unique to Sweden, also keep costs down there. Cross-border purchases by Norwegians in Sweden are extensive (particularly of canned beer), due to higher retail prices in Norway. Norwegian RVMs are programmed to accept Swedish containers but they do not refund the Swedish deposit. The Swedish deposit system therefore keeps the deposits on these cans, and

uses this money towards its operating costs. The Norwegian system counts the Swedish containers and gets them recycled and the Swedish system includes them in its return rates. This friendly arrangement is possible only because both countries have deposit systems.

Cross-border shopping between Northern Ireland and RoI would also affect the operation of a deposit system in RoI. Measures would be necessary to manage these container flows, and this would be more difficult than in Scandinavia because Northern Ireland does not have a deposit system.

2.4.2.2 The Danish model

The Danish system has much in common with those in neighbouring Sweden and Norway, but it also has some unique features.

a) Key features:

- A centrally managed system, with a private sector company that manages money flows (deposits and handling fees) between fillers/importers and retailers, acts as a clearing house for deposit imbalances, and organises the transport and recycling of returned containers.
- The same system handles deposit refunds for both non-refillables and refillables. This is a unique arrangement. Retailers receive handling fees for refillables but nothing for handling non-refillables.⁹ Despite this, the market share of non-refillables has increased each year, from zero when the system was introduced, to 23% in 2006.
- The deposit on non-refillables was introduced when these first became available on the market. Non-refillables only became available in Denmark after 2002, far later than in most countries. This was because until then, legislation had banned drinks cans and made it too difficult and expensive to use other non-refillables.
- The system handles cans, and refillable and non-refillable glass and PET bottles. The drinks affected are beer, waters and carbonated soft drinks. The deposit system will be extended to still waters and soft drinks with effect from September 2008.
- Containers are returned to the grocery store. The use of RVMs is widespread, and all deposit containers are marked with a special logo and unique bar code.
- Deposit rates for non-refillables are: DKK 1.50 (20 eurocent) for 50 cl plastic bottles, DKK 1.00 (13 eurocent) for cans, glass and other plastic bottles up to 99 cl, and DKK 3.00 (40 eurocent) for cans, glass and plastic bottles of 1 litre or more.
- The return rate for non-refillables has been increasing, but in 2006 it was 86%, so it has not quite reached the ambitious target of 95% set by the legislation. The deadline for achieving 95% has already been postponed twice, and has now been postponed again, from 2008 to 2013. However, the return rate may improve once retailers receive handling fees for non-refillables.
- The Danish legislation governing the deposit system sets out in great detail how the system will operate and all its funding arrangements, deposit rates, etc.

⁹ This will change in September 2008, when handling fees for non-refillables will be introduced for the first time.

- The system operator keeps unredeemed deposits, but the legislation specifies for what purposes it can use the money.
- There is no systematic funding by industry of the segregated collection of (non-beverage) packaging waste from households. This is still largely funded by local authorities. Denmark is now the only EU member state not to have introduced a producer responsibility arrangement for all household packaging waste.

b) Assessment

The fact that a single deposit system, uniquely, handles both refillables and non-refillables and was established at a time when only refillables were available makes the Danish arrangement inapplicable to Ireland.

However the level of detail in the Danish legislation provides interesting information about the operation of a deposit system and the cost implications of expanding an existing deposit system for refillables to handle non-refillables. The level of detail also indicates that the Danish authorities spent considerable time discussing the system with stakeholders before the legislation was drafted. It is also clear that Danish legislators were able to set out detailed requirements such as fees only because the new system was building on an existing well-established return system for refillables. The costs would be harder to estimate in Ireland where a deposit system would be established from scratch.

The level of detail in the Danish legislation means that each time it has to be amended, even to adjust minor administrative provisions, it has to be notified to the European Commission. The equivalent Swedish and Norwegian contain less detail, and administrative changes are negotiated between the system and the relevant national authority. Although the Danish approach makes the system transparent, it seems a cumbersome way to fine-tune the system in line with market changes, and we would not recommend it.

The Danish system also has problems with personal imports, particularly from Germany. “Border shops” operating on the German border specialise in selling to Danes. These containers are not managed as successfully as between Norway and Sweden. Currently no deposit or handling fees are charged on them in either country. The German deposit is not charged because the containers are exported, and the Danish deposit system does not accept the border shops as members.

2.4.2.3 The German approach

Experience in Germany highlights the problems that can arise when a deposit system is not designed properly and when the legislation does not set out clear legal obligations. It also shows how a deposit may be unacceptable under EU rules.

a) Key features - 2003:

- A mandatory deposit on non-refillable containers of beer, waters and carbonated soft drinks took effect in 2003. This was the result of a provision in the 1991 Packaging Ordinance, which said that deposits would automatically be imposed if the market share of refillables in these categories fell below the 1991 levels. The German mandatory deposit is thus unique in that it took effect over 10 years after the establishment of a producer-funded recycling system for household packaging waste. Its objective was to protect refillables.
- The deposit is 25 eurocent on each non-refillable container regardless of size¹⁰.

¹⁰ The deposit applies only to containers of between 0.1 and 3 litres.

- The legislation contained only basic deposit obligations. It did not provide for a system operator or clearing house. This was because the deposit was intended as a penalty for failing to meet market share quotas for refillables – legislators never intended that the deposit would take effect.
- It also exempted producers using a unique design of container from the obligation to refund the deposit on other containers. This loophole led to “island solutions” in which certain retailers only sold private label drinks in a unique design of PET bottle. This arrangement saved them the cost of participating in a clearing house (so none was established), but it meant that consumers could only get their deposit refunded where they had bought the drink, not at any store. Cans virtually disappeared from the market because they cannot easily be made to a unique design.

The Commission successfully challenged German arrangements in the European Court of Justice, as a result of which Germany revised its legislation. This is explained in the assessment below.

b) Key features – 2006:

- Revised legislation that took effect in 2006 contained clear obligations for producers and subsequent distributors to charge a deposit and to refund it on all containers of the material they supply, i.e. if they supply drinks in PET, they must refund the deposit on all containers of this material, regardless of brand. However small retailers (sales area of less than 200 m²) can refuse containers of brands that they do not sell.
- The mandatory deposit (still 25 eurocent per unit) now applies to all containers except those classed as “environmentally favourable” which are refillables, beverage cartons and certain pouches. In other words it applies to non-refillable glass, plastic and metal containers. In addition to beers, waters and carbonated drinks, the deposit now also applies to still soft drinks and alcopops, though not to milk-based drinks, fruit juices or wines.
- The legislation also exempted “drinks for special diets” although high-energy sports drinks are subject to the deposit. This exemption has been widely abused, with some drinks making various health claims (e.g. some sugar-free drinks claiming to be suitable for diabetics) to be exempt from the deposit.
- 80% of beverages must be in “environmentally favourable” containers. The legislation does not however set a return target, and no return rates are published. The legislation provides for a review in 2010.
- A deposit clearing house, DPG, has been established. Its role is narrower than those in Scandinavia – it provides the central database for deposit clearing and it has devised a security logo, but it does not get involved in transporting containers, nor with the mechanics of deposit clearing. Market operators appoint service providers to fulfil these tasks on their behalf.
- Participation in the system is more expensive than equivalent systems in Scandinavia. In 2007 annual fees paid by fillers or importers just to register with the system ranged from EUR 1,200 to 18,000, depending on the quantity of drinks sold. In addition, they have to pay commercial service providers for the services not provided by DPG.
- Retailers do not receive handling fees, although they bear more costs (transport and recycling) than retailers in the Scandinavian systems).
- Unredeemed deposits are kept by individual operators, not by DPG.

The requirements have recently been amended again as part of a broader amendment of packaging waste legislation. The new requirements will make it mandatory for all market operators to participate in the clearing house and will adjust the scope of the deposit slightly, such as removing the exemption for dietetic drinks.

c) Assessment:

The saga of the German deposit contains many useful lessons:

The lack of detail in the original legislation resulted in significant disruptions to the market after the deposit took effect. The obligations were very similar to those in the “simple” US bottle bills (see below), which have not had the same adverse effect on the market there. One reason is that the deposit in Germany was several times higher than in the US (25 eurocent compared with 5 US cent). The structure of the market is also different – discount chains in Germany have a significant market share for drinks, and they focus on private label versions.

This highlights the need to understand the structure of the drinks market and to design the deposit system around it. Only once there is a blueprint for a system should the legislation be drafted, with appropriate obligations based around that system and market structure.

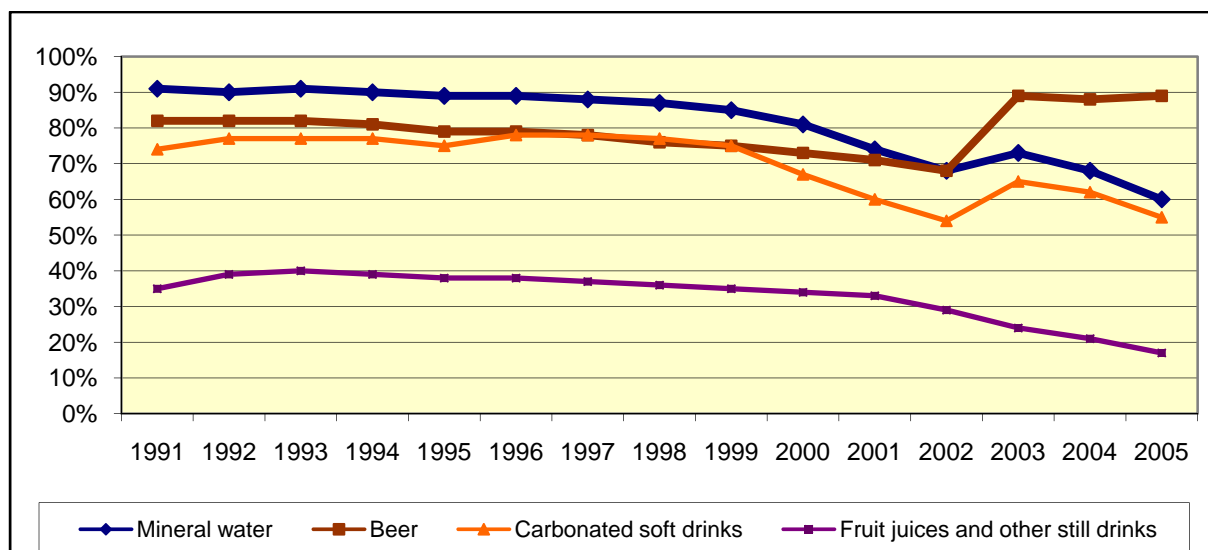
The German legislation also omitted to require market operators to ensure that returned containers were recycled (the US “simple” bottle bills have no such requirement either). In Germany, this was probably due to a combination of factors: the main objective of the deposit was to protect refillables, and there may have been an assumption that the containers would be managed by a central deposit system. An obligation to get returned containers recycled was added in 2006.

The experience from Germany makes it unlikely that the European Commission would accept draft deposit legislation that does not contain clear legal obligations. The Commission was particularly concerned about the existence of “island solutions” because these made it so difficult for consumers to get their deposit refunded and tended to exclude foreign brands from the market. The Commission would want to satisfy itself that the conditions set out by the ECJ in its 2004 ruling would be met (see above).

The mandatory 25 cent deposit on non-refillables is much higher than the commercially-determined deposits on refillables: 8 cents (glass) and 15 cents (PET). This was intended to encourage consumers to buy refillables, in order to protect the refill market. A perverse result of this has been that consumers who do not intend to return their empties buy refillables so they lose a smaller deposit. Thus the return rate for refillables has fallen.

The deposit has failed to protect refillables, and their market share has fallen in all categories except beer since 2003, as shown in the chart below. They are below the levels in 2001, just before the deposit took effect. Most of the non-refillables are PET, as consumption of cans has not recovered. The fact that beer is not commonly sold in PET, together with the conservative nature of the German beer market, explains why refill levels for beer have been maintained. Government data for 2006 are not yet available, but industry data suggests that refill levels declined further in 2006 for all drinks categories including beer.

Figure 1: Market share of refillables in Germany by drinks category, 1991-2005



Source: GVM

Another lesson from the German experience is the need to define terms carefully. The exemption for “dietetic drinks” has caused confusion, as has the definition of a small retailer. It is not clear whether the 200 m² applies to total sales area or only the sales area devoted to food and drink (such as a café within a department store).

It is tempting for the authorities to set the deposit high to ensure a high return rate, but the German experience demonstrates that a high deposit can create other problems:

- The high German deposit requires very robust anti-fraud measures, which are expensive to implement. While a low deposit might not yield a good return rate, setting the deposit high creates a strong incentive for fraudsters. DPG had to make the on-pack deposit label highly sophisticated so that it could not be easily counterfeited. As there is no deposit on non-refillables in many of the countries adjacent to Germany, including some beyond its eastern border where retail prices are lower, German producers were concerned to prevent fraudsters printing counterfeit deposit labels on foreign containers to obtain the deposit.
- In Germany, the deposit on containers that are not returned are kept by the individual producers that generated them, unlike the Scandinavian systems where the clearing house keeps this money. This, added to the high deposit, creates a disincentive for German producers to facilitate refund. The less successful the deposit system is, the less costly it is to operate because of the income from unclaimed deposits.

The German system is “semi-managed”, halfway between the managed systems in Scandinavia and the simple US arrangement, where there is no clearing at all and individual market operators have to organise the deposit themselves. The German arrangement seems to us to offer the worst of both worlds. It is expensive – its fees are significantly higher than those charged in Scandinavia, although it provides fewer services than the Scandinavian equivalents.

The role of the German deposit system is limited because of competition concerns about allowing a single operator to manage all aspects of the system – understandable given the large size of the German market. In California and Hawaii, the deposit refund is managed by the relevant public authority responsible for waste management. That arrangement would not have been possible in Germany because implementation of waste policy is the responsibility of each federal state, which would have made the system very complicated.

2.4.2.4 The “simple” US deposit model

a) Key features:

- These bottle bills operate in only nine US states¹¹ and were all introduced in the 1970s or early 1980s (none later than 1983), when non-refillables first became available and refillables were still in common use.
- The deposit applies only to carbonated drinks (beers, waters and soft drinks) except in Maine, where still drinks are included. In most of the states, it applies to refillable and non-refillable glass, metal and plastic containers. Some states include cartons in the deposit provisions, but as these are not used for carbonated drinks, the deposit does not apply in practice to cartons.
- There is no centralised management of the deposit. There is no clearing arrangement, nor organised transport of returned containers. Each producer/wholesaler makes its own arrangements with each retailer to refund deposits and to collect containers.
- Retailers are permitted to accept only containers of the type and brand that they sell. Most bills offer the option of establishing third party return depots, although many containers are returned in-store.
- The deposit is 5 ¢ (about 3.5 eurocent), except in Michigan, where it is 10 ¢ (7 eurocent).
- Most states require that the producer/wholesaler pays a handling fee to the retailer or return depot. Most states set the fee between 1 ¢ and 3.5 ¢ (0.7 to 2.5 eurocent). In most cases this has remained unchanged since the law was adopted.
- None of the states sets a return target.
- Deposit containers must be marked – in practice with both 5 ¢ and 10 ¢, and with the abbreviations of all the deposit states.
- None of the deposit states has introduced producer responsibility (known in North America as “stewardship” requirements) applicable to packaging in general¹². Indeed no US state has done so. Segregated collection of recyclable waste operates in many states, but this remains publicly funded. However several states have introduced litter taxes on commonly littered items, including drinks containers.

b) Assessment

The “simple” US arrangement is a cheap way to operate a deposit system. The absence of a system operator and its associated overheads reduces the cost of the deposit to market operators. However the arrangement makes individual market operators responsible for operating deposits, and some of them are no doubt more assiduous and better resourced to do so than others. There are differences in how they apply the rules, with some for example handling deposit refund themselves while others rely on return depots.

¹¹ “Simple” bottle bills are in place in Connecticut, Delaware, Iowa, Maine, Massachusetts, Michigan, New York, Oregon and Vermont.

¹² Hawaii has an advance disposal fee for non-deposit glass.

The lack of a clearing arrangement for deposit imbalances is acceptable only because the deposit is low. If the deposit were as high as in Germany, individual producers would have to reconcile imbalances with each other to avoid unacceptably high losses for those refunding more deposits than they pay out. The practice of weighing large batches of containers rather than counting them is also possible only because the deposit is low. It is likely that large batches include some non-deposit containers on which the deposit is then paid, particularly in states neighbouring non-deposit states.

Although the “simple” bottle bills do not specify any clearing arrangement, they do specify the rate of the deposit and of handling fees. As in Denmark, putting this level of detail in the legislation makes it hard to make changes as circumstances evolve. In practice, it has proved very difficult in the US to get any proposed amendments to deposit laws approved by state legislatures.

No state has adopted the “simple” deposit since 1983. Many states (including some bottle bill states) have now introduced general recycling arrangements, with segregated collection of recyclables, and some have set recycling targets and/or have introduced general anti-litter measures. This broader approach has helped to reduce political support for deposits. Despite this, bottle bills continue to be proposed (and rejected). It is therefore possible, though unlikely, that other states may introduce deposit requirements. The drinks industry strongly opposes deposits and lobbies against new bottle bills and amendments to existing requirements.

Given that the mandated handling fees paid to retailers by producers have never been increased, they are now well below real handling costs. Retailers no doubt seek the necessary additional financial support from their suppliers as part of commercial negotiations on product prices. The real cost of handling and of financial support are therefore not transparent.

The absence of statutory return targets helps to explain why US producers did not set up an operating system, which would have increased the cost of operating the deposit. There is a greater need to manage the system and to count returned containers accurately when a specified return rate must be verifiably achieved.

The multi-state marking of containers, combined with manual handling of returned containers and the practice of estimating the number of containers by weighing them, makes it impossible to determine return rates accurately. Drinks purchased in one deposit state may be returned in a neighbouring state. Such cross-border purchases may cancel each other out to some extent, unless retail prices (e.g. because of higher excise taxes on beer) encourage purchases on one side of the border.

The marking arrangement also creates problems in deposit states that adjoin non-deposit states, particularly given the practice of accepting large batches of containers by weight rather than by number of units. To combat fraudulent redemption, containers sold in New York for example often have “NY” marked on the crown in addition to the standard deposit marking, to prevent the deposit being refunded on containers sold in neighbouring New Jersey, which does not have a deposit.

2.4.2.5 The “complex” deposit model

Two states, California and Hawaii, have introduced a more complicated deposit arrangement that is linked in with segregated collection and recycling arrangements. California adopted its deposit legislation in 1986 but it has been amended several times since then (most recently in 2007), while the Hawaii legislation was adopted in 2002 but took effect only in 2005.

Centralised deposit clearing operates in both states, but this is handled by the relevant state waste authority, not by a private company. In both states, the deposit is used as a mechanism to raise funds for publicly funded segregated collection and recycling of other waste.

a) *California (CA) - key features:*

- A hybrid of a deposit refund and European-style recycling fee. The deposit (known as California Refund Value, or CRV) and processing fees are administered by the state – the Dept of Conservation (DoC). Unredeemed CRV is used by DoC to finance recycling and litter reduction and public administration costs. Segregated collection is operated by private businesses which can claim financial support from a fund administered by DoC.
- Consumers can either get their CRV refunded, or they can put the containers into kerbside collection, thereby forfeiting (or “donating”) the CRV.
- The CRV is 5 ¢ (3.5 eurocent) on each container up to 24 oz (approx 0.7 litre), and 10 ¢ (7 eurocent) on containers of 24 oz or larger (since 2007).
- The CRV applies to metals cans, glass and plastic bottles. Since 2001 it covers carbonated and still waters and soft drinks, beer, alcopops, tea and coffee drinks, and juices.
- Most containers are returned at return depots, but some retailers accept them. There are 2,500 privately operated depots, which must be licensed. Return depots may pay consumers a scrap value in addition to the CRV, but for contaminated containers they can refund less than the CRV, or refuse them. They claim the CRV from the reprocessor when they pass on the containers for recycling.
- The handling and admin fees are complicated. Beverage wholesalers who generate the CRV, keep 1.5% of the CRV as an admin fee when they pay DoC. Return depots or collection operators receive 0.75% of the CRV to cover admin costs. Processors receive 2.5% of the CRV as an admin payment plus the processing payment (see below).
- Beverage manufacturers pay a “processing fee” to DoC, intended to cover the difference between the cost of recycling and the scrap value of the material. The processing fee is also linked to the recycling rate achieved. The processing fees are set each year, taking account of scrap values the previous year. There is no fee for aluminium because of the high scrap value of this material. Since 2004, processing fees have been 65% of processing payments.
- The recycling fund has been reporting annual surpluses in recent years of around \$ 65 million (about EUR 42 million, or EUR 1.15 per capita).
- In 2007 the processing fee could be reduced to zero for any material that achieves a recycling rate above 40%. The recycling rates achieved by these materials in 2007 (a significant increase on 2006) were as follows: aluminium 83%; glass 71%; HDPE 70%; PET 58%.
- The overall recycling rate for all deposit containers in 2007 was 71%. Following a prolonged decline in recycling rates through the 1990s, the rate has been increasing in recent years (54% in 2003, 59% in 2004 and 61% in 2005). The authorities ascribed the increase in 2004 to a combination of factors: the higher CRV, continued growth of kerbside programmes, and increased availability of collection in rural areas and apartment buildings.

b) *Hawaii (HI) – key features:*

- The state Department of Health (DoH) fulfils the role of system operator (managing deposit and handling fees, and communications between the different operators), although it has no role in logistics. DoH retains unredeemed deposits. Handling fees are used to run the system and to improve recycling infrastructure, and may be used for related activities (education, compliance etc).
- The deposit is 5 ¢ (3.5 eurocent) on glass, PET, HDPE or metal containers of up to 2 litres. It applies to beer, carbonated and non-carbonated waters and all soft drinks, alcopops, mixed wine drinks, and tea and coffee drinks.
- Containers are mainly returned at return depots, which retailers must establish. There are 80 “certified depots” – which must handle all materials and have a contract with a recycler. Some are operated by third parties on supermarket car parks. Certified depots can obtain a grant from DoH towards facilities. Few have done so, suggesting that most containers are handled manually, not using RVMs. Large batches of containers can be accepted by weight.
- A handling fee of 1 ¢ (0.7 eurocent) per deposit container is paid by producers to DoH. Producers reclaim it by invoicing it to retailers. The retailers can opt to absorb it or charge their customers. Advertising warns consumers that they may have to pay it and thus consumers fund the system.
- Retailers and return depots receive 2 ¢ (1.4 eurocent) from DoH for each container to cover collection, transport and handling costs. Return depots, including retailers, must ensure that all containers are “properly recycled”. This is different from most of the “simple” US bottle bills, which require producers to take back containers from retailers but do not specify that the containers must be recycled.
- The handling fee paid by producers is adjusted according to the return rate achieved (because a higher return rate yields less unclaimed deposit income). If the return rate is 70% or less, the fee is 1 ¢ (0.7 eurocent) per container, or 1.5 ¢ (1 eurocent) if the return rate is higher. The return rate in 2006 and 2007 was 68%, up from 61% in 2005. Hawaii aims to achieve 80%.
- Glass was previously subject to an advance disposal fee (ADF) of 1.5 ¢ (1 eurocent) per container. This still applies to non-deposit glass containers.
- Kerbside collection is in its infancy. Following successful pilots, it will now be rolled out throughout Hawaii.
- The legislation contained a sunset clause, and would have expired on 30 June 2006, but it has been amended to extend the deposit until 30 June 2009.

c) *Assessment of the Californian and Hawaii arrangements*

The CA and HI arrangements are designed both to ensure the return of drinks containers and to raise funds for public recycling activities, which cover drinks packaging and other items. As no US state has introduced producer responsibility requirements for all packaging (the only exception being the ADF for glass in HI), in effect the income from the deposit subsidises recycling activities of other fractions. This is different from Europe where producers have a responsibility to contribute to the recycling of all packaging.

The HI arrangement in which retailers can charge the handling fee to consumers is similar to the Green Dot arrangement in Europe (which assumes that fees will be internalised into product prices).

The CA arrangement in which fees are paid to the authority to fund recycling depending on the recycling rate achieved, is arguably closer to the state-run recycling funds (popular with some of the former Soviet-bloc countries which joined the EU in 2004) than to the Green Dot arrangement.

Another feature of these systems is that the deposit operator is the relevant state waste management authority. Nowhere in Europe does a public authority operate the deposit system. In the former Soviet bloc countries such as Poland and Slovakia that have state recycling funds, it is taxes on packaging (based either on the tonnage placed on the market or on the tonnage not recycled) that finance the fund, not deposit systems. In Europe, deposit systems are run by private sector entities, and any unredeemed deposit income is used only for drinks containers, not to cross-subsidise other recycling.

The deposit in CA and HI covers a broader range of drinks than typical European deposit requirements, including fruit juices and drinks containing dairy products (we assume that “coffee drinks” include milk). Their exclusion in Europe is due to different factors. Sweden and Denmark have considered the competition problem because milk and juice are also supplied in cartons, which are not usually included in deposit systems because they are unsuited to handling through an RVM. Sweden has decided not to include milk and juice in its deposit for hygiene reasons (growth of mould spores) when empty containers are returned in grocery stores. This is not a problem in CA or HI, where containers are returned to return depots or (in CA) put in kerbside collections.

2.4.2.6 Deposits in Canada

There is significant variation between the arrangements in each of the eight provinces with a deposit, but some features of Canadian deposit arrangements emerge which distinguish them from those in Scandinavia and/or the US:

- The scope of many Canadian deposits is wider than elsewhere, applying to more drinks (often including wines and spirits) and container types (often including pouches and cartons).
- The deposit arrangement is seen in some provinces as a way to generate funding for publicly operated kerbside collection. Almost all provinces have some form of stewardship organisation to oversee the recovery of containers: in some places the organisation is effectively an extension of the government, but elsewhere it is private, an extension of the beverage sector organisations. Thus, as in California and Hawaii, the deposit is used as a means to generate funding for state-run recycling programmes. This means that beverage producers subsidise the collection of non-beverage packaging.
- One method of generating such funding is the unique half-back system which operates in some provinces. The full deposit is refunded when a refillable container is returned, but only half of the deposit is returned on other containers. The rationale was to provide an incentive for refillable containers, but this has not worked. Where refillables existed (for non-alcoholic beverages) they have disappeared from the market as producers realised that consumers accepted the difference in the level of refund.
- Some refillables for beer do seem to have survived however, although we have no data on the size of the market share of refillables. We do not know why this should be so, but assume that it is related to the structure of beer production and distribution in Canada.
- Some provinces (including Nova Scotia and Saskatchewan) argue that the deposit collection arrangement has slowed the growth of kerbside collection because it reduces the potential quantity of recyclable materials that can be collected through a kerbside arrangement.

- In many provinces return is undertaken only in separate return depots, not in-store. Only in one province, Quebec, are all deposit containers returned in-store.

Two provinces do not have a mandatory deposit:

- Manitoba, where a non-refundable levy of 2 ¢ (1.3 eurocent) is charged on each beverage container and is used to fund general recycling programmes (kerbside collection etc). Expansion of producer responsibility is under consideration, along similar lines to arrangements in Ontario.
- Ontario, the province where the CIPSI initiative originated, has requirements similar to a European Green Dot system. Producers pay weight-based fees for packaging, newspapers and similar printed matter, which contribute to the cost of kerbside collection and recycling. Ontario is the only province with generalised obligations for packaging. Separately, beer containers are handled through a deposit, but this is a voluntary system managed by the brewers.

2.4.2.7 Deposits in Australia

a) Key features:

South Australia is the only Australian state with a deposit law. This was introduced in 1977, and is very similar to the “simple” US deposit model:

- The law covers beer, carbonated soft drinks, still or carbonated water, alcopops and, since 2003, non-carbonated soft drinks, fruit juice, flavoured milk and fermented beverages. Plain milk, wine, juice and flavoured milk in containers larger than one litre, and any container larger than three litres, is excluded from the deposit system because these packs are deemed not to contribute to the litter problem.
- Containers must be labelled either with the words “5c at collection depots when sold in SA” or with “10c refund at points of sale when sold in SA”.
- Although the law provides for either in-store return or return depots, in practice returns are made to depots.
- The depots sort the various container types and brands and prepare them for transport to one of four “super collectors”. The super collectors, some of which are subsidiaries of major bottlers, reimburse the depots for deposits refunded to consumers, pay the depots a handling fee (3.33c per container) and sell the containers to recyclers and reprocessors for recycling, reuse or energy recovery. The super collector in turn claims the deposit and handling fee from the filler.

b) Assessment:

Much the same as for the “simple” US system. The 5c deposit is worth about 3 eurocent, and from September 2008 it will be doubled in order to provide a better incentive to return.

One bizarre feature of the South Australian system is that as the major supermarkets’ national pricing policies extend to charging the same retail price for drinks in South Australia as in the rest of the country, consumers there do not really pay a deposit, but just get a rebate off the purchase price when they return their containers. Since South Australia has 7.6% of the national population, people from out of state subsidise South Australians by 4.6c every time they return an empty bottle or can, as well as paying 92.4% of the deposit system’s operating costs. Handling fees in 2005-6 amounted to A\$ 12.1 million (EUR 7.4 million, equivalent to EUR 4.80 per capita).

2.4.3. Conclusions from the international review

Our analysis of the above systems revealed the following success factors for a deposit on non-refillables:

- *Most deposits were introduced when refillables were still common in the retail trade.* This is significant because it meant that retailers had return facilities and both retail staff and consumers were still accustomed to return drinks containers in-store. Only one jurisdiction (Hawaii) has imposed mandatory deposits in a market where there were no refillables in the retail grocery trade.
- *Most deposits were introduced before the kerbside collection of recyclables was commonplace and before the introduction of producer responsibility for all packaging.* There is some evidence that the deposit has slowed the introduction of kerbside collection because the absence of drinks containers reduced the economic viability of kerbside collection. Furthermore, once consumers have become used to the convenience of a kerbside bin, they may consider it a retrograde step if they then have to take their containers back to a grocery store or depot.
- *Deposit systems work best where there are a small number of market operators, because this reduces operating costs and complexity.* A comparison can be made between the Scandinavian countries, where there are relatively few drinks producers and where grocery retailing is concentrated among a few large chains, and Germany, where a large number of operators are involved in the production and distribution of drinks.
- *Deposit systems need the support of industry to be successful, because individual businesses need to make significant investment in infrastructure (return facilities etc) and adjusting production.* Scandinavia and Germany again provide good examples for comparison. German business opposed the deposit and made imaginative use of a loophole in the law to avoid having to participate in a clearing arrangement after the deposit first took effect. US drinks producers oppose the deposit, and their lobbying against new deposit requirements and amendments to existing ones has made it hard for state legislatures to adopt such measures.
- *Cross-border shopping can have a significant effect on deposit arrangements.* Differences in retail prices and excise duties between neighbouring countries make drinks a popular cross-border purchase. This means that deposit containers are not always disposed of where they were purchased. The Swedish deposit system benefits from unredeemed deposits from drinks purchased by Norwegians. Meanwhile the Danish system suffers from having to refund the deposit on containers purchased across the German border but returned in Denmark. For this reason, national deposit legislation or the system operator usually requires that deposit containers are specially marked.

3. A DEPOSIT SYSTEM FOR NON-REFILLABLES IN THE RETAIL TRADE IN IRELAND

3.1 THE OPTIONS TO BE CONSIDERED

In this section we consider the options for a mandatory deposit in Ireland on non-refillable drinks containers sold through the retail trade.

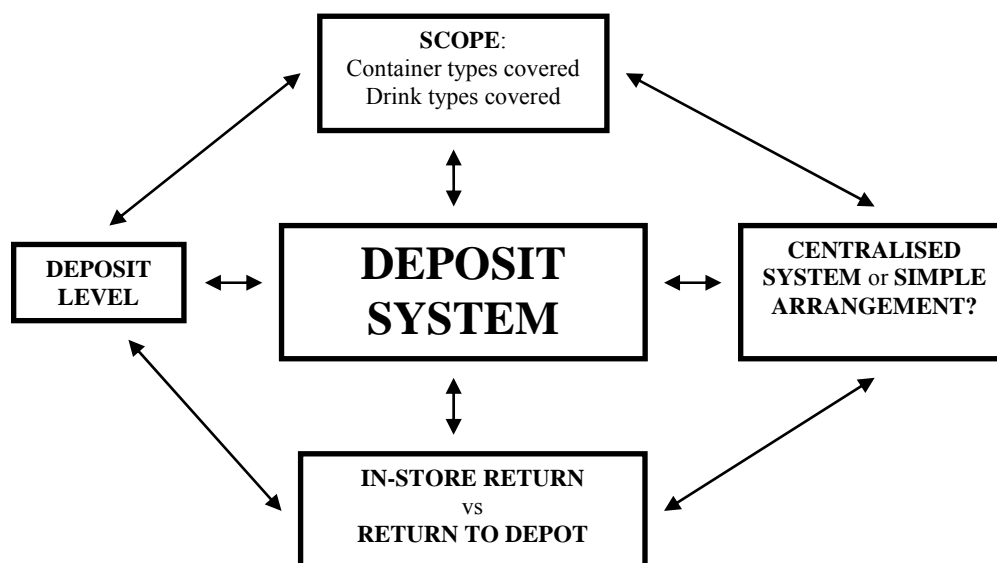
Our consideration is based on the above analysis of the deposit arrangements in other countries, and the lessons that can be learned from them. National legislators cannot enact a basic regulation that simply says that a deposit must be charged on specified drinks containers. Experience in Germany shows that careful consideration is needed of how a deposit will operate and legal requirements should then be designed around the proposed system.

Moreover, to be successful (i.e. to achieve a good return rate at reasonable cost), a deposit in Ireland would need to take account of the situation in Ireland, in particular of market conditions. Thus, it would not be possible simply to copy any of the deposit arrangements described above. They can certainly serve as models, but would need to be tailored to the Irish situation. The main options that need to be considered are:

- The scope of the deposit – what drinks types and what container types, and whether containers sold through the catering trade should be included as well as those sold through grocery stores;
- Whether there should be a centrally managed system with a deposit clearing arrangement, or a “simple”, individual arrangement (such as the Scandinavian centralised model or the “simple” US model);
- Whether consumers should return their containers and get their deposits refunded at retail stores, or through return depots, or a combination of both;
- What level the deposit should be – it needs to be sufficiently high to ensure a good return rate, but if it is too high it would cause distortions in the market and may encourage fraud.

In our analysis below, we will start by considering each of the above factors separately. However we will also consider them together because they are inter-dependent – the categories of drinks and containers subject to the deposit may affect the return arrangements and vice versa, as will the level of the deposit and whether there is clearing arrangement or not.

Figure 2: Features of a deposit system



3.2. THE IRISH MARKET CONTEXT

The structure of the production and distribution of drinks in Ireland is significant because the deposit would be charged by each producer or importer to his customers, who would then charge it on through all stages of distribution to the final consumer. Thus, the greater the number of market operators involved, the more complex it is to operate a deposit, and the harder it is for national authorities to enforce it. The size of the operators is also relevant as small drinks producers/importers and retailers are less likely to understand or to have the resources to comply properly with the deposit requirements than large companies.

3.2.1 The retailing environment

The international review highlighted the concentrated structure of grocery retailing in Norway and Sweden as a success factor for the mandatory deposits. Grocery retailing in Ireland is much more diffuse. According to a report by the Competition Authority on grocery retailing and wholesaling in Ireland¹³, the grocery market was as follows in 2006:

- **Number of outlets** - There are 6,400 grocery outlets in Ireland, of which 55% (3500) are operated by independent retailers, 40% (2560) by affiliated retailers (symbol groups), and 5% (340) by vertically integrated retailers¹⁴.
- **Turnover** - The vertically integrated retailers account for 46% of retail turnover in groceries. Retailers affiliated to the four largest wholesaler-franchisors account for 40%, while independent retailers and retailers affiliated to smaller wholesaler-franchisors account for 14%.¹⁵

¹³ A Description of the Structure and Operation of Grocery Retailing and Wholesaling in Ireland: 2001 to 2006, published in April 2008.

¹⁴ The six vertically integrated retailers are: Aldi, Dunnes Stores, Lidl, Marks & Spencer, Superquinn and Tesco Ireland.

- **Geographic distribution** – of the vertically-integrated stores, Dunnes Stores and Tesco Ireland had the widest geographic distribution, although both Aldi and Lidl grew significantly between 2001 and 2006. Affiliated retailers of the two largest wholesaler-franchisors, Musgrave and BWG Food, had an even distribution of outlets throughout the country. The other groupings of affiliated retailers tend to be more regionally concentrated. The vertically integrated stores tend to be in more urban locations while affiliated stores can be found in both rural and urban locations.
- **Store size** –The affiliated stores tend to be smaller than the vertically-integrated retailers and have a narrower product range. While the vertically-integrated stores tend to cater to one-stop shoppers, the affiliated stores satisfy top-up or convenience requirements. The Competition Authority comments that SuperValu (affiliated to Musgraves) resembles vertically-integrated stores in store size, range of products etc. Vertically integrated stores, such as Tesco, have now started to serve the convenience market.

Table 2: Size of Irish retail stores by category of outlet

Category	Outlet size	% of total outlets
CTNs		15%
Forecourts		25%
Traditionals	<100m ²	28%
Superettes	100m ² - 400m ²	22%
Small supermarkets	400m ² - 1000m ²	5%
Large supermarkets	1000m ² - 2500m ²	4%
Hypermarkets	>2500m ²	1%

Source: Irish Competition Authority, 2006 data

Another difference, which is relevant to considering a deposit arrangement for Ireland, is the absence of grocery superstores. Ireland operates a cap on the size of food stores, as set out in the Guidelines for Planning Authorities on Retail Planning issued in January 2005. Floorspace for food stores is limited to 3,500 square metres in the Greater Dublin area and 3,000 square metres in the rest of the country. The Guidelines also say that individual local authorities may set a lower cap, down to a minimum of 2,000 square metres. The Guidelines also say that priority for retail development should be within existing towns.

This has resulted in a small average store size in Ireland, where 80% of the vertically integrated retailers and affiliated stores have a net sales area of less than 500 m². If the independents and retailers affiliated to small franchise groups are included, then 90% of retail outlets have a total floor space of less than 400 m²¹⁶:

Table 3: Comparison of floor space – vertically-integrated vs. affiliated stores

Floor space	Total	Vertically-integrated	Affiliated
< 500m ²	80.6%	5.7%	90.0%
500m ² - 1000m ²	8.4%	25.0%	6.3%
1000m ² - 1500m ²	5.3%	25.9%	2.7%
1500m ² - 2500m ²	3.4%	23.2%	1.0%
2500m ² - 5000m ²	2.2%	19.3%	0.0%
>5000m ²	0.1%	0.9%	0.0%

Source: Competition Authority, 2006 data

¹⁵ Six wholesaler-franchisors (ADM Londis, Barry, BWG, Gala Retail Services, Mangan and Musgrave) license 18 retail brands.

¹⁶ This figure appeared in the Competition Authority but was based on AC Nielsen data. It is not clear whether to also relates to net sales area, or whether it refers to total floor space, i.e. including offices, stock rooms etc.

A large chain is more likely to implement a deposit in a consistent way in all its stores so consumers would understand the arrangements more easily than the piecemeal approach of independent stores. Large chains will have the management and financial resources enabling them to invest in the equipment (RVMs) and data systems to manage the deposit. Moreover, consumers are more likely to return deposit containers when they drive to do their shopping, so supermarkets with a car park are more likely to receive deposit containers. These factors could mean that large chains would gain competitive advantage from a mandatory deposit.

Ensuring that the deposit was applied correctly by small stores would require a significant enforcement effort from the government.

3.2.2 The supply environment

An analysis of the supply environment – covering both domestic production and imports – is also necessary to guide the design of a deposit suited to the Irish market. This includes the size of the market, broken down by drinks type and pack types, which is essential to determine the optimum scope of the deposit. It may not be sensible to include some drinks or pack types if they have only a small market, particularly if their inclusion would blur the scope of the deposit.

Other important factors are the size and number of operators – to assess the likely number of operators involved and the economic impact. The size of the import market is also important because this affects the significance of potential barriers to trade and the need to ensure that the deposit complies with EU rules.

The extent of cross-border shopping between Northern Ireland and RoI (either direction) is also relevant, although it is not easy to quantify due to its unofficial nature.

We were unable to undertake the thorough analysis of the supply environment that we intended. We requested data from the relevant stakeholders but it appears that comprehensive market data is not compiled for Ireland. We did obtain some data but it came from various sources. The different datasets were not fully compatible with each other, and so we were unable to draw coherent conclusions. Data that is available has been inserted in relevant sections of the report. We recommend that the Irish authorities undertake this market analysis to guide the design of the system.

3.3 SCOPE OF THE DEPOSIT

3.3.1 Grocery retailers and catering trade

It is clear that an obligation to charge a mandatory deposit would have to apply throughout the grocery retail trade. A discussion of whether it would be advisable to exempt small retailers from the obligation to refund the deposit can be found at 3.8.2. below.)

Should pubs and restaurants also have to charge the deposit?

In pubs and restaurants, where drinks are commonly consumed on the premises, the pub or restaurant is effectively the end-user. The wholesaler would charge the deposit to the pub, but there would be no need for the pub to charge the deposit on to customers to get the containers back.

However, the situation is less clear cut in the case of a small café, where consumers may either consume deposit drinks on or off the premises, or of a busy pub or club where customers may take

their drinks outside and then leave the empties on the street. In these situations the deposit should be charged. If the deposit were charged on all drinks, would consumers consuming the drinks on the premises have to return their empties to the counter to get their deposit refunded? We imagine that few of them would bother, and the pub or café would get to keep the deposit.

A deposit might encourage pubs and cafes to pour the drink into a glass or plastic cup, but this would be impractical in a busy venue, and could result in the glasses or cups getting littered instead of the bottles. In any case, some types of beer are commonly drunk straight from the bottle (such as Mexican beers with slices of lemon), and young people in clubs may insist on being served in the original bottle to ensure that the drink has not been spiked.

Whatever the arrangement, including the catering trade in the deposit on beer (and on other drinks) would undoubtedly increase handling costs for these outlets. This is likely to be resisted in particular by pubs at a time when they are already facing increased costs and are losing customers, not least because of the smoking ban. Their inclusion would also greatly increase the number of outlets involved in the deposit arrangement.

However, despite the practical problems and the cost implications, we believe that beer and other relevant drinks categories sold in non-refillable containers through the catering trade would have to be included in a mandatory deposit. Excluding this category of trade would create a major loophole. If pubs and cafes did not have to charge the deposit, they could supply deposit drinks for home consumption without the deposit, which might enable them to undercut supermarkets. Excluding drinks intended for sale in catering outlets would also mean that these drinks would have to be specially marked, without a deposit logo.

3.3.2 Drinks categories

In most European countries and “simple deposit” US states, the deposit on non-refillables is applied to the drinks that were traditionally sold in refillables. That made it easy to decide what product categories should be made subject to the mandatory deposit in those countries. Further, these drinks were usually the highest volume sectors of the drinks market when the deposit was introduced, and these drinks, when sold in non-refillables, are usually in homogenous container types. As no drinks are sold in refillables for home consumption in Ireland, legislators would have to determine the categories according to Irish market conditions.

The drinks categories most commonly subject to deposits in Europe are: beer, waters (carbonated and still) and soft drinks (carbonated and still). Containers of milk and other dairy-based drinks, juices, wines and spirits are excluded from the deposit and are handled by the relevant Green Dot systems.

In California, Hawaii and Canada, the scope of the deposit is broader, applying to a large range of drinks and pack types. The reason for the broader scope is that these systems aim to raise funds to subsidise kerbside collection, and the broader the scope of the deposit, the greater the revenue. This makes sense, given that there is no producer responsibility or industry-funding arrangement for recycling packaging waste in these regions.

For Ireland, it could be argued that the deposit should apply to the largest possible range of containers of different products as this would help both to spread the cost of establishing the deposit system among a large number of containers and to divert the largest possible number of containers from litter and to collect them for recycling.

However, as the discussion below highlights, care is needed to determine the categories of drinks and container types to be covered:

- The scope of the deposit should be clear-cut, so that consumers and retail staff understand easily which containers of which drinks are deposit-bearing, and which are not. If consumers are confused, some of the containers that they try to return will get rejected. After a few failed attempts, some consumers would lose faith in the system and stop returning deposit containers. The lack of a clear logic to the scope of the deposit in Germany certainly caused confusion there. For this reason, deposit regulations usually require that deposit-bearing containers are visibly marked with a deposit logo and/or with the value of the deposit.
- Competitive distortions between drinks categories and pack types that are deposit bearing and those that are not should be avoided. As it is invariably more expensive to participate in a deposit system than in a recycling scheme handling all pack types, some producers may avoid the deposit by switching some production to other pack types or reformulating some drinks. Some pack types (such as beverage cartons and laminated pouches) are usually excluded from deposit requirements although they are used for drinks that are often deposit-bearing. These packs are unsuited to standard RVMs which spin containers to read the bar code. That is not possible with rectangular cartons, while the flexibility of an empty pouch makes the bar code illegible.

Changing to a different pack type would involve significant costs for producers, but it is impossible to anticipate the extent to which such production changes might be made. Producers would make a commercial decision once the cost of participating in a deposit arrangement is known. However Irish legislators need to be aware of the risk that some producers may make such changes.

The deposit also makes the relevant drinks look expensive to consumers on the retail shelf, even though the deposit is refundable. This may encourage some consumers to switch to a non-deposit alternative. An increase in demand for non-deposit drinks would reduce the effects of the deposit in achieving policy objectives.

Below we discuss the drinks categories that are likely to be considered for inclusion in a mandatory deposit in Ireland. As the discussion shows, care will be needed to define each category to avoid unintentionally excluding similar drinks. There are issues that need to be considered for each product category, to determine how best to apply the deposit consistently and clearly.

3.3.2.1 Beer

All jurisdictions with a mandatory deposit include beer sold through the retail trade, and beer is highly likely to be included in any Irish deposit requirements. The non-refillables used for beer in the retail trade are mainly cans and glass, although beer is sometimes also available in PET.

The issue of whether the deposit should include pubs and similar catering outlets, discussed above, is particularly important for beer, given that a significant proportion of beer is not sold through the retail trade for home consumption, but is drunk in pubs and bars.

Traditionally, much of the beer sold through the licensed trade in Ireland is draught (i.e. supplied in refillable metal kegs), and draught beer has traditionally had a larger share of the national beer market in Ireland than anywhere else in Europe. Although the pub trade in Ireland continues to sell a significant proportion of beer in refillable kegs and glass bottles, this is declining. Also, the proportion of beer sold in refillable bottles is now far lower than the quantity of cans and non-refillable bottles.

Table 4: Market share of beer by container type

	million litres	%
Draught beer	308.5	62%
Beer in refillable glass	22.4	5%
Beer in non-refillable glass	48.2	10%
Beer in cans	116.1	23%
Total	495.2	

Source: BCI estimates

A mandatory deposit on non-refillables would also affect the use of refillable glass bottles, but it is impossible to anticipate how. On the one hand, requiring pubs to operate the mandatory deposit for non-refillables would help to reduce the cost differential with refillables, so perhaps it would help to maintain refillables in this sector. But on the other hand, producers and pubs may then abandon the refill system, to avoid having to operate two parallel deposit arrangements, particularly since non-refillables are easier for pubs to manage, and refillable glass only has a small market share anyway. So a mandatory deposit could accelerate the decline of refillable glass in the catering sector. Individual operators (producers, wholesalers and pubs) would make commercial decisions based on the cost and convenience of each option.

We understand that pubs are returning fewer refillable bottles than in the past, although they then forfeit the deposit. This suggests that, for the deposit on non-refillables to achieve a good return rate, it would have to be as high as, or higher, than the current deposit on refillable bottles (i.e. 18 cent).

The Danish, German, Norwegian and Swedish deposit requirements all include catering outlets. However, market conditions do not match those in Ireland. In Norway and Sweden, the sale of beer above a given alcohol content is closely controlled. Such “strong” beer (and wines and spirits) can be purchased by consumers and bar operators only through state-owned monopoly suppliers. Supermarkets are permitted to sell only low-alcohol and non-alcoholic beers.

And in Germany a large proportion of beer continues to be sold in refillable bottles, beer being the only drink sector where the market share of refillables has not declined following the imposition of the deposit. This is mainly because of the unique nature of the German beer market, characterised by a large number of small local brewers. Refillables also have a very large, but declining share of the beer market in Denmark.

The beer categories that would be subject to a deposit in Ireland would have to be defined. They should include stout, bitter and lager, plus shandies and other pre-mixed beer drinks.

3.3.2.2 Waters

All jurisdictions with a mandatory deposit include waters. Water is usually supplied in glass and in PET, and occasionally it is also available in cans and beverage cartons. Most of the US bottle bills imposed the deposit only on carbonates, because non-carbonated waters were not as common when the deposit took effect as they are now. Since those bills were adopted, there has been a massive surge in the popularity of bottled waters throughout the western world, including in countries such as Ireland where there had previously been little tradition of drinking bottled water. Still waters now have a significant share of the market for packaged waters, even in countries where carbonated waters were the norm in the past.

Irish legislators would need to define the categories of water to ensure that all relevant categories, such as mineral water, spring water, table water etc are included. Flavoured waters have become available in recent years, and it would make sense to include this category of water also.

One issue to be considered for still water is the possibility that producers will switch some production to cartons to avoid having to participate in the deposit arrangement. This happened to some extent in Germany after the deposit was introduced there. Denmark originally imposed its mandatory deposit only on carbonated waters, and when the Danish authorities first considered bringing still waters within the scope, they decided against this because having a deposit on water in glass and plastic but not on water in cartons would create a competitive distortion between these pack types. They feared that the proposal would be challenged on competition grounds.¹⁷ Denmark is now in the process of bringing still waters within the scope of its deposit rules because excluding them gave them a competitive advantage vis-à-vis carbonated waters.

Another issue to be considered is the status of the large containers used with water coolers. We believe that there would be little point in making these containers subject to a mandatory deposit, because they are usually supplied together with the cooling equipment and many already participate in a voluntary return arrangement, and they rarely get littered. Moreover they are usually made of polycarbonate, which cannot be recycled together with PET. We suggest therefore that the deposit legislation either specifically excludes them or sets a maximum container size for the deposit requirements, which would have the effect of excluding these large containers.

3.3.2.3 Carbonated soft drinks

Carbonated soft drinks (CSDs) are also included in all the mandatory deposit arrangements reviewed above. CSDs are predominantly sold in glass, cans and PET. We would expect this drinks category to be included in a deposit requirement in Ireland.

Of note is that the convenience sector has a significant market share of this drinks category in Ireland. Many convenience stores are by their very nature small, and many are independently owned and not part of large chains. This may make it difficult to ensure an adequate coverage of return facilities in this sector, not to mention ensuring that these stores charge the deposit to customers correctly in the first place. The authorities in both Sweden and Denmark have reported difficulties in enforcing the operation of the deposit in the convenience sector. In 2005 the Danish authorities announced that they were tightening up enforcement activities against restaurants and convenience stores (which it calls “kiosks”). These stores had been importing drinks without the deposit, and the Danish customs authorities were given new powers to seize drinks not correctly marked with the deposit label.¹⁸

The CSDs category also includes some sports drinks and energy drinks. The original German deposit legislation exempted drinks for special diets, as defined in the German regulations that transposed the EC Directive on Foods for Particular Nutritional Uses¹⁹, although sports drinks and energy drinks were specifically included in the scope of the deposit. This exemption encouraged some producers of sugar-free drinks to claim that they were suitable for diabetics, and hence exempt from the deposit. However not all producers claimed this spurious exemption, so one brand of a sugar-free drink was deposit bearing while an almost identical one of another brand was not. This exemption has now been rephrased to exempt only drinks intended for consumption “under medical supervision”.

At the boundaries of the CSD category are alcopops, which are discussed under the heading of wines and spirits below.

¹⁷ Study on the progress of implementation and impact of Directive 94/62/EC on the functioning of the Internal Market. Perchards et al for DG Enterprise, May 2005.

¹⁸ Danish Environment Ministry newsletter, summer 2005.

¹⁹ Directive 89/398/EC, as amended.

3.3.2.4 *Still soft drinks*

This sector covers ready-to-drink squashes, iced teas, and still fruit drinks that are not classed as juices. These drinks were not traditionally sold in refillables and so were not originally included in mandatory deposit requirements. However most countries (but not the majority of US bottle bill states) have now expanded the scope of requirements to include them. Still soft drinks compete with carbonated soft drinks so perhaps they should be included to avoid competitive distortions between the two categories. Moreover, consumers may be confused if carbonates are deposit-bearing but still drinks are not, particularly as it is not always easy to know whether a drink is carbonated or not until it is opened.

However defining the drinks in this category is not straightforward. If juices are excluded (see below), consumers and retail staff are likely to be confused between deposit-bearing containers of fruit based drinks and non-deposit containers of juice. There may also be some confusion between ready-to-drink squashes and the concentrated versions intended to be diluted at home.

Another problem with this category of drinks is that they are supplied in a wider range of container types than carbonates, including beverage cartons and laminated pouches, that would be probably be excluded from a deposit arrangement, unless of course they were returned manually in Ireland. Germany excludes cartons and pouches from its mandatory deposit because these are considered to be “environmentally favourable” on the basis of an LCA study. This LCA related to the situation in Germany in the late 1990s and may not be relevant to Ireland. If Ireland excluded these pack types, then it is possible that some producers would change their packaging to pouches and cartons to avoid the deposit.

Irish policy-makers would need to give careful consideration about whether to include still soft drinks or not. One point to bear in mind is that they constitute a relatively small part of the market. Industry estimates suggest that the total market for fruit-based still soft drinks *plus* fruit juices is no more than 50 million litres. This is far less than packaged carbonated soft drinks (610 million litres), packaged beer (440 million litres) and water (170 million litres).

3.3.2.5 *Milk, milk drinks and juices and nectars*

Milk is exempt from deposit requirements in Europe and most jurisdictions in the US and Canada. Fruit and vegetable juices and nectars are exempt from most European deposit requirements and in most US states, although many Canadian provinces include them.

These drinks categories have been excluded from deposit requirements for a variety of reasons. These include:

- Milk and juice are mostly consumed at home, so they are not considered to contribute to the litter problem;
- Storing the empty containers in-store may have hygiene implications. Fears about bacteria, mould spores and odour in supermarket stock rooms were among the reasons why the Swedish authorities recently decided not to bring these drinks categories within the scope of the deposit²⁰. This of course would not be a problem if deposit containers were returned to return depots, as they usually are in Canada.
- Milk and juice are often supplied in container types not usually handled through deposit systems, such as beverage cartons and HDPE plastic containers. Denmark ruled out including drinks in

²⁰ Returförpackningsutredningen, Jordbruksverket, Rapport 2006:7.

beverage cartons in its deposit requirements because they are unsuited to standard RVMs, and adapting RVMs to accept cartons would be disproportionately expensive²¹. The Swedish authorities also took the view that larger producers would switch some production to exempt container types to avoid the deposit. This, they argued, would put small producers in particular at a competitive disadvantage because they would find it harder to make such a switch.²²

Even if plain pasteurised milk and juice are excluded from the deposit, what about ready-to-drink drinks, such as chocolate milk and similar shakes, coffee drinks, drinking yogurt, and fruit smoothies? The sale of such drinks in small containers through convenience stores is a recent development. These are more likely to be consumed on-the-go than pasteurised milk or juice, and may now be regarded as contributing to the litter problem.

Germany exempts drinks that contain at least 50% dairy product from its deposit requirements. One side effect of this is that fruit drinks are now available there containing whey. Although these drinks look and taste just like other fruit drinks, their dairy content exempts them from the deposit. This is an example of producers reformulating their drinks to avoid having to operate the deposit.

3.3.2.6 Wines, spirits and alcopops

Wines and spirits are rarely subject to deposit requirements, and only Canada and South Australia include them. Wines and spirits are usually excluded because their high retail price means that the deposit provides little incentive to return the empty container, and because of the long time delay that may occur between placing on the market, purchase by the consumer and consumption. In some countries these products are excluded because glass is not subject to the mandatory deposit, and finally, because they are less likely to be littered than other drinks.

However some countries do include pre-mixed drinks containing wines (spritzers) and spirits (such as pre-mixed gin and tonic and alcopops). The argument for including mixed drinks is stronger than for wines and spirits. Alcopops can be described as a carbonated soft drink with added alcohol and they are more likely to be littered than “neat” wines and spirits. If Ireland wanted to include these mixed drinks in a deposit, it would have to define them.

3.3.2.7 Other drinks categories

The above discussion does not include cider and perry, which are popular in Ireland (and which were brought within the scope of the Danish deposit law in 2007). Before any legislation is prepared, we recommend that an analysis of the Irish drinks market is undertaken to identify other significant drinks categories that are suitable for inclusion in the deposit requirement. This is essential to avoid creating loopholes and to ensure consistency in the scope of the requirements.

3.3.3 Container types

The decision as to what drinks categories should be subject to the deposit must also take account of which container types will be deposit-bearing.

²¹ Comments accompanying draft Act on a duty on mineral waters etc as well as the Packaging Duty Act, notified to the EU Commission in December 2006.

²² Jordbruksverket, op.cit.

PET and cans are by far the most likely contenders, and the mandatory deposit requirements in all countries that have one include these pack types. PET is commonly used for water and for CSDs, while cans are commonly used for beer and CSDs.

Most drinks cans are made of aluminium, but tinfoil cans are also used for drinks. Ireland should make all metal cans subject to any deposit. The Swedish deposit legislation originally applied only to aluminium cans and to PET bottles, but Sweden recently expanded the scope of its obligations to cover all metal and plastic drinks containers. This was because some importers were buying drinks in tinfoil cans, which fell outside the scope of the deposit. Including all metals makes operational sense because, once the empty cans have been returned, it is easy to separate out any tinfoil cans using magnetic extraction so that both types can be recycled.

As for plastics, the vast majority of plastic drinks bottles are made of PET, but other plastics, such as polycarbonate, HDPE and laminated PE pouches, may also be used for drinks. Care is thus needed in defining the plastic container types to be included in the deposit. The benefits of including all plastic bottles in a deposit requirement are less clear-cut than for metals. Non-PET containers would have to be separated as they would hamper PET bottle recycling.

That leaves the question of non-refillable glass, which is not subject to the mandatory deposit in Sweden or Norway, but is in Denmark, Germany and most of the US and Canadian bottle bill states and provinces. Glass is widely used for beer, some waters and soft drinks.

It can be argued that glass should be included in the deposit to avoid competitive distortions with the other pack types, because glass is often used for the same drink types. If glass were excluded, then some producers might switch to glass to avoid having to operate the deposit. Moreover, glass may be littered, and broken glass on pavements, footpaths etc is potentially dangerous.

On the other hand, including glass might create confusion among retail staff and consumers because glass is also used for drinks that are likely to fall outside the scope of the deposit (such as wines and spirits). Further, returned glass is harder for retailers to manage than PET and cans, because it is heavy and requires careful handling and storage. Retailers would lose their deposit on broken bottles, as would consumers. Glass could be more easily included in a deposit arrangement if consumers get their deposit refunded at return depots, not in-store.

We believe that glass is the material least likely to achieve good return rates in a deposit system. This is because bottle banks are the most common return arrangement in Ireland for glass and they have been in place for a relatively long time, so consumers have become used to using them. Ireland reported a recycling rate of 64% for glass in 2005. As consumers will still have to take bottles of non-deposit drinks, and bottles and jars of other products to the bottle bank, they may not bother to sort their deposit bottles and get their deposit refunded on them.

3.3.3.1 Container size

As regards the size of the containers subject to the deposit, in Germany the deposit applies only to containers of between 0.1 and 3 litres. This has the effect of excluding 5 litre party kegs of beer sold in Germany, and water containers used with water coolers.

The Scandinavian countries do not impose a minimum or maximum container size, although they do have higher deposit rates for larger sizes.

Irish legislators would need to establish whether a similar minimum or maximum size restriction is necessary for Ireland. It may be simpler not to impose any size limit, but to specify that the deposit

should apply to all containers of the specified material intended for retail sale and through catering outlets, if they are to be included.

There is an argument that the deposit should apply only to smaller sizes of container because these are more likely to be littered. The deposit could apply only to containers of, say, less than 0.75 or 1 litre. Larger containers would continue to be collected through existing bring/kerbside arrangements.

The disadvantage is that the deposit would be proportionately more expensive as the system and facilities would be set up for a smaller quantity of containers.

Furthermore, PET and glass bottles are produced in a range of different sizes, but cans are not. Thus, all cans would be included in the deposit, but not other materials. Would this constitute a distortion of competition against cans?

A deposit only on small containers was recently considered in Switzerland but the authorities rejected it following publication of a study that concluded it would be too confusing for consumers, and too expensive²³.

3.3.4 Future-proofing the scope of deposit requirements

The discussion of the various drinks categories above illustrates that determining categories of drinks categories is not easy because the boundaries between them have become blurred. New drinks have been developed in recent years, such as alcopops, flavoured waters, and fruit smoothies. And the popularity of some drinks has also changed – who could have anticipated the massive growth in demand for bottled still water?

The market for drinks is likely to continue to change in future – other new drinks will be developed and the popularity of some drinks will change, and correspondingly, their significance in the market.

The same is also true of pack types. New pack types suitable for drinks are likely to be developed, and they may fall outside the scope of deposit requirements.

Care would therefore be needed when drafting legal obligations in defining the drinks and specifying the pack types to be subject to the deposit. The regulations would need to be sufficiently flexible so that they can be adjusted in line with future market developments.

3.4 THE LEVEL OF THE DEPOSIT

It is fairly self-evident that a low deposit, say 5 eurocent, may not yield a good return rate. A 5 cent deposit represents a low percentage of the selling price of the product and may be less than the difference in price charged by different retailers, for example between a larger grocery store and a convenience store. As Irish consumers are not in the habit of returning their drinks containers to the store, and as an increasing number of them now have access to bring and/or kerbside collection, the deposit would have to be sufficiently high to motivate them to take their “empties” when they do the grocery shop or make a special trip to the return depot. Kerbside collection is undoubtedly more convenient for consumers, and return to store or depot would in effect “compete” with kerbside.

²³ Press release from Swiss environment agency BUWAL (now known as BAFU) 7.7.2005. Study by Ellipson AG, commissioned by BUWAL, PRS and Igora.

An omnibus survey undertaken on behalf of Repak in summer 2008²⁴ indicated that only 7% of respondents said that a deposit or refund scheme in-store was their first choice of collection arrangement, compared with 51% whose preferred kerbside collection, as shown below:

Q.14 Which of the following recycling collection schemes would you most support. And which would you favour second?

Base: All respondents (976)	MOST	SECOND
	%	%
▪ Household recycling collection using different wheelee bins or bags.....	51	16
▪ Bring Banks/bottle banks in car parks or on street	17	24
▪ Bring Centres or Recycling Centers.....	14	26
▪ On Street recycling bins.....	7	17
▪ Deposit or refund schemes in store	7	12
▪ None of these	4	5

However, a high deposit rate of, say, 15, 20 or 25 eurocent, although likely to generate a better return rate, does bring other problems with it. Thus, careful consideration would be needed in setting the deposit rate. The issues that would need to be considered are:

- The higher the deposit, the greater the incentive to fraud. If the deposit is greater than the cost of printing a forged label and bar code on a non-deposit container, then we would expect that there will be attempts to obtain a deposit on containers on which it was never paid. As the container retains the value of the deposit until it has been crushed, then a high deposit would also require retailers to take measures to prevent fraud by staff. Containers would need to be stored securely to prevent staff re-scanning some returned containers.
- A high deposit would generate more income in unredeemed deposits. If Ireland opts for a centrally managed system, then this money provides a useful source of funding that helps to keep participation fees for producers down. This of course means that consumers who do not reclaim their deposit provide a key source of revenue for the system. This is acceptable provided that there is a good network of return facilities. But if return rates are low because there are insufficient return facilities, then the deposit would have an adverse social impact because it would increase the real cost of drinks for consumers.
- Although the deposit is refundable, the extra charge does make drinks on the retail shelf look more expensive, particularly for consumers not motivated to return the empties. This could encourage more consumers to cross the border to Northern Ireland to buy drinks. We understand that this type of cross-border shopping already happens to some extent between NI and RoI, particularly for beer, and particularly at the moment because the current exchange rate makes Northern Irish products cheaper. The easy availability of non-deposit drinks across the border would make it essential to differentiate deposit drinks by using different bar codes and a special label in RoI. It would also make it essential to use electronic scanners for deposit refund, not the weighing approach used in North America.
- A high deposit would also encourage some operators, particularly smaller ones, to purchase drinks across the border to avoid having to operate the deposit, and to enable them to sell the drinks to customers more cheaply. Both the Swedish and the Danish authorities have reported problems along these lines. Consumers assume that they have paid the deposit on these grey imports and they may lose confidence in the return system if they fail to get their deposit refunded.

²⁴ Omnibus survey by Millward Brown IMS for Repak with fieldwork undertaken 13 August – 2 September 2008; 976 respondents.

Norway, Sweden and Denmark and some Canadian provinces have different deposit rates for different container types, particularly higher deposits for large containers. However in each US state a single rate applies to all deposit containers, as it does in Germany (although the deposits on refillables are lower).

A key reason for setting different deposit rates for different containers in Scandinavia is so that they correlate to the deposit on the equivalent refillable container. The deposit on a refillable bottle is usually the replacement value of the bottle, so it is higher for larger sizes.

For Ireland, we see no reason to have deposit rates for different sizes, which would only add complexity to the arrangement. To keep matters as simple as possible, we suggest that the rate of the deposit should be the same for all container sizes and types.

3.5 MANAGING THE SYSTEM

Above we discussed the centrally managed Scandinavian systems, the US “simple” model with no centralised clearing, the US “complex” model with deposit clearing arrangements operated by the state authority, the Canadian arrangements also managed by the state or semi-public bodies, and the German semi-managed system.

3.5.1 A “simple” deposit for Ireland?

Although the “simple” US model is cheap to operate, we believe that the lack of centralised clearing is acceptable only if the rate of the deposit is low. Without a clearing arrangement, a high deposit could give rise to windfall profits for some operators and losses for others as consumers frequently return containers to a different store from that where they purchased the item.

To avoid this problem, the legislation could permit retailers to refuse containers of brands that they do not stock, as in US “simple” bottle bills. That would make it hard for consumers to get their deposit back in some circumstances, so it is unlikely to achieve the high return rates sought by Irish policy-makers. The arrangement could also have an adverse social impact, as it may be particularly hard for socially disadvantaged consumers (the elderly, low-earning families, etc), to get their deposit back.

If Ireland has a higher deposit, in the 15-25 eurocent range, in order to achieve a reasonable return rate, then we believe that a central clearing arrangement will be necessary.

3.5.2 A centrally managed system

In a centrally managed system, when fillers/importers sell deposit drinks, they pay the deposit to the system operator and claim back the deposit from their customers (wholesalers or retailers) by adding it to product invoices. The deposit is then charged on through each stage of distribution to the final consumer. When the final consumer returns the empty container and claims back the deposit, the retailer or wholesaler reports on the number of returned containers to and claims back the deposit from the system operator. The flow of deposit monies is nowadays tracked online, with retailers reporting regularly to the system operator on deposit monies received and refunded.

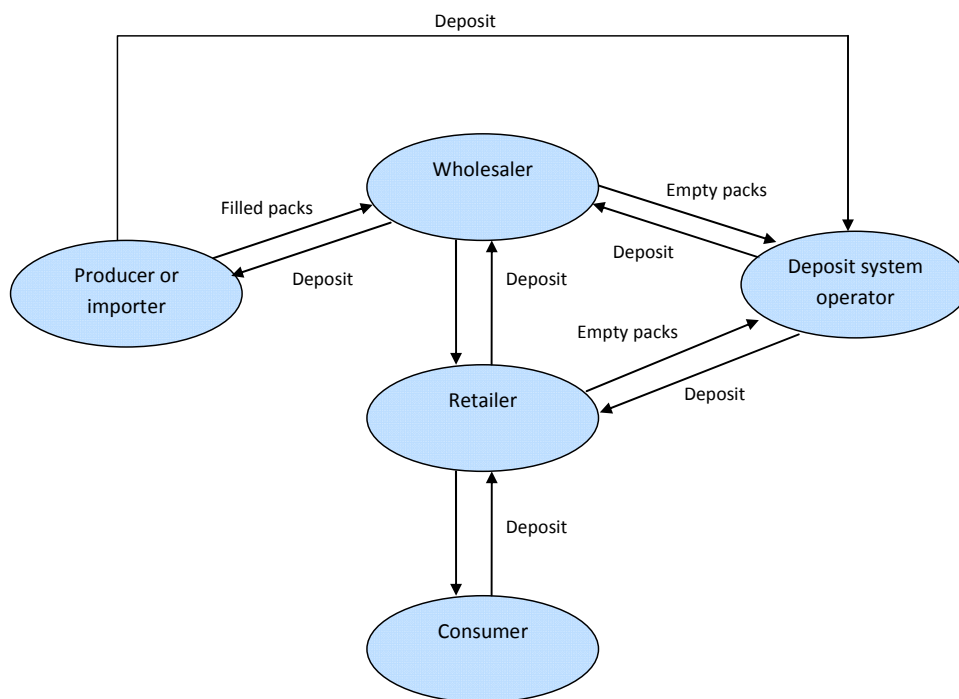
At the same time producers also pay a handling fee per unit to the system, which the system then pays to the retailer as a handling fee per returned container when the retailer claims back the deposit.

In a managed system, a new market entrant must register with the deposit system which involves the payment of an upfront fee and a delay while all the container details are programmed into the database, and into all RVMs (if these are being used). Although cumbersome and expensive (as these fees are charged at a flat rate in most countries), this single process does mean that a new producer is included in the deposit system nationwide, which is likely to facilitate sales discussions with retailers. In a “simple” deposit, retailers would face additional costs if they start to stock new products from a new producer (additional sorting of containers and deposit handling). Retailers may well use this as a bargaining point with new market entrants. This is a particular problem where handling fees are set by law, as in the US, and have not been increased in line with cost inflation. This suggests that the simple deposit could represent a barrier to market entrants.

In Germany, the law requires all retailers to refund the deposit and register with the system. However not all retailers report directly to the system. The wholesaler often interacts with the system operator on behalf of its retailer customers. Retailers pass on deposits received to and are refunded by the wholesaler. This arrangement reduces the number of market operators that the system operator has to deal with. Given the significance of wholesalers in the Irish market, an adapted version of this German arrangement might suit Ireland.

The diagram below shows the flow of deposit monies in a centrally managed system, with options for the retailer to interact directly with the system operator or indirectly through the wholesaler:

Figure 3: Flows of deposit monies in a centrally managed deposit system



3.5.1.1 Who would operate a centrally managed system in Ireland?

In California and Hawaii the system operator is the relevant state waste authority, while in most of the Canadian deposit provinces it is an arms-length organisation established by the authorities. We do not believe that such an arrangement would be appropriate in Ireland. As the Irish government sees a deposit as an extension of producer responsibility, we assume that it expects the private sector to operate the deposit. The Californian funding arrangements seem unnecessarily complicated and we reject them also for this reason.

In Europe, deposit clearing is usually handled by a private sector company established jointly by the associations representing drinks producers and grocery retailers. In Ireland, the relevant industry groups would be all or some of the following: Beverage Council of Ireland, Alcohol Beverage Federal of Ireland, and Food and Drink Industry Ireland and Retail Ireland. Some other Irish industry groups might also want to be involved, such as the associations representing the smaller retailers and convenience stores, RG Data.

Would it make sense for Repak to operate the deposit system alongside its existing activity? At first glance this option looks sensible because it could save the cost of establishing and operating a new separate company to operate the deposit, and there could be advantages in co-ordinating the complementary activities of the two organisations.

However there is no precedent anywhere for a Green Dot organisation to run a deposit system. This is no doubt partly because deposit systems were generally established before the Green Dot systems. Nonetheless no deposit system opted to expand its range of activities to handle all packaging. We also believe the two are kept separate also because the deposit requirements affect a smaller range of companies than general packaging requirements, and the costs of operating each system are different. The Scandinavian and German deposit companies are established on a not-for-profit basis, so that any operating profit is returned to the system participants as lower fees.

Much of the activity of a deposit system operator relates to clearing deposit imbalances so its activities only partly overlap with those of a Green Dot organisation. There is some overlap where the deposit system operator organises the collection of returned containers. However, the funding for collecting the two sets of packaging comes from separate sources, so the deposit containers must be kept separate from other collected packaging.²⁵

When the German deposit took effect, the German Green Dot organisation, DSD, was keen to expand its remit to be the deposit operator. However by this time DSD had already been embroiled in clashes on several occasions with both the EU and the national competition authorities, and its bid was rejected on competition grounds.

Whether the operation of a deposit system is a suitable expansion of Repak's role is an issue that the Irish businesses affected by a deposit would need to consider further. Our view is that, given the different funding arrangements and different activities, the deposit system should probably be managed by a company separate from Repak, with a separate board and management team. However it would clearly make sense for both organisations to liaise on matters relating to collection and recycling.

3.5.1.2 Scope of activities

The range of activities to be undertaken by the system operator would also need to be determined.

In Norway, Sweden and Denmark the system operator manages the entire system – deposit flows, flows of handling fees from producer to retailer, transporting the returned containers for recycling, and communications.

²⁵ It would of course be possible for deposit containers to be collected from a retailer at the same time as other packaging waste. However, deposit containers that have not been crushed in an RVM need to be kept secure and must not be squashed until they have been counted. They would usually be in a security tagged box or sack of some kind.

However in Germany, the central organisation operates the basic database necessary for clearing but each market operator uses service providers for data management (reporting on containers supplied and claiming deposit refunds) and to collect returned containers. This arrangement seems to us to offer the worst of both worlds between the simple deposit and the centrally managed arrangement. It involves the overhead cost of a central system, but each market operator still needs to manage a significant part of the arrangements themselves or contract a third party to do so.

The German system is structured in this way for competition policy reasons. The German competition authority felt that a Scandinavian style deposit operator would have become an enormous monopoly company with a massive budget, controlling a large tonnage of returned containers. While such concerns may be reasonable in a large market like Germany, in principle there should be no such competition concerns in a smaller market, like the Scandinavian countries or Ireland. In Germany the deposit operator has a monopoly for the limited role that it fulfils – all market operators selling deposit drinks must register and report to it. Sweden has one large deposit operator that represents nearly all the market. The Swedish deposit legislation does however permit other deposit systems to operate, provided that they register with the authorities (the food and agriculture agency). Three such small systems have been licensed. They operate at a local level and supply a specialist market, such as mineral water for offices branded with the customer's logo.

The Danish competition authority investigated the Danish deposit system operator (DR). The authority had received complaints from small importers and producers who felt that the system was bureaucratic and inflexible. These small operators also said that the fact that system is owned and operated by their large competitors – Carlsberg and the Brewery Group (Bryggerigruppen) – “made them insecure”. The competition authority argued²⁶ that the reporting arrangements for small producers should be simplified and that the ownership of DR should be put out to tender when it came up for renewal in 2008. Although DR has made some adjustments to its reporting requirements, the Danish government has decided to renew its licence until 2012. The complaints by the small operators should be seen in the context of the Danish market situation, where there are a few dominant players in the drinks market and where no non-refillable drinks containers were available until 2002.

3.5.3. Managing the system – conclusions

Given that Ireland is likely to need a high deposit to ensure a good return rate, then we believe a centrally-managed system will be necessary. The Irish authorities will need to explore with industry stakeholders about who will operate such a system, and the scope of services it provides. Our view is that there would be benefits in the operator providing a wide range of services along Scandinavian lines.

- ***The deposit arrangements are fully managed*** – ensuring that deposit imbalances are reconciled and organising the collection and recycling of the containers. The system operator can establish ground rules for the operation of the system, and can also help to ensure that all market operators apply the deposit correctly and consistently. As many Irish market operators are unfamiliar with operating deposits, this type of system operator would have an important role in co-ordinating activities and liaising with and advising market operators.
- ***Revenue from the unreturned containers accrues to the system operator, not to individual producers.*** The income from unredeemed deposits provides the system with a source of revenue, which can be used to defray some of its operating costs and/or be used for beneficial activities such as litter abatement and public communications. If revenue accrues to individual producers

²⁶ Statement from the Danish Competition Council to the Danish Environment Minister, 17 December 2003.

and retailers, they have a disincentive to make it easy for consumers to return their containers. Of course the more successful the system is in delivering high return rates, the lower the income from unredeemed deposits, so the system cannot rely on this revenue source. An alternative income stream in the form of fees charged to market operators will also be necessary.

Given the concerns over competition that arose in Germany and Denmark, care would be needed in how the operating company is established and in the way that it operates. The system would need to be monitored by the Irish authorities, and the system operator should ensure that the interests of small operators are fully taken into account.

3.6 RETURN IN-STORE, THROUGH RETURN DEPOTS, OR BOTH?

In the Scandinavian systems and in Germany, all containers are returned in-store. This is an obvious arrangement given that deposit refund for non-refillables operates alongside return systems for refillables in these countries. In the US, many containers are also returned in-store, although many bottle bills provided for return depots and these do operate in some states. In Canada, return through depots is common, and some provinces prohibit in-store return. Beer is the exception, and beer containers in Canada are more likely to be returned in-store than containers of other drinks. In South Australia all returns are made to depots.

The key criterion for deciding which arrangement is best suited for Ireland is the one that would yield the highest return rate at minimum cost.

3.6.1 Return in-store

Return in-store has the clear advantage of being the most convenient option for consumers – they can return containers when they are going to the store anyway to shop. Returning the containers to a return depot would require consumers to make a special trip.

However grocery retailers are often reluctant to provide return facilities because it requires them to allocate space to accept and store returned containers, which they would prefer to put to more profitable use. Moreover, if containers are accepted manually, staff will need to be trained to identify the deposit bearing containers, and they must be available to refund the deposit, which diverts them away from their other tasks. Sometimes deposit refund is handled at the checkouts, which is time-consuming and means that large storage bins must be available nearby.

This explains why larger stores usually install RVMs, which automate the return/refund process, although these are expensive. RVMs are usually located either in the entrance lobby to the store, or near to where drinks are sold. Some RVMs are free-standing, with returned containers stored inside them (so they need to be emptied fairly regularly), but some are installed on the wall between the stock room and store. On the store side there is a front panel where the consumer feeds the container, which then passes on a small conveyor belt through a hole in the wall to the stock room. The more sophisticated RVMs crush the containers, which reduces the storage space required, and prevents fraud because the deposit cannot be refunded once the container has been crushed.

The cap on the size of food stores in Ireland, discussed above, may make supermarkets particularly reluctant to operate deposit refund. If they are unable to expand their stores or move to larger, out of town sites, they are likely to resist giving up any sales space to accept and store deposit bottles. The rules applicable to small retailers vary between the various deposit countries.

In the US, several “simple” bottle bill states allow retailers to refuse containers of brands that they do not stock. The limitation by brand makes sense in the US given the lack of any clearing arrangement – if a retailer does not stock a particular brand, then he has no commercial relationship with the distributor of that brand, which makes it difficult to arrange to get the deposit refunded. We understand that in practice some retailers do accept all brands as a service to customers.

The German deposit requirements (as revised from 2006) allow all retailers, regardless of size, to refuse containers of materials that they do not stock. This means that if they sell non-refillable PET but not cans (and few German retailers sell cans), they must refund the deposit on any deposit-bearing PET bottle but may refuse cans. Small retailers with a sales area of 200 m² or less can also refuse containers of brands that they do not stock. A further amendment to the legislation will require all retailers selling deposit drinks to participate in the clearing house, DPG.

The exemption for materials not stocked makes sense given that in Germany, individual retailers are responsible for getting returned containers recycled. It would be unreasonable to expect them to store and then organise for cans to be recycled if they do not sell them. The original German deposit legislation also allowed retailers to refund the deposit only on containers of the type that they sell. This loophole in effect meant that retailers who sold a unique design of pack accepted only the containers that they sold. Some retail chains started to sell own brand drinks in their own unique design of PET bottle and refused all others. These arrangements, known as “island solutions”, meant that these chains did not need to participate in a clearing arrangement. They resulted in widespread market disruption, and were successfully challenged by the Commission in the European Court of Justice.

However, now that there is a clearing house in Germany we think that there is no justification for allowing small retailers to refuse containers of brands that they do not stock, particularly since all deposit containers must be marked with a special deposit logo.

In our view the fact that a Scandinavian-style centralised deposit arrangement, which organises both clearing and the transport and recycling of containers, makes it possible that all retailers accept all packs of all brands is a strong argument in favour of this type of centralised arrangement.

Allowing retailers to accept only the brands that they stock is less likely to generate a good return rate. Furthermore, this exemption could create a loophole, resulting in some retailers operating their own independent return arrangement (similar to the “island solutions” that developed in Germany after 2002) alongside the centralised clearing. Private label products have become far more common than they used to be and some retailers predominantly (such as Aldi and Lidl) or solely (Marks & Spencer) sell own label products.

The other retailers that do participate in the centralised clearing arrangement would not accept these private label containers, as the relevant data would not be programmed into the RVMs of the other retailers.

In Ireland, the vertically-integrated grocery chains and the six large wholesalers would initiate the deposit on the products that they place on the Irish market (private label, imports). Both would also pay the deposit for products sourced from Irish suppliers. The wholesalers would invoice it on to their customers, either affiliated or independent stores. All retailers would charge the deposit to customers.

If Ireland opted for in-store return, retail outlets would have a legal obligation to refund the deposit and accept the returned containers. The vertically integrated stores would have to ensure that all their outlets had the necessary facilities and operated deposit refund correctly. Supervalu can probably be included in this category.

However wholesale groups would have to decide whether each individual affiliated retailer would have to make its own arrangements to operate deposit refund, or whether this would be managed on their behalf by the wholesaler. These wholesalers already provide support services to their affiliates, and it could make sense if the wholesalers organised the purchase of the necessary equipment (RVMs, hand scanners etc) centrally to obtain a better price for a large order. However some smaller affiliates would probably prefer to save money by opting for manual return. Even if the franchising contracts between wholesalers and affiliated retailers require retailers to comply with relevant legislation, an effort will be needed to ensure that small individually owned stores operate deposit return correctly.

Then there are the 3,500 independent retailers not affiliated to a wholesaler. They represent only 14% of turnover, but many are likely to be small convenience stores who undoubtedly sell drinks likely to be subject to the mandatory deposit. They would have to make their own deposit arrangements. It will undoubtedly be challenging to ensure that these small retailers both charge the deposit correctly and provide adequate return facilities.

The implications for small retailers are discussed further at 3.8.2. below.

3.6.2 Return depots

In most of the Canadian bottle bill provinces, consumers return their empty containers to return depots operated by third parties on a commercial basis. Return depots are also the norm in South Australia.

One option for Ireland is to use this type of return facility instead of, or in addition to, retail stores.

To estimate roughly how many such depots might be necessary in Ireland, we took the number in three jurisdictions, and adjusted them for population size:

- Nova Scotia (where the legislation prohibits in-store return), has 83 depots, which also handle paint containers. The population of Nova Scotia is around 940,000.
- South Australia has 140 depots for a population of around 1.5 million. They are spaced no more than 5 km apart in the Adelaide area. They are generally sited on industrial estates, so they are accessible only by car.
- Hawaii has 99 depots for a population of 1.275 million. The sites are open for a total of 2967 hours per week, or an average of 30 hours each. 92 of these are fixed and 7 are mobile trucks. These serve supermarkets, some of which allow return depots to operate on their car parks.

Ireland's population is around 4.2 million, so it would need the following number of sites to have a similar density of sites as the above:

- To match Nova Scotia, Ireland would need 350-400 depots.
- To match South Australia, Ireland would need around 400 depots.
- To match Hawaii, Ireland would need 300-350 sites.

Of course Ireland may not need as many return sites, provided there is a good network of facilities close to all population centres and commercial centres. If return is to be handled only through depots, then they will have to be accessible to consumers who do not own cars.

If return is handled through depots, the scope of the deposit could include juices and milk, if the government so wished, because there would be fewer hygiene concerns. Depots are likely to have a larger storage area for containers, which may also make it easier to include glass in a deposit arrangement.

Potential sites for return depots in Ireland include:

- *civic amenity sites* (90) which accept a range of packaging and non-packaging items. Most of the civic amenity sites are operated by local authorities although an increasing number are operated by the private sector. Many could potentially also handle deposit refund as they are already accessible to the public, the public are used to the idea of taking recyclables there, and we assume that they are locked when closed to provide safe storage.
- *Bring sites* - There are currently around 2,200 bring sites, mainly in urban areas, where consumers can take glass and cans, and in some cases plastic. Not all the sites would be suitable however. We understand that some of the bring sites are manned for security reasons, but we do not know how many. Unmanned sites on the street would not be suitable as they would not provide secure storage for deposit containers. Further investigation is needed to ascertain the number of suitable sites.
- *Transfer stations* - 53 licensed sites²⁷ operated by waste companies. None of these is currently accessible to the public for health and safety reasons. We further understand that some of them are likely to be unsuitable to act as return depots because they are not in a suitable location (e.g. they are in remote rural locations, or in industrial urban locations, or close to a busy road with no parking).
- *New depots* – established as a commercial venture in retail premises. Such sites would also provide convenient return facilities for consumers but we do not know whether they could be financially viable in Ireland. They could also handle WEEE and batteries.

Any suitable civic amenity site, bring site or transfer station would have to be adapted for use as a return depot. Transfer stations would need to have a hut near the entrance or a hatch in the perimeter fence for example. The site operator would also incur handling costs, as either a staff member would have to be available to accept the deposit containers, or the site would have to install one or more RVMs. Cash refunds could be problematic so perhaps a system of refund vouchers (redeemable at any grocery store) could be devised. However we would expect that the site operator would receive handling payments paid by the deposit system operator for each container handled. Adapting the site would involve a cost for the site operator, which they would be unwilling to incur unless operating as a return depot looked financially viable.

The Regulations transposing the Directive on Waste Electrical and Electronic Equipment provide for WEEE from private households either to be returned to the retailer or taken to a civic amenity site or similar collection site. Electrical and electronic equipment producers, or third parties acting on their behalf, must finance the provision (or upgrading) of these facilities. It was originally envisaged that transfer stations would also act as collection centres, but none of the transfer stations offers such a return facility because of the cost of adapting the site.

More research is needed to establish whether there is a sufficient number of potential sites to serve as return depots for deposit containers, and whether these sites would provide adequate geographic coverage so that all consumers, including those without cars and regardless of where they live, have convenient access to return facilities.

If there are not enough suitable sites, then Ireland would probably have to rely on in-store take-back. In that case, the legislation would have to require all retailers that sell deposit drinks to accept returns and refund the deposit. Return depots could of course then provide useful additional return facilities.

²⁷ Source: Irish Waste Management Association

The alternative would be to use a combination of in-store return and depots, with no legal obligation on retailers to provide facilities. However, that option could leave gaps in the availability of return facilities so some consumers may not have convenient access.

3.7 COST OF ESTABLISHING A DEPOSIT SYSTEM IN IRELAND

The cost of establishing a deposit system in Ireland would depend on the scope of the deposit obligations, the system design, whether return was undertaken in-store or at return depots and the extent to which returns were handled by RVMs or manually.

It is hard to project the set-up costs for various deposit options in Ireland based on the costs of other systems because Ireland would be setting up a deposit entirely from scratch, rather than building on an existing system for refillables. Hawaii has also recently set up a new system, but cannot be used to compare costs because the system operator is the state (so the administrative structure exists already). Also, since unredeemed deposits are used to fund waste collection activities not towards operating the deposit, it is not comparable to Ireland.

The absence of market data for Ireland also makes it difficult to project costs because the likely number of containers is not known. Set-up costs would include the cost of establishing a system operator including a data system to manage the deposit flow, establishing counting centres (for containers returned manually), the costs for producers and retailers of adjusting to the deposit, the cost of adjusting other sites to serve as return depots (if this option is appropriate), and the cost of running communications campaigns both for industry and for consumers to explain the deposit.

Another unknown is the amount of income from unredeemed deposits. If Ireland had a Scandinavian-style managed system, the system operator would retain any unclaimed deposits, which could contribute towards operating the system. The level of such income would depend on the number of containers not returned and on the level of the deposit. It is tempting to assume a high income from this source, and even that unredeemed deposits would be sufficient to fund the overheads of the system operator. However that assumes a low return rate, in other words, that the system has failed in its key objective of achieving high return rates for drinks containers.

Below we review costs and the cost factors to be taken into account using data from Germany and Denmark respectively, and the fees charged by European deposit systems. We then consider what type of costs would be incurred by producers, retailers and consumers. However we recommend that the Irish government commission a more thorough cost benefit analysis of a deposit system. A deposit system will mean higher costs for Irish industry, part of which will inevitably be passed on to consumers as higher retail prices. Given the current economic climate in Ireland, the government will therefore need to satisfy itself that these additional costs are justified by the environmental benefit likely to be achieved.

3.7.1 Germany

The German deposit system was introduced into a market where refillables survived, so stores already had return facilities. However, new investment has been made in RVMs to cope with the greater variety and number of deposit-bearing containers now being handled, and there are other costs such as registration so that returns can be recorded, printing special labels bearing a security logo intended to minimise fraud and so on.

Before the deposit law came into force in 2003, there were widely differing estimates of what the system would cost. These were largely dependent on assumptions about how many RVMs would be needed. More recently Roland Berger²⁸ estimates that the initial investment by industry was EUR 726 million, of which EUR 702 million was paid by retailers (mainly for RVMs) and EUR 24 million by “industry” i.e. drinks producers and importers, packaging manufacturers (including label printers and can makers). DPG, the system operators, commented in May 2008 that the cost per container is three times as much as household-based collection.

Roland Berger estimates the annual costs for retailers at EUR 699 million and for industry at EUR 94 million. This is based on a market size of 14 billion deposit containers. In May 2008 the deposit system operator, DPG, stated that the cost per container was three times as much as household-based collection.

These figures cannot simply be scaled down to produce an estimate of likely costs in Ireland, since the number of RVMs is a function of the number of large stores in operation rather than being population-dependent, and because the cost of household-based collection is very different in Germany and in Ireland.

3.7.2 Denmark

The best guide to possible costs comes from Denmark, even though the starting-point is again not comparable. The 2002 Statutory Order that established the deposit system specified the level of payments that producers should make to the system operator (DR) and those that DR should make to the retailers. These payments were based on detailed research into actual costs.

The Statutory Order envisaged that DR would fund a programme to introduce reverse vending machines to stores of sufficient size to justify this. The investment subsidy was to be capped at DKK 120,000 to 500,000 per store (about EUR 16,000 to EUR 67,000), depending on store size.

This investment programme is now complete, and from September 2008 (when a new Statutory Order comes into force) stores will be eligible for a more modest subsidy of up to DKK 60,000 (about EUR 8,000) if redeeming deposits on at least 50,000 non-refillable containers per year, and up to DKK 40,000 (about EUR 5,400) if redeeming deposits on between 35,000 and 50,000 non-refillables. These subsidies are intended for the purchase of compactors and conveyor belts.

Stores will also receive a handling allowance for non-refillables (up to now, there has only been a handling allowance for refillables). The allowances have not been announced yet, but they will be based on time and motion studies which DR is carrying out in 84 “standard stores”.

All costs flow through DR rather than being internalised by individual market operators, so the estimated Danish handling costs (once announced) will represent the best available indicator of likely costs in Ireland. However they would give no guidance on likely infrastructure investment.

Table 5: the 15 different handling allowance rates to be calculated in Denmark

STORE GROUP	Aluminium and steel cans	Plastic bottles	Glass bottles
With RVMs & compactors, received investment subsidies in last 5 years			
With RVMs but no compactors, received investment subsidies in last 5 years			

²⁸ Roland Berger are the consultants advising DPG. The estimates were given in a presentation to PRO-Europe in February 2008.

With RVMs & compactors, no investment subsidies in last 5 years			
With RVMs but no compactors, no investment subsidies in last 5 years			
No RVMs			

The first two store categories are irrelevant to Ireland, but the other three should give a good indication of costs. The table below shows the calculation variables (some of which relate to refillables).

Table 6: Variables being used to calculate handling fees in Denmark

Across the stores	Unit
Number of loose packaging items on bottle table	Packaging items per m ²
Number of crates on rollway	Crates per m
Number of fixed non-assignable costs relating to bottle handlers' (BHs') time	%
Number of non-assignable costs relating to store assistants' (SS') time	%
BHs' hourly salary	DKK per hour incl holiday pay
SS' hourly salary	DKK per hour incl holiday pay
Price and wage index considerations	Increase in %
SS' service time: minimum per reverse vending machine per hour	Minimum per hour
At individual stores	
BH/SS distribution	%
Loose bottles/bottles in crates distribution	%
Walking time for bottle handlers and store staff – only in non-self service stores	Seconds per bottle

Costs will be calculated separately for refillables and non-refillables.

Handling times will be divided into a number of subsidiary operations, and handling costs will be split between fixed non-assignable costs and variable costs assignable to particular types of container.

The handling times for the fixed non-assignable costs will be split between the following operations:

- Lifting bottles onto belt (stores with RVMs only)
- Pushing bottles forward (stores with RVMs only)
- Moving crates/sacks/pallets
- Customer service/changing of receipt roll
- Planning (stores with RVMs only)
- Clearing up
- Searching for crates/sacks/pallets
- Waiting time

Time spent on handling operations that cannot reasonably be attributed to a specific returns group will be distributed among the individual returns groups on the basis of their share of the total operations time in the store and on the basis of their share of the packaging returned to stores in the last 12 months.

The following variable assignable costs will be obtained through time and motion studies:

- Moving crate or pallet container to belt or table
- Accepting packaging from customer and sorting in crate or sack
- Accepting crates from customer
- Writing out bottle receipt for customer
- Move pallet containers to emptying station
- Sorting in crates/sacks or pallet containers
- Moving crates from rollway onto pallet or floor
- Moving crates to stacking location
- Placing of crates onto clean pallets/mix pallets,
- Transport to rear storage room/yard/shed/cellar
- Subsequent sorting and transferring from mixed pallet to clean pallets
- Baling
- Transport of pallets, crates, sacks or pallet containers from rear storage room to pick-up place
- Put containers into the compactor
- Moving filled crates from the compactor
- Mark and lock filled crate with compacted containers and filled sacks or palletized containers

The final results will be a weighted average of the findings from

- Stores taking back 700,000 containers or more per annum
- Supermarkets and discount stores taking back less than 700,000 containers per annum
- Convenience stores, kiosks, filling stations etc.

Once the fees have been announced, an equivalent estimate can be obtained for Ireland by adjusting for any differences between Danish and Irish wage rates.

3.7.3 Cost for producers

3.7.3.1. Participating in the deposit system

A key cost for producers are the upfront joining fees and ongoing administration fees per unit for participating in a deposit system, which are generally higher than those charged by a recovery system handling all packaging. This is because the operation of a deposit system is complex but covers a relatively small number of packs.

The fees charged by deposit systems in Europe to each drinks producer vary in scale and structure, as shown in the table below. This shows for example that fees in Sweden are low. The Swedish system is now mature so the necessary investment has been made in infrastructure and Sweden benefits from the lean market structure described above and from revenue from unredeemed deposits.

Most systems charge either an annual registration fee or a one-off registration fee. Producers (except in Sweden) also have to pay to register each bar code, which covers the cost of registering new bar codes into all RVMs. It must be paid every time a producer changes a bar code, such as for a new product or a new pack type or size.

In addition producers pay a unit fee for each non-refillable container supplied. These vary according to the material and the size of container and cover the cost of the handling fee paid to retailers and the costs of transporting the collected containers, counting the consignments and purchasing sacks or crates for them, minus the scrap value of each material. This charge varies according to container size and material.

Producers in Denmark also pay a “logistics fee” of DKK 0.81 (about 1 eurocent) for each non-refillable container supplied to a retailer or wholesaler (but not to the bar or catering trade) to cover

the admin costs associated with introducing RVMs. DR acquires the machines and manages the programme; if it were left to individual retailers to purchase their own, this charge would not be necessary (but the purchase price paid by retailers for RVMs would almost certainly be higher).

The fee structure is slightly different in Germany in that fillers do not pay unit fees to DPG (because retailers do not receive handling fees from the system). However they pay the highest annual fees and bar code registration fees of any system, which are scaled according to the number of items placed on the market. Businesses fulfilling other roles also have to pay fees to DPG in Germany – including companies registered to handle deposit refund, label printers and can makers using the special security ink to print the DPG logo. As DPG's role is limited, fillers and other operators also have to pay commercial service providers for data services – to report on the containers sold and handled.

3.7.3.2. Other costs for producers

In addition to fees paid to the system, producers would have to make adjustments to their production, including marking containers with a unique bar code and special deposit logo. Irish producers would have to use different markings on each side of the border between RoI and N. Ireland, whereas currently the same packs and markings are used.

Packs are sometimes produced in different versions for different countries to meet EU rules that require foodstuffs to be marked in a language easily understood by local consumers. However non-deposit packs can be multi-lingual or a single language version is often suitable for several different national markets. It can be argued that the special marking requirements for deposit containers are a barrier to trade that breaches the free market guarantee provided by the Directive on Packaging and Packaging Waste. Thus Ireland would have to demonstrate to the EU Commission that any barrier to trade was justified by the environmental benefits.

For situations where it is not feasible to use special markings, most deposit systems sell special bar code and deposit stickers. But the labels then have to be stuck on each pack individually to hide the standard bar code, so this option is only suitable for a small number of containers. We believe that they would mainly be used by small importers or for small batches of drinks, such as for test marketing purposes.

Finally, producers may also be faced by new negotiations on price with their retail customers as retailers will want to claw back from suppliers some of the costs they faced.

3.7.4 Costs for retailers

3.7.4.1. Handling deposit refund

If Ireland opted for in-store return, retailers would face the costs of adjusting their stores and their data systems to operate deposit refund. Many would automate the process by purchasing one or more RVMs, which can cost anything up to EUR 30,000 to purchase. Added to this would be installation costs (which may include knocking a hole in the wall between the store and the stockroom), of associated data management systems, and service and maintenance costs. The Danish deposit system offered grants of up to DKK 500,000 (EUR 67,000) per retailer towards the cost of installing RVMs after non-refillables first came on the market after 2002.

In addition, retailers would bear the cost of staff time spent handling returned containers, even where RVMs are installed and a loss of sales and storage area.

In the Scandinavian systems, retailers do not pay for containers to be transported, which is organised and funded by the deposit system. However in most US states and in Germany individual retailers are responsible for this.

In a centrally managed system, retailers would also pay fees to register with the system in order to be able to claim back refunded deposits. The larger chains would also have to register as producers in respect of own-brand drinks.

3.7.4.2. Handling fees

In Norway, Sweden and in North America, retailers receive a handling fee per returned container to cover the cost of operating deposit refund. This arrangement means that retailers initially have to cover the capital cost of installing return facilities including RVMs, and they are compensated over time by the handling fees that they receive. In Norway and Sweden retailers that have RVMs receive slightly higher handling fees to compensate them for their cost. However as the money is received per unit refunded, the retailer is only refunded gradually.

Conversely, in Denmark the deposit system offered grants to retailers towards the cost of installing RVMs. The retailers who had received such grants then received handling fees at a lower rate than other retailers. Thus, the retailers gradually repay the system.

Handling fees paid to retailers are as follows:

- In the US the fee is only about 1¢ (0.7 eurocent) or 2¢ (1.4 eurocent) in most states, the rate set by the legislation when the deposit was introduced and not increased since. These fees must by now be far below the real handling cost, and we assume that retailers negotiate additional funding in the form of reduced prices from their suppliers and/or pass on costs to consumers in product prices.
- In Norway and Sweden, handling fees are set by the system operator, and retailers with an RVM receive more per unit than the small retailers who handle containers manually. Current handling fees are as follows – Swedish handling fees decreased in 2008 following discussions between retailers and producers.

Table 8: Handling fees paid by producers to retailers in Norway and Sweden

	NORWAY		SWEDEN	
	NOK	EUR	SEK	EUR
	<i>Manual handling</i>			
PET	0.10	0.012	0.20	0.021
Cans	0.05	0.006	0.00	0.000
	<i>Automated handling</i>			
PET < 1 litre	0.25	0.030	0.40	0.043
PET > 1 litre	0.25	0.030	0.50	0.054
Cans	0.20	0.025	0.15	0.016

Fees and costs for non-refillable beverage containers in European deposit systems, 2007

Country/ System name	Pack type	Admin fee	Unit fee		Pack tax		Deposit		Marking	Comments
			øre / €cent	øre / €cent	øre / €cent	øre / €cent	DKK / EUR	DKK / EUR		
Denmark/ Dansk Retursystem	Alu 0.33l	DKK 2,000 / EUR 268 per year. No fee payable if no new packs registered in any year.	20.8	2.79	10	1.34	1.00	0.13	Logo & special bar code – adhesive labels can be purchased from DR @ 6 øre each.	Mandatory for carbonates. Still waters and soft drinks from 8/2008. Same system also handles refillables. Unit fee is collection fee plus logistics fee, paid for containers supplied to retailers. The logistics fee (8.1 øre) is not paid for containers supplied to the catering trade.
	Alu 0.50l		21.9	2.93	16	2.14	1.00	0.13		
	Steel 0.33l		34.5	4.62	10	1.34	1.00	0.13		
	Steel 0.5 l		36.5	4.89	16	2.14	1.00	0.13		
	Plastic 0.33l		32.9	4.41	10	1.34	1.00	0.13		
	Plastic 0.50 l		33.6	4.50	16	2.14	1.50	0.20		
	Plastic 1.5 l		40.4	5.41	48	6.43	3.00	0.40		
	Plastic 2.00 l		46.2	6.19	64	8.58	3.00	0.40		
	Glass 0.33 l		45.4	6.08	10	1.34	1.00	0.13		
	Glass 0.5 l		54.8	7.34	10	1.34	3.00	0.40		
	All types/sizes									
Germany/DPG	All cans, PET and glass between 0.1 and 3 litre.	Annual fee from EUR 1,200 – 18,000. Plus one-off barcode registration fee from EUR 150 – 33,000,	Negotiated between individual market operators and with service providers.	-			EUR 0.25	Amount of the deposit plus DPG logo using security ink. Must use special bar code. Annual registration fee for label printers of EUR 18,000 and for can makers of EUR 25,000.	Annual and bar code fees depend on number of containers sold. Deposit account- holders, deposit claimants, RVM manufacturers and service providers also pay annual fees.	

<i>Country/ System name</i>	<i>Pack type</i>	<i>Admin fee</i>	<i>Unit fee</i>	<i>Pack tax</i>	<i>Deposit</i>	<i>Marking</i>	<i>Comments</i>
Norway/Resirk	Alu cans	Joining fee of NOK 30,000 (€3700) plus NOK 5,000 (€600) per bar code registered.	2 øre	95 øre basic tax plus 36 øre discounted material tax	NOK 1.00 (12c)	Mandatory use of Resirk logo. Usually special bar code (4 øre surcharge if standard bar code used) For PET: surcharge for coloured bottles and sleeved bottles.	Basic tax paid only on non-ref containers. Material tax discounted according to return rate achieved each year. (Resirk - 92% discount for cans in 2007, 82% for PET). Resirk unit fees are regularly adjusted. Taxes and associated deposit requirements apply to all ready drinks.
	Steel		22 øre	95 øre basic tax plus 36 øre material tax	NOK 1.00 (12c)		
	PET < 0.5 l		10 øre	95 øre basic tax, plus 50 øre material tax	NOK 1.00 (12c)		
	PET 0.5-1 l		0 øre	95 øre basic tax, plus 50 øre material tax	NOK 2.50 (30c)		
	PET > 1 l		0 øre	95 øre basic tax, plus 50 øre material tax	NOK 2.50 (30c)		

<i>Country/ System name</i>	<i>Pack type</i>	<i>Admin fee</i>	<i>Unit fee</i>	<i>Pack tax</i>	<i>Deposit</i>	<i>Marking</i>	<i>Comments</i>
Sweden/ Returpack	Alu cans	No joining fee and free registration of bar codes.	0.0	SEK 10,000 (€1,000) annual licence fee to authorities.	SEK 0.50 (5c) (paid by converters or importers)	Use of unique barcode mandatory, Returpack logo and amount of deposit.	Requirements apply to all ready drinks in alu cans. Scope may be extended to steel cans.
Sweden/ Returpack PET	PET ≤ 1 l		SEK 0.27 (3c) (paid by filler or importer) SEK 0.15 (1c) extra for coloured PET	SEK 10,000 (€1000) annual licence fee to authorities.	SEK 1.00 (10c)	Use of unique barcode mandatory, Returpack logo and amount of deposit.	Requirements apply to all ready drinks in PET bottles. Scope may be extended to all plastic bev bottles.
	PET > 1 l		SEK 0.77 (8c) (paid by filler or importer) SEK 0.15 (1c) extra for coloured PET		SEK 2.00 (20c)		

- In Denmark, the deposit system originally paid retailers only for refillable containers. From September 2008 it will start to pay fees for non-refillables²⁹. Retailers were also able to apply to the system for grants to upgrade their return facilities for refillables, and from September 2008 these will also be available for non-refillables as the market share of non-refillables increases. Retailers who received subsidies received lower handling fees than those who did not. Current handling allowances (but subject to change from September 2008) are as follows.

Table 9: handling fees paid in Denmark:

	DKK		eurocents	
	<i>Normal</i>	<i>Reduced</i>	<i>Normal</i>	<i>Reduced</i>
Glass	0.027	0.025	0.35	0.33
Plastic < 1 litre	0.052	0.040	0.68	0.52
Plastic ≥ 1 litre	0.073	0.062	0.97	0.83

- German retailers do not receive any handling fees from the system operator. They are also responsible for ensuring that returned containers get recycled. We assume that in practice retailers negotiate with their suppliers for a deduction from product prices to cover the costs that they incur.

3.7.5 Costs for consumers

Consumers bear the cost of the deposit until they return the containers, at which time they may purchase new containers and pay more deposits. Thus, they effectively provide an ongoing source of funding for the deposit system. If they do not return the containers, then the unredeemed deposit provides a permanent source of funding for the deposit system. The lower the return rate, the higher the revenue to the system.

The additional costs faced by producers and retailers associated with establishing and operating the deposit system will be passed on to consumers as higher product prices. The extent to which these costs are passed on will depend on market forces, which may mean that the additional costs may not necessarily be applied only to deposit-bearing drinks, but to other products as well.

3.8 IMPLICATIONS FOR SMALL BUSINESS

Another factor to be considered is the role of small market operators and the potential impact on them.

3.8.1 Small producers and importers

It would not be possible to exempt small producers and importers from the obligation to charge the deposit. This is because the deposit must apply consistently on all the specified drinks and containers to avoid confusion. Thus, even small operators would have to participate in the system and pay the relevant fees.

²⁹ The rates of the new handling fees were still under discussion when this report was published.

Small operators may not fully understand or have the resources to operate the deposit successfully, and this could result in gaps in coverage. Such importers would include specialist companies importing a range of food and drink products from, say, Italy or Poland for supply to delicatessens and specialist restaurants. It is always problematic to enforce this type of legal requirement on small operators.

The Danish authorities estimated that only 78% of imported drinks were complying with the deposit requirements in 2005 and that 55% of 2 litre bottles were sold without the deposit. In response customers and excise officers were given new powers to confiscate drinks sold without deposit.

Joining fees and bar code registration fees charged by deposit systems are usually charged at a flat rate, regardless of the number of containers. This is because the fees reflect the costs incurred by the system. These fees fall harder on small operators who sell a smaller number of deposit containers so the fees work out higher per container sold.

3.8.2 Small retailers

It would not be possible to offer an exemption for small producers, distributors or retailers from the obligation to charge a deposit. The deposit must be charged on all relevant containers regardless of the size of the market operator. It would be impossible to operate a partial deposit, not least because all deposit containers would have to be marked as such.

However, there would be a significant administrative burden involved in refunding the deposit and it might be possible to exempt retailers with a sales area below a specified size from the obligation to refund the deposit. Small stores may also have problems finding space to store returned containers. Above we discussed for example the exemption in Germany that allows small stores (< 200 m²) to refuse containers of brands that they do not stock. However it is not certain whether an exemption along these lines would be either necessary or desirable in Ireland.

Assuming that Ireland opts for a centralised managed clearing system, and assuming that deposit containers are clearly marked, there is no need for such an exemption.

Moreover, an exemption along these lines could put small retailers at a competitive disadvantage. If small stores were allowed to opt out, they run the risk that consumers who generally use their local shop might decide to make periodic trips to the nearest big store where they can return their empties. And having changed their shopping habits for this reason, consumers might abandon the local store.

In Germany stores of all sizes can refuse containers of materials that they do not stock. Because few German stores now sell cans (for reasons specific to the German market), they can refuse to accept them. The market situation in Ireland is very different so we think it unlikely that any store in Ireland would stop selling cans or PET if a deposit were introduced, so an exemption by material, even for small stores, would serve little purpose.

However there are certainly ways to reduce the burden on small retailers of refunding the deposit. For example, those affiliated to a wholesaler could perhaps participate in the clearing arrangement through the wholesaler rather than reporting and paying/claiming deposits received and refunded directly with the system.

In practice small stores may receive only a few returned containers. They may therefore not need to than register for the deposit at all, but, they could simply take any containers they receive to their nearest larger store. We understand that this informal arrangement is used by some small stores and cafes in Germany.

Our experience in Germany³⁰ suggests that in any case consumers mainly return containers to larger stores – we found that small stores usually had the necessary facilities in place and accepted containers, but staff seemed genuinely unused to handling deposit returns.

A further point is that the size threshold defining a small retailer in Germany proved difficult to implement in practice. It was not clear whether the sales area should apply only to the sale of food and drink, thus whether a large store (such as a department store) that had a café or sold a small selection of drinks should be classed as a small retailer or not. Small grocery and convenience stores often display fruit and vegetables on the pavement outside – should this be included in the sales area in question? If Ireland decides that easier return obligations for small retailers are appropriate, then the size threshold must be carefully defined.

3.8.3 De minimis exemption from producer responsibility obligations

Ireland currently exempts small companies from the obligations to meet the recycling targets in respect of all packaging waste under the producer responsibility regulations, although these small producers are subject to the obligations to take their backdoor packaging waste available for recycling. As amended last year, these *de minimis* exemptions benefit companies with an annual turnover of EUR 1 million and who place less than 10 tonnes of packaging (lowered from 25 tonnes) on the market each year.

As argued above, it would not be possible exempt small producers from the obligation to charge the deposit. This raises the question of how these new obligations would fit in with the existing *de minimis* exemptions for non-deposit packaging. Would companies exclude deposit-bearing containers from their packaging tonnage for the purposes of determining whether they exceed the thresholds?

Consider for example a small importer of various types of drinks who is currently just above the *de minimis* threshold. If around 80-90% of his products in future were classed as deposit-bearing, would it be fair that he has to both operate the deposit and still participate in Repak for any non-deposit sales packaging plus all his transport packaging?

The *de minimis* arrangement clearly benefits small operators and reduces the overall administrative burden on Irish industry. However it does also give rise to a competitive distortion around the threshold between companies that are exempt and those with a slightly higher tonnage or turnover which are just above the thresholds. There is a risk that the deposit obligations might magnify this distortion to unacceptable levels.

A mandatory deposit could therefore call into question the *de minimis* exemption from the producer responsibility obligations for small businesses.

3.9 IMPACT ON REPAK AND ON EXISTING RECYCLING ARRANGEMENTS

If a deposit were introduced in Ireland on selected drinks and packs, then these containers would no longer participate in Repak. The producers would no longer pay fees to Repak for such containers. In theory, such containers would no longer be collected through the existing kerbside and bring

³⁰ In-store research undertaken by Perchards for DG Enterprise in January 2006 and again (after the rules were amended in May 2006) in October/November 2006. Findings of second investigation published as: “Study on factual implementation of a nationwide take-back system in Germany after 1 May 2006”.

collection arrangements that Repak subsidises through its RPS payments made to local authority and private waste collectors.

Producers would of course continue to participate in Repak in respect of any sales packaging not subject to the mandatory deposit. They would also participate in respect of all transport packaging, including the transport packaging associated with deposit containers.

The potential implications of a deposit for Repak include the following:

3.9.1 Income

Repak would lose the income from deposit containers. It is hard to estimate the impact on Repak's fee income of a deposit because the scope of the deposit is not known. However it is also difficult to make estimates for different scenarios because producers currently report to Repak by material but this is not broken down by product type, and many small retailers pay according to turnover. Thus, the exact tonnage of drinks containers cannot be discerned from the data for plastic, glass and metal packaging. Furthermore, the shared fee structure (as discussed below), and the option whereby retailers can pay fees based on turnover not on tonnage, add to the difficulty of calculating the impact on Repak's income. Impact would also depend on how the *de minimis* thresholds were revised following imposition of a deposit requirement as discussed above.

If a deposit were imposed on cans, glass and plastic bottles, Repak's best estimate is that its fee income would decrease by 16%.³¹

3.9.2 Operations and costs

Consumers do not return all their deposit containers all the time, so no deposit system achieves a 100% return rate. Some deposit containers would therefore still end up in collections subsidised by Repak, particularly since all kerbside schemes in Ireland now accept PET and cans. This certainly happened in Germany after the deposit took effect there, and the Danish environment ministry has also complained about consumers putting their deposit containers in recycling collections.

Repak currently pays collectors for each tonne of material collected, at a higher rate for kerbside collection than for bring. Waste contractors would, justifiably, continue to claim their RPS subsidy on this material. The absence of most deposit containers would reduce the tonnage of material they collect in each round. Thus, the economic viability of kerbside/bring collections would decrease, particularly since PET, metals and glass are among the easiest pack types to recycle and have the higher secondary market values.

Alternatively, the contractor would have to separate deposit containers from other packaging and claim a collection fee from the deposit system. We are not aware of any precedent for this where a deposit operates alongside a general packaging recovery system. It would be complicated and it might lead to some double counting.

Moreover, Repak would face reduced economies of scale. Even though it handled a lower tonnage of packaging, its tasks would remain the same so it is unlikely that it would be able to reduce its staff, and the cost of the core management team and offices would be spread across a reduced tonnage of material and of fee income.

³¹ The German Green Dot organisation calculated that its income decreased by around 20% following the imposition of the deposit. This is comparable with Repak's estimate – although it should be borne in mind that there are significant differences between the scope and fee structure of the two organisations.

3.9.3 Impact on shared fee structure

At the moment the company that places packaging on the market in Ireland pays a material-specific fee but the other stages of the packaging chain also contribute some funding. The fees paid by other stages of the chain are based on the weight of packaging but are not material-specific. Small retailers contribute based on turnover, according to a fee scale based on typical quantities of packaging in each retail sector. Brandholders would know which packs were now deposit-bearing so they would be able to adjust their data, but companies at other stages in the chain would find it hard to recalculate what tonnage should no longer be reported to Repak.

If some drinks containers were no longer handled through Repak, this fee structure would be hard to maintain. The fee structure has always been part of the Irish packaging waste arrangements. It was devised by the industry stakeholders that originally developed Ireland's producer responsibility arrangements for packaging waste – it was not imposed by Repak. We understand that Irish industry continues to support the concept of the shared fee structure.

3.9.4 Potential impact on fees

The imposition of a deposit looks likely to confront Repak with a combination of lower income, still having to pay collection subsidies on some deposit containers, and reduced economies of scale. This may result in Repak having to increase its fees to its members. The deposit is therefore likely to have a knock-on effect on all Repak's members, including those who do not sell drinks in deposit containers.

3.9.5 Meeting Ireland's targets

Repak has given the Irish authorities an undertaking to meet the recycling targets not only in respect of the packaging waste of its members but of Ireland as a whole. Repak currently estimates that its members account for only around 60% of Ireland's total packaging waste. Repak originally agreed to this arrangement on the understanding that it remains the only approved compliance scheme. If the deposit does have the effect of forcing Repak to increase its fees, its members may no longer be willing to bear the cost of recycling the packaging of free-riders.

If a deposit were imposed, it would in effect become a second compliance arrangement that would operate in parallel, if not in competition with Repak. A deposit arrangement would in any event trigger a significant shift in Ireland's arrangements for handling packaging waste. Repak's agreement could not continue in exactly its current form, although how far it needs to be amended would clearly be a matter for negotiation between Repak and the government.

3.10 POTENTIAL ENVIRONMENT IMPACTS AND BENEFITS OF A MANDATORY DEPOSIT IN IRELAND

The potential environmental benefits that may be achieved through a deposit need to be balanced against potential adverse environmental impacts. Moreover Ireland will need to justify the introduction of a deposit to the EU because it will be proportionately more onerous for importers to operate than domestic producers (special marking requirements etc). After all, Ireland already has a functioning producer responsibility system (Repak) that has a successful track record in achieving national recycling targets for packaging waste.

3.10.1 The potential impact of a deposit on litter in Ireland

As litter reduction has been indicated to be a key objective of a deposit return system, then the potential impact on litter of a deposit needs to be considered. Annual litter surveys are undertaken in Ireland, and the Litter Monitoring Body reported the results of the Litter Quantification Survey for 2006 (with responses from 72 out of 90 local authorities) in June 2007. The survey shows that the main categories of litter pollution were as follows (by number of items):

Table 10: Categories of litter in Ireland, 2006

	2004	2005	2006		2004	2005	2006
Cigarette related litter	48.06%	49.39%	55.65%	Miscellaneous litter	0.92%	0.90%	0.49%
Food related litter	30.81%	33.18%	26.42%	Dog fouling etc	0.72%	0.81%	1.05%
Packaging litter	14.56%	11.91%	12.79%	Non-packaging plastic litter	0.47%	0.33%	0.33%
Non-packaging paper litter	4.00%	3.32%	2.97%	Bulky litter	0.47%	0.16%	0.30%

The three largest categories of litter (by number of items) are cigarette related litter, food related litter and packaging, which represents 13% of litter.

Cigarette related litter mainly comprises cigarette ends (49% of total litter) but it includes cigarette packets and wrappers, matches, matchboxes and lighters. Food related litter mainly comprises chewing gum (25% of total litter), with other food items representing only a small proportion of litter.

If the objective of a deposit is to reduce litter, then there is an argument for imposing a deposit on the items most commonly found in litter. But there would be little purpose served by charging a deposit either on cigarette ends or on chewing gum because neither is suitable for recycling, and their small size would make such a system unmanageable. A different solution to litter from these items is needed.

Table 11: Categories of packaging in litter in Ireland, 2006:

Packaging litter composition	% of total litter
Plastic bottles	2.06%
Takeaway bags and wrappers	1.52%
Beverage cans (non-alcoholic)	1.16%
Takeaway drink cups	1.04%
Beverage cans (alcoholic)	0.80%
Drinks cartons	0.82%
Glass beverage bottles (non-alcoholic)	0.69%
Glass beverage bottles (alcoholic)	0.65%
Other plastic packaging	0.61%
Paper bags	0.61%
Other paper packaging	0.59%
Shopping bags	0.52%
Tin foil (not sweet wrappers)	0.35%
Plastic film	0.33%
Cardboard	0.18%
Boxes	0.17%
Food cans	0.13%
Aeroboard	0.13%
Lids (e.g. from bottles, jars)	0.12%
Bubble-wrap	0.10%
Jars and other glass containers	0.09%
Other metal packaging	0.07%
Bags - other (e.g. fertiliser)	0.03%
Plastic sheeting (e.g. silage)	0.02%
Metal drums	0.01%

Table 11 shows that that drinks containers and takeaway food containers are the most prevalent items within the packaging category.

We find it hard to imagine how a deposit could be charged on takeaway food containers and drink cups. Many such items are filled at point of sale by small independent operators such as fish and chip shops, cafes and mobile snack bars. These packs are often not branded and deposit requirements would be impossible to enforce on these small operators. In any event, such containers are often hard to recycle because they are contaminated with food residues and/or because they are made from a variety of different materials. We are not aware of any precedent for this anywhere in the world. We therefore exclude them from consideration.

Added together, all the categories of beverage containers shown above (excluding cartons) represent only 5.36% of litter. This low percentage is of course deceptive in that each beverage container is obviously larger and more visible than a cigarette end or piece of chewing gum. Nonetheless, as even the long-established Scandinavian deposit systems have struggled to achieve return rates above 80% for non-refillable drinks containers, a deposit system in Ireland may initially capture less than 50% of the containers affected. Even once it is fully established and consumers have got into the habit of getting their deposit refunded, it is unlikely to capture more than 60% - 80% of the containers affected.

This leads us to conclude that, *even though a deposit may reduce the incidence of drinks containers in litter, it would have little impact on total litter in Ireland.* Thus, even if a deposit is introduced, other measures would still be needed to manage the litter problem.

One argument for a deposit is that by reducing litter, local authorities would save money because they would not have to clean up litter so often. The above figures suggest that a deposit would not yield significant cost savings because the reduction in litter would be too small to enable litter to be picked up less frequently. Through Repak, Irish industry is already helping to combat litter.

3.10.1.1 International evidence of the impact of a deposit on litter

Studies on litter undertaken around the world have also shown that, although a deposit can certainly reduce the incidence of drinks containers in litter, a deposit has little impact on total litter.

a) Europe – Austria

An Austrian study on litter in five major European cities found that packaging represented on average just 6% of litter. The study, commissioned by Austrian Green Dot organisation ARA and the waste department of the city of Vienna, looked at litter in Barcelona, Brussels, Frankfurt/Main, Prague and Vienna in summer 2003.

Cigarette butts represented the largest number of littered items, followed by plastics, organics and paper and board, glass, with metals representing the smallest proportion of litter, as shown in the chart below.

Overall, Vienna had the lowest number of littered items, and also the lowest number of packaging items of all the cities.

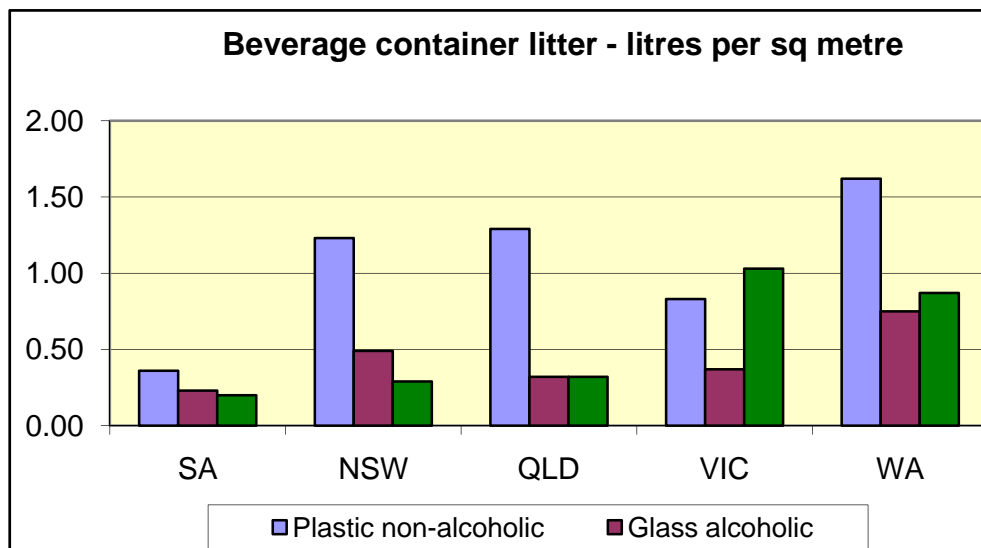
b) *Australia*

Keep Australia Beautiful publishes a National Litter Index which enables litter rates in South Australia, the only state with a deposit system, to be compared with those in other states.

The latest (2006-7) report shows that there is indeed less litter from drinks containers in South Australia than in other states. However, drinks containers represent a low proportion of all litter, and South Australia has a higher incidence of *total* litter than some other Australian states.

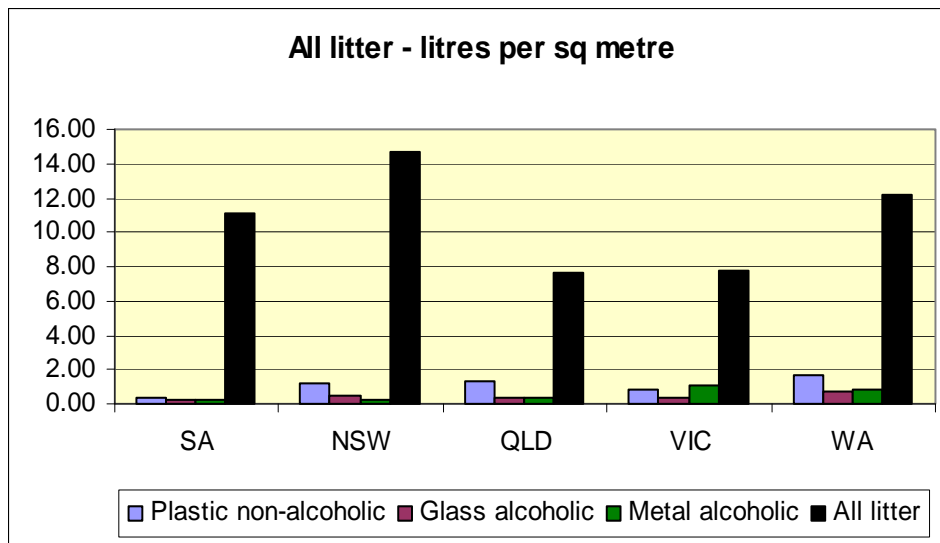
The report says that if deposits eliminated *all* beverage container litter, the deposit law would reduce the incidence of littering by up to 5% and its visual impact by up to 15%. In fact, the National Litter Index suggests that South Australia's deposit law reduces litter from plastic soft drink bottles by 30%, from beer cans by 33% and from glass bottles for alcoholic drinks by 50%.

Figure 6: *Beverage container litter (litres per m²) in Australia*



Thus when *all* litter is considered, South Australia performs worse than Queensland and Victoria, no better than Western Australia and is significantly better only than New South Wales. The following chart also shows how insignificant beverage container litter is as a proportion of total littering.

Figure 6: All litter (litres per m²)



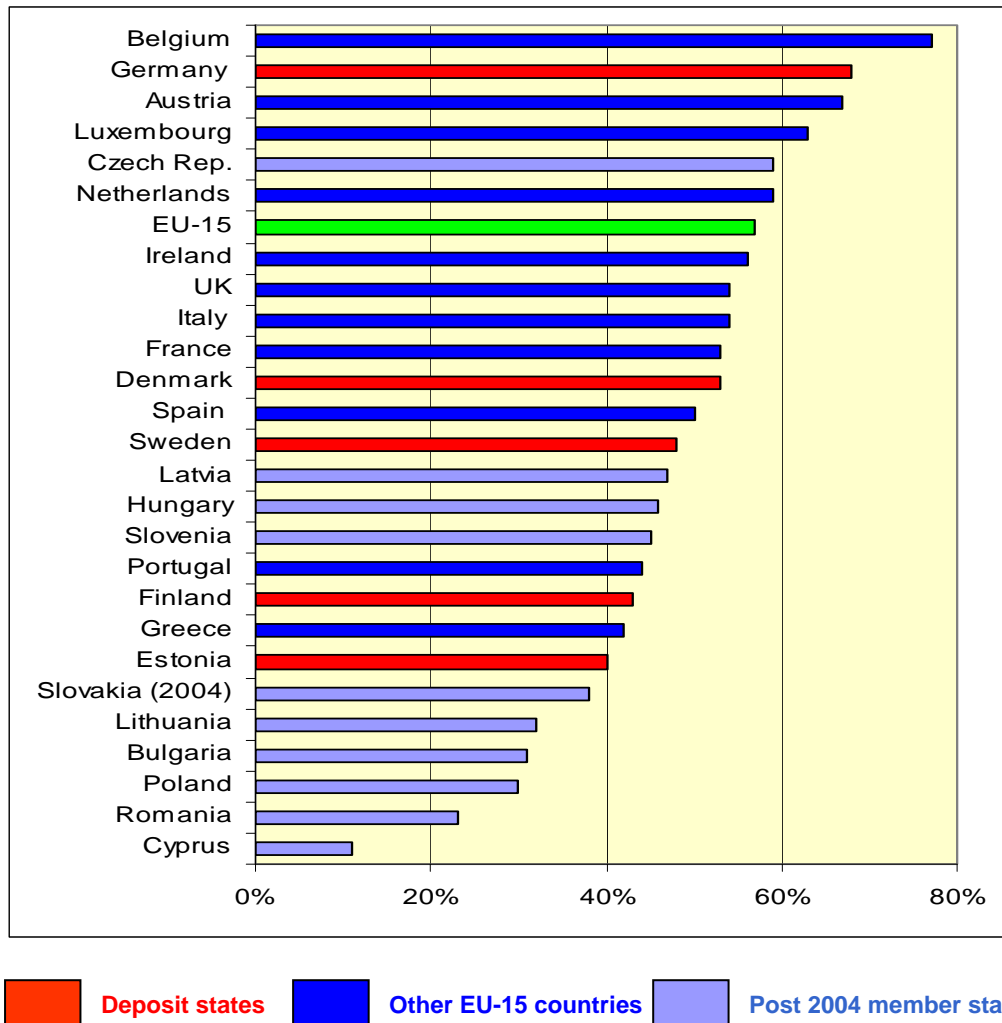
3.10.2 Impact of a deposit on recycling rates for packaging waste

It is certainly true that deposit systems for non-refillable beverage containers can achieve higher recycling rates for the beverage containers affected than when these containers are handled through general recycling systems. However European experience shows that *deposit systems do not achieve a higher recycling rate for all packaging of a given material, because beverage containers represent too small a proportion of the total tonnage of that packaging material.*

Drinks containers typically represent only about 10% of all packaging and the recycling rate for beverage containers in general recycling systems is likely to be higher than the recycling rate for all packaging of the same materials.

Thus the potential effect on Irish recycling rates would be no more than 10% of whatever improvement in the return rate is achieved by a deposit system. If deposit containers in Ireland were to achieve a return rate of 70%, that would not raise Ireland's average recycling rate by 14% (from the 56% reported for 2005) but by no more than 1.4%.

Figure 8: European recycling rates for all packaging, 2005



Source: European Commission

The above graph shows that Belgium, which has no deposit, achieved the highest recycling rate in Europe. Although Germany (which has a deposit) was second, Ireland achieved higher recycling rates than deposit states Denmark, Sweden and Finland.

3.9.3 Environmental impact of a mandatory deposit

Operating a deposit system would have its own environmental impact which needs to be taken into account in estimating its environmental benefits. Irish policy-makers and stakeholders will need to minimise environmental impacts when they design a deposit system for Ireland. These impacts are:

Deposit containers would be transported separately for recycling from other packaging. That would mean additional trucks, with increased energy and carbon impacts. One set of trucks would collect containers from retailers and another would transport packaging waste collected from the existing bring and kerbside system. Deposit containers would have to be kept separate from other packaging. It may sometimes be possible to collect both together, as deposit packs would have to be in sealed containers, but collection contracts would be awarded separately for each stream, so this arrangement would often not be possible.

Ireland would not be able to benefit from backloading arrangements that used to operate in Scandinavia. When the Norwegian and Swedish deposit systems for non-refillables were first established, non-refillable containers were taken back to the drinks producer in the same truck with refillable bottles. In any event, that arrangement, which relied on the fillers counting returned containers, has now been abandoned. In both countries, the system operator has now established its own sites where all containers are counted and baled and each has appointed its own contractors to collect containers from retailers.

Deposit containers need to be kept whole until they have been counted (because the bar code must be legible). This means that they may need to be transported uncrushed (unless the depot or retailer has a sophisticated RVM that counts and crushes containers), so fewer can be transported on each truck, which is environmentally and economically inefficient.

If Ireland opts for return at depots not at retailers, the depots would need to be accessible to consumers without a car – otherwise the environmental impact of driving to them could outweigh any environmental benefits. Ensuring that depots are accessible to consumers without cars is also important for social reasons. Otherwise, the “carless,” including the elderly and lower income groups, would find it difficult to get their deposit refunded.

These aspects need to be borne in mind when designing a deposit arrangement for Ireland. Otherwise, it is possible that the environmental disbenefit of increased lorry and car traffic would outweigh any environmental benefit from deposits in terms of reduced litter and increasing recycling of drinks containers.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1. SUITABILITY OF DEPOSIT SYSTEM FOR IRELAND

Our analysis suggests that *a deposit would not be the optimum solution for Ireland* to achieve the environmental objectives cited. This is because:

4.1.1. Findings of review of international mandatory deposit systems

The assessment of international mandatory deposit systems identified conditions associated with the successful establishment and operation of a deposit. These do not apply in Ireland, as follows:

- ***Most mandatory deposits were introduced when refillables were still common in the retail trade.*** Refillables disappeared in Ireland long ago so consumers have lost the habit of returning empties to the store, and retailers have no facilities to accept them.
- ***Most mandatory deposits were introduced before the kerbside collection of recyclables became commonplace and before the introduction of producer responsibility.*** Kerbside collection is already established in Ireland, so many consumers have become used to the convenience of a kerbside bin. They may consider it a retrograde step if they now have to take their containers back to a grocery store or depot. Ireland already has a functioning producer responsibility system for all packaging waste which has a successful track record in achieving Ireland's recycling targets for packaging waste.
- ***Deposit systems work best where there are a small number of market operators, because this reduces operating costs and complexity.*** A comparison can be made between the successful Scandinavian deposit systems, where there are relatively few drinks producers and where grocery retailing is concentrated among a few large chains, and the problematic arrangements in Germany, where a large number of operators are involved in drinks production and distribution. Grocery retailing in Ireland is characterised by a high number of small independent operators.
- ***Deposit systems need the support of industry to be successful, because individual businesses need to make significant investment*** in infrastructure (return facilities etc) and adjusting production. While Scandinavian businesses saw the mandatory deposit on non-refillables as an extension of their existing refill arrangements, German business opposed the deposit and made imaginative use of a loophole in the law to reduce their costs. Irish business will also have to make significant investments to implement the deposit.
- ***Cross-border shopping can have a significant effect on deposit arrangements.*** Differences in retail prices and excise duties between neighbouring countries (as in Northern Ireland and the Republic of Ireland) make drinks a popular cross-border purchase, so deposit containers are not always disposed of where they were purchased. Where retail prices are lower, the deposit system benefits from unredeemed deposits from exported drinks (Sweden benefits from personal exports by Norwegian consumers). Conversely, the Danish system suffers from having to refund the deposit on containers purchased across the German border but returned in Denmark. Cross-border purchase will make it essential for containers sold in Ireland to be marked differently from those sold in N. Ireland.

4.1.2. Designing a mandatory deposit system for Ireland

Our discussion of how a deposit system might operate in Ireland makes clear that establishing *a deposit system in Ireland would be complex and would require very careful planning*.

The elements that will need to be decided include what drinks and containers should be deposit-bearing, how the system would be managed and by whom, and ensuring that there are sufficient return arrangements.

4.1.3. Cost

The complexity and sophistication of a deposit system means that it is invariably more expensive than a general recovery system for all packaging. This is likely to be case as Ireland would be establishing its system from scratch. More research into the costs and benefits of a deposit is needed. However it looks certain that *Irish producers and retailers would face higher costs, which would be passed on to consumers*.

4.1.4. Marginal environmental benefits and adverse environmental effects

- *A deposit system in Ireland would have only marginal environmental benefits*. It is unlikely to make a significant impact on total litter because the containers likely to be deposit bearing are less than 6% of all litter. It would not result in a significant increase in overall recycling rates for packaging waste, because drinks containers represent a small proportion of total packaging waste.
- *A deposit system would have adverse environmental effects* that could outweigh any environmental benefit. Deposit containers would be transported separately from other packaging, involving additional trucks with increased energy and carbon impacts. Deposit containers must be transported uncrushed, which is environmentally and economically inefficient. The system design must ensure that these impacts are minimised, such as by ensuring that consumers do not have to drive far to return their containers.

4.2. Next steps

If Irish policy-makers wanted to pursue the option of a mandatory deposit for Ireland, then we would recommend the following preparatory steps:

- Robust market research - to establish the size of the market for drinks likely to be deposit-bearing and the number of operators likely to be affected. Such research is essential to assess the market implications and cost of the various deposit options, such as the potential drinks categories and container types to be deposit-bearing.
- Consumer research - to determine consumer preference for returning deposit containers either in-store or to return depots. Research commissioned by Repak indicates that consumers strongly prefer kerbside collection to in-store return, so the new research should explore what level of deposit would provide sufficient incentive for consumer to take containers elsewhere for deposit refund.
- An environmental impact assessment, including a carbon impact assessment, of each of the various deposit options compared with existing collection arrangements.

- Discussions with the relevant sectors of Irish industry on the deposit arrangements. For example, a decision will need to be taken about whether deposit refund will be operated by grocery stores or at return depots, if there will be a centralised clearing arrangement and, if, who will operate it. Draft regulations should be devised around the arrangements proposed. Experience from Germany illustrates what can go wrong when legal obligations are not fleshed out sufficiently.
- Draft regulations should then be put out to wide consultation in Ireland. Individual stakeholders may be able to highlight potential loopholes or other problems, such as unclear definitions.
- Before the draft regulations are notified to the EU Commission, it would be advisable to sound out EU officials informally about the proposals and potential conflicts with EU requirements. The Irish authorities would no doubt wish to avoid any legal challenge, both because it would delay implementation of the deposit and because such actions are time-consuming and costly.

4.3. Alternative approaches

Given our conclusion that deposits would not be the optimum solution for Ireland, we also recommend that other approaches should be considered instead of a deposit.

There are several recent examples around Europe where national authorities have given serious consideration to imposing a mandatory deposit, but then decided against it in favour of alternative approaches.

4.3.1. Austria

Above we reviewed the results of a litter survey undertaken in Austria. At the time that study was undertaken, policy options for drinks containers were under consideration, including a mandatory deposit for non-refillables. Policy-makers were seeking new policies to replace combined refill/recycling targets for individual drinks categories (which gave companies the choice between using refillables and achieving high recycling targets). At that time refillables were still common in the retail trade, although the market share of refillables was in decline.

In the event, Austria did not adopt a mandatory deposit. New measures were set out in a voluntary agreement in 2004. In that agreement, Austrian industry undertook to meet a 50% recycling target for PET drinks bottles and to develop bottle-to-bottle recycling of PET. It also undertook to maintain refillables and to meet a combined reuse/recycling target for beverage containers of 80%. These targets have all been met and this voluntary approach has been maintained.

A new agreement with revised objectives has recently been signed. The commitment to maintain refillables has been abandoned and instead a new commitment to reduce greenhouse gas emissions from drinks containers has been agreed.

4.3.2. Netherlands

The Netherlands also considered a mandatory deposit on non-refillable drinks containers to tackle litter. The parliament has even adopted deposit requirements, but these have not been activated.³²

³² The legislation specifically said that the deposit requirements would remain inactive unless a further royal decree is adopted. The requirements on deposits formed part of wider legislation that brought about a radical change in Dutch arrangements for meeting the recycling targets for packaging.

Concern about litter has been particularly focussed on small PET bottles as most larger PET bottles are refillable.

During the discussion on the issue in 2006, the then recycling minister Pieter van Geel wrote a letter to the Dutch parliament in which he argued that the litter problem could not be solved by the “one-dimensional” approach of imposing a mandatory deposit on drinks bottles and cans. In the letter, dated 31 March 2006, van Geel said that a broader approach was needed.

Litter consists of many different components, he said, which makes the problem more complex: no single measure can address all the various types of litter. It is not sufficient just to clear away litter – a change in the attitude and behaviour of consumers is also needed.

At that time negotiations were ongoing between Dutch business and local authorities on a new voluntary agreement on litter. The local authorities and industry both agreed that a broader approach to litter was needed.

The discussion on litter formed a small, but significant, part of a broader debate on producer responsibility for packaging. Most attention was focussed on the new arrangements for meeting the recycling targets for packaging, which represented a radical change in the Dutch system. The discussion on litter was affected by this wider debate.

In June 2006 a new litter agreement was reached between industry and local authorities, which industry accepted on condition that the mandatory deposit was not activated. Key details of the agreement are:

- Industry agreed to increase its financial support for litter abatement to EUR 11 million per year for 3 years.³³ Industry also undertook to improve the design of products and packaging likely to be littered.
- Industry would ensure that 55% of small PET bottles are collected.
- Local authorities would be more proactive in cleaning up and controlling litter, for example by fining litterers. They already had the power to impose on-the-spot fines of EUR 50, and the law was changed to allow them to keep the money.

4.3.3. Switzerland

Switzerland has statutory recycling targets for beverage containers, but not on all packaging. (Switzerland is not an EU member state and does not have to implement the Packaging Directive.) Under the Swiss Beverage Containers Ordinance of 2000 (which replaced an earlier ordinance of 1990), 75% of PET containers, of cans and of glass bottles used for drinks must be recycled. If any of these materials fails to meet this target, the legislation authorises the government to impose a mandatory deposit and/or an advance disposal fee.

To meet the target for glass, the legislation requires producers and importers to pay an advance disposal fee (ADF), the revenue from which is used to support the collection and recycling of glass. For the other materials, the producers affected established recovery organisations, one for PET (PRS), one for aluminium drinks cans (IGORA) and one for tinplate (Ferro-Recycling). Aluminium cans and glass both met their 75% recycling targets fairly quickly, but PET did not.

³³ That is equivalent to about 67 eurocent per person per year.

In 2003, for example, only 71% of PET was recycled. Members of the recovery organisation PRS, which then represented around 85% of the market, achieved 76%, but other producers, with individual compliance arrangements, achieved only 47%. Each year when the environment authorities announced the result, they indicated that they would consider imposing a mandatory deposit for PET.

However, in 2005 the environment authority (BUWAL) announced that it would not be recommending that a deposit be imposed on PET, although PET had again narrowly failed to meet the target, achieving 74%. In making its decision, BUWAL took account of a study it had undertaken together with PRS and IGORA. Starting from their analysis that the problem lay with small PET bottles (0.5 litre), the study assumed that the deposit would apply only to small bottles, and that existing arrangements would continue for other sizes.

The study concluded that a deposit would solve the free-rider problem for PET and that, with a deposit of CHF 0.50 (about 30 eurocent) on small bottles, a recycling rate of between 75% and 84% be reached.

However, the study also concluded that:

- a deposit on small bottles but not on the large ones would be complicated for businesses and consumers;
- there would be additional costs per deposit bottle of CHF 0.8-0.16 (EUR 0.50 - 1.00) per bottle to fund the return system (refund and logistics). Most of this would be met through unredeemed deposits, but a fee of up to CHF 0.05 (0.3 eurocent) per bottle could be necessary, depending on the return rate achieved;
- a deposit would not solve the litter problem because small PET bottles represent a small proportion of total litter. There could be a knock-on effect on other pack types such as beverage cartons and aluminium cans, which could mean that the target for aluminium might no longer be met.

BUWAL commented that the recycling rate for PET had increased by 3% over the previous year, which was due to increased efforts by PRS and the local authorities. New collection points were established on sites such as petrol stations, kiosks and railway stations, 4,400 in all.

In 2005 the target was indeed just met, with PET achieving a recycling rate of 75%. Despite this, in 2006 the environment authority (now known by the acronym BAFU) announced that it was proposing to introduce an advance disposal fee for PET. BAFU was concerned that the voluntary funding arrangement for PET recycling was under threat from continued free-riding – PRS still only represented 85% of PET on the Swiss market. BAFU proposed a fee of around 4 - 5 centimes (ca. 2.5 - 3 eurocent) per container. The ADF would in effect prohibit individual compliance arrangements.

The threat of an ADF seems to have persuaded some large free-riders to sign up with PRS, and its market share is now 95%. This seems to have solved the problems for PET.

Switzerland is now achieving the following recycling rates:

- PET - 76%
- Aluminium - 90%
- Steel - 80%
- Glass - 95%.

ANNEX 1

MANDATORY DEPOSITS ON BEVERAGE CONTAINERS IN US STATES

Status: December 2005

<i>State</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Handling fees – who pays what?</i>	<i>Return arrangements</i>	<i>Marking</i>	<i>Unredeemed deposits</i>
CT	1978 adopted, took effect 1980	Bottles, cans, jars or cartons of glass, metal, plastic	Beers, waters, carbonated soft drinks	Min 5 ¢ (3.5 eurocent)	Distributor to pay min 1.5 ¢ (1 eurocent) to dealers or redemption centres	Via dealer or redemption centre to distributor	Either: Deposit value, or “Return for deposit” or “Return for refund” plus “Connecticut” or “CT”	May be kept by distributors or dealers.
CA	1986 adopted, in force 1987	Glass, alu, bimetal, plastics (7 common resin types)	Carbonates and non-carbonates: beer, waters, soft drinks, fruit drinks, coffee and tea drinks.	Since 2004: 4 ¢ (2.8 eurocent) up to 24 oz, 8 ¢ (5.6 eurocent) for 24 oz or larger	Distributors pay CRV to DoC, but keep 1% of CRV for admin. Redemption centres keep 0.75% of CRV. Manufacturers pay processing fee to DoC (govt body). DoC pays fee to processors who pay redemption centres.	Mainly via redemption centres, with some via kerbside or dropoff collection.	Either: CA redemption value, California redemption value, CA cash refund, CA CRV	Passed to State to fund recycling/litter abatement.
DE	1979 adopted, took effect 1982	Containers of < 32 oz, but not alu cans.	Carbonates only: soft drinks, beers, waters.	Min 5 ¢ (3.5 eurocent)	Distributor pays min 20% of deposit to dealers.	Via dealers (no redemption centres in operation)	Deposit value plus “Delaware”. Min 1/4” type size.	May be kept by distributors or dealers.

<i>State</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Handling fees – who pays what?</i>	<i>Return arrangements</i>	<i>Marking</i>	<i>Unredeemed deposits</i>
HI		Containers of glass, PET, HDPE or metal up to 64 oz.	All carbonated and non-carbonated ready-to-drink non-alcoholic drinks (soft drinks, water, juice, tea, coffee) except dairy products. Beers, malted beverages, alcopops.	5 ¢ (3.5 eurocent)	Distributor pays fee of 1 ¢ (0.7 eurocent) per container to Dept of Health. In practice reclaimed from dealers who may reclaim it from consumers. Dealers and redemption centres receive 2 ¢ (1.4 eurocent) from DoH per container.	Via dealers or redemption centres, who must get the containers recycled.	5¢ and “Hawaii” or “HI”	
IA	In effect 1979		Liquor, beer, waters, carbonated soft drink	Min 5 ¢ (3.5 eurocent)	Distributor pays 1¢ (0.7 eurocent) to dealer or redemption centre.	Via dealers or redemption centres	“Iowa refund 5¢” or “IA 5¢”	May be kept by distributors or dealers.
ME	1978 adopted	Refillable and non-refillable bottles, cans, jars of glass, metal, plastic of < 4 litres.	Beers, carbonated and non-carbonated waters and soft drinks, wines, wine coolers, spirits (not milk, rice or soy milks)	Min 5 ¢ (3.5 eurocent) : 5 ¢ in practice, except for wine & spirit bottles (15 ¢ / 11 eurocent) practice.	Distributor to pay to dealer or redemption centre 3.5 ¢ (2.5 eurocent) min per container. Fee reduced by ½ ¢ (0.35 eurocent) if containers commingled and exemption for specified small producers. Registration fee?	Via dealers or redemption centres. Containers of same product or material groups may be commingled.	Refund value and “Maine” or “ME”. Labels must be registered with authorities.	Must be kept in separate account and surplus deposit money passed to the State.

<i>State</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Handling fees – who pays what?</i>	<i>Return arrangements</i>	<i>Marking</i>	<i>Unredeemed deposits</i>
MA	In effect 1983	Refillable and o-w bottles, cans, jars or cartons made primarily of glass, metal, plastic or combinations. But not biodegradable containers or containers over 2 gallons	Soda water, carbonated soft drinks, mineral water, but NOT: natural fruit juice, wine or other alcoholic drinks.	Min 5 ¢ (3.5 eurocent) up to 32 oz, and 10 ¢ (7 eurocent) for larger sizes	Min 2.5 ¢ (1.7 eurocent) per container paid by distributor to dealer For refillables, paid by bottlers based in MA.	Via dealers or redemption centres	Refund value, and that can be redeemed in MA.	Must be kept in separate account and surplus deposit money passed to the State.
MI	In effect 1978	Refillable and non-refillable glass, paper or plastic containers, or composites containing max. 1 gallon In practice: glass, alu, plastic	Soft drinks, waters, beers, mixed wine or spirit drinks – carbonates only.	Min 10 ¢ (7 eurocent)	25% of unclaimed deposits distributed between dealers by deposit containers handled.	Via dealers. (Redemption centres permitted but none operate)	Refund value and name of state.	Manufacturers and distributors must report annually and pass unclaimed deposits to the State.

<i>State</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Handling fees – who pays what?</i>	<i>Return arrangements</i>	<i>Marking</i>	<i>Unredeemed deposits</i>
NY	In effect 1983	Refillable and non-ref glass, metal, alu, steel or plastic cans, bottles, or jars of up to 1 gallon (3.8 l)	Carbonates only: soft drinks, mineral water, soda water, beer and “wine product”	Min 5 ¢ (3.5 eurocent)	Distributors pay 2 ¢ (1.4 eurocent) per container to dealers or redemption centres.	Via dealers or redemption centres	Refund value plus “NY” or “New York”	May be kept by distributors and dealers but distributors must report regularly to state authorities. Distributors must refund each other. Now proposed that monies should pass to the state.
OR	Adopted 1971	Refillable and non-refillable glass, metal or plastic bottle, can, jar or carton	Carbonates only: Beer, mineral water, soda water and similar soft drinks	Min 5 ¢ (3.5 eurocent) on non-refillable Min 2 ¢ (1.4 eurocent) on refillable	None	Via dealers. No redemption centres established.	Refund value and name of the state	Kept by distributors and manufacturers.
VT	In effect 1973	Refillable and non-refillable bottle, can, jar, carton of glass, metal or plastic or combinations, but not biodegradable materials	Beer, mineral water, soda water, carbonated soft drinks and wine coolers, and liquor.	Min 5 ¢ (3.5 eurocent), except for spirits > 50 ml = min 15 ¢ (11 eurocent)	Manufacturer or distributor pays dealer or redemption centre greater of 2 ¢ (1.4 eurocent) or 20% of deposit. (Reg says min 3 ¢ / 2.1 eurocent)	Via dealers or redemption centres.	Refund value and “Vermont” or “VT” on non-refillable containers.	Liquor control fund retains unclaimed deposits on liquor containers.

MANDATORY DEPOSITS ON BEVERAGE CONTAINERS IN CANADIAN PROVINCES
Status: November 2005

<i>Province</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Recycling fees (per unit, by material and size)</i>	<i>Handling fees (per unit, by material and size)</i>	<i>Return arrangements</i>	<i>Comments</i>
Alberta	1972, amended since	Plastic bottles, glass, cans, sealed plastic cups, cartons	Beer, wines & spirits, CO2 and still soft drinks and waters, juices.	\leq 1 lt (not beer) 5¢ (3.5 eurocent); \leq 1t (beer) 10¢ (7 eurocent); $>$ 1 lt 20¢ (1.4 eurocent)	Plastic 2 – 6 ¢ (1.4-4.2 eurocent) Glass 6 – 8 ¢ (4.2-5.6 eurocent) Tinplate 4 ¢ (2.4 eurocent) Alu 0 ¢ Cartons 1-2¢ (0.7-1.4 eurocent) Pouch 2 ¢ (1.4 eurocent) Cup 3 ¢ (2.1 eurocent)	N/A	Mainly return depots plus some in-store for beer	Voluntary agreement for milk containers.
British Columbia	1970, expanded since	All. Cartons and pouches added in 1999.	All ready to drink bevs except milk	\leq 1 lt (not beer) 5¢ (3.5 eurocent); $>$ 1 lt 20¢ (1.4 eurocent)	Alu 0 ¢ Plastic 3-4 ¢ (2.1-2.8 eurocent) Glass 4-5 ¢ (2.8-3.5 eurocent) Tinplate 5 ¢ (3.5 eurocent) Cartons 0- 4 ¢ 0-2.4 eurocent) Pouch 0 ¢	Alu 3¢ (2.1 eurocent) Plastic 4-7 ¢ (2.8-4.9 eurocent) Glass 5¢ (3.5 eurocent) Tinplate 3-5 ¢ (2.1-3.5 eurocent) Cartons 5¢ (3.5 eurocent) Pouch 3¢ (2.1 eurocent)	Return depots or in-store	System is subject to regular adjustments
New Brunswick	1991	Cans, glass, plastic bottles,	All except milk and unpasteurised cider.	10 ¢ (7 eurocent) (Only 5¢ (3.5	0.025¢ (0.00017 eurocent) to	Depots receive 0.034 ¢ (0.00024	Return depots - all use RVMs	Possible expansion of deposit to dairy,

<i>Province</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Recycling fees (per unit, by material and size)</i>	<i>Handling fees (per unit, by material and size)</i>	<i>Return arrangements</i>	<i>Comments</i>
		cartons.		eurocent) refunded on non-refs)	Environmental Trust Fund (from unredeemed deposit)	eurocent)		and other stewardship programmes
Newfoundland	1997	All - 5 lt or less, but not refillables	All except milk	8 ¢ (5.6 eurocent) for non-alcoholic (5 ¢ (3.5 eurocent) refund) 20 ¢ (14 eurocent) for alcoholic (10 ¢ / 7 eurocent refund)	N/A (funded from unredeemed deposits)	Depots receive handling fees (amount not specified) from unredeemed deposits.	Return depots	Refillables are used for local beer production.
Nova Scotia	1996	All (incl. cans, glass, PET, pouches and cartons)	All except milk	10 ¢ (7 eurocent) (5 ¢ / 3.5 eurocent is refunded); 20¢ (14 eurocent) for liquor over 500 ml (10 ¢ / 7 eurocent refunded).	50% of unredeemed deposits to Resource Recovery Fund.	50% of unredeemed deposits to Enviro-Depot	Return depots only (retailers not permitted to accept returns)	Kerbside collection threatened by absence of deposit materials.

<i>Province</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Recycling fees (per unit, by material and size)</i>	<i>Handling fees (per unit, by material and size)</i>	<i>Return arrangements</i>	<i>Comments</i>
Prince Edward Island	1977 (following repeal of bans on non-refs.)		Refill mandatory for beer, all CO2 flavoured beverages. Deposit for non-refs of still drinks (fruit juice, water, wine, spirits, alcopops, etc)	Soft drinks: 20 ¢ (14 eurocent) < 500ml (min 17¢ /12 eurocent refund) 40¢ > 28 eurocent) 500 ml Min 35¢ / 25 eurocent refund) 80¢ > 56 eurocent) 1.5 lt (min 70¢ / 50 eurocent refund) Beer: 10¢ (7¢ refund or \$1.20 / 85 eurocent) per 12) Spirits: 10¢ (7 eurocent) <500ml (5¢ / 3.5 eurocent) refunded) 20¢ (14 eurocent) > 500 ml (10¢ / 7 eurocent refunded)		Soft drinks: Portion of unredeemed deposits, but most retailers refund full deposit. Beer: Depots receive deposit plus 2¢ (1.4 eurocent) per container. Brewers receive unredeemed portion of deposit. Spirits: Depots receive 2 ¢ (1.4 eurocent). Unredeemed deposits go to general public funds.	Soft drinks: Return depots or in-store Beer: Return depots only. Spirits: Return depots and Liquor Control Commission stores.	No deposit on still drinks (water, juice, “new” drinks, etc) in non-refs which are collected via kerbside system.

<i>Province</i>	<i>Date introduced</i>	<i>Containers affected</i>	<i>Drinks categories affected</i>	<i>Deposit rate</i>	<i>Recycling fees (per unit, by material and size)</i>	<i>Handling fees (per unit, by material and size)</i>	<i>Return arrangements</i>	<i>Comments</i>
Quebec	1985	Non-refillables: cans, glass and plastic	Beer and carbonated soft drinks	Beer & soft drinks <450 ml: 5 ¢ (3.5 eurocent) Refillable beer: 10 ¢ (7 eurocent) Non-ref beer >450 ml: 20 ¢ (14 eurocent)	Unredeemed deposit and sale of materials used to fund system.	2 ¢ (1.4 eurocent) to retailers Also contribute for public information to Recy-Québec. Beer: 1.25% of 5 ¢ (3.5 eurocent) 0.625% of 10 ¢ (7 eurocent) 0.3125% of 20 ¢ (14 eurocent) SDs: 0.15 ¢ (0.11 eurocent) per unit	Deposit containers in-store only (non-refillables plus refillables for beer) via 10,000 retailers licensed to handle deposit refund.	Statutory return targets for deposit containers. Non-deposit containers collected via kerbside Since 2004 legislation for all non-deposit packaging requires industry to fund 50% of kerbside cost.
Saskatchewan	1988	Non-refillable cans, plastic, glass, cartons.	CO2 and still soft drinks, juices, water, beer and alcoholic drinks, but not milk.	Cans & plastic: 0-999ml: 10¢ (7 eurocent) ≥1 litre: 20 ¢ (14 eurocent) Non-ref glass: 0-300 ml: 10¢ (7 eurocent) 301-999 ml: 20¢ (14 eurocent) ≥ 1 litre: 40 ¢ (28 eurocent) Cartons: 5¢ (3.5 eurocent)		Cans: 5 ¢ (3.5 eurocent) Plastic: 6 ¢ (4.2 eurocent) Non-ref glass: 7¢ (5 eurocent) Cartons: 3 ¢ (2.1 eurocent) Sarcen also receives 4 ¢ (2.8 eurocent) per refillable bottle.	Return depots run by SARCAN (education/rehab organisation)	Voluntary agreement for milk containers. Sarcen also collects refillable beer bottles (refunding deposit) and plastic milk containers (no deposit).