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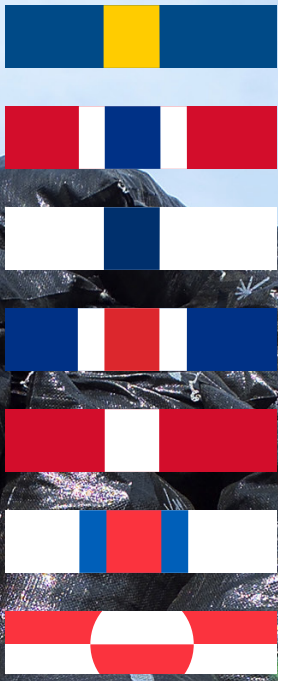

COMPETITION IN THE WASTE MANAGEMENT SECTOR

– PREPARING FOR A CIRCULAR ECONOMY

Competition in the Waste Management Sector – Preparing for a Circular Economy

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Preface

Competition policy and waste management is an issue that has seen increased interest in the last five to ten years. There have been quite a few cases concerning different competition problems in waste management in the Nordic countries over the last few years. The OECD, the European Commission and the Nordic competition authorities have also written reports on the green economy and competition in waste management. This increased interest is, in part, driven by changes in the way people perceive waste. Waste is in many cases no longer only considered a nuisance, but also a valuable material that needs to be reused, recycled or recovered in some other way.

In recent decades, competition for raw materials has increased, in particular as a result of the rapid growth of emerging economies. The strain on non-renewable natural resources is increasing, and this magnifies the importance of sensible waste management. The European Union has introduced the concept of a circular economy as a central part of its policy. In the circular economy, resources are used as efficiently as possible. The circular economy represents a move from the linear industrial economy of "take, make, consume and dispose" to an economy of "reusing, repairing, refurbishing and recycling" resources. The Prime Minister of Sweden recently stated that "what today is considered waste will become a resource that will drive the new business opportunities of tomorrow."[1] The Nordic competition authorities believe that competition will be an essential tool in reaching the objectives of a more efficient use of materials, and environmental protection.

In September 2014, a waste management workshop was held in Copenhagen at the annual meeting of the Nordic competition authorities. At the workshop, the Nordic Authorities held presentations regarding the state of competition in waste management in their respective countries. Following those presentations and the subsequent discussions, the Directors General of the Nordic competition authorities decided that waste management should be the subject of a joint Nordic project.

For historical and legal reasons, municipalities play a central role in waste management in the Nordic countries. Municipalities are, in most cases, both the administrators and organisers of waste management services. On the one hand they are involved in surveillance of the activities of those operating in the market. On the other, municipalities and their undertakings are often active in providing waste management services, in many cases in competition with private undertakings.

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[1] The Prime Minister of Sweden, Stefan Löfven, Riksdagen, 15th September 2015, http://www.regeringen.se/tal/2015/09/regeringsforklaringen-den-15-september-2015/

Those different roles are sometimes conflicting and can lead to unnecessary restrictions on competition. The Nordic competition authorities therefore decided that this report should focus on possible public restraints on competition that may arise from regulations, and the different ways in which waste management is organised. In addition, it should explore similarities and differences regarding competition in waste management in the respective Nordic countries. It was also decided that the report should explore the different systems for Extended Producer Responsibility (EPR) in the Nordic Countries, and the way in which they affect competition.

The Nordic countries are similar in many ways and their cultures and legal traditions have many things in common. There are, however, several important differences. For example, populations vary from around 50,000 inhabitants in the Faroe Islands to around 10 million in Sweden. The populations are also quite dispersed in some regions, for example in Greenland and in the North of Norway. Greenland and the Faroe Islands are not members of the European Union or the EFTA and the EEA agreement. For those reasons, special considerations do apply to certain countries and regions with regards to the possibility for competition in waste management. However, the main themes and proposals of this report should be relevant to all of the Nordic countries.

The main conclusion of this report is that there is considerable scope for increased competition within the waste management sector in the Nordic countries. Embracing market solutions may create opportunities for new and innovative solutions that could bring about cost savings, reduce resource scarcity and generate an overall increased efficiency of waste management services. Studies have shown that the use of procurement procedures in waste management can lower costs considerably, especially related to collection. New solutions and flexibility stemming from competition can further help to fulfil environmental goals.

Short term changes, such as an increased and better use of procurement procedures as well as enhanced competition neutrality may help to bring about some of the benefits that increased competition can offer. However, in the long run some more radical changes may be needed with regards to the setup of waste management systems, for example to facilitate better materials recovery and to increase the trade in valuable waste materials. This restructuring may lead to some difficult but necessary trade-offs. However, it is important not only to look at the current (and narrowly defined) waste markets, but also to consider overall efficiency and the impact of a system on several adjacent markets. This operation should be conducted using a perspective that is not only focused on a certain point in time (static) but also over time (dynamic efficiency).

This report is a result of the collaborative efforts of staff members from participating authorities and it is the eleventh joint report from the Nordic competition authorities. The purpose is to advocate the considerable efficiencies that increased

competition in waste management in the Nordic countries can offer. It is important that the various different stakeholders realise the potential benefits of competition for consumers and society as a whole. This applies especially to municipalities and their residents.

The members of the working group have been:

- **Danish Competition and Consumer Authority**: Anders Strange Vest, Mette Clausen and Lauge Rasmussen.
- **Faroese Competition Authority**: Sigurd Rasmussen.
- **Finnish Competition Authority**: Martti Virtanen, Ari Luukinen, Lasse Pöyry, Riikka Rosendahl and Mika Oinonen.
- **Greenland Competition Authority**: Cecilie Juhl Nielsen and Jon Christensen.
- **Icelandic Competition Authority (Coordination and Project Management):** Magnús Þór Kristjánsson (Project Manager) and Guðmundur Sigurðsson.
- **Norwegian Competition Authority**: Eivind Campbell Lillesveen, Øyvind Nilssen and Kjell Jostein Sunnevåg.
- **Swedish Competition Authority (Coordination, Project Management and Editing):** Johan Adamsson (Project Manager), Martin Sutinen, Morgan Westéus, Christopher Creutzer, Martin Bäckström, Mathias Lassinantti Jansson and Max Brimberg.

The working group has also received valuable assistance from colleagues across the Nordic competition authorities.

Executive Summary

This report focuses on competition in waste management in the Nordic countries. In the preceding years the waste markets have been evolving with an increased emphasis on waste prevention, reuse, recycling and other forms of recovery of materials or energy. The use of market mechanisms in waste management has also increased in recent decades. The European Union has recently implemented the "*circular economy*" as one of its main policy objectives. The aim of the circular economy is to move from the linear industrial economy of taking resources, using them, and then disposing of them once the lifetime of the product is over, to an economy where materials are reused, recycled and finally reintroduced back into production.

The report consists of six different chapters. The *first chapter* is an introduction where previous work is reviewed and the evolution of waste management is discussed, amongst other things. In the *second chapter*, the legal framework in the Nordic countries and the roles of different market operators are reviewed. In this chapter the reader can also find some statistics regarding waste management in the Nordic countries. *Chapter three* concerns the creation and management of waste markets, with an emphasis on the role of municipalities and the economics of waste management. In *chapter four* the concept of competitive neutrality is defined and discussed in relation to waste management. In *chapter five*, the Extended Producer Responsibility concept for certain waste types is discussed and various systems to deal with that responsibility are considered. Possible solutions and recommendations to competition problems in waste management are explored in *chapter six*, which is followed by concluding remarks reflecting on the way ahead in waste management. A brief summary of chapters one to six can be found below.

Introduction

The introduction to the report includes a presentation of the major trends within waste management, whilst attempting to contextualise the report. Throughout history, waste has been considered a problem. In recent decades, however, increasing emphasis has been placed on finding value in waste products, in order to reduce the strain on resources and the environment. Landfill bans and the encouragement to recycle have led to the growth of markets for waste treatment and secondary materials. The move away from a linear industrial economy to a circular economy requires new thinking, and competition is a very efficient way of achieving the necessary innovations.

Moving forward, there is still much that can be done to facilitate the growth and efficiency of waste markets. Some of these measures are broadly outlined in the introduction. Sector regulators should focus on creating and facilitating waste

markets, helping municipalities in their search for efficiency and innovative solutions, and encouraging trade. Waste holders should be encouraged to recycle in a manner that maximises the value of the waste, and industries must be incentivised to create products that take their entire lifespan into account. For municipalities, the proper use of a tendering process is important, and how the municipalities manage their waste management undertakings will often determine the chances of producing efficient and innovative solutions.

Finally, the chapter provides a brief summary of a selection of previous reports and analyses of the sector.

Legal framework and the structure of the waste management sector

The influence of the EU directives and international law on the legal framework of waste management in the Nordic countries is considerable. In most cases, EU legislation is laid down in directives rather than regulations and, for that reason, the member states have more leeway to incorporate the rules into their domestic law. The directives lay out certain principles and targets for waste prevention, reuse, recycling, etc. The member states and EEA countries can, for that reason, go about fulfilling those targets in a variety of different ways. This is one of the factors that can explain the differences in the legal frameworks and the setup of waste management in the Nordic countries.

Historically, waste management has been a matter for the municipalities. Deregulation in some parts of the waste management sector has opened up waste markets for competition in the Nordic countries. In most cases, the trend seems to be moving increasingly towards more market orientation. Few municipalities in the Nordic countries manage waste collection purely through in-house services. Municipalities usually purchase services from either public or private waste management undertakings.

The legal framework in most Nordic countries limits competition in waste management to some extent. It imposes obligations, but at the same time grants municipalities extensive rights to waste, or at least to waste generated by households. Within the current legal framework there are opportunities to increase competition within waste management, for example, should municipalities decide to facilitate market creation through a tendering process. However, the current legal framework may not be sufficient to support major and long-term improvements to the market structure, or the creation of new waste markets.

In this chapter there is also a discussion regarding the roles of different parties operating within waste management and some statistical information relating to the waste management market.

Creating and managing waste markets

For various reasons, society has had to regulate how waste is managed. This has led to the creation of legal and structural frameworks within which markets have started to emerge. The waste market can be described as a chain where each link is of importance for the functioning of the whole system. The three main stages of the waste value chain are collection, sorting and treatment. The market conditions for each respective stage vary greatly, not only from country to county, but also on the municipal level.

The multiple roles of the Nordic municipalities with regards to waste management place them in a central and influential position with regard to the creation and development of waste markets. The constitutional autonomy of municipalities allows municipalities, to a large extent, to independently choose how to manage their local waste markets. The competition problems and distortions arise either from organisational or executive issues inherent in the existing legal or structural frameworks.

How waste management is organised at municipal level creates different conditions in the market but also a variety of incentives for the different stakeholders which in turn have an effect on the efficiency of the organisation. There are, therefore, pros and cons for every different way of organising waste management, regardless of whether the organisation is vertically integrated or decentralised. The choices municipalities make could either effectively shut out private companies from competition or facilitate effective competition that brings with it new and innovative solutions, and possibly a lower cost for the services provided.

It is therefore very important that municipalities make thorough preparations prior to their organisational and executive decisions. It is also very important to continuously evaluate the effects of the decisions from both a short and a long-term perspective. Attention must be paid to all affected markets, and not only to the effects within the geographic borders of the municipality. The municipality should choose the option that increases competition, or, if it is inevitable, the option that harms competition the least. The choices that have been made historically may have created an infrastructure based on a business model that might be at odds with today's political aims to reduce the amounts of waste. It may therefore be necessary to make major changes to existing infrastructures, for example to escape from a business model where the central concept is that the more waste that is received, the more profits will be made.

In order to overcome or avoid competition problems or distortions of competition it may be necessary to rethink the allocation of property rights to the waste. It may also be necessary to ensure a uniform definition of household waste. In some cases this imply finding ways to learn more about market solutions, in others it might involve a strategic reorientation towards using market solutions to a greater extent.

In this chapter there is also a discussion concerning the problems and possibilities related to the cross-border trade in waste, the collection of statistics and the process of public procurements.

Competitive neutrality in waste management

Competitive neutrality enhances allocative efficiency. When an economic agent suffers from unfair disadvantages it is not able to compete in the market on equal terms. Lack of neutrality will also inhibit entry of new firms. As a result, goods and services are not necessarily produced and offered by those who can do it most efficiently. A lack of competitive neutrality may also limit the willingness to invest in research and development and thus hamper the gains from innovations.

In waste management markets competitive neutrality problems seem to originate from three sources. *Firstly*, municipalities have several and sometimes conflicting roles in waste management. *Secondly*, municipalities have exclusive rights to municipal solid waste. *Thirdly*, in some cases municipal undertakings have undue advantages compared to private undertakings.

There are different tools available in different Nordic countries to tackle problems in competitive neutrality. Some countries have special legislation that allows competition authorities to intervene when problems regarding competitive neutrality are observed. Others manage the problems with more general competition law tools, such as applying abuse of dominance provisions. Irrespective of the legislative tools available, it is important that municipalities themselves recognise the positive effects that a level playing field brings about in waste management markets.

In order to achieve increased recycling targets and to respond to the challenges of adapting to a circular economy, market-based solutions need to be utilised to a greater extent. However, this will be seriously hampered if municipal and private undertakings are not equally entitled to use their know-how and insights to bring about new, innovative solutions.

Extended producer responsibility schemes

Extended producer responsibility (EPR) extends the responsibility of producers and importers to the post-consumer stage of a product's life cycle. The main objectives of EPR schemes are to increase the collection and recycling rates of the products and materials targeted, and to shift the financial responsibility from municipalities to producers in order to incentivise producers to take environmental considerations into account when designing their product and, thus, create products and packaging that are easier or less cost-intensive to reuse and recycle. EPR is an

individual obligation, although in a great number of cases producers create a joint structure - a producer responsibility organisation (PRO) to execute their legal obligations.

The report presents certain EPR schemes in the Nordic countries and highlights competition issues and challenges. The Nordic competition authorities have chosen to focus on EPR schemes for Waste from Electrical and Electronic Equipment (WEEE) and for packaging waste, due to observed issues and challenges within these schemes in some of the Nordic Countries. Furthermore, packaging waste was selected due to the volume of that category of waste, whilst WEEE was selected due to its growing volumes and the increased focus on recycling to extract and recover scarce materials and metals.[2] The Nordic competition authorities have identified several competition-related concerns for further analysis; these include the regulatory setup and the respective roles and responsibilities of the various operators affiliated to the EPR schemes.

Recommendations

The final chapter contains the Nordic competition authorities' conclusions and recommendations based on the findings of the report. The issues highlighted throughout the report provide the basis for six separate, but closely related, categories of recommendations. Within each category there are several concrete suggestions regarding how to obtain increased efficiency and innovation in the waste sector.

Increased use of market solutions
The Nordic competition authorities are convinced that competition will be an essential tool in reaching the objectives of more efficient waste management, increased environmental protection and efficient use of materials. Today, market solutions are utilised to a varying degree. Municipalities that do not facilitate markets risk losing out on short-term cost benefits and obstructing long-term societal benefits, such as innovation.

The Nordic competition authorities recommend the following:

- Municipalities should be obliged to continuously evaluate their operations and to consider market solutions, including the procurement of waste management services, and to focus on the creation of well-functioning markets. Exploring market solutions would allow municipalities the

[2] For example, see the report "Danish WEEE market - A study of markets, actors and technologies in treatment of WEEE in Denmark Environmental project No. 1643, 2015", published by the Danish Environmental Protection Agency.

opportunity to compare the status quo with the potential benefits of market solutions. In order to accurately evaluate current practices and assess the potential benefits, municipalities must keep separate accounts for waste management activities.

- Sector regulators should facilitate the creation and maintenance of waste markets, including market facilitation as a fundamental instrument when adapting or amending regulations. Innovation through competition will be key to unlocking the potential of waste resources.

- Efficiency-enhancing international trade should be encouraged, and barriers to trade should be removed.

Clarifying public roles and goals, and increasing dialogue

Municipalities are entrusted with important tasks, and they have several roles with regards to waste management. The different goals of the municipalities' various roles may be difficult to reconcile. This may result in conflicts of interest. The Nordic competition authorities therefore believe it is important to clarify the municipalities' roles and goals, keeping certain roles separate, and for municipalities to ensure continuous dialogue with different stakeholders.

The Nordic competition authorities recommend the following:

- There should be a clear separation between the municipalities' roles as, on one hand, the providers of waste management services and, on the other hand, public authorities.

- Municipalities should avoid entrusting the same departments or persons with responsibilities for governance tasks and service provision tasks. Specifically, municipal waste undertakings should not participate more than other market actors in municipal decision-making regarding the monitoring, regulation and design of municipal waste management.

- Municipalities should consult stakeholders when creating waste management plans and deciding how to organise municipal waste management.

- Waste management plans should be required to contain organisational aspects, including a description of the allocation of responsibilities between public and private actors carrying out the waste management and an evaluation of the usefulness and suitability of the use of economic and other instruments in tackling various waste problems.

Sufficient tools to tackle competitive neutrality issue

Municipal undertakings may have several advantages compared to private counterparts. Some of those advantages may distort competition and they may cause a harmful lack of competitive neutrality. The Nordic competition authorities possess a variety of different means to counteract a harmful lack of competitive neutrality. It is important to ensure that those instruments are effective and sufficient to deal with competitive neutrality issues.

The Nordic competition authorities recommend the following:

- Different tools can be implemented to address issues related to competitive neutrality. The competition authorities' tools to address a harmful lack of competitive neutrality should be effective and sufficient.

- Regulations regarding municipal participation in markets should, as far as possible, seek to ensure competitive neutrality. Transparent and detailed accounts, rules regarding cost allocation, the separation of the municipal role of governing from the provision of waste management services, and the removal of financial advantages are important steps towards a level playing field.

Better use of municipal procurement procedures

Procurements are one way of utilising market solutions. A switch from in-house management to procurement could bring efficiencies through competition and innovation. However, the municipalities' procurement procedures can be further adapted, for example, to better facilitate necessary innovations.

The Nordic competition authorities recommend the following:

- Relevant bodies in the Nordic area should evaluate whether their procurement regulations could be revised in order to ensure that there is sufficient scope and incentive for municipalities to create innovation-friendly and cost-efficient tenders.

- Municipalities should be encouraged to explore the possibilities of collaborating with other municipalities on procurements in order to facilitate economies of scale to increase efficiency. Likewise, some larger municipalities may increase competition by segmenting their total need into smaller packages.

- Relevant bodies should offer increased support and tools to improve municipal procurement of waste management services.

Improving statistics and common definitions
Reliable statistics and common definitions are the basis for well-founded decisions. It is therefore necessary to ensure that decision-makers have access to reliable statistics on costs and efficiency. From a market study perspective, the reliability of certain statistics is currently questionable, due to the variations that exist with regard to certain definitions.

The Nordic competition authorities recommend the following:

- Relevant bodies in the Nordic countries are encouraged to amend data collection to include details on procurement.

- Data collection should prioritise and disseminate information on costs and efficiency in order to provide decision-makers with the necessary tools to create efficient waste markets at all levels of trade.

- Sector regulators and legislators should work towards establishing EEA-wide standards and definitions that are relevant to both the achievement of environmental targets and the facilitation of trade and commerce.

Ensuring the efficiency of EPR schemes
The main purpose of EPR schemes is to extend the producer's responsibility for products in the post-consumer stage and to reduce the responsibility of municipalities and consumers. Even though the EPR schemes in the Nordic countries share the same objectives they vary in design and in structure. Competition issues relevant for EPR schemes are also a result of national regulations that create unnecessary barriers to entry to the markets and the sometimes unclear role of municipalities in relation to PROs.

The Nordic competition authorities recommend the following:

- Relevant bodies in the Nordic countries should consider if there are potential efficiency benefits to be gained by increasing competition in the markets for extended producer responsibility.

- Relevant bodies should implement concrete measures to lower entry barriers where needed.

Concluding remarks

The implications of the circular economy in respect of how systems to ensure the value and utilisation of materials are designed, are discussed in the concluding remarks. it is important to note that there is a substantial need for change if the aims of the circular economy are to be realised. Market solutions will play a significant part in any successful redesign of the waste sector.

1 Introduction

The history of waste management can be divided into three main phases.[3] In the *First* phase, waste was considered a sanitary problem, in the *second* phase it was considered a sanitary and a spatial problem, and in the *third* and current phase waste is also considered an environmental problem. Waste as a *problem* has called for management-oriented solutions; these are reflected in regulatory frameworks and the roles of the various different actors in this sector, and not least in the creation of exclusive rights.

The Nordic competition authorities argue that the efficient use of society's resources – i.e. the minimisation of the costs of collection and the value maximisation of waste as a resource, constrained by environmental goals and applicable legislation – calls for a *fourth* phase. In that phase, the role of public operators shifts towards managing waste *markets* rather than managing waste. In the short term this requires regulatory bodies, municipalities, industries and consumers to adopt a different approach to waste management. In the long term this also calls for a regulative framework which facilitates the implementation of the fourth phase.

In recent decades, competition for raw materials has increased; this has been driven in particular by rapid growth in the emerging economies of China, Brazil, South Africa and India. The increased strain on resources and continued global population growth are challenges for the global economy, and not only for environmental reasons. Within the countries of the European Union and EFTA the challenge is compounded by an aging population, which means that their citizens' long-term welfare hinges on the ability to solve the growing strain on the factors of production.[4] The long-term increase in demand for virgin materials is also bound to increase demand for secondary materials.

In this environment, reusing and recycling materials becomes a key element for maintaining economic growth and competitiveness in trade whilst also protecting the environment.[5] In line with this view, a lack of reuse and recycling is not only seen as an environmental problem, but also as an inefficient use of resources. This reflects the concept of a *circular economy* - a move from a linear economy of "take, make, consume and dispose" to an industrial economy of "reusing, repairing,

[3] Eriksen, Thomas Hylland (2011) *Søppel: Avfall i en verden av bivirkninger.*

[4] See for example the report of the Nordic competition authorities no. 1/2013, A Vision for Competition Policy towards 2020.

[5] OECD, Material Resources, Productivity and the Environment, 12 February 2015, OECD Green Growth Studies, p. 9–10.

refurbishing and recycling" resources.[6] The European Union has recently implemented the *circular economy* as one of its main policy objectives and adopted a Circular Economy Package consisting of an action plan[7] and legislative proposals.

Efficiently achieving the environmental goals and satisfying the resource needs of the future does in some cases require a change in policy, and a different approach by decision-makers. Competition is a proven mechanism for creating innovation and efficiency, and should increasingly be utilised in the waste management markets. With increased use of market-oriented means of dealing with waste management it is only natural that competition authorities have shown an increased interest in waste management and the potential for competition in this sector. One of the aims of this report is to encourage legislators and regulators to consider how to reach environmental targets more efficiently by using competition to maximise value, limit costs and encourage innovation.

The first part of this introduction will take a brief look at waste from a historical perspective, the second part highlights the way in which important actors such as municipalities and regulators may enable the waste markets of tomorrow.

1.1 The evolution of waste management

Waste management has been an issue that has had to be dealt with for as long as there have been people populating the Nordic countries. Remains in the early Stone Age were largely organic and, as space was of little concern, most of it was left to break down naturally near dwellings. As people were often nomadic, there was little need to organise the waste disposal of any one area.

Over time, a need for increased focus on waste removal, particularly in towns, led both to the professionalisation of waste management and to the first organised recycling of paper and cloths. In the 19th Century, there was a significant increase in the use of packaging, but the total volumes of waste did not rise accordingly. Packaging materials such as paper, wood and cloth were mostly reused or recycled and little became waste. At the same time, the image of waste as a health hazard, as

[6] Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, Towards a circular economy: A zero waste programme for Europe, COM(2014) 398 final/2. See also the Nordic Prime Ministers green growth projects which include creating a resource effective life cycle in the waste treatment sector. http://www.norden.org/en/theme/green-growth/the-prime-ministers-green-growth-projects.

[7] Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, *Closing the loop - An EU action plan for the Circular Economy*, COM(2015) 614/2.

well as a nuisance, became clear during the 19th Century, and with it an increased focus on the removal and proper handling of waste.[8]

In the first half of the 20th Century, the focus on municipal responsibility for waste management emerged in the Nordic countries. The first examples of industrialised recycling with large scale production of secondary materials also enter the markets in this period.

In the 1950s and 1960s there was a sharp increase in consumption, and consequently waste production. As a response to issues with waste being disposed of in inappropriate areas, more and more municipalities introduced mandatory municipal waste collection. Sorting waste into certain fractions, such as paper, glass and cloth, also increased in this period.

From the 1970s onwards, environmental concerns became an important complement to basic economic incentives and sanitation as the driving forces for change in the waste management sector. Incineration facilities began replacing landfills, and recycling was once more in focus.

In the latter stages of the century the "polluter pays" principle was also introduced.[9] The principle intends to place the cost of waste management on the original polluting party, providing incentives to limit emissions and waste generation. The implementation of this principle is the background for the many extended producer responsibility systems in the Nordic countries, as discussed in Chapter 5.

Waste materials are now increasingly recovered across the Nordic countries. Landfilling is now the exception rather than the norm.[10] The introduction of several other measures, including a ban aimed at limiting the landfilling of degradable waste, has led to a sharp decline in the number of landfills, as well as a decline in the volumes disposed of at them. Refuse is either incinerated in order to utilise the stored energy, transformed into biogas or compost, or fragmented and worked into reusable materials. New uses for waste materials, such as clothing made from recycled plastic bottles, emerge continuously as technological advances provide innovative solutions.[11] This is in line with the ambitions of the EU's policy for a *circular economy* and environmental targets in all the Nordic countries. As a result of

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[8] Torstenson, Inge (1997) Fra nattmann til renholdsverk: avfall og renovasjon i Oslo gjennom tusen år. ProArk. p 30

[9] The United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, Rio de Janeiro 3 to 14 June 1992. See Principle 16 *"National authorities should endeavour to promote the internalization of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment."*

[10] For example, landfilled waste per capita in Iceland has decreased from 364 kg in 2005 to 170 kg in 2013.

[11] For example, the recycling rate for packaging waste has increased from approximately 55% in 2005 to 65% in 2012 in the EEA. Source: EUROSTAT.
http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=ten00063

policies, improved techniques for extraction, shifting demands and more, waste management is no longer simply a matter of disposal.

The sector regulators in the Nordic countries show an increasing understanding of the fact that waste management is no longer simply a matter of dealing with a problem. Reports such as the Norwegian waste strategy[12] which is titled *"From waste to resource"* indicate an apprehension of this fundamental change. This report, however, does not include a vision for how to use market solutions to attain a correct valuation of the resource, or to encourage innovation in treatment and usage. It focuses solely on the transferal of waste volumes from traditional landfilling to different forms of recovery, without contemplating how to achieve this shift efficiently. The same applies to other policy makers and sector regulators in the Nordic countries.

The Nordic countries are world leaders in waste recovery, and as a group they recover a larger percentage of waste than any other region in Europe[13]. The Nordic countries have, over the last 20 years, limited landfilling and rerouted the waste to energy recovery and materials recycling. The region's sector authorities have reason to be proud of these results, which have been achieved over a relatively short time span. The achievement of environmental targets has, however, not come about in an organic manner. Bans on landfilling and targeted taxes have pushed the waste into less harmful forms of waste treatment. Imposing taxes and regulations aimed at achieving environmental targets may be a necessary means to a justified end, but it is still important to ensure that the measures achieve the targets in the most efficient way.

1.2 Moving forward

Over the last 30 years, the Nordic countries have increasingly decided to embrace market solutions in sectors where previously the performance of the service was considered quintessentially public. This is an ongoing revolution where governments, both national and local, move from being service providers to being service procurers; they are moving from a command and control approach to being market facilitators. Even in areas where it is difficult to argue that the service is fixing "*a problem*", e.g. health care, private enterprises have been invited to participate, and markets have been created. Household waste treatment, however, is still regulated as a municipal responsibility and prerogative in most instances.

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[12] Issued by the Norwegian Ministry of Climate and Environment in 2013.

[13] Eurostat News Release 54/2015, 26th March 2015, http://ec.europa.eu/eurostat/documents/2995521/6757479/8-26032015-AP-EN.pdf/a2982b86-9d56-401c-8443-ec5b08e543cc

Competition improves the utilisation of companies' resources[14]. Undertakings in competitive markets that do not utilise their resources in a sufficiently efficient manner tend to exit the market, whilst undertakings in non-competitive markets can, to a greater extent, pass on and survive inefficiencies. Competition could therefore be said to promote innovation, and undertakings in competitive markets are generally more prone to innovation than those in non-competitive markets.[15]

Utilising market solutions is regularly thought of as the best way to ensure the correct valuation (i.e. price) of a service or good, and of ensuring the most efficient utilisation of society's resources. This is, furthermore, in line with the objectives of the national Competition Acts in the Nordic countries.[16] It should therefore be in the public interest to promote and facilitate market solutions.

As with most other inputs, there will be some waste treatment methods or undertakings that will be better than others at extracting the potential value from what today is regarded as waste. This may be due to lower treatment costs from efficient extraction technology, better business strategies, improved networks or many other factors. This leads to different waste management undertakings having a differing willingness to pay or, as is more often the case with waste materials, a different willingness to accept materials. The implication is therefore that, granted a sufficient mobility amongst waste holders, a market-based system would reward the most efficient competitors and, in the long run, the most innovative. The undertakings that prove to be most proficient at extracting value from waste materials will thrive. Waste holders would end up paying less to have their waste treated, whilst improved waste treatment solutions would benefit the environment. Efficient material recovery would also have the potential to lower prices for products created with secondary materials through lower prices for raw materials.

Central to the idea of waste management as production of resources is the industry's prospective capacity to profitably produce secondary materials. The future development of waste management necessarily relies both on technological developments that decrease the costs to produce secondary materials of better quality, and on increasing demand for the secondary materials. Lowering the cost of producing secondary materials will lower the costs of new products incorporating these materials and, as a result, increase demand. Policymakers should keep this in

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[14] See, for instance Bloom, N. and Van Reenen, J. (2007), Measuring and Explaining Management Practices across Firms and Countries, *The Quarterly Journal of Economics*, Vol. 72(4) pp. 1351–1408 and Green, A. and Mayes, D. (1991), Technical Inefficiency in Manufacturing Industries, *The Economic Journal,* Vol. 101(406), pp. 523–538.

[15] See for example Blundell, R., Griffith, R. & van Reenen, J. (1999), Market Share, Market Value and Innovation in a Panel of British Manufacturing Firms, *Review of Economic Studies*, nr. 66, pp. 529–554, and Geroski, P. A. (1990), *Innovation, Technological Opportunity, and Market Structure*, *Oxford Economic Papers*, Vol. 42(3), pp. 586–602.

[16] See for example Article 1 of the Icelandic Competition Act no. 44/2005: "*The objective of this Act is to promote effective competition and thereby increase the efficiency of the factors of production of society. This objective shall be achieved by: a. preventing unreasonable barriers and restrictions on freedom of economic operation; b. preventing harmful oligopoly and restriction of competition; c. facilitating the entry of new competitors into the market.*"

mind, even when dealing with regulations beyond the scope of waste management proper.

The following highlights some examples of how different market actors may play a part in increasing the value of waste materials and creating a more efficient waste management system.

1.2.1 The role of regulators

As mentioned in previous paragraphs, it is important that regulators construct frameworks that incentivise market solutions and encourage value maximisation to ensure the most efficient waste management market possible. In the past, the focus of regulators seems to have been mainly on achieving environmental and sanitary targets, with little emphasis on efficiency. In the fourth phase of waste management, efficiency ought to be joined by environmental gains through the design of frameworks that incentivise total value maximisation.

One of the fundamental requirements for properly functioning markets is that market entry is feasible. Sector regulators and legislators ought to examine how it is possible to ensure that the legal and structural framework does not impose prohibitive entry barriers across the value chain as the necessary permits must be attainable. Regulations should be easy to comprehend, possible to comply with, and proportional to the relevant environmental targets.[17]

Municipalities have been afforded the responsibility and right to household waste management. This requires the presence of municipalities in, at the very least, the procurement of waste management services. The manner in which municipalities could undertake this responsibility within the current framework is discussed below in Chapter 3, but sector regulators and legislators could do even more to encourage an improved and increased use of market solutions by municipalities.

The current framework for municipal solid waste leaves significant room for municipalities to choose the manner in which they undertake their responsibilities for collection and treatment. As a result, some municipalities utilise market solutions, whilst others less so. If this is the result of a careful cost-benefit analysis it might not pose an efficiency problem. However, as long as municipalities are responsible for waste management, it is important to ensure that they take competition, efficiency and innovation into consideration in their decision-making.

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[17] This is in line with the OECD competition assessment toolkit. The OECD competition assessment toolkit helps governments to eliminate barriers to competition by providing a method for identifying unnecessary restraints on market activities and developing alternative, less restrictive measures that still achieve government policy objectives. http://www.oecd.org/competition/assessment-toolkit.htm

A distinct trend of increased trade in waste materials between and beyond the Nordic countries has emerged over the last few years. Trade is the result of international competition for certain goods, and it is generally accepted as a good thing that is encouraged throughout the EEA in almost every product or service market. In the area of waste management, principles of proximity and self-sufficiency are embedded in EU and national policy, and these are sometimes given as reasons to restrict transport and trade. It may be considered an admirable thing to wish to deal with one's own problems, rather than pushing them onto others. Waste is however in most cases no longer a problem to be solved, but rather a resource that could be traded much like most other commodities. Trade should be encouraged and should remain an integral part of waste management systems.

1.2.2 The role of producers

For example, waste management does not begin the moment something is discarded. In order to achieve ambitious environmental targets, producers must be incentivised to create products and packaging that either reduces the need for materials and/or increases the value of the waste remains. There are currently Extended Producer Responsibility (EPR) schemes in all the Nordic countries. Such schemes must be designed in a way that facilitates competition and incentivises the maximisation of the value of the waste. As is detailed in Chapter 5 of this report, several of the Nordic EPR schemes are most likely not functioning efficiently.

1.2.3 The role of consumers

In order to ensure that environmental targets are achieved as efficiently as possible, it is important to align the incentives of consumers[18] with those of the waste management undertakings. Sorting waste into fractions at source should make it easier for waste management undertakings to collect them; it should also increase the value of that waste whilst also improving the likelihood that the waste will be recycled or reused, rather than be incinerated or landfilled.

Systems for collection of household waste should therefore incentivise an appropriate level of sorting at source. Differentiated pricing is one way to ensure that costs of non-sorting are levied onto consumers. Some municipalities in the Nordic countries do offer differentiated forms of collection and reward low volumes of mixed waste. However, the municipalities' incentives to do this currently largely depend on how they choose to organise the downstream utilisation of waste materials.

[18] In the context of waste management, consumers of waste services are not only the households and companies producing the waste (waste producers) but also the natural or legal person who is in possession of the waste (often called the "waste holder").

In order to ensure that consumers are rewarded for making choices that increase the value of the waste they produce, waste collectors should try to create incentives for consumers to sort their waste in a manner that maximises the value of the waste for the waste management company. However, it is important to note that the profit maximising level for the waste management companies might not coincide with the environmental goals, and regulators may need to utilise available instruments, such as regulations, taxes and subsidies, to guide the system's overall efficiency.

1.2.4 The role of municipalities

At present, municipalities in the Nordic countries often both administrate and participate in the markets for waste management. Municipalities have both the right, and the obligation, to collect and treat household waste. In all the Nordic countries, municipalities fulfil their duties in a variety of ways; these include using in-house departments, the direct awards of contracts, side-by-side competition and public procurement. Some municipalities own, or partly own, waste management undertakings whilst others fulfil their responsibilities solely through competitive tendering. The municipalities themselves decide if they are to perform the service, or if others are to be allowed to participate in the market. The Nordic competition authorities believe municipalities could benefit from increasing their use of market solutions.

To enable the most cost-efficient and value-enhancing waste management system, municipalities and their residents would benefit from switching their focus from being market participants to being *market facilitators*. In this role, municipalities should focus on creating the best possible environment for competition. Effective procurement divisions are needed to ensure efficient procedures and results. Contracts should incentivise innovation and reward solutions that maximise the value of waste, as well as considering the environmental and regulative requirements. However, as is detailed in Chapter 4, a lack of competitive neutrality is always going to be a potential issue as long as municipalities act as market participants.

Some municipalities in the Nordic countries are already functioning as market facilitators, organising tenders and procuring services, but most still directly partake in waste management in some form. In order to ensure the optimal use of municipal resources, and to maximise the value of municipal waste, it is important that the municipalities at the very least compare market solutions to the cost of providing the service in-house. In order to be able to do so it is also vital that the municipalities keep accounts for the waste management separated from other parts of the municipal budget. This is described further in Chapter 4, which addresses competitive neutrality.

Municipalities hold a central position in the waste management sector, but with changing regulations and shifting market conditions, how they perform their role as market facilitators is a matter of increasing importance. In a circular economy, the potential benefits of competition through innovation and increased efficiencies are something the municipalities cannot afford to miss out on. Public presence in the waste management sector is also put under closer scrutiny with the introduction of new legislative tools in some Nordic countries that focus on the actions of public entities in competitive markets. As the waste management sector becomes more market-oriented and the degree of competition between public and private undertakings increases, the issue of competitive neutrality, or lack thereof, will become ever more relevant for the Nordic countries.

Municipal undertakings in the Nordic countries are often well run, and have both know-how and a desire to innovate. They are fortunate in having certain financial advantages over private undertakings, and exclusive rights to household waste. At the same time, they are restricted with regard to their expansion into new areas and investments, to name but a few examples. Ensuring a fair and competitive market for all types of waste undertakings should lead to an improvement in productivity. Some would struggle in the face of competition, beleaguered by high costs and outdated business models but, on the other hand, some would thrive by outperforming the competition. Innovation would no longer be a question of political will, it would be a necessity in order to stay competitive and ultimately for survival in the market.

1.3 Previous work

Competition problems in markets related to the treatment of waste have been a topic that has received increased interest from national competition authorities and international organisations in recent years. As an example there have been competition cases regarding waste management in most of the Nordic countries over the last few years. The Nordic competition authorities, the OECD and the European Commission have written several reports on the green economy and waste management. In order to lay a foundation for this report it is important to take into account this previous work on the subject.[19]

[19] **Nordic reports:** 1/1998: Outsourcing of municipal services; 1/2010: Competition Policy and Green Growth; and 1/2013: A Vision for Competition – Competition Policy towards 2020. **OECD papers:** 2010 OECD Roundtable on Pro-Active Policies for Green Growth and the Market Economy"; 2013 OECD Roundtable on Waste Management Services; OECD issue paper, The State of Play on Extended Producer Responsibility (EPR); and 2015 OECD Green Growth Studies on Material Resources, Productivity and the Environment. **EU contributions:** 22/9 2005: DG Competition Paper – Concerning Issues of Competition in Waste Management Systems; SEC (2011) Report from the Commission to the European Parliament and others on the Thematic Strategy on the Prevention and Recycling of Waste; and The European Commission's contribution to OECD report of April 4 April 2014, Waste Management Services DAF/COMP(2013).

Those reports, summarised in Annex I, share the common theme that the waste management sector, and the way waste is handled, is changing. During the last three decades the use of tenders and other market mechanisms has increased drastically. The leading causes of this development include the extended responsibility of producers and importers, the will to increase efficiency in the waste management sector and the fact that waste is increasingly being viewed as a valuable resource. This development is also in line with the concept of a *circular economy* and the *Rio Declaration* mentioned above.

In the OECD Competition Commission's 2013 Roundtable on Waste Management Services it is stated that *"[e]nvironmental objectives, taxonomy, and historical practices govern much of the law and regulation that applies to the waste sector, including the management of municipal solid waste (MSW). Although these regulations constrain the conduct of the firms operating in this sector, competition can nevertheless be relied upon to provide incentives for efficiency. Competition authorities' advocacy can help to ensure that laws and regulations achieve environmental goals in a least-anticompetitive way."*[20]

According to the report, the experience of competition law enforcement does not support any special treatment for the waste management sector. It states that several decisions have managed to balance the different objectives of competition and environmental protection. If special legislation or contracts are needed to ensure environmental protection, the path that harms competition the least should be chosen, according to the OECD.

The reports also indicate that international organisations involved in competition policy, and national competition authorities, show an increased interest in competition in this sector. The impression is that there is a greater need for advocacy and intervention in this sector than in many others. The new structure of the sector is in its infancy, producer responsibility organisations tend to have considerable market power and the involvement of public actors in the market is common.

The Nordic Council and the Nordic Council of Ministers have also been active in studies of the Green economy.[21] The Prime Ministers of the Nordic countries have initiated a program called "The Nordic Region – leading in green growth".[22] The initiative is an eight part plan, with one part being the development of new techniques and methods for waste treatment. The goal is to develop methods and technology for selected types of waste for which there is known potential, e.g.

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[20] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 5.

[21] For more information, see the web page on the Nordic Council's work on green growth http://www.norden.org/en/theme/green-growth

[22] For more information about the Prime Ministers' Green Growth Projects see http://www.norden.org/en/theme/green-growth/the-prime-ministers-green-growth-projects

building and construction waste, plastic waste, reducing food waste and textile waste. The Council also hosts the Nordic Waste Group that works to help in the transition to a circular economy.[23] The Nordic Waste Group has published a number of reports on waste management, including recent reports on plastic and textile waste.[24]

1.4 Final remarks

In this report the Nordic competition authorities want to take a closer look at the roles of different actors in the waste management sector, existing competition problems in waste management in the Nordic countries, and possible solutions to those problems. As mentioned in the preface it was decided to focus on public restraints of competition and the organisation of certain EPR systems. There will therefore be less focus on traditional competition issues, i.e. illegal collusion, abuse of dominant position and merger control.

The report shows that, in the short term, there is a need for certain changes in order to increase competition in the waste management sector. In the long term there is a need for strategic reorientation in waste management in the Nordic countries. There also needs to be a certain change in the mind-set of stakeholders and in terms of how waste management is perceived. Governments, national Environmental Protection Agencies (EPAs) and municipalities need to notice and utilise the possibilities and potential that increased competition in waste management has to offer.

It is time for us to move beyond the mere consideration of waste as a resource, and to start actually treating it as one. The Nordic countries would benefit from increased use of market solutions in the waste management sector as the competitive process is the best guarantee for efficiency gains, both in terms of value maximisation and for achieving environmental targets. This means constructing a regulative framework robust enough to sustain high environmental standards, but simultaneously a framework that is sufficiently flexible and conducive to commerce and innovation.

[23]For more information about the Nordic Waste Group see: http://www.norden.org/en/nordic-council-of-ministers/council-of-ministers/the-nordic-council-of-ministers-for-the-environment-mr-m/institutes-co-operative-bodies-and-working-groups/working-groups/nordic-waste-group-nwg

[24] See the Nordic Waste Group's (NWG) website for a list of its publications.

2 The legal framework and structure of the waste management sector

The Nordic competition authorities are responsible for safeguarding and promoting competition in their respective countries through the enforcement of competition law and competition advocacy activities.[25] All the competition authorities are empowered to enforce the prohibition of anti-competitive agreements and abuses of a dominant position.[26] These forbid agreements between competitors that limit competition, and forbid undertakings enjoying a dominating position in a market from unduly restricting competition or exploiting their customers. Both of these rules apply to the waste management sector and there have been instances in several countries of cases exploring possible breaches of competition law in this sector.

As previously stated, the Nordic competition authorities decided to write a report on waste management following a workshop on the matter in the autumn of 2014. It had become clear that there are many similarities in both the systems for waste management and in the competition problems that have emerged in the Nordic countries. However, there are also some differences and various different ways used to deal with similar competition problems. The main theme of many competition problems in the sector is that in many cases they stem from, at least in part, the way that the system and legal framework is designed. In particular, the different roles and goals of actors in the waste management sector can lead to competition problems.

In this chapter the structure and legal framework of the Nordic countries in relation to waste management is discussed with an emphasis on the different goals and roles of market actors. Some data on the size and scope of the Nordic waste management market is presented below. Understanding the legal framework and structure of waste management in the Nordic countries is important if we are to be able to analyse the market and possible competition problems within it. For example, municipalities play a central role in waste management in the Nordic countries. Municipalities and their undertakings have to some extent been active in three different ways within waste management: as organisers of the services; as regulators and surveillance authorities; and as competitors in the market. This

[25] On top of these major tasks, which are similar across the Nordic countries , the Nordic competition authorities have additional responsibilities in the areas of public procurement, sector supervision and consumer policy. However, the roles and assignments with regard to these tasks differ, in some cases significantly, from country to country.

[26] The Nordic countries have all incorporated statutes along the lines of Articles 101 and 102 Treaty on the Functioning of the European Union (TFEU), Official Journal C 326, 26.10.2012, p. 47–390.

situation has led to certain public restrictions on competition in the waste management markets.

Uncertainty regarding the roles of different market actors can affect competition. This applies especially to competition neutrality issues. If public undertakings are in competition with private undertakings, a level playing field is required.

2.1 The impact of EU and international law

The legal framework for waste management in the Nordic countries is heavily influenced by the policy and legal framework on waste in the European Union. Sweden, Finland and Denmark are members of the EU. Iceland and Norway are a part of the internal market through the EEA agreement. Greenland and the Faroe Islands are not members of the internal market; nevertheless their legal framework is influenced by international law, EU law and the legal framework in the other Nordic countries, especially Denmark.[27]

As mentioned in Chapter 1, the EU has made the *circular economy* a central part of its policy. The essence of the concept is to use resources as efficiently as possible. A *circular economy* is a move away from the linear industrial economy of "take-make-consume and dispose" to an industrial economy that "reuses, repairs, refurbishes and recycles" resources.[28] This policy is of great importance both for waste management and resource efficiency within the EU. The European Commission's roadmap towards a circular economy states:

> *"The circular economy requires action at all stages of the life cycle of products: from the extraction of raw materials, through material and product design, production, distribution and consumption of goods, repair, remanufacturing and re-use schemes, to waste management and recycling. All these stages are linked (for example, use of certain hazardous substances in the production of products can affect their recycling potential, if the substances become subject to regulatory requirements at later stages, or the quality and value of recycled materials, if not addressed adequately), and improvements in terms of resource and energy efficiency can be made at all stages.*

[27] The Faroe Islands and Greenland are self-governed parts of the Danish kingdom.

[28] Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, Towards a circular economy - A zero waste programme for Europe, COM(2014) 398 final. See also the Nordic Prime Ministers' green growth projects which include creating a resource-effective life cycle in the waste treatment sector. http://www.norden.org/en/theme/green-growth/the-prime-ministers-green-growth-projects.

> *Promoting the circular economy also requires demand-side measures. The development of innovative solutions and new markets also need to be supported as a key element of the circular economy.*
>
> *Important barriers to the circular economy arise from market failures (e. g . weak price signals due to lack of internalisation of externalities on some commodity markets , split incentives for actors across the value chain, lack of information for investors or consumers, etc.), but also governance and regulatory failures, some of which can be linked to EU legislation (e.g. some ineffective or insufficient policy tools, unaddressed implementation problems, lack of coherence between policy instruments, creation of administrative burden and barriers, lack of harmonised standards, etc.).”*[29]

The European Commission recently adopted a circular economy package consisting of legislative proposals and an action plan[30]. The legislative proposals consist of proposed amendments to the current waste management directives, the *Waste Framework Directive*[31], the *Landfill Directive*[32], *WEEE-directive*[33], *ELV-directive*[34], *Battery Directive*[35] and the *Packaging Waste Directive*[36]. Amongst other things, the amendments consists of new common targets for recycling levels and use of landfills, new and updated definitions and also harmonised calculation methods for recycling rates throughout the EU. The current *Waste Framework Directive* sets out the basic concepts and definitions related to waste management. It defines different types of waste, recycling and recovery and also the “end-of-waste” criteria, i.e. what happens when waste ceases to be waste and becomes secondary raw material. The *Directive* also contains some basic waste management principles, for example that waste should be managed without endangering human health or harming the environment. According to the *Directive* all waste should be managed according to a specific waste management hierarchy.

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[29] European Commission, Roadmap – Circular Economy Strategy, April 2015. http://ec.europa.eu/smart-regulation/impact/planned_ia/docs/2015_env_065_env+_032_circular_economy_en.pdf

[30] Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, *Closing the loop - An EU action plan for the Circular Economy*, COM(2015) 614/2.

[31] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (OJ L 312, 22.11.2008, p. 3).

[32] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ L 182, 16.07.1999, p. 1).

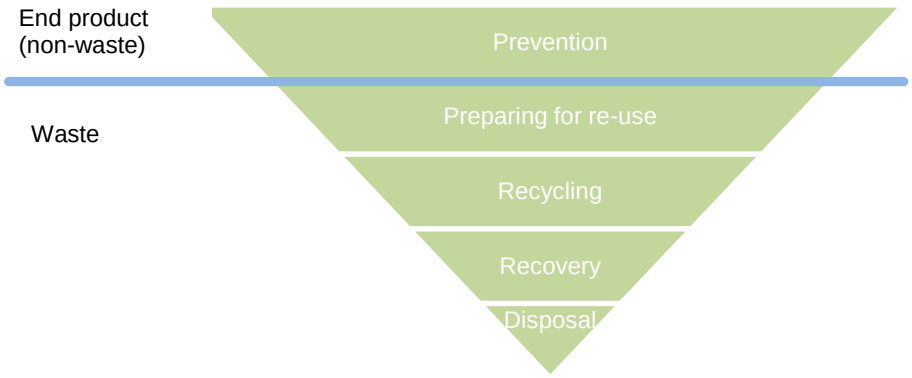
[33] Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (OJ L 197, 24.7.2012, p. 38–71).

[34] Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end of life vehicles (ELV) (OJ L 269, 21.10.2000, p. 34–43).

[35] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC (OJ L 266, 26.09.2006, p. 1–14).

[36] Directive 94/62/EC of European Parliament and Council of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10).

Figure 1 Illustration of the waste management hierarchy.



The waste management hierarchy lays out the way in which waste should be managed. First of all, creation of waste should be prevented to the greatest extent possible, e.g. packaging of products should not be excessive and materials used should be environmentally friendly. After prevention, waste should be reused, recycled or recovered (energy recovery) in that order. Finally, waste that cannot be prevented, reused, recycled or recovered in some way may be landfilled or disposed of in another manner.

The Directive introduces the "polluter pays" principle and "extended producer responsibility" into the European legal framework. These principles were formulated in the *1992 United Nations Rio Declaration on the Environment and Development*, cf. principle 16 of the *Declaration*. These principles state that producers and importers have the legal, physical or socio-economic responsibility for environmental impacts that stem from their products and packaging. The OECD has also been an avid promoter of the polluter pays principle and Extended Producer Responsibility (EPR).[37]

Definitions of waste are important not only because different rules can apply for different types of waste, but also because they can apply at different stages of the management. In Article 6 of the *Waste Framework Directive*, the end-of-waste criteria are set, i.e. that certain specified waste shall cease to be waste once it has undergone some form of recovery and:

1. the material is commonly used for specific purposes,
2. a market or demand exists for the material,
3. the material fulfils technical requirements for its use in existing legislation or standards, and
4. the material does not lead to overall adverse environmental or health impacts.

[37] See OECD's fact sheet on EPR, http://www.oecd.org/env/waste/factsheetextendedproducerresponsibility.htm

Once a material ceases to be waste, restrictions and other rules relating to waste should no longer apply to it, i.e. the material should be treated as any other commodity on the common market.[38]

In Article 3 of the *Waste Framework Directive* there are various definitions of words and concepts related to waste management. Waste is defined as *"any substance or object which the holder discards or intends or is required to discard"*. Waste management is defined as *"the collection, transport, recovery and disposal of waste, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker"*. In the foreword to the *Waste Framework Directive* it is acknowledged that *"member states maintain different approaches to the collection of household wastes and wastes of a similar nature and composition."*[39] It is therefore appropriate that not only the common recycling targets set out in the Waste Framework Directive but also the definition of municipal waste take into account the member states' differing systems. Municipal waste is not defined in the current Waste Framework Directive but it is defined in entry 20 of *Commission Decision no. 2000/532/EC* as waste from households and similar commercial, industrial and institutional wastes (e.g. paper and cardboard, glass, kitchen waste, clothes, solvents, edible oil and fat, paint, batteries, WEEE and garden waste).[40] The recently adopted proposal for an amended Waste Framework Directive defines municipal waste as "*mixed waste and separately collected waste from households […] and […] waste from other sources that is comparable to household waste in nature, composition and quantity."*[41]

According to Article 28 of the *Waste Framework Directive,* member states are required to ensure that waste management plans are established. The plans shall cover the entire geographical territory of a member state and need to be in line with the fundamental principles and objectives of the *Waste Framework Directive*. Once the waste management plan has been drawn up, member states shall inform the *Commission* of the plan. [42] The same applies for the waste prevention programme that each member state is obligated to enact, cf. Article 29 of the *Waste Framework Directive*.

The EU first introduced measures on the management of packaging waste in the 1980s. Rules were set regarding the production, marketing, use, recycling and

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[38] For more information about the end-of-waste criteria visit: http://ec.europa.eu/environment/waste/framework/end_of_waste.htm

[39] See recital 41, Directive 2008/98/EC on waste.

[40] Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, (OJ L 226, 6.9.2000, p. 3).

[41] Proposal for a directive of the European Parliament and of the Council amending Directive 2008/98/EC on waste, COM(2015) 595 final - 2015/0275 (COD).

[42] For more information about waste management plans visit: http://ec.europa.eu/environment/waste/plans/

refilling of containers for liquids for human consumption. Different member states introduced diverging national legislation with regards to packaging and, for that reason, the EU saw a reason to harmonise. The current *Directive on Packaging Waste* (with later amendments) aims at providing a high level of environmental protection and ensuring the functioning of the internal market by avoiding obstacles to trade and distortion and restriction of competition.[43]

Consequently, one of the main objectives of the *Directive* is to promote competition in the management of packaging waste. It requires member states to set up systems for return, collection and recovery, systems that should be open to participation from all interested parties as well as being designed to avoid discrimination or distortions of competition.[44] These conditions seem to address the upstream market (the product market) more than waste management itself. However, the systems should promote competition in the waste management market as well. According to Article 15 of the *Directive*, member states are allowed to decide fees in accordance with the polluter pays principle for the management of packaging waste.

Waste of electrical and electronic equipment (WEEE) such as computers, refrigerators and mobile phones is one of the fastest growing waste streams in Europe. WEEE is a complex mixture of materials, some hazardous, that if not properly managed can damage people's health and the environment. To address the problems associated with WEEE the EU has enacted two directives, *Directive 2012/19/EU* on WEEE and *Directive 2002/95/EC* on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive). *Directive 2012/19/EU* became effective on 14 February 2014 replacing *Directive 2002/96/EC* the *previous WEEE Directive*. The objective of the change was to improve implementation and enforcement, to set higher recovery targets and to cut unnecessary administrative burdens.[45]

According to Article 5 of the *WEEE Directive*, member states shall ensure that WEEE from private households is collected separately and that final holders of the waste can return it to a facility (a transfer and sorting station or a store) at least free of charge. Producers and importers are allowed to set up and operate individual or collective take-back systems (a Producer Responsibility Organisation (PRO)) for WEEE from households. In Article 12 and 13 respectively the financing of WEEE management is decided. Producers should finance at least the collection from collection facilities, and the treatment, recovery and disposal of WEEE. The take-back schemes set up should not affect the possibility of new entry into the market or exclude niche and low-volume producers and importers.

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[43] Art. 1, Directive 94/62/EC on Packaging and Packaging Waste.

[44] Art. 7, Directive 94/62/EC on Packaging and Packaging Waste, see also recital 22.

[45] Commission press release IP/08/1878 3rd December 2008, http://europa.eu/rapid/press-release_IP-08-1878_en.htm

How the EPR schemes are to be set up is not governed by the *Waste Framework Directive* or the *directives on Packaging Waste and WEEE*. As a result, EPR systems vary widely across Europe and the Nordic countries.[46] Please see the description of the different schemes in Chapter 5 on EPR.

Other *EU* directives and regulations on waste concern, e.g. incineration, landfilling, batteries, end-of-life vehicles, shipments of waste and mining waste and plastics.[47] Shipment of waste is regulated in the EU's *Regulation 1013/2006 on shipment of waste*. The Regulation is mandatory for all of the European Union and is also relevant for the EEA agreement. Besides the *Regulation*, the member states are obliged to set national legislation, for instance for the financial guarantee in the notification procedure. The procedure for shipment of waste is divided into two categories. Either it may be shipped according to the procedure for "green-listed waste" or it needs to be notified to the national competent authority. In some instances the *Regulation* contains possibilities for member states to reject the cross-border trade of waste, cf. Articles 11 and 12. This is discussed further in Section 3.2.4.

One of the important prerequisites for a reliable waste management policy is statistics on waste. The EU has created a framework for the production of statistics on waste with *Regulation no. 2150/2002 on waste statistics*. The *Regulation* requires EU and EEA countries to produce statistics on the generation, recovery and disposal of waste and to submit the results to Eurostat. The statistics collected are supposed to allow the EU waste policy implementation to be monitored and evaluated. In writing this report, the Nordic countries encountered problems in collecting reliable statistics on parameters that affect competition in waste management, for example, data on procurement and the activities of waste management undertakings. Those difficulties are discussed further in Section 3.3.1.

The EU waste management directives and regulations described above are mainly concerned with harmonising technical standards, reporting standards and protecting the environment. Understandably, the main aim of the directives is not specifically to promote competition. In that sense they are competition neutral and directives concerning EPR have, as one of their aims, to not prevent competition in the upstream market (product market). For this reason, national legislation and systems for waste management can vary widely within the EU and the stage of liberalisation of waste management services differs between individual member

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[46] See for example Cahill, Grimes and Wilson, Extended producer responsibility for packaging waste and WEEE – a comparison of implementation and the role of local authorities across Europe, Waste Management and Research 29[5] 455–479, 2010.

[47] Directive 1999/31/EC on the landfill of waste, Directive 2000/76/EC on the incineration of waste, Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators, Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, Directive 2000/53/EC on end-of-life vehicles, Directive 2006/21/EC on the management of waste from the extractive industries, Directive 96/59/EC on the disposal of PCBs and PCTs, Directive 86/278/EEC on sewage sludge, Regulation (EC) No 1013/2006 on shipments of waste and Regulation no. 1257/2013 on ship recycling.

states. This is contrary to other pieces of EU legislation regarding some sectors that traditionally are heavily influenced by governments and national legislation, such as the telecommunications and electricity sectors.

Other international law or treaties may affect waste management in the Nordic countries, for example, the *1992 UN Rio Declaration* which sets 27 principles for the environment and development. Those principles are some of the corner stones of global waste management policy, in particular principles 14, 15 and 16 on preventing environmental dumping, the precautionary principle and the internalisation of environmental costs (polluter pays principle*). The 1989 UN Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal* aims to reduce the movement of hazardous waste between nations. Specifically, *the Convention* aims to prevent the transfer of hazardous waste to less developed countries that are not equipped to treat it correctly.[48]

2.1.1 Procurement rules

All of the Nordic countries, with the exception of Greenland and the Faroe Islands, are directly or indirectly required to follow the EU directives on public procurement. These directives constitute an entirely separate legal framework regarding the procurement of waste management services.

The aim of the directives on public procurement is to ensure free and unbiased competition when tendering for a public contract. This is ensured through the principles of non-discrimination, equal treatment, proportionality, transparency and mutual recognition, which are coupled with remedies for the market-actors when the principles have been breached.

Public procurement rules are important for the waste management sector in the Nordic countries as a large part of the services municipalities offer are procured from private and, in some cases, public waste management undertakings. Denmark, Finland, Iceland, Norway and Sweden are a part of the internal market, either as EU member states or through the EEA agreement. For that reason, they are bound by the public procurement rules of the Union, and their national public procurement rules are otherwise heavily influenced by EU legislation. The Faroe Islands have specific public procurement legislation that is applicable when municipalities or public undertakings procure waste management services. In Greenland there is no specific legislation on public procurement.

[48]For more information about the United Nation's Basel Convention *on the Control of Trans-boundary Movements of Hazardous Wastes and Their Disposal* please visit the webpage http://www.basel.int/

The current EU public procurement directive is *Directive 2004/18/EC* on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts. There is also a specific directive in force regarding public procurement in water, energy, transport and postal services sectors, i.e. *Directive 2004/17/EC*. The aim of the rules is to make procedures for awarding contracts transparent and open to all European companies. The procurement procedures in the directive are mandatory for contracts that exceed a certain monetary amount[49] and one of the main objectives of the rules on procurement is to facilitate increased competition, cf. recital 2 of the Directive.[50] The Directive, chapter V, allows for certain different procurement techniques to be utilised, e.g. open tenders and competitive dialogue.

The current *Procurement Directives* remain in force until 17th April 2016 when it will be replaced by the *Directives 2014/24/EU and 2014/25/EU*. A new *Directive 2014/23*/EU on concession *contracts* will also enter into force.[51] The aim of this reform of the procurement rules is to simplify the procurement process for public purchasers and other stakeholders and to provide the best value for money for public purchasers, whilst taking into consideration the principles of transparency and competition.[52] The 2014 directives also introduce new procedures for innovation procurement and are generally more flexible and aimed at facilitating innovation-friendly procurements, although some effects of these new procedures can already be achieved with existing legislation based on the 2004 directives. If the procurements, for example, are based on function rather than defining in detail how the contract is to be performed, then they are generally more innovation-friendly.

There are some differences in the implementation of the procurement directives between the Nordic countries, especially the manner in which the remedies directive[53] has been implemented. However, the basic rules and principles are the same.

It is important to remember, however, that the rules on public procurement govern the behaviour of public entities when contracting for an outside supplier. The rules

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[49] The current threshold for service contracts, including waste management services is € 207,000.

[50] "[…]However, for public contracts above a certain value, it is advisable to draw up provisions of Community coordination of national procedures for the award of such contracts which are based on these principles so as to ensure the effects of them and to guarantee the opening up of public procurement to competition. These coordinating provisions should therefore be interpreted in accordance with both the aforementioned rules and principles and other rules of the Treaty."

[51] A concession contract is a kind of partnership between the public sector and a (usually) private company that has shown its added value in a specific area, for example, developing infrastructure.

[52] For more information about the reform please visit: http://ec.europa.eu/growth/single-market/public-procurement/modernising-rules/reform-proposals/index_en.htm .

[53] Council Directive 89/665 EEC of 21 December 1989 on the coordination of the laws, regulations and administrative provisions relating to the application of review procedures to the award of public supply and public works contracts (OJ L 395, 30.12.1989, p. 33–35).

do not apply when a public entity performs the task itself. For a further discussion of procurement issues, please see Section 3.3.3.

2.2 The legal framework in the Nordic countries

As stated above, the influence of the EU directives and international law on the legal framework in the Nordic countries is considerable. In most cases, EU legislation is laid down in directives rather than regulations and, for that reason, the member states have more leeway to incorporate the rules into their domestic law. The directives lay out certain principles and targets for waste prevention, reuse, recycling, etc. The various member states and EEA countries can, for that reason, go about fulfilling those targets in a variety of different ways. This is one of the factors that can explain the differences in the legal frameworks and the setup of waste management in the Nordic countries.

The EU legislation is centred on protecting health and the environment and most targets and goals that are set within it concern waste prevention and the correct management of waste, i.e. the waste hierarchy. The regulations only to a lesser extent decide how each member state's waste management sector is to be regulated from the standpoint of competition, i.e. who is eligible to provide the services and whether or not there is a competitive market.

The legal framework for waste management in the Nordic countries is quite extensive and public presence in the market is fairly strong. For that reason, special provisions in environmental laws and waste management regulations can make it difficult or impossible for the Nordic competition authorities to intervene with a binding decision. In those cases, advocacy is the only tool available to promote increased competition.

Below is a short description of the similarities and differences in the legal framework for waste management in the Nordic countries.

2.2.1 General remarks

Neither Greenland nor the Faroe Islands are members of the EU or the EEA area. They are also the smallest of the Nordic countries with regards to population. Special conditions apply to the legal framework and structure of waste management in those countries. In the Faroe Islands, municipal undertakings are tasked with all waste management and therefore free competition is very limited. Lack of infrastructure limits the possibility for competition in waste management in Greenland. All waste transfer stations, landfills and incinerators in Greenland are owned and operated by municipalities. See Annex II for further descriptions of the legal framework in Greenland, the Faroe Islands and the other Nordic countries.

The waste management sector in the other Nordic countries is more comparable, i.e. Denmark, Finland, Iceland, Norway and Sweden. All of the countries are part of the internal market, either as EU member states or through the EEA agreement. Therefore the same EU legislation on waste applies to all. The Nordic countries also have a long tradition of cooperation and turn to each other in respect of policy and legislation, which in many cases is quite similar.[54] However, there are also some notable differences, for example, waste is not defined in the same way in all the Nordic countries and the exclusive rights that municipalities enjoy cover different sections of the waste management market.

As stated above, according to Articles 28-29 of the *Waste Framework Directive 2008/98/EC*, member states need to publish national plans for waste management and waste prevention. The Nordic countries have published such plans both on a national and regional level. The waste management plans set out the policy objectives of the national and regional governments with regards to waste management. The plans need to be evaluated every six years and they usually refer to the forthcoming 10 year period. For this reason, the plans are an important starting point when it comes to waste management legislation and the possibility for increased competition in the sector.

Ongoing regulatory reforms that some of the Nordic countries are undertaking can affect competition. Some of them are aimed at increasing the efficiency of waste management while others may be aimed at competition-related aspects. For example, a working group in Denmark was tasked with finding ways to increase the efficiency of the incineration sector. One of the aims of the Icelandic government's ongoing review of the waste management legislation is to increase competition in the sector. The Norwegian waste legislation, with regards to municipal waste management, has been amended to level the playing field between public and private competitors and the Norwegian WEEE regulation is currently being reviewed. The Swedish government has recently started an investigation into how the responsibility for the collection of packaging waste falling under the scope of the existing EPR system can be transferred from the producers to municipalities. In Finland, the Waste Act is currently being reviewed and, amongst other things, a limitation of the municipalities' exclusive rights to waste is being discussed.

Both quantitative and qualitative goals and objectives of waste management found in the laws of the Nordic countries, other than Greenland and the Faroe Islands, originate from the EU legislation that has been implemented. An example of qualitative goals is the waste management hierarchy mentioned above. Quantitative goals which are minimums with regards to the management of certain types of waste usually emanate directly from EU legislation. As an example, reuse and

[54] The Nordic countries have close collaboration through the Nordic Council which is an official inter-parliamentary body. For more information about the Nordic Council please visit: http://www.norden.org/en/nordic-council .

recycling of household waste should be increased by no less than 50% overall by 2020. This includes materials such as paper, metal, plastics, glass and possibly wastes of other origins. Member states are free to strive for more stringent goals and such goals are often to be found in the national plans for waste management. For instance, Iceland's goal is that the use of landfills will be reduced to less than 5% of the overall weight of waste by 2025. These auxiliary goals are usually strategic and not legally binding.

2.2.2 Similarities and differences

The waste management sector in the Nordic countries is comparable, at least in respect of Denmark, Finland, Iceland, Norway and Sweden. However, there are some differences between the individual states of the Nordic countries with regard to waste management. Waste is not defined in the same way everywhere. For example waste is defined by source rather than form in Denmark, Iceland and Norway. In those countries, household waste is defined as waste that is produced by households. Meanwhile, Finland defines household waste as *"waste generated in permanent dwellings, holiday homes, residential homes and other forms of dwelling, including sludge in cesspools and septic tanks, as well as waste comparable in its nature to household waste generated by administrative, service, business and industrial activities."* In Sweden, household waste is defined as *"waste from households and waste similar to household waste"*. In Greenland, the definition of waste is up to each municipality and in the Faroe Islands, the definition is sub-categorised by two municipal undertakings.[55]

The municipalities' responsibilities cover different sections of the waste management market in the Nordic countries. In all the Nordic countries, the responsibility extends to waste from households and the municipalities control the collection and further management of household waste, albeit in various different ways. In Denmark, each municipality is also responsible for the treatment of waste from companies, with regard to incineration and landfill. It is up to each municipality in Sweden to decide exactly what waste is considered to be "waste similar to household waste". In Finland, the municipality can decide to either organise the collection of household waste itself or leave the organisation of collection to the property holders[56]. In the Faroe Islands and Greenland the responsibility extends further.

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[55] IRF (Interkommunali Renovatiónsfelagsskapurin L/F) and KBR (Kommunala Brennistøðin).

[56] *Property holder* is defined as the owner of a real property or the holder of the lease on the property in Chapter 1, Section 6 of the Finnish Waste Act (646/2011).

The participation of private undertakings in waste management is different in each of the Nordic countries. In most cases, competition is free in the Nordic countries when it comes to the collection and further management of commercial and industrial waste, but the same does not apply to household waste in most cases. In Iceland, municipalities procure collection services for household waste in almost all instances. In Finland there are some instances of free competition in the market for collection of household waste, i.e. if the waste collection is organised by property holders and not the municipality. In many cases, the municipalities in Sweden procure a part of household waste management on the open market. In Denmark the collection of household waste, combustible and landfillable waste is often procured by municipalities from private undertakings. Some municipal or inter-municipal waste management undertakings in Norway procure a part of the services from private undertakings. In some cases, Norwegian municipalities procure the services directly from public or private undertakings. In some instances, the collection of waste is procured from private undertakings in municipalities in Greenland and the Faroe Islands.

One of the similarities between the Nordic systems is the fee structure for publicly provided services. The Swedish *Local Government Act* states that the municipalities may not charge higher fees than those corresponding to the cost of the services or goods which the municipality provides. According to Icelandic "service fee" provisions, fees collected by municipalities for waste management are never to exceed the cost of providing the service. According to the Finnish *Waste Act*, a municipality shall collect a waste charge for waste management it organises to cover any costs it incurs in managing the task. A reasonable return on capital[57] may be collected as part of the waste charge in Finland. In Norway, the waste fee charged by the municipality should reflect the cost of managing the household waste. The reason behind this structure is that the municipalities should not be able to exploit their legal and natural monopolies. However, this fee structure cannot correct for possible inefficiencies in the municipal systems.

The table below describes the similarities and differences of the legal framework in different Nordic countries. The table compares the definitions of household waste, as well as the extent of the municipal exclusive position and the participation of private undertakings in the markets for waste management services. See Annex II for further descriptions of the legal framework in the Nordic countries.

[57] In addition to the usual investment costs, the reasonable rate of return in municipal waste management in Finland may also include the costs for after-care of landfills. The return target should be set at a reasonable level, but not substantially under that which is usually set for public goods. Undersized return target may lead to infringements of the EU state aid regulations or compromising competitive neutrality rules. See Chapter 4 for details.

Table 1 The legal framework of waste management in the Nordic countries – Definitions and extent of competition

	Definition of household/municipal waste	The extent of municipal exclusive position	Participation of private undertakings
Denmark	Waste is defined by source rather than form. Household waste is defined as waste generated by households, e.g. domestic waste, garden waste.	Municipalities have an exclusive position regarding the collection of all household waste and the collection of commercial waste to incineration and landfills. In buildings with a mix of undertakings and residents, companies can acquire the services from municipalities.	There is competition in the collection of commercial and industrial recyclable waste. The collection of household waste, combustible and landfillable waste from commercial undertakings is in many cases procured by municipalities from private undertakings.
Faroe Islands	There is a clear distinction between household and commercial/industrial waste. Municipal Solid Waste (MSW) is sub-categorised by national laws and regulations.	IRF and KBR, the municipal undertakings, are tasked with all waste management in the Faroe Islands, i.e. both household and commercial waste.	There is some competition in respect of the management of scrap metal. IRF and KBR, the municipal undertakings, can also procure a part of the services from private undertakings.
Finland	Household waste is defined as "Waste generated in permanent dwellings, holiday homes, residential homes and other forms of dwelling, including sludge in cesspools and septic tanks, as well as waste comparable in its nature to household waste generated by administrative, service, business and industrial activities."	The municipal exclusive position extends to household and similar waste as defined by legislation. The municipality may decide that property holders are responsible to organise the collection of household waste. Even in these cases the municipality decides how the waste is disposed of. If the municipalities decide to organise the collection themselves, they always procure these services.	There is free competition in the collection and management of waste other than household waste, as defined by law. There is free competition for the collection of household waste in municipalities where the waste collection is organised by property holders and not the municipality. In some cases the municipalities or their undertakings procure a part of the service, e.g. collection of household waste.

Continued

	Definition of household/municipal waste	The extent of municipal exclusive position	Participation of private undertakings
Greenland	Each municipality decides how waste is defined within its area. Most municipalities differentiate between the collection of domestic waste and waste from industrial and commercial facilities.	The municipalities can opt for having in-house waste management services.	In some cases, in larger settlements the waste collection is outsourced to private undertakings. In smaller settlements the service is usually provided by the municipalities themselves. All waste facilities i.e. waste transfer stations, incinerators and landfills are owned and operated by municipalities.
Iceland	Waste is defined by its source rather than form. Household waste is defined as waste from households, e.g. glass, paper, cardboard, plastics, etc.	The municipalities' exclusive rights extend to the collection of waste from households. The municipalities also control that waste stream. Some EPR waste from households may not be collected by municipalities kerbside, e.g. batteries, disposable drink containers, hazardous waste, etc.	There is free competition in the collection and further management of comercial and industrial waste. Municipalities also procure collection services for household waste in most instances. Whether or not further management, e.g. sorting is a part of the procured service depends on the terms of the procurement contract.
Norway	Waste is defined by source, rather than form. Household waste is defined as waste from households. Any waste from non-household premises is the responsibility of the undertaking producing the waste. The municipality must monitor that waste emanating from industries which is similar to household waste is properly collected, and that the relevant regulations are adhered to.	The task of collecting and sorting household waste has historically been a public task in Norway and it is still the municipalities' exclusive right pursuant to Section 34 of the Pollution Control Act.	There is free competition in the collection and further management of industrial and commercial waste from undertakings. Some municipal or inter-municipal waste management undertakings procure a part of the services from private undertakings. In some cases municipalities procure the services directly from public or private undertakings.

Continued

	Definition of household/municipal waste	The extent of municipal exclusive position	Participation of private undertakings
Sweden	Household waste is defined as "waste from households and waste similar to household waste". Waste similar to household waste refers to waste which in this context is comparable with waste coming from households but is produced by industries, businesses and other similar activities. It is waste that is generated as a direct consequence of people gathering in a particular place, regardless of the reason for such a gathering, for example, waste from canteens, restaurant waste and sewage. Each undertaking is responsible for ensuring that the waste it produces (other than waste similar to household waste) is taken care of in accordance with health and environmental rules	The municipalities' exclusive rights extend to household waste as defined by law. It is thus up to each municipality to decide the exact scope of the definition of waste similar to household waste.	There is competition regarding both the collection and treatment of industrial waste. But only as far as it is not defined waste similar to household waste. Private undertakings also participate in the collection and treatment of waste covered by the municipalities' exclusive rights through public procurements.

2.3 The structure of the waste management sector in the Nordic countries

The legal framework of waste management in the Nordic countries was described above. It follows from that description that there are many similarities in the legal framework and the extent of municipalities' involvement in waste management. There are also similarities in the structure of the waste management sector in different Nordic countries. Below is a further discussion of the role of different stakeholders in waste management. Those stakeholders are municipalities, sector regulators, consumers, private waste management undertakings and producers and importers. However, first it is relevant to take a look at indicators of the size of the waste management market globally, in Europe and in the Nordic countries.

2.3.1 Size of the market and statistics

Waste management is becoming a major business worldwide and some analysts predict that the size of the global waste management market will be around US$ 475 billion (€ 423 billion) in 2015 and US$ 562 billion (€ 501 billion) in 2020.[58]

According to empirical studies, increased competition in the waste management sector can lead to considerable savings without affecting the level of service. Different studies have shown that potential savings when procuring waste collection could be between 10 and 47%.[59] Effective competition also increases dynamic efficiency and facilitates innovation. According to data from national statistics bureaux, the turnover of undertakings active in waste management was € 1.5 billion in 2013 in Finland, € 8.5 billion in 2013 in Sweden, € 3 billion in 2012 in Norway, € 2.6 billion in 2014 in Denmark and € 94 million in 2013 in Iceland.[60] The Nordic sector is therefore worth at least € 15 billion. If competition could lead to as little as 5% in savings, that would amount to savings of well over half a billion Euros.

In preparation for this report, the Nordic competition authorities sent out two questionnaires to be answered by each Authority in order to gather information about the Nordic waste management markets. This information is the main basis for this report. The second questionnaire involved gathering reliable statistics on different parameters important for assessing competition in waste management. It became evident during the fact-finding that statistics were both limited and often incompatible, for example on the procurement of waste management services. For that reason, one of the recommendations of this report is to improve statistics on waste by adopting common definitions.[61]

Below are six graphs that show the relative size and scope of the Nordic waste management sector in comparison to other countries in the EEA area. The data comes in most cases from the databases of Eurostat, the European Union's statistical office.[62] Greenland's and the Faroe Islands' waste management is not monitored by Eurostat. The table on the recovery rate of total waste is part of the information gathered with the second questionnaire.

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[58] Source Statista. http://www.statista.com/statistics/246178/projected-global-waste-management-market-size/.

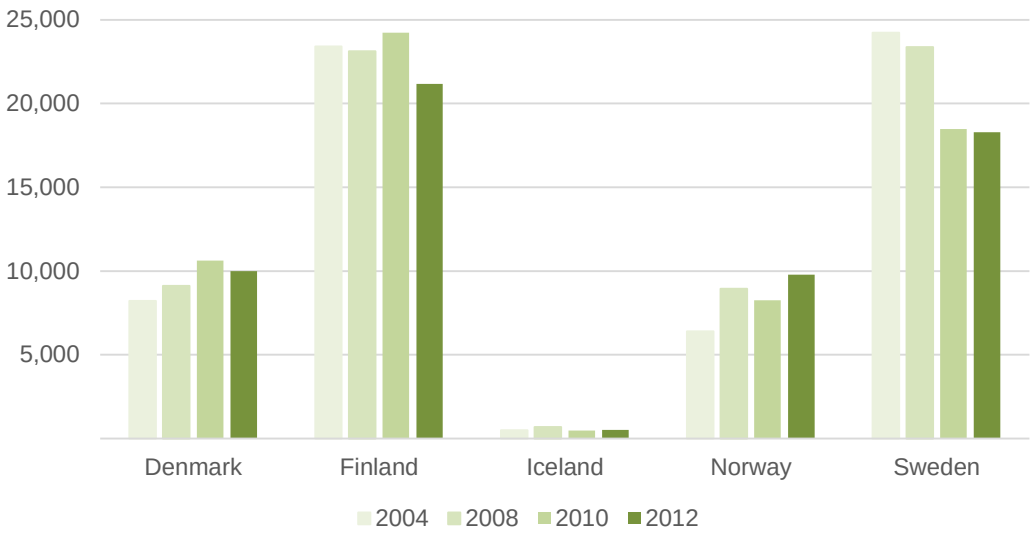
[59] See discussion on those studies in Chapter 3.3.3.

[60] Data from respective national statistics bureaux according to NACE section E-38 Waste collection, treatment and disposal activities; materials recovery. It should be borne in mind that the numbers may not be 100% accurate as some undertakings that are active in waste management may be categorised in other sections of the NACE code. What's more, some turnover of the undertakings in NACE E-38 may originate from services other than waste management. However, those numbers are a good indicator of the size of the Nordic waste market.

[61] See further discussion about data and statistics in Section 3.3.1.

[62] For more information about Eurostat please visit: http://ec.europa.eu/eurostat/about/overview.

Figure 2 Total waste in thousands of tonnes excluding major mineral waste[63]



Source: Eurostat.

Figure 2 describes the total waste generated in the Nordic countries, except for Greenland and the Faroe Islands.[64] In 2010, the total waste generated in the Faroe Islands was 58,000 tonnes and in 2014 it was 61,000 tonnes. Figure 2 shows that considerably more waste is generated in Finland and Sweden than in Norway, Denmark and Iceland. In Sweden, 18.2 million tonnes of waste was generated in 2012 whilst in Iceland only about half a million tonnes of waste was generated in the same period.

In addition to the waste detailed in Figure 2, Sweden, Finland and Denmark also generate a considerable amount of major mineral waste. In Sweden, 138 million tonnes of major mineral waste was generated, in Finland 70 million tonnes and in Denmark 6 million tonnes. The majority of the major mineral waste from Sweden and Finland comes from mining activities, 129 million tonnes in Sweden and 53 million in Finland. What is defined as waste and what is defined as a by-product may also vary from country to country.[65]

In the EEA, about 921 million tonnes of waste was generated in 2012 (2.5 billion tonnes if major mineral waste is included). The Nordic countries generated a total of

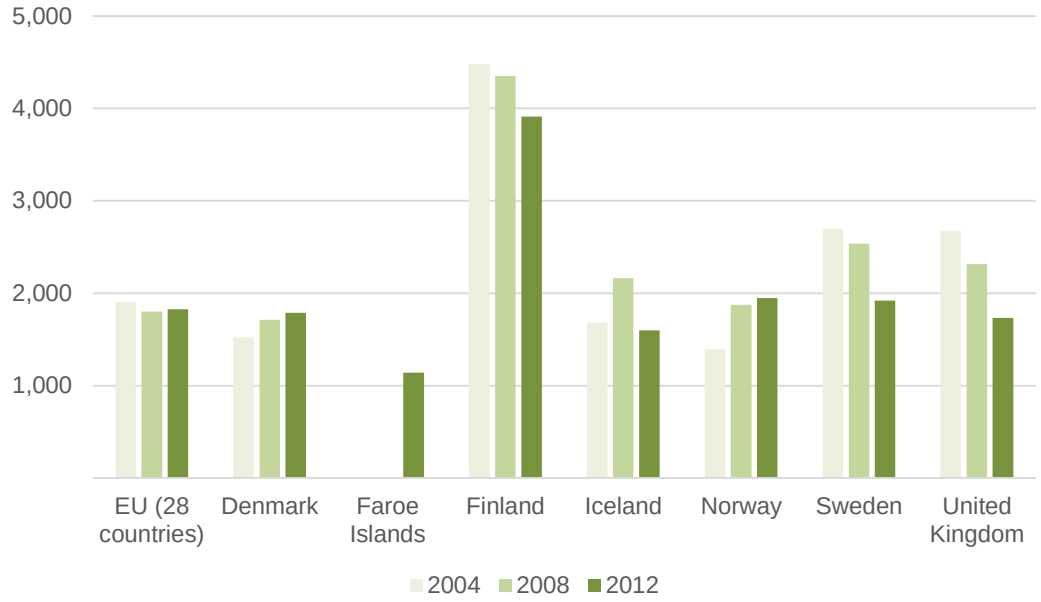
[63] Major mineral waste includes mineral waste from, for example, construction and demolition and mining activities (EWC-Stat 12.1 – 12.7). For more information see Regulation (EC) No 2150/2002 of the European Parliament and of the Council on waste statistics.

[64] Note that the statistics include both industrial and household waste.

[65] Mining is the major factor explaining the high waste figures in Finland. Moreover, there have also been some differences regarding the gathering of waste statistics in respect of Finland and Sweden. Up until 2013, Finland included fibre and wood-containing waste (barks, stumps and woodchips) from agriculture and forestry in the total amount of waste, contrary to the EU's instructions, whereas Sweden considered them to be by-products instead of waste. However, from 2013 waste statistics Finland no longer includes these items in the waste statistics.

55.5 million tonnes, which represents about 6% of the EEA's total waste generation. If major mineral waste is included, the Nordic countries generated 275 million tonnes in total, which represents about 11% of the EEA's total waste generated.

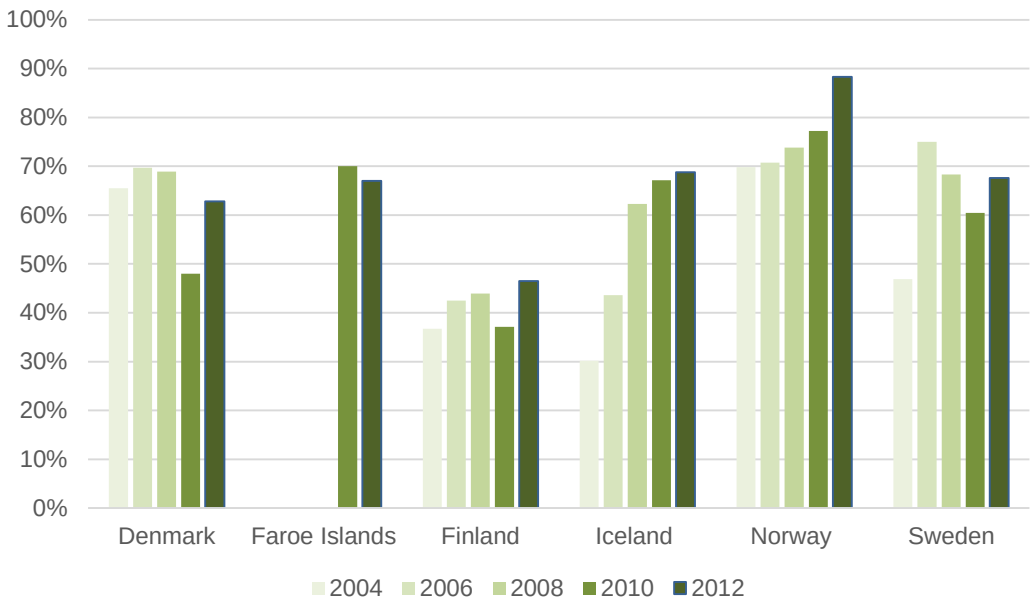
Figure 3 Total waste kilograms per capita excluding major mineral waste



Source: Eurostat and Faroe Islands.

Figure 3 shows the total waste per individual in each of the Nordic countries, the UK and the average in the EU. The numbers are for total waste and include both municipal and commercial/industrial waste. The figure shows a trend of decreasing amounts per capita in Finland and Sweden and the opposite trend in Denmark and Norway.

Figure 4 Total waste ratio of recovery*



Source: Answers to a questionnaire issued by the Nordic competition authorities. In most cases the data was collected from national EPAs.
* The data excludes mining waste in all instances except for Finland, which can explain the lower ratio due to the considerable mining activities in Finland.

Figure 4 shows the recovery ratio of total waste generated and is based on data that was collected from the second questionnaire on the waste management market, as mentioned above.[66] The Nordic countries have some of the best ratios of recovery in Europe and the world. Recovery in this context is defined as the following methods of management: incineration with recovery, composting, anaerobic digestion, recycling, other recovery and hazardous materials exported for treatment. Mineral wastes that are inert are usually landfilled[67] or used for land reclamation.

[66] The data for Denmark was collected from two different authorities. The data for the years 2004, 2006, 2008 and 2012 is from the Danish EPA. The data for 2010 is from Eurostat. The Danish EPA did not publish data for 2010 due to the implementation of a new database and poor quality of data for that year.

[67] In Finland, stockpiling of soil materials and the like, usually on site, is regarded as landfilling. For example, in 2011 approximately 96% of landfilled waste in Finland was mineral waste, such as waste stone from mining, quarrying and construction (bricks and concrete).

Figure 5 Total municipal waste (thousands of tonnes)

Source: Eurostat.

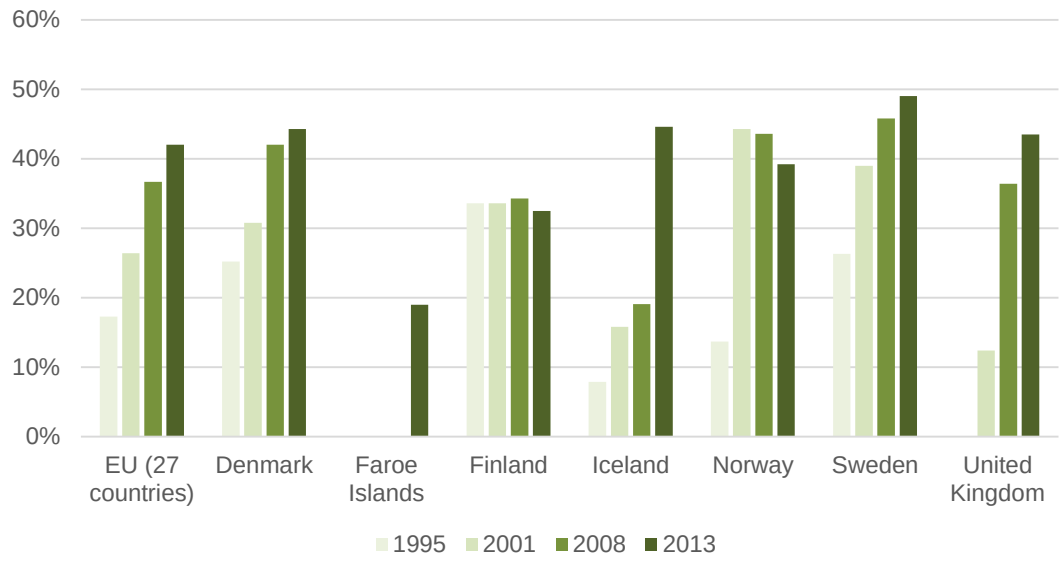
Figure 5 shows the size of the municipal waste markets in Denmark, Finland, Iceland, Norway and Sweden. The total municipal waste generated in the Faroe Islands (not presented in the table) was about 56,000 tonnes in 2014. Denmark and Sweden, which are the most populated countries, understandably generate the most municipal waste of all the Nordic countries - around 4.2 to 4.4 million tonnes whilst Iceland, the least populated of the Nordic countries presented in the table generated around 112,000 tonnes of municipal waste. The total generation of municipal waste in the EEA area is around 250 million tonnes. The Nordic countries account for about 5.4% of the EEA area's total municipal waste.

Figure 6 Municipal waste per capita (kilograms)

Source: Eurostat and Faroe Islands.

In 2013, individuals living in the Nordic countries generated an average of 603 kilograms of municipal waste. It is interesting to look at the evolution of the generation of municipal waste in Iceland. Figure 6 shows quite vividly the effect the economic crisis in 2008 had on the generation of municipal waste in Iceland as individual consumption contracted. The high numbers for the Faroe Islands can be attributed to differences in the definition of municipal waste as the Islands are not members of the EU or the EEA. KBI and IRF, the municipal waste management undertakings in the Islands, are responsible for the management of both municipal and commercial/industrial waste.

Figure 7 Municipal solid waste recycling rates



Source: Eurostat and Faroe Islands.

The recycling rate of municipal waste has been increasing quite rapidly over the last 20 years in the EEA area, i.e. from 17% in 1995 to 42% in 2013. In 1995, Iceland had the lowest municipal waste recycling rate for the Nordic countries at only 8%. Today, Iceland's recycling rate has increased almost six fold and seems to be on a par with other Nordic countries and the average for the EEA area.

2.3.2 The role of municipalities

As stated in Chapter 1, it is often the extensive and sometimes uncertain role that municipalities play that causes negative effects on competition in the waste management sector. Municipalities can simultaneously have roles as organisers, regulators and competitors in waste management. Those different roles can cause certain conflicts of interest.

In the Nordic countries, municipalities play a central role in organising waste management. Usually this role is a part of the function of municipalities according to laws on municipalities or waste management regulation. This role extends to the waste to which municipalities enjoy an exclusive right, usually waste from households. In some cases, the municipalities organising and administrating role also extends to other types of waste, such as waste from commercial undertakings. For example, municipalities in Iceland can set local waste management regulations that, for instance, obligate residents and undertakings to sort waste by type at the point of collection. In some Nordic countries, municipalities also decide, to a certain extent, how waste is defined. In Sweden, each municipality decides what waste is to be considered as waste similar to waste from households. This has in some cases

proven to be problematic as municipalities can interpret the definition of waste "similar to household waste" in various ways. Swedish municipalities may in this way be able to widen the scope of their own exclusive rights.[68] For a further discussion on market conditions, please see Chapter 3.

In the Nordic Countries, municipalities are either required or encouraged to draw up waste management plans, in which the general outline of how waste is to be managed in the municipality is described. One of the main objectives of the local plans is to reach the goals of the national waste management plan. The municipalities and regional governments are also tasked with local planning. If a public or private undertaking wants to open a waste management facility, e.g. a landfill, they need a building permit from the municipality. In many cases, a special permit for operating waste management facilities is also required. Municipalities have been reluctant to issue permits for waste management facilities, especially new landfills. The reason, in most cases, is the potential environmental effects, e.g. odour and water protection. This is a barrier for new entry into the waste management market.

In some cases, municipalities, or other bodies at the same level of government, are also tasked with certain surveillance of waste management operations. In Iceland, Local Health Boards (LHBs) issue permits for waste management undertakings and monitor their operations.[69] In Norway, municipalities must monitor that waste emanating from industry that is similar to household waste is properly collected and that relevant regulations are adhered to.

Both private and public waste management undertakings in the Nordic countries operate transfer and sorting stations, landfills, incinerators, recycling facilities and other waste management facilities that accept the same or similar types of waste. The municipalities are therefore direct or indirect competitors of private waste management undertakings in many instances. Municipalities and their undertakings are therefore often in direct or indirect competition with private firms. In Norway, some municipally owned companies compete for household waste treatment contracts in municipalities other than their own.[70] In some cases, municipal undertakings compete for the collection of commercial and industrial waste. In Sweden, for example, some municipal undertakings are engaged as direct competitors in the market for the collection of industrial waste. The competition from the municipalities is in general perceived as problematic from a competitive

[68] For example, there have been cases where municipalities have considered organic waste from grocery stores as waste "similar to household waste".

[69] Municipalities appoint the majority of the LHBs' members. Some private waste management undertakings have expressed the view that they need to fulfil stricter requirements than public waste management undertakings in order to be issued a permit.

[70] Norsk Industri og Maskinentreprenørenes forbunds rapport "Avfallsbehandling, Disponering av avfall – Kryssubsidiering", rapport nr. 20130018-1.

neutrality perspective by private undertakings for two reasons; *firstly*, because the municipalities are engaged in a market where they should not be competing at all, and *secondly*, that the municipalities have several advantages as competitors. For a further discussion on competitive neutrality, please see Chapter 4.

2.3.3 The role of sector regulators

In the Nordic countries there are national administrative authorities on waste management, Environmental Agencies. The Environmental Agency in each country is the main regulatory body which is entrusted by law with supervisory and monitoring tasks. The agencies are responsible for ensuring that waste regulations are complied with and they are tasked with designing and suggesting solutions within waste management. They are also responsible for ensuring that waste management is acceptable from an environmental perspective, that it is effective and that it is simplified for the consumer. A large part of the administration is delegated to the countries' municipalities or other local government bodies. The agencies have, amongst other things, the mandate to issue regulations and guidance. Their role is to promote the sustainable use of natural resources, environmental protection and public welfare, by helping to ensure a healthy environment and the safety of consumer goods.

National Environmental Agencies issue permits for waste management undertakings. Usually permits from Environmental Agencies concern larger facilities, such as landfills and incinerators and facilities that manage hazardous waste. In almost all cases, waste management undertakings are required to have special permits to operate in the market, either from the National Environment Agencies or local competent authorities.

There are some other authorities in the Nordic countries that are competent in matters regarding waste management. For example, the ministries and ministers responsible for the environment are responsible for waste management policy in each Nordic country.

2.3.4 The role of consumers of waste services

For households and companies, waste management is an essential service which needs to be guaranteed under all circumstances. Many consumers[71] are environmentally conscious and want to increase recycling and the sorting of waste.

[71] In the context of waste management, consumers of waste services are not only the households and companies producing the waste (waste producers) but also the natural or legal person who is in possession of the waste (often called the "waste holder").

There are examples where consumers have been instrumental in demanding increased sorting and recycling in the Nordic countries.[72] At the same time, the municipalities' exclusive right in respect of household waste limits the consumer's opportunities to exert consumer power.

Businesses in the Nordic countries primarily purchase waste management services from private waste management undertakings. That applies especially to collection services. In some instances, businesses ship their own waste to a transfer and sorting station that is either run by municipalities or by a private undertaking. The initiative for increased recycling has come from private undertakings in many cases in the last couple of decades. One of the main reasons for that is that working consciously with environmental issues is good for public relations and building brand names. Sorting valuable recyclable materials from other waste is also a possible factor in lowering costs.

In some cases, increased recycling and the sorting of waste into fractions at source is legally mandated. National laws or municipal regulations can demand that waste is managed in a certain environmentally friendly way, for example that paper and cardboard, plastics and metals are separated into individual fractions. In other cases, consumers are incentivised by public or private waste management undertakings to separate waste streams into different and more manageable fractions. The municipalities in most Nordic countries can use differentiating tariffs to incentivise certain behaviour in order to obtain specific environmental targets. For example, some municipalities have used a weight-based waste tariff for the collection of household waste.[73] But there are also other forms of incentives for sorting and recycling; fees may be decided according to the size of containers and the frequency of collection, or by whether or not food waste is sorted separately.

2.3.5 Private waste management undertakings

As a result of the Nordic municipalities' prominent position and exclusive rights with regards to municipal solid waste, as described above, private undertakings are prohibited from offering services for the collection of household waste to households, except as contractors to the municipality.[74] Private waste management undertakings do compete for contracts with municipalities that choose to outsource

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[72] For example, consumers that want to purchase "extra services" from private waste management undertakings in Reykjavík, the largest municipality in Iceland, have been able to do so since 2005.

[73] Avfall Sverige – Swedish Waste Management, Viktbaserad avfallstaxa - en litteraturöversikt, RAPPORT U2011:10, http://www.avfallsverige.se/fileadmin/uploads/Rapporter/Utveckling/Rapporter_2011/U2011-10.pdf.

[74] The scope of the municipalities' exclusive position differs from country to country. In Finland for example municipalities can decide that the collection of household waste should be organised by the municipality or by property holders and whether it shall apply to the whole territory of the municipality or only to specific parts (decentralisation). Meanwhile, in Denmark the scope of the municipal exclusive rights extends to commercial and industrial waste that is either combustible or landfillable.

the collection part of the service. In many cases, collection of municipal solid waste is procured from private undertakings. But there are exceptions, for example, the only municipality in Iceland that performs waste collection with an in-house operation is the city of Reykjavík, which is by far the largest municipality in Iceland. Municipalities also procure not only the collection of waste but also other waste management services from private undertakings, albeit to a lesser extent. For a further discussion on procurement issues please see Section 3.3.3.

When PROs organise the collection of EPR waste the situation is similar. The PROs can provide the collection services themselves or procure the services on the market. If the PRO is a private undertaking it is not bound by public procurement legislation.

As far as commercial and industrial waste is concerned, private undertakings are more or less free to offer their services in competition with public undertakings and they are only limited by legal requirements in respect of environmental concerns.[75] Private waste management undertakings perform most of the commercial and industrial waste collection in the Nordic countries. Private undertakings are allowed to operate waste management facilities, e.g. waste transfer and sorting stations, and in most cases they can also operate waste disposal facilities, e.g. landfills and incinerators. Most private waste management undertakings that offer a wide variety of services own and run sorting and transfer stations, usually integrated with collection services.

2.4 Conclusions

The *circular economy* is a central part of EU policy and the essence of the concept is to use resources as efficiently as possible. A *circular economy* is moving from the linear industrial economy of "take-make-consume and dispose" to an industrial economy of "reusing, repairing, refurbishing and recycling" resources.[76] This policy is of great importance both for waste management and resource efficiency within the EU.

The Nordic competition authorities believe that increased competition in waste management will help to attain the objectives of the circular economy, for example, innovation and the creation of new markets. There are different types of innovation,

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[75] The situation in Greenland and the Faroe Islands is different and in Denmark the scope of the municipal exclusive rights also covers some of the waste otherwise considered commercial waste.

[76] Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, *Towards a circular economy - A zero waste programme for Europe*, COM(2014) 398 final. See also the Nordic Prime Ministers' green growth projects which include creating a resource effective life cycle in the waste treatment sector. http://www.norden.org/en/theme/green-growth/the-prime-ministers-green-growth-projects.

for example, incremental or radical innovation.[77] An example of incremental innovation in waste management could be increased sorting at source or increased use of competitive tenders, whilst radical innovation might be implementing new technologies for recycling or radical changes to the institutional set up of waste management.

Historically, waste management has been a matter for the municipalities. Deregulation in some parts of waste management has opened up waste markets for competition in the Nordic countries. The trend seems to be moving increasingly towards more market orientation in most cases. However, there are also some exceptions, for example some cases of an alleged remunicipalisation of services (see for example the Blue Bins case described in Section 4.4.4) and the Swedish governmental investigation (mentioned above) into how the responsibility for the collection of packaging waste falling under the scope of the existing EPR system can be transferred to municipalities.

Some municipalities in the Nordic countries manage waste collection only with in-house services but municipalities seem to purchase services from either public or private waste management undertakings in most cases. Due to limited statistics it is difficult to identify any particular trends. For a further discussion on statistics please see Section 3.3.1.

[77] See, for example, an explanation from the Australian Institute for Commercialisation: *"Have you ever made improvements to existing technologies, processes, products or services? That's incremental innovation and is the most common form of innovation today. However incremental innovation often produces incremental growth.*
Radical innovation entails high uncertainty with high risks, and the potential, though not guaranteed, for high returns. To illustrate the difference between incremental and radical innovation think about the camera industry. Kodak led the industry for years developing new and improved products based on traditional film. However these were all incremental innovations based on the same technology. The radical innovation in this industry was the development of digital imaging. This revolutionised the industry and the way people captured, stored and used images." See also:
http://www.innovationtoolbox.com.au/why-innovate/innovation-can-be-incremental-or-radical

3 Creating and managing waste markets

As described in the previous chapters, the municipalities play a central role in waste management in the Nordic countries for both historical and legal reasons. They are required to ensure that household waste is properly taken care of but they have also been granted exclusive rights to household waste. Municipalities are in most cases administrators and organisers of waste management services. In some cases they, or other institutions at the same level of government, are also involved in surveillance of the activities of the various actors active in the market. Finally, municipalities and their undertakings are often active in providing waste management services, in many cases in competition with private undertakings.

Waste markets could be described as value chains where the effectiveness of each part is, to a varying degree, conditioned by the effectiveness of other parts of the chain. The value chain and market mechanisms set the framework for how municipalities may set up their waste management organisation efficiently. Meanwhile, the manner in which the municipalities ultimately choose to set up their waste management organisation may create a series of potential problems and distortions to competition (organisational issues). Similarly, the decisions that a municipality makes within any given waste management organisation may also cause competition problems and distortions, for example how individual municipalities define "waste similar to household waste" (executive issues).

In this chapter, the role of the municipalities in creating and managing waste markets will be discussed, as will the pros and cons of different organisational models. Furthermore, competition problems arising from executive issues and barriers to trade will also be discussed, in addition to specific issues relating to data and statistics and the pros and cons of public procurement procedures.

3.1 The waste market value chain

The waste market can be described as a chain where each link is of importance for the functioning of the whole system. The three main stages of the waste value chain are collection, sorting and treatment. However, the first stage of the waste value chain is the categorisation of waste into two main categories - either household waste[78] or commercial waste.[79] Definitions for each type of waste are provided by

[78] Waste from households. In Sweden and Finland this also covers "waste similar to household waste" (e.g. food scraps from office canteens).

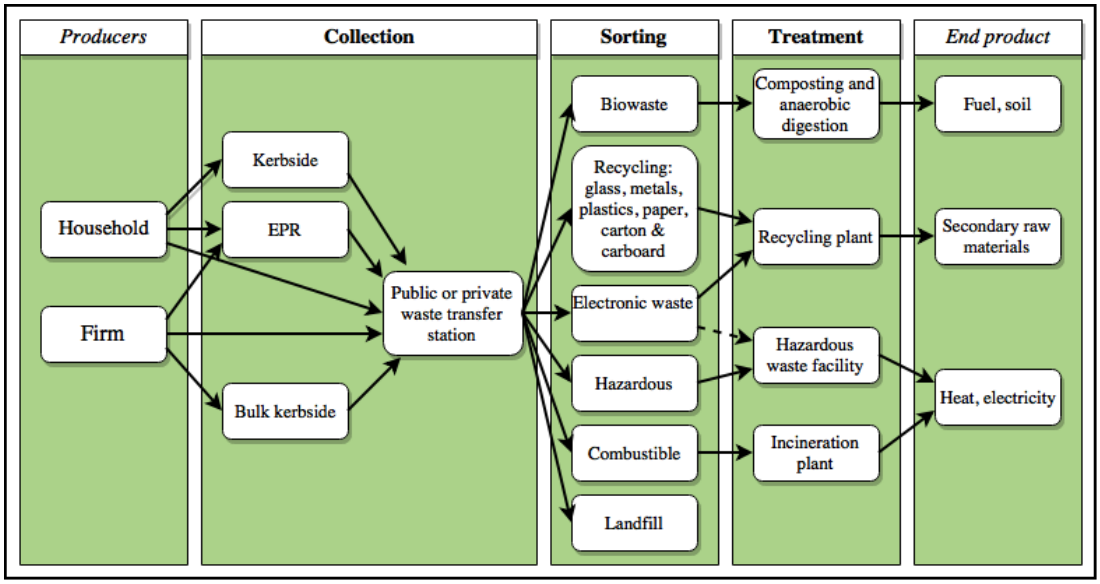
[79] Waste from commercial actors.

national legislation and these emanate either from the source of the waste or from its type.[80]

Waste collection is the second step in the waste value chain. In the Nordic countries, the collection of household waste is in most cases an exclusively municipal responsibility. Household waste is predominantly organised through kerbside collection, but some household waste falls under Extended Producer Responsibility (EPR) schemes[81] that often have special collection sites (recycling stations). The collection of commercial waste is not a municipal responsibility; it is rather the individual companies' responsibility to ensure that their waste is properly taken care of. Commercial EPR waste is often collected from commercial firms at the same time as other waste fractions.

The transportation of the waste to a waste transfer station is also part of this step. At the waste transfer station, the waste is sorted by its type and properties - e.g. bio waste, recycling material (further sorted in to e.g. metal, glass and paper), electronic waste, hazardous waste and combustible waste. When the sorting process is finished, the waste is packaged and transported to a treatment facility (unless the waste fulfils the criteria for it to be deposited in a landfill).

Figure 8 An overview of the waste value chain in the Nordic countries



This brings us to the third step in the waste value chain – treatment. There are four main types of treatment facilities for waste; composting, material recovery, incineration (i.e. energy recycling) and hazardous waste. Composting facilities transform bio waste into soil and fuel, recycling facilities recycle waste into

[80] See also Section 2.2.2.

[81] The organisation of EPR schemes is described in greater detail in Chapter 5.

secondary raw materials, and incineration and hazardous waste facilities produce heat and electricity. The efficiency of the treatment facilities depends among other things on the type of waste, how well it is sorted, and the technology being used. The steps of the waste value chain described above are illustrated in Figure 8, also above.

The organisation of municipal waste management differs both between and within countries and different parts of the world. Efficiency with regards to the collection, treatment and disposal of waste is conditioned by a number of different factors. Income levels, population density, geographic properties, political goals and environmental aspects are just a few of the aspects that impact on how waste management is operated, and these factors also partly explain why waste management differs from country to country and even from one municipality to another. The more developed an economy is, the more complex the waste management streams tend to be.[82] Furthermore, it has been argued that there is no optimal solution for waste collection that can be applied in every situation.[83]

The importance of making a full system assessment when creating and evaluating waste management services has been emphasised in the literature. As handling waste streams becomes more complex, using municipal waste management as an integrated and dynamic system becomes important in order to maximise collective welfare. The current system assessment tools[84], however, need to be developed to include economic, environmental, social, ecological, political, cultural, and managerial aspects in order to better assess the sustainability of current and future waste management systems. There is a need for a broad system analysis technique that incorporates many system assessment tools such as environmental impact assessment and life cycle assessment tools, amongst others.[85]

One approach to estimating the total cost and benefit of the waste chain is to perform a life cycle assessment (LCA), which is a procedure for calculating the environmental impact of a product or service over its lifetime. However, it has been argued that the value of utilising LCA as a tool for evaluating waste management is limited. LCA will, like any system assessment tool, only give a simplified view of a more complex problem, but used with its limitations in mind, it can provide decision-makers with useful information. Adding economic and environmental aspects into an LCA makes the analysis more complex and thereby provides better

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[82] Beede & Bloom, 1995, The Economics of Municipal Solid Waste, The World Bank Research Observer, vol. 10, no. 2.

[83] Hage, O., 2008, The Economics of Household Packaging Waste. Norms, Effectiveness and Policy Design, Doctoral Thesis, 2008:03, Luleå University of Technology, Department of Business Administration and Social Sciences, Luleå, Sweden

[84] Examples of system assessment tools are cost-benefit analysis, optimisation models and simulation models.

[85] A. Pires et al, 2011, Solid waste management in European countries: A review of systems analysis techniques, Journal of Environmental Management 92, pp. 1033–1050

information to the decision-makers. LCA used together with other system assessment tools gives a more complete view of reality and it gives decision makers more useful information.[86]

A study where LCA and economical valuation were applied to a recycling system in Milton Keynes, Great Britain, showed that recycling provides a net benefit compared to a waste disposal system. The study found that the combination of LCA and economical valuation can be applied to different waste management issues.[87]

3.1.1 Collection

Kerbside waste collection is the most common means of collection for both households and industry[88]. The OECD refers to studies that have found that the economies of scale for kerbside waste collection are exhausted in areas with a relatively limited population. In a study concerning USA, the scale has been found to be exhausted for cities/areas with 50,000 residents[89], and for certain regions in Italy, the economy of scale has been similarly found to be exhausted for cities with just over 42,000 residents[90], whereas the Italian Competition Authority found in one study that 16,000 residents[91] was enough to exhaust the scale benefits. However, it has also been concluded that, in many areas in Italy, household waste collection still does not reach its optimum scale and it should be expanded to include nearby territories.[92] All in all, whatever the actual ideal number of residents for economies of scale, these studies suggest that economies of scale in densely populated areas are exhausted for a relatively small number of residents.

The results from the studies suggest that larger municipalities could potentially gain from considering fragmentation of their waste collection areas. These areas could be tendered out independently and staggered over time to promote active competition within those markets, whilst also avoiding a situation where only one

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[86] T. Ekvall et al, 2007, What life-cycle assessment does and does not do in assessments of waste management, Waste Management 27, pp. 989–996

[87] Craighill, AL and Powell, JC, 1996, Lifecycle assessment and economic evaluation of recycling: A case study. Resources, Conservation and Recycling, 17 (2). pp. 75–96.

[88] An exception is extended producer responsibility (EPR) waste collection which is organised differently. The organisation of EPR schemes is described in greater detail in Chapter 5.

[89] Stevens, B.J., 1978, Scale, Market Structure, and the Cost of Refuse Collection, The Review of Economics and Statistics 60.3: 438–448. See also OECD, 2000, Competition in Local Services: Solid Waste Management, DAFFE/CLP(2000)13, Paris, p. 25.

[90] Graziano Abrate, Fabrizio Erbetta, Giovanni Fraquelli & Davide Vannoni ,2014, The Costs of Disposal and Recycling: An Application to Italian Municipal Solid Waste Services, Regional Studies, 48:5, 896–909,

[91] OECD, 2000, Competition in Local Services: Solid Waste Management, DAFFE/CLP(2000)13, Paris, p. 112.

[92] Antonioli, B. & Filippini, M., 2002, Optimal Size in the Waste Collection Sector, Review of Industrial Organization, Vol. 20, pp. 239–252.

actor has the necessary capacity to collect all of the waste in the region.[93] Similarly, smaller municipalities might gain efficiency from pooling at least some of their collection areas through tenders.

3.1.2 Sorting

The first crude sorting is conducted by households and firms when sorting the waste into different fractions, such as recyclable waste and food waste. This first sorting is important for the next steps of the waste value chain as waste transfer stations, where the finer sorting is performed, are more efficient when the waste it receives is well sorted – this in turn affects the efficiency of the next step of the value chain, the treatment facility.

The geographic location of the waste transfer station is important for its economic efficiency and should be chosen in such a way that it minimises the distance between where the waste is collected and the treatment facilities. A waste transfer station is associated with high sunk costs and long entry or expansion lead times due to environmental and permit reasons, and there are also high exit costs since the area normally needs to be sanitised after an exit. Investments in waste transfer stations are therefore typically long-term investments and the securing of a steady and reliable influx of waste is essential.

3.1.3 Landfills and treatment facilities

Landfills and treatment facilities for composting, anaerobic digestion, incineration, traditional material recycling and hazardous waste are also all associated with high sunk costs and long lead times for entry and expansion due to environmental regulations and permit requirements similar to those required for waste transfer stations. The investments in such facilities are therefore also made for a comparatively long timespan (20-30 years), and without additional investments they can often only be used for very specific purposes.[94]

Whilst the optimal number of residents for economy of scale in collecting waste seems to be below 50,000 residents, the economies of scale for treatment are much larger. Three independent studies from different parts of the world all find that the

[93] In Finland there are even some instances of side-by-side competition for household waste within the collection services. For further details, see Section 3.2.2 Decentralisation.

[94] OECD, 2013, Waste Management Services, background paper, Working Party No. 2 on Competition and Regulation, 23rd September 2013, DAF/COMP/WP2(2013)12.

optimal number of residents for treatment is 300,000[95,96,97]. In a recent literature study the empirical evidence points to scale benefits in cities with between 20,000 and 50,000 residents.[98] The conclusions that can be drawn from the empirical evidence are that small municipalities could potentially increase their efficiency through cooperation or common tendering of their waste treatment with others. Reducing barriers to the trade and transportation of waste could also increase the efficiency of treatment facilities.[99]

Securing the influx of the necessary waste volumes in order to reach and maintain at least the minimum, or ideally the optimal, scale is perhaps the biggest barrier to entry into the market for waste treatment. If a municipality operates its own anaerobic digestion plant, the municipality is likely to use its exclusive rights to secure the necessary volumes of waste. Private entrepreneurs may therefore find it hard to justify an investment to enter any market requiring the same input since it will be very difficult to secure the necessary waste volumes. This could decrease competition and as a consequence result in a less cost-efficient market with fewer innovations. The municipalities' responsibility to organise the waste management and their exclusive rights to household waste are therefore important factors.

A steady and reliable influx of waste could be facilitated by increased opportunities for cross-border trade, which at least to some degree is also relevant for sorting (see Section 3.1.2). *The Waste Framework Directive's* principles of proximity and self-sufficiency are not intended to impose a responsibility on each EU member state to necessarily possess the full range of treatment facilities themselves.[100] *The Directive* instead calls for cooperation between member states to establish an integrated and adequate network of waste treatment facilities. This clearly advocates not only cooperation between countries but also the concept of seeking the most efficient solutions through the cross-border trade of waste.

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[95] Graziano Abrate, Fabrizio Erbetta, Giovanni Fraquelli & Davide Vannoni, 2014, The Costs of Disposal and Recycling: An Application to Italian Municipal Solid Waste Services, Regional Studies, 48:5, 896–909.

[96] Shimada, 2012, Efficiency Evaluation of Philippines Waste Management Sector: A Two Stage Approach, Conference paper, https://www.researchgate.net/publication/242343111_Efficiency_Evaluation_of_Philippines_Waste_Management_Sector_A_Two_Stage_Approach

[97] Simões, P., De Witte, K., and Marques, R.C., 2010, Regulatory structures and operational environment in the Portuguese waste sector, Waste Management Volume 30, pp. 1130–1137.

[98] Bel, G., 2012, Local government size and efficiency in capital intensive services: What evidence is there of economies of scale, density and scope?, International Center for Public Policy Working Paper 12–15, Andrew Young School of Policy Studies, Georgia State University.

[99] See Section 3.2.4 for a discussion on trade barriers.

[100] Art. 16 Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

3.2 Competition problems and distortions

3.2.1 The municipalities' role in an efficient market

The multiple roles of the Nordic municipalities with regards to waste management place them in a very central and influential position concerning the creation and development of waste markets. National legislation in the Nordic countries assigns responsibility and decision-making rights for waste management, particularly regarding the household waste, to the municipalities[101]. It also grants the municipalities exclusive property rights to the collected waste.

The constitutional autonomy of municipalities allows municipalities to independently choose how to manage their local waste markets to a large extent. The municipality may choose to manage the whole chain in-house (full vertical integration) which can be done either through a municipally owned firm or through an inter-municipal (regional) co-operation without any involvement from private firms. This implies setting up an infrastructure capable of handling collection, sorting, treatment and the sale of the output - typically electricity, heating, secondary raw materials or biogas. The municipality may also choose to procure only part of the chain, for example the collection, or to procure the entire waste management service from private entrepreneurs, thereby disengaging from the actual management of the waste except for the responsibilities that follow by law (i.e. monitoring of compliance).

As an example, 71% of the Swedish municipalities procure the collection of household waste from private companies, whereas 25% perform the collection in-house, and the remainder rely on a combination of in-house and procured service providers.[102] Even if there are notable differences, for example in Finland, where the collection of household waste is every individual house owner's responsibility, in almost half of the municipalities the situation seems to be similar in the other Nordic countries. In Denmark, only a few out of the 98 municipalities do not procure the collection of household waste.[103]

Even though municipal autonomy allows for differentiated solutions to reach a common goal, as each municipality and/or region is allowed to utilise their own comparative advantages[104], it also implies that national governmental influence will

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[101] One should however note that the system differs somewhat between the various Nordic countries.

[102] Svensk Avfallshantering 2015, a report issued by Avfall Sverige (Swedish Waste Management).

[103] According to the Danish Environmental Protection Agency, there is no data regarding how many of the Danish municipalities have outsourced the collection of waste. However, it is the Danish Environmental Protection Agency's assessment that a large share of the Danish municipalities have outsourced the collection if waste."

[104] The original concept was formulated by David Ricardo, 1817, On the Principles of Political Economy and Taxation, London, Chapter 7).

need to be exercised through advocacy and guidance in addition to national legislation.

In order to get the best use of the resources at hand, the municipality should focus on cost efficiency and facilitating innovation whilst striving to reach environmental goals[105]. The municipalities also need to consider the entire waste management system in order to ensure compliance and compatibility between different parts of it[106]. Furthermore, efficiency not only depends on short-term factors such as contract length and choice of organisation, but also on more long-term aspects, such as previous and future investments in infrastructure.

The problems and distortions of competition in waste markets that can be attributed to the municipalities' (in-)activities generally derive from how municipalities choose to set up the management of waste markets - i.e. the organisational issues, or the actual management of waste markets - i.e. the executive issues.

3.2.2 Problems arising from organisational issues

Full vertical integration

Municipalities are legally responsible for the collection and treatment of waste from households. By placing this obligation on the municipality, society not only assigns liability but also in a way limits the price of having the service performed, whilst also ensuring that the entire population will be serviced. The highest price that a municipality (or most public offices/authorities) may charge for its services is regulated by the prime cost principle.[107] This prevents the municipal waste collector from charging an excessive price without having several waste collectors competing in the market. It also ensures that the entire market will be serviced.

The fact that a publicly controlled effort might be the solution that best addresses these issues does not necessarily imply that the services are most efficiently carried out by a public service provider. Whilst a publicly elected city council should have no incentives to extract a profit from its constituents, but rather an incentive to minimise the costs for providing the necessary services[108], the publicly employed

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[105] R. Kemp, K. Smith, G. Becher, F. Leone (ed.), 2001, IPTS report "How should we study the relationship between environmental regulation and innovation", EUR 19827 EN. In the report it is stated that the level and nature of competition allowed in the market by the environmental regulation is an important aspect in how regulations influence innovations.

[106] Whenever discussing the concept of efficiency it is important to define which type of efficiency is being referred to. In this report we generally refer to Kaldor-Hick's concept of efficiency (see e.g. Miceli, T., 2009, The Economic Approach to Law, 2nd ed , Stanford Economics and Finance).

[107] See for example Article 3, Section c in the Swedish Local Government Act (1991:900). There are some specific exemptions from the prime cost principle, however such exemptions have to be specified in legislation.

[108] How municipalities decide the waste handling fee to be paid by households is generally regulated through law.

administrators or the representatives of a municipally owned company might not have the same incentives[109].

Under certain circumstances, a fully vertically integrated system can usually be quite an efficient solution - for example, if there is no or only very limited access to capacity from private operators in the waste management market, or if there are no private operators that are prepared to make investments to develop or create the necessary infrastructure.

A fully vertically integrated, in-house waste management system may also create relatively high barriers to entry which may effectively shut out all competition. A municipality that has constructed such a system will arguably have the highest cost for switching systems, and thereby also incentives to protect and maintain the investments that have been made. The system also locks the municipality into a particular waste management solution. Furthermore, there may be spill-over effects into other markets when a municipality has to ensure that there is a continuous flow of combustible waste to be incinerated, and they may therefore extend the local definition of waste in order to maximise the input. That may for instance cause problems for companies recovering or recycling waste themselves.[110]

Another potential barrier to entry, and expansion, is disproportionate requirements stipulated for permits. There are a variety of permits ranging from rather simple transportation permits to more complicated environmental permits which entitle the holder to run, for example, sorting stations, landfills and incineration facilities. The permits aim to reach environmental goals and protect potential victims who could suffer from unregulated waste handling and disposal. It is not the permits as such that are problematic, but rather that the requirements necessary to obtain such permits can sometimes be set unnecessarily high. There seems to be no quantitative restrictions on the number of permits, however, the municipality is in some cases both the issuer of permits and the monitoring body. As the municipality is usually active in the market, this could potentially incentivise the municipality to create barriers to entry and expansion for private entrepreneurs through the stipulation of disproportionate requirements.

If a private entrepreneur is able and willing to perform the same service, with the same quality and quantity, at a cost that does not exceed the (prime) cost of the public actor performing the service, then the outsourcing of that service arguably enhances efficiency, given a sufficiently low cost of administration and compliance monitoring.

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[109] See Niskanen, W., 1971, Bureaucracy and Representative Government, Chicago: Aldine.

[110] See Section 3.2.3 under "Definitions of household waste".

Having several firms competing in the tendering process, with sufficiently low entry barriers and/or limited information (e.g. not communicating the number of participating firms and their offers) means that the offers are driven down to somewhere between the most efficient firm's own cost and the cost of the second most efficient firm[111]. During the past few decades, more and more waste management services have been deregulated and opened up for competition in the Nordic countries and new markets have been created as a result.

Partial vertical integration

Partial vertical integration occurs when the municipality has chosen to procure some part(s) of the operation(s) from private operators. Allowing private actors to compete, either in or for the market, through procurement processes could facilitate new market solutions and innovations which could lead to more cost-efficient services.[112] However, problems and distortions to competition may still arise depending on how the tendering is carried out. For example, a call for competition that is too detailed or narrow may create barriers to entry or de-incentivise the introduction of innovations.

One way to avoid barriers to entry and, at the same time, facilitate new and innovative solutions is to use function-based contracts. This is not a procedure in its own right, but a way of formulating contracts where the contracting authority states the desired goals and results instead of defining how a contract should be performed. This kind of contracting is generally considered innovation-friendly since each contractor can bring their own unique competencies into satisfying the contracting authority's needs. According to a draft report from the *Swedish Association of Local Authorities and Regions*, function-based procurements are described as a possible way to handle current and future challenges of waste markets.[113]

Procuring functions, as well as other kinds of public procurement of innovative solutions, present great opportunities but they are, at the same time, arguably more difficult for the municipality to evaluate, and they are risky. A firm could be awarded a contract due to an innovation that is expected to cut costs drastically, but whenever the expectations are not met, the winning firm will not be able to provide

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[111] See the concept of *Bertrand competition*, and the choice of auction.

[112] Allowing for competition could for instance help to bring in new green technologies and solutions that could add additional benefit for both the environment and the consumer.

[113] Funktionsupphandling - ett sätt att klara avfallshanteringens utmaningar, a draft report issued by Sveriges Kommuner och Landsting (SKL), May 2015.
http://skl.se/download/18.152b643114d6b5b5cc972ea4/1432195883224/SKL-Funktion-avfall-rapportkonsultation-150521.pdf

the service at the specified cost – it may perhaps even go bankrupt[114]. The municipality arguably carries a lower risk of defaulting than a procuring firm, which reduces the risk of having to make short-term arrangements (at a potentially high cost) to secure that the service is provided until a new procurement can take place.

The tendering therefore needs to be carefully balanced in a way that allows for innovations, whilst at the same time reducing the associated risks. The European Commission has argued for the following typology of risk in this kind of procurement: technological, organisational and societal, market, financial and turbulence.[115] This typology can then be applied when characterising the risks attached to a certain procurement (striving to reduce each kind of risk, mitigate potential costs and allocate responsibility). Detailed risk management guides intended to support the handling and management of risks in the public procurement of innovation have been developed, see for example the guide developed by the *Agency for Public Management and eGovernment* in Norway[116].

In some cases municipalities have chosen to create undertakings, sometimes co-owned with other municipalities, to which they award contracts and the responsibility to handle all the waste management services that each respective municipality needs. In these cases, contracts are usually directly awarded in accordance with the so called "Teckal exemption"[117]. The aim of the European public procurement rules is to ensure that the relevant public purchasing contracts are open to competition for suppliers across the internal market. But the Teckal exemption states that a contract between a contracting authority and a separate entity is not a contract regulated by the EU public procurement rules if the contracting authority exercises a control over the entity similar to that which it exercises over its own departments (the control condition), and the entity carries out the essential part of its activities with the controlling authority (the activities condition).

Thus the Teckal rules state that EU public procurement directives do not apply if a contracting authority concludes a contract with a third party that is only formally,

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[114] The *winner's curse* predicts that the winning firm will be the one that overestimates the value of the procured service and not the firm that makes the correct evaluation. See, for example, Buccirossi, Paolo (ed.) ,2008, Handbook of Antitrust Economics, The MIT Press.

[115] Risk management in the public procurement of innovation – Concepts and Empirical Evidence in the European Union, experet group report, published by the European Commission, 2010, EUR 24229 EN. http://ec.europa.eu/invest-in-research/pdf/download_en/risk_management.pdf

[116] Risk management in public procurement of innovation, published by Norwegian Direktoratet for Forvaltning og IKT (Difi), http://www.innobuild.eu/sites/innobuild/files/Managing%20risk%20in%20public%20procurement%20of%20innovation..pdf

[117] Case C-107/98 *Teckal Srl v Comune di Viano and Azienda Gas-Acqua Consorziale (AGAC) di Reggio Emilia, [1999] ECR I-8121.*

but not substantially, independent[118]. Third party solutions covered by the Teckal exemption are therefore not necessarily subjected to any competitive pressure and may therefore suffer from the same lack of incentives to evolve and innovate as a fully integrated solution. It should however be noted that the Teckal rules serve an important function in keeping the EU public procurement rules neutral in matters of organisational form.

However, complaints regarding contracts directly awarded to co-owned municipal companies do occur. *The Norwegian Complaints Board for Public Procurement* has, for example, reviewed a complaint regarding a co-owned municipal company that received directly awarded contracts from the owner municipalities.[119] *The Swedish Competition Authority* has recently conducted two parallel investigations where municipally owned companies would probably, on their own merits, be covered by the Teckal exemption. However, the companies had formed subsidiaries competing against private undertakings for the collection and treatment of commercial waste. The municipally owned companies argued that they were covered by the Teckal exemption since "all" activities in the parent companies were carried out with the controlling municipalities. The fact that the subsidiaries carried out most, if not all, of their activities in competition with private undertakings should not affect the exemption, due to the formal separation of entities. However, the Swedish Competition Authority argued in its decision that such an organisational setup must be analysed in a functional manner or else the effectiveness of the public procurement rules would be jeopardised. Consequently, the Authority argued that the two municipally owned companies should not be subject to the Teckal rules[120]. However, a judicial review is currently in progress since the decisions have been appealed.

Whilst the Teckal rules allow some activity in competitive markets (within a certain percentage of turnover), such activity may clash with rules on competitive neutrality since an activity that is well within the limits of the Teckal rules may still cause distortion in the market. It should therefore be noted that the Teckal rules might cause some friction in conjunction with the rules on competitive neutrality. For a further discussion on competitive neutrality, please see Chapter 4.

Furthermore, since the Teckal rules allow a certain degree of turnover in the open market, it is quite difficult to accurately assess when an entity covered by the rules is actually overstepping them. Whilst it might be difficult for the municipal company itself to keep track of whether it keeps within the boundaries, it is

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[118] Commission Staff Working Paper concerning the application of EU public procurement law to relations between contracting authorities ('public-public cooperation'), SEC(2011) 1169 final, p. 6.

[119] Norwegian Complaints Board for Public Procurement (Klagenemnda for offentlige anskaffelser) joined cases 2012/157-165, 2012/169 and 2012/181, www.kofa.no.

[120] Swedish Competition Authority's cases number 728/2014 and dnr 733/2014.

arguably even more difficult for anyone outside, and perhaps particularly SMEs that lack the necessary resources and knowledge. A lack of transparency or openness and no legal requirement to keep separate financial accounts of competitive and non-competitive activities within municipal companies may cause ambiguity and/or uncertainty in the market. This may in turn cause private undertakings to hesitate from making the necessary investments to either enter the market or develop their business in order to stay competitive.

It is therefore important to increase transparency through a legal obligation to keep separate accounts and a certain level of openness. However, it is equally important to keep in mind that increased transparency may also cause problems as it could facilitate coordination between competing undertakings.

Decentralisation

A decentralised waste management organisation implies that private entrepreneurs are allowed to directly compete in the market. A fully decentralised system, where the collected household waste becomes the property of the collector who, in turn, may choose a marginally more profitable way of treating the waste[121], could facilitate the creation of markets where other enterprises could bid for the collected waste; they might also incentivise innovation and other cost reductions. However, even in a decentralised organisation, governmental monitoring will probably still be necessary in order to ensure compliance with, for example, environmental goals, and to ensure that treatment is carried out in accordance with the applicable legal framework.

In Finland, the municipalities have an option to choose a decentralised waste management organisation in respect of the collection of household waste. A municipality may, according to *the Finnish Waste Act*, decide that the collection of household waste should be organised by the municipality or by the property holders[122], and whether it shall apply to the whole municipality or just specific parts. Approximately half of the Finnish municipalities have chosen to retain their exclusive rights for the collection of household waste. The other half, which covers about 40% of the Finnish population, has chosen to decentralise the organisation. In those municipalities the collection of household waste is performed by private waste collection firms under individual contracts with the property holders.

However, regardless which organisation it has chosen, the municipality is always responsible for the overall functionality of the municipal solid waste management.

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[121] However, there must always be sufficient capacity (either domestically or internationally) so that all waste can be treated in an environmentally approved manner.

[122] *Property holder* is defined as the owner of a real property or the holder of the lease on the property in Chapter 1, Section 6 of the Finnish Waste Act (646/2011).

For instance, the municipalities are still responsible for ensuring that household waste is collected and the municipality also has the exclusive rights to the collected waste. The municipalities decide how and where the waste is to be disposed of but they also monitor how the waste collection services are performed. The Finnish model can thus be described as a partially decentralised waste management organisation since the property rights to the collected waste are not transferred to the private companies performing the collection services.

A decentralised waste management organisation has the capacity to provide many potential benefits. It could provide waste management companies with the opportunity to combine the collection of both commercial and municipal solid waste, and this might increase efficiency. It could also bring new and innovative solutions to match the needs of the consumers of the waste management services (amongst others). It also holds a potential for small and medium enterprises to compete, as the entrant may choose, endogenously, the area in which they wish to compete, rather than being bound to a procurement area set by the municipality. It could also allow enterprises to only compete for a specific step in the waste value chain, which in turn may limit the investments necessary for entry.[123]

However, there are also potential risks. The option to endogenously choose the area in which to compete could lead to cherry-picking, which in turn could result in substantially increased costs in areas where private entrepreneurs are interested in competing, and this could subsequently lead to a situation that is not Kaldor-Hicks efficient. Furthermore, in a decentralised waste management organisation, the prime cost principle will not restrict the price that the consumer is charged. Also, the economies of scale in collecting waste[124] and the substantial investments necessary could potentially constitute significant entry barriers that only allow one actor to be active in some markets, whilst also allowing that actor to utilise the (natural) monopoly power and price accordingly.[125] Another potentially complicating factor for this market is the legal requirement that all household waste must be handed over to a carrier. Opting out of utilising the service all together is not possible regardless of who is providing the service.

There are some tentative indications that this may be the case in Finland as there are some areas with only one active waste management company, and there are reports

[123] A strategically correct procurement can provide similar opportunities for small and medium-sized companies to compete.

[124] See Section 3.1.1.

[125] On the other hand, an option to combine the collection of both commercial and municipal waste could increase efficiency. Usually, in Finland, this opportunity is not granted in municipal waste regulations.

that the price of waste collection in the decentralised municipalities is higher than in municipalities that adopt more traditional waste collection solutions.[126]

3.2.3 Problems arising from executive issues

Property rights

Provided that the collection of waste is characterised by some type of (limited) economies of scale, the most efficient way to organise the collection of waste would arguably be to promote a system where the potential actors compete for the markets that would be created as a result of dividing up the market in question into different geographical subareas and/or waste types.[127] However, if only one actor (the municipality) is allowed to make use of the collected waste then there could potentially be several innovators that never get access to those resources, and such a market could arguably benefit from an increased side-by-side competition for the waste. This could however also require a transfer of the ownership (i.e. the property rights) of the waste from the municipality to another actor.

Whilst it is possible, or perhaps even likely, that further progress in the reuse and recycling of waste materials could require lawful access to waste materials for both public and private operators, a legal framework regulating the handling of waste will still be necessary to ensure a continued move upwards in the waste hierarchy, and so that the full externalities of different treatment methods are taken into consideration.

Ronald Coase[128] showed that, if there is a market with sufficiently low (i.e. zero) transaction costs, where those causing and suffering from an externality may bargain over the optimal amount of whatever is creating the externality, then an efficient outcome may be reached regardless of how the resources are initially allocated (the resource allocation insight is sometimes referred to as Coase's invariance thesis). However, if there are prohibitively large bargaining costs,[129] then Coasian bargaining may not be feasible and the efficient outcome will probably not

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[126] Mälkönen, V. ja Tukiainen, J. 2010. Jätekuljetuksen sopimusmallien yritysvaikutukset. Valmisteluraportit 1. Valtion taloudellinen tutkimuskeskus (VATT). Incl. english summary. See: http://www.vatt.fi/file/vatt_publication_pdf/valm.rap.1.pdf

[127] It is far from certain that the boundaries of a municipality are the most efficient delimitation, or that household waste should necessarily be collected by the same operator who collects plastic waste from firms, or even that the entire population of a city should be serviced by the same actor.

[128] Coase, R, 1960, The Problem of Social Cost", Journal of Law and Economics, Vol. 3, pp. 1–44, The University of Chicago Press. Although not explicitly stated as a theorem therein, the theorem is commonly attributed to this paper.

[129] This is the case when e.g. there is one polluter whilst there are many suffering from that pollution. Coase's model only includes one polluter and one victim, with full information for both parties regarding actual marginal damages and the marginal cost of reducing output.

be reached. Other issues that could affect the likelihood of reaching an efficient outcome could be when the bargaining parties have limited information or misaligned incentives[130]. Creating markets and reducing transaction costs are therefore regularly advocated, but may not be considered a universal solution.

Furthermore, even though the initial allocation of property rights might not matter in order to reach an efficient outcome, it will nevertheless redistribute wealth from the non-property holder to the property holder. Assigning property rights under imperfect information could also incentivise different actors to exaggerate either the costs or benefits from the externality. Imperfect information about the other parties' actual marginal cost and/or gain from pollution could therefore prevent an efficient outcome. There is also a hypothesis that there exists a more passive cognitive bias called the endowment effect[131] (or divestiture aversion) where individuals tend to value things they own at a price higher than they would pay to acquire them had they not owned them.

The existence of a (bidding) market for the collected waste could potentially lower the required waste collection fee[132] as the waste may now also yield additional revenue whenever marginally more profitable alternatives acquire access to the waste. No matter who holds the property right, the same incentives to sell waste to actors that value it marginally higher already exists (this is the basis for the Coase theorem). However, what has been mentioned above could constitute prohibitively large bargaining costs and care must be taken when designing the proper mechanism for bargaining within these markets. It is of course also of utmost importance that a market actually exists where those interested in acquiring waste may present their offers.

Awarding ownership of the waste to the one collecting it may be argued to potentially create disincentives for long-term investments. Building a treatment facility is a substantial investment; it takes a long time to recover the investment and therefore requires a continuous access to waste. However, this is not necessarily an unwanted outcome. Requiring the current or future operator of a treatment facility to actively and continuously consider the marginal cost and benefit of

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[130] There are several papers highlighting the weak applicability of the Coase theorem on real world problems. Examples include that bargaining is not a market but a negotiation and that it is therefore subject to game theory and dynamics from other areas of strategic interaction, see e.g. the Myerson-Satterthwaite theorem (Myerson, R.B. & Satterthwaite, M.A., 1983, Efficient Mechanisms for Bilateral Trading, Journal of Economic Theory, 29 (2), pp. 265–281). Critique has also been directed toward the full information requirement of both parties necessary to achieve an efficient outcome (see e.g. Hahnel, R. & Sheeran, K.A., 2009, Misinterpreting the Coase Theorem, Journal of Economic Issues, Vol. 43, No 1, pp. 215–238). The critique is not so much against the theorem itself, but rather the way in which it is often interpreted, without considering several of the issues associated with the practical application of the theorem – something that Coase himself indeed acknowledged.

[131] The term was first coined by Richard Thaler but the bias had been observed even prior to that. It is, however, not certain that this effect is present in all situations. Thaler, R, 1980, Toward a positive theory of consumer choice, Journal of Economic Behavior & Organization, vol. 1, issue 1, pages 39–60.

[132] As long as the cost of administering the market is less than the additional revenue generated.

treating more waste could arguably reduce the incentives to overstate the gain from the current practise, as well as hopefully reducing any potential endowment effect.

In that way, facilitating alternative uses for waste could, in an efficient manner, mitigate the incentives to invest in additional treatment capacity. If, for example, a regional treatment facility proved to be the most efficient solution, it might force local treatment facilities to discontinue their operation[133]. If there is a risk that a local treatment facility may need to be shut down, then there will naturally be a risk of resistance from local politicians who have incentives to create and safeguard local jobs rather than facilitating national, or regional, waste management efficiency. However, this does not imply that a consolidation of treatment facilities could not increase overall efficiency.

Definitions of household waste

The definition of waste is important because the classification of substances as waste is the basis for the formulation of waste management policy and the application of regulatory controls to protect the environment and human health. The Waste Framework Directive defines waste as "[…] *any substance or object which the holder discards or intends or is required to discard* […]".[134]

And even though the Directive lays down some guiding principles and common definitions intended to facilitate a functioning internal market, it does not include definitions of either household waste or municipal solid waste.[135]

The definition of household waste therefore differs, not only from country to country, but in some countries even from municipality to municipality. In Denmark, Iceland and Norway household waste is defined by source. This means that waste from commercial actors is commercial waste, even if its properties are similar to those of household waste.

However, in Sweden and Finland the situation is less clear and municipalities may to some extent determine, at their own discretion, whether or not certain waste from commercial actors should be considered waste similar to household waste and therefore whether is falls within the municipalities' exclusive responsibility. The subsequent uncertainty regarding property rights may unfortunately discourage private companies from developing and investing in new recycling systems which could perhaps in turn take us a step closer to achieving environmental goals.

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[133] See the concept of *creative destruction* (german: Schöpferische Zerstörung) as described and popularised by Joseph Schumpeter in his *Capitalism, Socialism and Democracy* (1994, [1942]. London: Routledge. pp. 82–83).

[134] Art 3, Directive 2008/98/EC of 19 November 2008 on waste and repealing certain Directives

[135] Municipal solid waste is defined in Commission Decision no. 2000/532/EC establishing a list of wastes and Regulation no. 2150/2002 on waste statistics, OJ L 226, 6.9.2000, p. 3–24, see entry 20. However, that definition is for statistical purposes mainly and is not legally binding.

Some Swedish municipalities have decided to open up the market for waste similar to household waste and to allow recycling companies to offer waste holders a complete service that takes care of all waste.[136] Other municipalities have, however, chosen to extend the definitions, and in doing so they have increased the influx of waste into the municipalities' own facilities.[137] Swedish food stores have, for example, complained that some municipalities defined leftover fruits and vegetables as waste similar to household waste.[138] Similarly, Danish municipalities may decide whether or not waste should be classified as combustible waste and consequently become the property of the municipality.

The municipal right to create heterogeneous definitions of waste could create problems, for instance, whenever commercial waste that otherwise could have served as a (more) valuable input is drained from the market. This affects not only companies providing waste collection services but also waste treatment facilities that specialise in the reuse or recycling of commercial waste. There is also a risk that this may prevent commercial actors from developing new and innovative uses and treatment solutions for the waste since the conditions in the market differ from municipality to municipality. This may in turn affect efficiency. For example, a fast-food chain in Sweden has complained about the effects that the varying definitions of waste similar to household waste between different municipalities have on the recycling systems that the company has developed. The company has created a system that collects the oils used for deep-frying food to sell to operators who process it into renewable fuels. The efficiency of that system is of course affected when the oil is defined as waste similar to household waste in some municipalities and as such falls under municipal responsibility.[139]

There are also other examples of municipalities using these unclear definitions to gain access to some types of waste. In a recent court case[140] a Swedish municipal company argued that it ought to be regarded as a producer in accordance with the Swedish EPR scheme for graphic paper.[141] Furthermore, the municipal company argued that the existing PRO only had exclusive ownership to paper that had been handed over to that PRO for recycling and, consequently, that it was free to set up a parallel collection system throughout its geographic market area. However, the

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[136] Återvinningsindustrierna, 2012, Yttrande över betänkandet Mot det hållbara samhället- resurseffektiv avfallshantering (SOU 2012:56).

[137] Allegedly this has happened, for instance, when municipalities have made investments in biogas plants. Återvinningsindustrierna, 2012, Yttrande över betänkandet Mot det hållbara samhället- resurseffektiv avfallshantering (SOU 2012:56), p. 28.

[138] However, the administrative courts have ruled against Municipalities extending the definition to cover those types of goods. Mark- och miljööverdomstolen, M 5773-12, Stockholm.

[139] Remissvar gällande utredningen "Mot det hållbara samhället" – resurseffektiv avfallshantering (SOU 2012:56), McDonalds, 2012-12-20.

[140] Miljö- och marköverdomstolens dom referat MÖD 2015:18, Vafab Miljö AB / Miljö- och konsumentnämnden i Västerås kommun och Stora Enso Hylte AB.

[141] Read more about the Nordic EPR schemes in Chapter 5.

court declared that the municipal company in question could not be defined as a producer as this would be contrary to the intentions of the EPR regulation.

3.2.4 International trade and trade barriers

The Waste Framework Directive advocates cooperation between EU member states and the creation of cross-border waste management networks where this is necessary and advisable. It also states that the principles of proximity and self-sufficiency are not intended to impose a responsibility for each EU member state to possess the full range of treatment facilities themselves. This advocates not only cooperation between countries but also the concept of seeking the most efficient solutions through a cross-border trade of waste, just as with any other resource, commodity, or service. However, sometimes those principles may be used to justify measures/decisions that effectively close borders, notwithstanding the practical implications.

The actors in the Nordic countries' waste markets all have different reasons for importing and exporting waste. In some cases this is due to capacity availability and in other cases it is because there is a more efficient treatment solution available in another country. For example, the incineration capacity in Swedish and Danish municipalities necessitates the import of combustible waste since they cannot be utilised as efficiently solely on waste produced within the national borders. Meanwhile, some countries like Iceland and the Faroe Islands may produce too little waste to support their own treatment infrastructures, and this leads them to export some waste fractions.

Definitions of waste are important, as mentioned throughout this report, not only because different rules can apply for different types of waste, but also because different rules can apply at different stages of the management. Notwithstanding the fact that the Waste Framework Directive and other legislative acts contain a number of definitions, there is still room for significant discrepancies to occur in respect of the interpretation and application of some definitions. Clear definitions help facilitate trade, whether or not it is cross- border. A better assessment regarding, for example, the energy potential of a unit of combustible waste from any given source would help traders to find buyers, and to create markets.[142] Unless a buyer is fairly certain of the value of that which they are buying, it is unlikely that there will be a functioning marketplace.

[142] Cf. *Gresham's law* where good money is said to drive out bad money, referring to a commodity's real value compared to its face value.

Barriers to trade

International trade may have an impact on the national waste management plan, and treatment capacity and infrastructure. Under certain circumstances, member states are authorised to limit incoming and outgoing shipments of waste. Incoming shipments of waste destined for incinerators that are classified as recovery may be limited, provided that it has been established that such shipments would result in national waste having to be disposed of in a way that is not consistent with their waste management plans.[143] Outgoing shipments of waste may be limited on the basis of environmental grounds, as set out in Regulation (EC) No 1013/2006 on Shipments of Waste. Whilst it is important to organise and regulate the supervision and control of shipments of waste in order to safeguard environmental and health issues, it is also important to ensure that the application of such rules does not create or maintain unnecessary barriers to trade.

Different administrative procedures are applicable, depending on type of waste and whether the waste is destined for disposal or recovery.[144] Whilst under some circumstances the export or import of waste is merely subject to a general information requirement[145], the export or import of certain categories of waste requires prior written notification and written consent from all relevant authorities of dispatch, transit and destination.[146] The competent authority in either country may raise reasoned objections to the transport, provided the objections are based on one or more of the grounds listed in articles 11 and 12 of the regulation on shipments of waste.

The notification procedure is sometimes quite extensive and may create barriers to trade. It requires, for example, information about the facility to which the waste is being exported or imported, detailed information about the intended routes of transportation, including possible alternatives, and also (in case of unforeseen circumstances) details about the carriers and their agents who will conduct the actual transportation, and any changes to already supplied notifications have to be renotified.[147] The handling of each notification takes time to prepare and may therefore be relatively costly. If, for example, there is excess capacity available in a neighbouring country, the administrative burden or, for that matter, other forms of indirect trade restrictions and related costs may in fact inhibit the most efficient

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[143] Art. 16, Directive 2008/98/EC on Waste.

[144] Art. 3, Regulation (EC) No 1013/2006 on shipment of waste.

[145] Mixed solid waste intended for recovery is for example subject to the general information requirement, provided it is not mixed with other waste. If it is, it is subject to the prior notification and consent requirement.

[146] Wastes listed in Annex IV (amber listed wastes containing both hazardous and non-hazardous parts) or in Part 2 of Annex V (European list of wastes, e.g. wastes from mining, quarrying and physical and chemical treatment of minerals); and shipments for disposal of wastes listed in Annex III (green listed wastes).

[147] See Annex II of Regulation (EC) No 1013/2006 on shipments of waste regarding the full list of required information.

choice from both an economic and an environmental point of view. Some stakeholders have described situations where they have found themselves choosing a treatment facility within the same country despite the availability of a treatment provider abroad which is both closer geographically and which would provide a more cost efficient solution.

However, it is possible for the Nordic countries to enter into bilateral agreements making the notification procedure for shipments of specific flows of waste less stringent in respect of cross-border shipments to the nearest suitable facility, if this is located in the border area between the two member states.[148] Sweden and Finland entered into such an agreement recently; this applied to the northernmost regions of the two countries and is designed to lessen the administrative burden for, for example, municipalities regularly sending the same type of waste to the same facility.[149]

According to the *Finnish Waste Act* there are five alternative conditions according to which waste may be exported. One of the conditions relates to cost differences and the total costs of treatment of municipal mixed waste in the receiving country must be considerably less compared to the cost of treatment in Finland in order to be granted permission for shipment.[150] In practice, this condition has been interpreted by the Finnish Environment Administration to mean that the total costs of waste treatment abroad (including transport, 90 days storage and administrative costs) should be 60 % lower than total costs would be in Finland. Such requirements obviously create a considerable barrier to trade notwithstanding the underlying reasons for such a rule. On the other hand, if the shipment of waste is covered by the bilateral border area agreement mentioned above, then a municipality can receive a 5 year exemption from some of the administrative burdens.

There are also other possible barriers that affect international trade. For example, sometimes the legal framework regarding waste does not correspond sufficiently to other legal frameworks. For example, customs legislation may in practice create barriers to trade. If a recycler in Sweden, for example, imports old, used refrigerators from a Norwegian PRO, the refrigerators are defined as waste according to WEEE-legislation. However, Swedish customs may have a completely different view on the issue and instead define some of the refrigerators as "goods to be sold" in accordance with customs legislation. The result is that there is a level of uncertainty and it is difficult to calculate the costs associated with imports since any

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[148] Art 30 of Regulation (EC) No 1013/2006 on shipments of waste.

[149] The bilateral border area agreement between Finland and Sweden wassigned on 4 September .2015 and can be found on the websites of both countries' Environmental Protections Agencies. For example: http://www.ymparisto.fi/download/noname/%7B6E4DF4E5-B1C5-41E4-8442-5ED25935611E%7D/111994 and https://www.naturvardsverket.se/Nyheter-och-pressmeddelanden/Overenskommelse-med-Finland-om-avfallstransporter/

[150] Section 109 of the Finnish Waste Act.

such shipment will involve additional costs as a result of import taxation, custom fees and delayed deliverance due to administration.

Moreover, the European Commission has acknowledged that the facilitation of the cross-border circulation of secondary raw materials is essential in order to ensure that they can be traded easily across the EU. In so doing, the Commission envisages simplifications of cross-border formalities but other barriers to the smooth circulation of waste in the EU will also be examined.[151]

Statistics on trade

As can be seen below, *Denmark* exported most waste of all the Nordic countries in 2012. Denmark exported a total of 2,360 thousand tonnes of waste, which is roughly 23% of all the waste generated in the country. Since Denmark does not have any steelwork that uses scrap iron and metal, their export mainly consists of scrap iron and metal (1,273 thousand tonnes); paper and cardboard were also a major export waste fraction (448 thousand tonnes). In 2012, 34% of the waste Denmark exported was exported to Germany [152]

Norway is also a net exporter of waste, exporting 1,489 thousand tonnes, which is roughly 14% of all the waste generated in the country. Most of the waste Norway exports is combustible waste and 1,024 thousand tonnes of waste is exported to Sweden.[153] *Sweden* is, contrary to Denmark and Norway, a net importer of waste. Sweden imports a total of 1,786 thousand tonnes of waste which is roughly 7% of all the waste generated in the country.[154] The vast majority, 1,527 of the 1,786 thousand tonnes of the waste Sweden imports is combustible waste. Most of this, 882,000 tonnes, is imported from Norway and 411,000 tonnes from Great Britain.[155]

Finland exports and imports very little waste, which could indicate that they have a balanced waste infrastructure. However, it has been indicated that the statistics in respect of total waste exports and imports may in fact be misleading since not all waste categories are covered.[156] However, to some extent it could also be due to the trade barrier mentioned above. *Iceland* imports very little waste but most recyclable

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[151] Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, *Closing the loop - An EU action plan for the Circular Economy*, COM(2015) 614/2, p. 12.

[152] Information from the Danish national waste database as reported in the publication "Affaldsstatistik 2013" by the Danish Environment Agency.

[153] Source Statistics Norway.

[154] Source Swedish Environmental Protection Agency.

[155] Source Swedish Environmental Protection Agency.

[156] According to Statistics Finland, the total waste exports and imports are not provided at EU level for compilation into statistics in the member states.

material, e.g. paper, cardboard and plastics, is exported to treatment plants outside of Iceland.[157]

Figure 9 Import and export share of the total waste produced in the Nordic countries during 2012 (Waste import and export in thousands of tonnes in parentheses)

Sources: The Danish Environmental Protection Agency, Finnish Environment Institute, Swedish Environmental Protection Agency, Statistics Norway.

The flow of waste from Norway to Sweden has increased from 544,000 tonnes in 2009 to more than 1 million tonnes in 2012[158], out of which 882,000 tonnes were destined for incineration. Of the 882,000 tonnes, 303,000 tonnes were labelled as wood waste, 53,000 tonnes were labelled as mixed municipal waste and the remaining 526,000 tonnes were labelled as combustible waste which could be a mix of household waste, wood waste and other wastes (including mixtures of materials) from mechanical treatment.

One explanation for why Sweden imports so much combustible waste from Norway could be that increased competition from Swedish district heating plants has driven the price for incineration of waste down to a level that makes it difficult for the Norwegian incineration plants to compete. This has in turn led incineration plants in Norway to import waste from, for example, Great Britain.[159]

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[157] There are no available statistics regarding Iceland and its export/import of waste.

[158] Source Swedish Environmental Protection Agency

[159] Article published in Svenska Dagbladet 2015-06-14, http://www.svd.se/norge-sluta-elda-upp-vart-avfall

Excess capacity in incineration may constitute a competitive advantage, but it may also cause concern from both an environmental and an efficiency point of view in the long term.[160] In Denmark, the current regulation of waste incineration plants has created concerns regarding excess capacity in the sector. A working group consisting of members from e.g. *the Danish Environmental Protection Agency* (DEPA) and *the Danish Competition and Consumer Authority* has developed model that creates competition between the incineration plants.[161] The model is intended to reduce the risk of excess capacity and thus increase cost-effectiveness. However, whether or not the model will be implemented remains undecided.

From an environmental point of view the excess capacity may decrease the likelihood of moving waste upwards in the waste hierarchy. The households are potentially also disincentivised to sort their waste[162], which has an environmental effect, but it also raises a concern for the potential markets for secondary raw materials if less waste is handed over to the EPR systems, for example.[163]

Excess capacity in any treatment method may lead to reduced incentives to look for alternative treatment methods or facilities that potentially could be more efficient, both financially and environmentally. And since developing new treatment methods and/or facilities often requires substantial investments, particularly if this is related to new green technologies, then a lack of incentives to look for alternative treatment facilities may have a particularly negative effect. Excess capacity in, for instance, incineration may therefore lead to less competition from alternative treatment methods to incineration and the development of fewer innovative technologies.

It should be duly noted that one country's excess capacity from a national perspective might not be an inefficient solution in terms of the greater Nordic, and/or European, cooperation. However, a non-existent (or flawed) waste market, in which alternative solutions cannot be compared to current practices and payoffs, will probably not allow the most efficient utilization of resources.

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[160] "*For example, the Netherlands has invested heavily in waste incineration only to find itself in a position of having far too much incineration capacity for the country's needs, resulting in competition for waste and a substantial lowering of incineration prices, thus jeopardizing the economic viability of the facilities. This is of particular concern to the authorities if they made the investment with public money. In such cases, in their efforts to secure return on investment, authorities may inadvertently slow down broader societal trends towards waste prevention and enhanced environmental practices.*" See UNEP/ISWA (2015) Global Waste Management Outlook, page 133.

[161] Joint report of the Danish Competition and Consumer Authority, the Danish Energy Agency, the Danish Environmental Protection Agency and the Danish Ministry of Finance, 2010, Forbrænding af affald – Afrapportering fra den tværministrielle arbejdsgruppe vedrørende organisering af forbrændingsområdet. http://www2.mst.dk/udgiv/publikationer/2010/Affaldsforbr%C3%A6nding/978-87-7856-976-9.pdf

[162] Article published in Svenska Dagbladet 2015-06-21, http://www.svd.se/sopimport-aventyrar-sorteringsviljan

[163] An issue that was raised in the court case MÖD 2015:18 (Miljö- och marköverdomstolens dom), Vafab Miljö AB / Miljö- och konsumentnämnden i Västerås kommun och Stora Enso Hylte. Also referred to above in Section 3.2.3. Definitions of household waste.

3.3 Other waste market issues

3.3.1 Problems with data and statistics

As described in Chapter 2, the Nordic countries are obliged by EU law to supply statistics to Eurostat.[164] The underlying purpose for the Eurostat collection of statistics is to ensure better monitoring and evaluation of effective implementation of Community policy on waste management. For that reason the statistics may not be completely reliable for measuring or comparing national and local environmental goal achievements. Furthermore, the fact that the definition of household/municipal waste varies from country to country reinforces the notion that the Eurostat statistics should be interpreted with caution.

In order to conduct an analysis of competition in a specific market, certain data is required. The Nordic competition authorities have, however, encountered significant problems when collecting data in respect of waste markets. The problems can be divided into two main areas: procurement data and waste statistics.

The data that the Nordic competition authorities were looking for regarding procurements included the duration of procured contracts, estimated waste volumes and costs, the actual outcome with regards to waste volumes and costs, and the classification of the services and waste. Procurement data is not collected by Eurostat, nor is it readily available in any Nordic country. Gathering such statistics for this report required a great deal of work and the issue of reliability due to varying definitions still exists.

In January 2015 there were around 790 active calls for tenders in respect of solid municipal waste in Sweden, roughly 182 calls for tenders in Norway and 64 calls for tenders in Iceland.[165] Apart from the obvious fact that there seems to be a greater number of procurements in Sweden, the Nordic competition authorities cannot draw any further conclusions without better information about the duration of contracts, volumes and costs, etc. Unfortunately, the data and statistics available in respect of procured contracts are therefore insufficient for an analysis of the competition in the markets where waste management services are procured.

The problem, in respect of waste statistics, is that there are seemingly detailed statistics on household waste, collected volumes, transports, how much is sold, bought, treated and by whom. However, regardless of the relatively comprehensive statistics for municipal waste, its usage for analysis is fairly limited due to the

[164] Regulation (EC) No 2150/2002 on waste statistics.

[165] The other participating authorities have not been able to collect information about the number of call for tenders.

different definitions used in the same country, sometimes even in the same municipality. Furthermore, statistics on commercial waste do not exist in most cases and if they do they are either difficult to obtain or they consist purely of estimates.

To highlight the problem, Swedish households produced 3,781 thousand tonnes[166] of waste in 2012, according to the national Environmental Protection Agency. Eurostat, however, reports 4,304 thousand tonnes.[167] The underlying reason for the difference is that Sweden defines household waste by nature rather than source, which is also why waste similar to household waste (commercial waste) is included in the Eurostat statistics as household waste. Finland also has a similar definition and the effect is that both countries inflate the data regarding collected household waste compared to other European countries who define household waste by source.

The European Commission has proposed introducing a common definition of municipal waste in the Waste Framework Directive in order to ensure reliable and comparable data and to ensure effective monitoring of progress and the attaining of recycling targets.[168] However, since the proposed definition is neutral with regard to the organisation of national waste management, the proposed definition does not seem to address the problems arising from the various different national definitions, i.e. the extent of municipal exclusive rights.

Problems regarding varying definitions are not exclusive to household waste. The way in which waste is categorised can also have an impact on both reported volumes and the ratio of recovery. For example, Finland previously included fibre and wood-containing waste from agriculture and forestry in the waste statistics it reported to Eurostat. Naturally it increased their total waste volumes and ratio of recovery, albeit only to a small extent. When Finland stopped including fibre and wood-containing waste in its waste statistics, the total ratio of recovery consequently dropped. However, this also coincided with a significant decrease in

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[166] Source Swedish Environmental Protection Agency.

[167] Data from Eurostat, Municipal waste, Product code: [env_wasmun], http://appsso.eurostat.ec.europa.eu/nui/show.do

[168] In the European Commission's proposed amendment of the Waste Framework Directive municipal waste is defined as:

> *(a) mixed waste and separately collected waste from households including: […]*
> *(b) mixed waste and separately collected waste from other sources that is comparable to household waste in nature, composition and quantity.*
> *(c) market cleansing waste and waste from street cleaning services, […]*
> *Municipal waste does not include waste from sewage network and treatment, including sewage sludge and construction and demolition waste;*

See Proposal for a Directive of the European Parliament and the Council amending Directive 2008/98/EC on Waste, COM(2015) 595 final.

the recovery of mineral waste which reinforced the drop in the statistics considerably.[169]

As long as there is room for arbitrariness regarding the definitions of waste fractions, there is a risk that member states will interpret the definitions to their own advantage since they will have an incentive, for example, to statistically increase their recycling rates and lower the share of landfilled waste artificially. This creates three problems: there is no reliable measurement between countries, measurement over time is not comparable and the recovery rate may be inflated, which can have a negative effect on the possibility to assess whether or not a country fulfils its environmental goals.

Municipalities also face the problem of not being able to produce a waste management plan that efficiently takes into account local and regional capacity in the waste management system due to a lack of proper statistics. If, for example, the collection of commercial waste and EPR waste is not accurately and sufficiently reported and collected, it has an immediate negative effect on the possibilities to accurately measure the achievements in comparison to the environmental goals.

Reliable and comparable data and statistics are therefore important for all parties involved in order to make sure that the waste market services are as efficient, reliable and environmentally friendly as possible. It is therefore imperative that these issues are highlighted and that they are dealt with properly. There are many parties involved, municipalities, national governments and the European Union, and they all need to cooperate in order to find a solution to these issues.

The European Commission has proposed new rules addressing several key issues with regards to the calculation of the attainment of the targets laid down in the Waste Framework Directive.[170] However, the underlying problem of heterogeneous definitions of municipal exclusive rights, as described above, may still have a negative effect on the comparability with regards to municipal waste.

3.3.2 Waste management plans

In order to create, evaluate and maintain effective waste management systems it is absolutely necessary to draw up plans based on relevant data and market knowledge. The Waste Framework Directive obligates all EU member states to draw up national waste management plans containing information about, for

[169] Source Finnish Environment Institute.

[170] Proposal for a Directive of the European Parliament and the Council amending Directive 2008/98/EC on Waste, COM(2015) 595 final.

example, existing waste collection schemes and treatment facilities and an assessment of their capacity.[171]

All Nordic countries draw up national waste management plans. In Finland it is in practice prepared by *the Environment Administration* in consultation with stakeholders. The national waste plan then governs the objectives and preparation of regional waste plans. Regional waste plans take local circumstances and development needs into account – a top-down approach. Meanwhile, Sweden takes a bottom-up approach as the national plan is based on the plans that the Swedish municipalities are required to draw up.[172] At municipal level the plans are required to describe the goals the municipality has set out for itself, e.g. with regards to collection and treatment. The plan has to include empirical data on the volumes of collected and recycled waste[173] and also describe the measures that the municipality is planning to take to achieve the environmental goals which they have set themselves and also established in legislation.[174]

Swedish municipalities are required to send their waste management plans to the *county administrative boards*, who then collect and analyse the plans from the municipalities in the county.[175] If it is deemed necessary, the county administrative boards are required to consult relevant municipalities, trade organisations and other county administrative boards in order to resolve, for example, an existing or potential lack of, or excess, capacity[176]. The county administrative boards are also required to send the municipal waste management plans to the national *Environmental Protection Agency* (EPA). The EPA is in turn required to draw up a national waste management plan[177] that analyses the waste management situation in Sweden.

Similarly, in Iceland, each municipality is required to draw up a regional waste management plan, most often in cooperation with nearby municipalities. The local and regional waste management plans are supposed to describe how the municipalities intend to reach the objectives of the national waste management plan that the EPAs are responsible for drawing up and enforcing.

However, a recent study conducted by *the Swedish Environmental Protection Agency* to which 16 of Sweden's 21 county administrative boards responded shows that none have compiled or analysed the treatment capacity at regional level. Several

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[171] Art. 28 Directive 2008/98/EC on waste.

[172] Chapter 15, Section 11 of the Swedish Environmental Code (1998:808).

[173] Section 7, NFS 2006:6.

[174] Section 9, NFS 2006:6.

[175] Sections 79 and 81 of the Waste Ordinance (2011:927).

[176] Section 81of the Waste Ordinance (2011:927).

[177] Section 83 of the Waste Ordinance (2011:927) implementing Article 28 of Directive 2008/98/EC on waste.

boards instead question the relevance of analysing capacity issues since it is difficult to access data on treatment capacity and the data from the municipal waste management plans relates to different times.[178] On the other hand, 54% of the municipalities that responded to the study claimed to have drawn up their waste management plan in cooperation with other municipalities.[179]

The waste management plans are important for municipalities when they plan for future waste management systems – including investments in new treatment facilities. The plans should, if drawn up correctly, reflect the total capacity of different waste treatment facilities in the municipalities, both public and private. The majority of municipal waste management plans do not, however, include a complete set of data, and about a third of the municipal waste management plans in Sweden lack data on waste fractions that the municipality is not responsible for.[180]

Consequently, the plans are in many cases not accurate or even misleading in terms of illustrating the available capacity (both municipal and private). The potential to use the plans to analyse the need to develop waste market management is therefore impeded and this may ultimately lead to inefficiencies. There is also a risk that existing private operators are underutilised and that the municipality, instead of using the capacity already available, invests in new facilities, thereby duplicating those already available. Duplicating already existing facilities or creating regional excess capacity may result in unnecessarily high costs for the municipalities and, ultimately, its residents.

Meanwhile, the potential advantages of using local waste management plans strategically are many, as described above, but this also necessitates a rather comprehensive approach. Some of the content to be found in the plans is obligatory and follows the requirements set out in the Waste Framework Directive whilst other requirements are purely national. Interestingly, the Waste Framework Directive also contains requirements which perhaps ought to be obligatory but which are optional. For example, it sets out that waste management plans may contain organisational aspects related to waste management including a description of the allocation of responsibilities between public and private operators carrying out the waste management.[181] If the waste management plans were required to contain such a description they would, arguably, present stakeholders with a better understanding of the local waste management market; this, in turn, would make it easier to evaluate the efficiency of the existing waste management organisation.

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[178] ”Kommunal Avfallsplanering enligt föreskrifter och allmänna råd”, Naturvårdsverket, 30 January 2015, Annex 4, p. 2.

[179] ”Kommunal Avfallsplanering enligt föreskrifter och allmänna råd”, Naturvårdsverket, 30 January 2015, p. 12.

[180] ”Kommunal Avfallsplanering enligt föreskrifter och allmänna råd”, Naturvårdsverket, 30 January 2015, p. 13.

[181] See art. 28 p. 4 of Directive 2008/98/EC on waste.

The procedure of drawing up waste management plans offers excellent opportunities for dialogue and consultations before any investment decisions are made. Not only does it present an opportunity to create a forum for dialogue between municipalities and other waste market operators, both existing and potential, but a system, like the Swedish one, in which municipal waste management plans are meant to be collected and scrutinised at regional level, also creates an excellent opportunity for decision-makers to reflect on the regional capacity and to ensure that they have a correct and complete basis for such a decision. It is therefore of the utmost importance that municipal waste management plans are required to contain the same information, reflecting both municipal and private capacities, and that common definitions are used in respect of volumes of collected, treated and recycled waste. From a private waste market operator's perspective, any uncertainty in the waste management plans could affect their desire to make the investments necessary for development or innovations which in the end may have repercussions on the overall development of the market.

3.3.3 The procurement process

Competition has been found to increase innovation in the marketplace since it forces private companies to cut costs in order to be competitive. A study has outlined a model of the relationship between product market competition and innovation and found that competition encourages firms competing neck-and-neck to innovate but discourages less progressive firms from innovating.[182] An older study has estimated that around three quarters of a 22% cost reduction from a competitive tender could be related to improvements in technical efficiency.[183] What's more, innovation should not necessarily be viewed as a new product, but rather as doing something in a different and more efficient way. The European Commission is therefore pushing for regulations that stimulate innovations rather than hamper them.[184]

The Irish Competition Authority has made an extensive literature review of how the tendering of waste collection affects prices and quality. They found that the cost reduction associated with the competitive tendering of waste collection services ranges between 10 and 47% compared to when the municipality offers the service

[182] Aghion, Philippe, Nick Bloom, Richard Blundell, Rachel Griffith and Peter Howitt, 2005, Competition And Innovation: An Inverted-U Relationship, Quarterly Journal of Economics, v120 (2, May), pp. 701–728.

[183] Cubbin, John, Simon Domberger and Shirley Meadowcroft, 1987, Competitive tendering and refuse collection: identifying the sources of efficiency gains, Fiscal Studies, 8(3), 49.

[184] R. Kemp, K. Smith and G. Becher, 2000), 'How Should We Study the Relationship between Environmental Regulation and Innovation?' in IPTS Report EUR 19827 EN, Sevilla: The European Commission DG JRC.

themselves, or if there is side-by-side competition.[185] These results are based on studies conducted in USA[186], the UK[187], Sweden[188], Denmark[189], Ireland[190], Canada[191], Finland[192] and in the Netherlands[193]. These studies, as well as a survey from Norway[194], have found that the decrease in cost is not due to reductions in quality.

For a municipality that has chosen to organise its waste management in-house, a switch to procurement of waste collection and/or other services in the waste management value chain could bring efficiencies through competition and innovation. In Norway, a study found that municipalities buying treatment services on the open market paid about half of what municipalities that have invested in their own incinerators charged for their own waste. This resulted in lower fees in municipalities without treatment facilities.[195] However, where waste management services are already delegated to private operators or consumers[196], it is not possible to similarly conclude that recentralisation and subsequent tendering necessarily improve efficiency. As is the case when deciding between an in-house solution and procurement, the decision must be based on a thorough investigation of the market in question and its impact on overall, and not just partial, efficiency.

Sometimes the decisions of municipalities may be affected by perception rather than facts. For example, municipal decisions can be politically influenced. It is possible that waste management decisions may be affected by the perception that

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[185] Ireland Competition Authority, 2006), Submission to the Department of the Environment, Heritage and Local Government (Response to Consultation Paper "Regulation of the Waste Management Sector") Submission S/06/007, October. www.tca.ie/images/uploaded/documents/S_06_007%20Waste%20Regulation.pdf

[186] Kemper, P. and J. Quigley, 1976, The Economics of Refuse Collection, Cambridge, Mass.: Ballinger and Stevens, Barbara J., 1978, "Scale, Market Structure, and the Cost of Refuse Collection", Review of Economics and Statistics, 60(3) August, p. 445.

[187] Domberger, S., A. Meadowcroft, and D.J. Thompson, 1986, Competitive Tendering and Efficiency: The Case of Refuse Collection, Fiscal Studies, 7(4), 99. 69–87; Szymanski, S., and S. Wilkins, 1993, Cheap Rubbish? Competitive Tendering and Contracting Out in Refuse Collection – 1981-88, Fiscal Studies, 14, pp. 109–130 and Szymanski, S., 1996, The Impact of Compulsory Competitive Tendering on Refuse Collection Services, Fiscal Studies, 17, pp. 1–19.

[188] Ohlsson, H., 2003, Ownership and Production Costs: Choosing between Public Production and Contracting-Out in the Case of Swedish Refuse Collection, Fiscal Studies, Vol. 24, Issue 4, pp. 451–476.

[189] OECD, 2000, Competition in Local Services: Solid Waste Management, DAFFE/CLP(2000)13, Paris: OECD, p. 32, http://www.oecd.org/dataoecd/34/51/1920304.pdf

[190] Reeves, E. and M. Barrow, 2000, The Impact of Contracting Out on the Costs of Refuse Collection Services: The Case of Ireland, Economic and Social Review 31, pp. 129–150.

[191] McDavid James, 2001, Solid-waste contracting-out, competition and bidding practices among Canadian local governments, Canadian Public Policy, 44(1), pp. 1–25.

[192] OECD, 2000, Competition in Local Services: Solid Waste Management, DAFFE/CLP(2000)13, Paris OECD, p. 130, http://www.oecd.org/dataoecd/34/51/1920304.pdf

[193] Dijkgraaf, E., and R.H.J.M. Gradus, 2003, Cost Savings of Contracting Out Refuse Collection, Empirica, 30, pp. 149–161.

[194] OECD, 2000, Competition in Local Services: Solid Waste Management, DAFFE/CLP(2000)13, Paris OECD, p. 131, http://www.oecd.org/dataoecd/34/51/1920304.pdf

[195] Avfallsbehandling Disponering av avfall – Kryssubsidiering, 2013, Norsk Industri og Maskinentreprenørenes forbund, Hjellnes Consult AS.

[196] See Section 3.2.2 (e.g. the side-by-side competition situation in Finland where property holders themselves are obliged to independently enter into agreements on the collection of household waste).

environmental goals, set out in legislation and policy, require direct political control and that environmental goals are incompatible with "the free market". A municipality may, from such a viewpoint, conclude that there is a need for continued direct public control of the waste management sector. Of course such arguments are symptoms of a lack of understanding of market forces and they miss the value of creating the correct incentives for market operators to attain political goals through careful mechanism design.

Outsourcing services through public procurement naturally leads to less direct control over the service. Moving away from direct control over all aspects, to control only through an agreement, the municipalities may primarily see the risks connected with involving private market operators. However, it is important to increase confidence in market solutions and that this, if properly implemented, may lead to the introduction of new and innovative green and possibly more cost-efficient solutions, solutions which in turn create consumer benefits through cheaper services and a better environment.

There seems to be a widespread perception that public procurement procedures rarely generate good results and only reward low cost solutions. There is therefore potentially a tendency to favour in-house solutions over procurement. A limited knowledge and understanding of the procurement procedure and its possible gains will probably not generate as good results as is otherwise possible.[197]

Public procurements are not without drawbacks for the contracting authority. When contracting for an outside supplier, the details of the contracts, for example the contract period, need to take into account how large investments need to be in order to fulfil the contract. Short contract durations compared to the required investment cost will limit the number of tenderers, whereas longer contracts might delay future improvements to the waste management system since the tendered contract cannot be adapted to it until the contract has expired.

The contract is thereby potentially hard to draft, the process may be long, and it may in the end be delayed by appeals from losing bidders. It is also important to take into account the cost of contract management and the risk of legal disputes with the contractor. The procurement procedure itself adds a layer of complexity to the process of purchasing services, which may create incentives to avoid using tenders. Similarly, as described above the perception that they rarely generate good results and only promote low cost solutions is sometimes enough to create disincentives to procurement.

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[197] The Norwegian municipality of Oslo recently concluded a procurement for the collection of household waste. A great deal of resources were invested in the project which, amongst other things, conducted market studies and interviews. The end result was a cost reduction of almost 40% for the collection of household waste. See following article: http://www.kretslopet.no/ledere/53-nyheter/497-kraftig-prisreduksjon-pa-innsamling-i-oslo

Offering support to overcome the complexity of the procurement procedure can therefore play an important role due to the limited knowledge and understanding of the public procurement procedure among individual municipalities and governmental agencies. *The National Agency for Public Procurement* in Sweden, *the Agency for Public Management and eGovernment* (Difi) in Norway and the *Public Procurement Advisory Unit* in Finland are examples of agencies that provide general support to contracting authorities and suppliers regarding the public procurement procedure, including areas such as sustainability and innovation. The basic idea is to lessen the transaction costs through support, information and guidance to authorities and suppliers in order to improve their knowledge of public procurement procedures as well as their possibilities.

Good examples of procurements are those that give the market the chance to innovate and be efficient. In Iceland, all municipalities except the capital Reykjavík procure their entire waste collection services from private undertakings. Municipalities outside the capital area also often procure the entire handling of the waste from collection to disposal or treatment[198]. It seems a vast majority of the municipalities in most Nordic countries procure waste collection services and thus put market forces in play, albeit to varying degrees of success. Around 70% of the municipalities in Sweden procure all of their waste collection.[199] In Finland, collection is tendered without exception, whilst collection systems are arranged by the municipalities.

A good example of a procurement procedure which is favourable in respect of innovations and increased competition is dividing the municipalities up into smaller geographical areas when procuring waste collection services. This allows smaller firms to be part of the bidding process and could result in a more efficient winner, lower prices and increased incentives to innovate, compared with having just one large contract for the entire municipality. Municipalities also procure other waste treatment services but perhaps not to the same extent as the collection of household waste. Nevertheless, statistics from Norway seem to indicate a trend away from in-house solutions for waste treatment and towards the procurement of such services. A survey has shown that the share of municipalities procuring waste treatment services has risen from 11% in 2002 to 39% in 2013.[200]

As an example, twelve municipalities in the Norwegian county of Vestfold have formed a joint purchasing unit where ten of the municipalities have given the unit the task of tendering out different parts of the service. The joint purchasing unit gathers experience and know-how in order to make better procurements for each

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[198] All disposal facilities in Iceland are owned and operated by municipalities or municipal undertakings.

[199] Svensk Avfallshantering 2015, a report issued by Avfall Sverige (Swedish Waste Management).

[200] Miljödirektioriatet, Klima- og Miljödepartementet, 2014/12026, 2014/14615
http://www.miljodirektoratet.no/Global/Nyhetsbilder/Svarbrev%20KLD.pdf

municipality. The collected experience of procuring waste market services should allow the joint purchasing unit to be more efficient and successful in procuring the services.

When preparing for a procurement procedure it is very important that the municipality carefully analyses its needs and the market conditions. However, to be able to conduct this analysis, access to accurate data and statistics is required. If, for example, the municipality cannot specify accurate volumes of waste this may create problems for the operator performing the contract. In a worst case scenario this may result in renegotiation of the contract and a new procurement procedure might even be required.

It is also important to collect data and statistics during the contract period. This facilitates an evaluation of the performance of the contract in order to summarise costs on a detailed level, and it also serves as valuable input for future procurements. Likewise, evaluating the performance of the contracts can be very beneficial to the municipality when drawing up its waste management plans.

3.4 Conclusions

As described in the previous chapters, waste has traditionally been considered a nuisance – a by-product and an additional cost to society from both manufacturing and consumption. In economics terminology, waste has regularly been considered a negative externality of consumption (and thereby implicitly of production) as its cost to society may not always have been fully included in the price of the goods. Waste generators will thereby produce more waste than if the cost had been higher, as their individual marginal cost for generating waste is less than the marginal addition to the total cost. Even though offsetting such an externality is theoretically trivial[201], there are several difficulties associated with the practical assessment of the actual additional cost to society for many (if not all) types of externalities.

An incorrect assessment of the damage to society will result in inefficiencies[202]. When there are difficulties in assigning the exact marginal cost of handling for each type of waste, a second-best alternative could be to impose a (differentiated) waste collection fee[203] for all individual households. Such a fee would probably not be an optimal solution as e.g. an individual in an apartment building would not enjoy the

[201] See the concept of *Pigouvian taxes* in Pigou, A., 1920, Economics of Welfare, Macmillan and Co.), or most intermediate textbooks on microeconomics.

[202] Whether or not an over or under provision of a certain good or service is to be preferred depends on the underlying type of externality and its associated impact on society.

[203] A third-best solution could potentially be a more general tax on all consumption, where one example is the VAT and/or sales tax, but it could also be included in the income tax. However, the less precise the tax is, the larger the scope for inefficiencies.

full benefit of his, or her, individual reduction in the amount of waste produced. However, even though such alternative arrangements might not solve the issue perfectly, they could still improve welfare.

High costs for handling waste do not only reduce the willingness to produce waste, but they also provide more incentives to dispose of the waste in alternative ways (i.e. they reduce the relative cost of non-compliance). Therefore, a low cost for proper waste management potentially not only increases the production of waste, but could also increase the incentives for discarding the waste in a proper manner. These dynamics also need to be taken into consideration when designing a system for waste management.

The absence of a market reasonably obstructs otherwise important price signals which could help to determine the fee needed to reach, or maintain, an optimal level of different types of waste. When waste serves as an alternate input, the existence of a well-functioning market for that input could help to determine the appropriate corrective fee that should be imposed. To determine an optimal or at least an efficiency-enhancing level of waste also requires clear and consistent definitions of what is to be regarded as waste.

The fact that some types of waste are considered resources and command a market value provides waste holders with a potential to exploit that value. Waste generated within the framework of an industrial or commercial activity could, for example, be sorted into separate fractions and sold to dealers on the market for the production of secondary raw materials. This applies mostly to private undertakings but is of course also applicable to households.

Municipalities are in a very influential position with regards to creating and managing waste markets. The level of the municipality's own participation in the markets may depend on several different factors. The choices the municipalities make could, however, either effectively shut private companies out from competition or facilitate effective competition bringing new and innovative solutions, and possibly a lower cost for provision of the services. The choices that have been made historically may also have created an infrastructure based on a business model that might be at odds with today's political aims to reduce the amounts of waste.

It may therefore be necessary to make major changes to existing infrastructures, for example to escape from a business model where the central concept is that the more waste that is received, the more profits will be made.[204] It is therefore very

[204] This has for example happened when a Swedish municipal company recently exchanged its in-house model and instead opened up for competition by renting the treatment facilities to private undertakings, see the article "Nya tidens affärsmodell" published in Avfall och Miljö, no. 3, 2015.

important that municipalities carry out a thorough analysis before deciding on how waste management is to be conducted. It is equally important that the municipality continuously evaluates the effects of the decisions from both a short-term and a long-term perspective. Furthermore, due care should be taken with all affected markets, and also not only to the effects within the geographic borders of the municipality. The municipality should choose the option that increases competition or, if it is inevitable, the option that harms competition the least. This is in line with the thinking of the OECD toolkit for competition assessment.[205]

Well-founded decisions necessitate knowledge of not only the municipality's own requirements, which in turn necessitates keeping separate accounts when applicable, but also knowledge of available private resources and the requirements of adjacent municipalities. The requirement to draw up waste management plans presents an ideal platform for facilitating the necessary knowledge and awareness of what the different market actors can provide and the level of demand. Access to relevant statistics is also essential for well-founded decisions, in particular statistics on costs and efficiency. From a market study perspective, the reliability of certain statistics is questionable today due to the existing variations in respect of how certain waste fractions are defined.

Although this chapter has focused on the municipalities' roles and how important it is that they make the right choice when setting up waste infrastructure, private firms have a responsibility to convince and help local municipalities to implement new innovations. Since municipalities do not have unlimited resources, and assessing a new waste management system requires both resources and knowledge, the municipality might be reluctant to assess the new systems. The private firms should therefore try to help municipalities by providing, or at least cooperating with municipalities to carry out and present, life-cycle assessments and other system assessments for new waste management systems as mentioned in Section 3.1 above.

International trade in waste can facilitate efficiencies and national borders should therefore be immaterial to the decision of where to treat waste. It is therefore essential to facilitate a cross-border circulation of waste and secondary raw materials by ensuring that they can be traded easily across the EEA. There are currently barriers to cross-border trade; these result in longer transportation than would otherwise be necessary and, consequently, reduced efficiency.

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[205] The OECD competition assessment toolkit helps governments to eliminate barriers to competition by providing a method for identifying unnecessary restraints on market activities and developing alternative, less restrictive measures that still achieve government policy objectives. http://www.oecd.org/competition/assessment-toolkit.htm.

It is clear that the legal and structural frameworks in most Nordic countries in some cases limit competition in waste management, and that they grant municipalities extensive rights to the waste from households. Within the current legal framework there are possibilities to increase competition in waste management, for example, if municipalities decide to facilitate market creation. However, the current legal framework may not be sufficient for supporting major and long-term improvements in the market structure or the creation of new waste markets. Another problem that stems from the current legal framework is the often unclear roles that market players should adopt, especially municipalities. This can create a lack of competitive neutrality. For a further discussion on competitive neutrality, please see Chapter 4.

4 Competitive neutrality in waste management

Competitive neutrality has been said to occur when no entity operating in a market is subject to unfair competitive advantages or disadvantages.[206] More specifically, it is not an end in itself rather a means to enhance welfare through increased competition through equal operating conditions for public and private sector business activities. Competitive neutrality can also be defined as completely undistorted competition between rival companies. If competition is undistorted, a company purchasing a product will make its choice from the alternatives offered solely on the basis of its preferences, i.e. the preference ranking it makes is not asymmetrically affected by any outside institutional factor. Conversely, competition is distorted if such an outside factor affects the trading partner´s product choice.[207]

The OECD report "Competitive Neutrality – Maintaining a Level Playing Field between Public and Private Business" lists eight building blocks that governments should address if they are seeking to obtain competitive neutrality:

1. Streamlining government business – either in terms of its structure or corporate form.
2. Identifying the costs of any given function and developing an appropriate cost allocation mechanism.
3. Government business activities operating in a commercial and competitive environment should earn rates of return like comparable businesses.
4. Where the performance of public policy functions is required of government businesses, adequate, transparent, and accountable compensation should be provided.
5. Tax neutrality – government businesses should operate in the same tax environment as private enterprises.
6. Regulatory neutrality - government businesses should operate in the same regulatory environment as private enterprises.
7. Debt neutrality remains an important area and it should be tackled.
8. Procurement policies and procedures should be competitive, non-discriminatory and safeguarded by appropriate standards of transparency.

A major reason to pursue competitive neutrality is that it enhances allocative efficiency. Whenever economic agents (whether public or private) are put at an undue disadvantage, goods and services are no longer produced by those who can do it most efficiently. This leads to lower real incomes and a sub-optimal use of

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[206] OECD, 2012, Competitive Neutrality: Maintaining a Level Playing Field between Public and Private Business, OECD Publishing, Paris, p. 15.

[207] Virtanen, M and, Valkama P., 2009, Competitive Neutrality and Distortion of Competition: A Conceptual View. World Competition, vol.32, Issue 3, pp. 393-407.

scarce resources.[208] Competitive neutrality also fosters the dynamic incentives that are necessary for improvements. Lack of competitive neutrality may limit willingness to invest in increased research and development as well as the ability to roll out new products and services and processes that increase dynamic gains from innovation.[209]

4.1 Legislative tools available in Nordic countries

There are different kinds of public policy tools in the Nordic countries to tackle competitive neutrality problems. Some countries have special legislation concerning competitive neutrality, other countries deal with the problem through recommend-dations or formal letters as well as with traditional competition law tools, such as applying abuse of a dominant position provisions.

Denmark

According to Section 2(2) of the Danish Competition Act, the prohibitions against anti-competitive behaviour and agreements will not apply where an anti-competitive practice is a direct or necessary consequence of public regulation. However, if the Competition Council finds a public regulation likely to restrain competition or otherwise likely to impede efficient allocation of resources, the Competition Council can deliver a reasoned opinion to the relevant minister to be replied, cf. Section 2(5) of the Danish Competition Act, pointing out the potential adverse effects on competition. Recommendations for improving competition at the market may be presented, but the Competition Council is prevented from intervening.

However, the Danish Competition Act Section 11a, similar to EU state aid rules in Article 107-109 TFEU, aim to ensure that competition in the Danish market is not distorted by the granting of public aid to certain professional activities. According to Section 11a(1) the Danish Competition and Consumer Authority can issue orders that the competition-distorting aid must be eliminated or recovered. This requires that the aid is not permissible under government regulation, see Section 11a(2)(2).

Finland

Rules on competitive neutrality were introduced to the Finnish Competition Act in 2013. The purpose of the legislation is to safeguard equal operating conditions, i.e. to ensure competitive neutrality between public and private sector business

[208] OECD,2012, Competitive Neutrality: Maintaining a Level Playing Field between Public and Private Business, OECD Publishing, Paris, p. 19.

[209] OECD, 2009, State Owned Enterprises and the Principle of Competitive Neutrality, DAF/COMP(2009)37, p. 40.

activities. The Finnish Competition and Consumer Authority (FCCA) has the authority to intervene if the competitive parameters used or operating structures of government-owned undertakings prevent or distort competition on the market. The FCCA may also intervene in the pricing by a municipal undertaking in situations where the said undertaking is not obliged to corporatise.[210] In such situations pricing behaviour by the municipal undertaking must be market-based.

Greenland

The Greenland Competition Board may issue injunctions to the Government of Greenland, municipalities, etc. to terminate the economic activities of companies that distort or threaten to distort conditions for effective competition in the relevant market, or inhibit or serve to inhibit the occurrence or the development of conditions for effective competition.

Iceland

The main tool available to the Icelandic Competition Authority (ICA) to tackle competition neutrality issues is Article 14 of the Competition Act. The ICA may order financial segregation between the parts of the operations conducted by the undertaking under exclusive rights or protection, and the operation conducted in free competition with other parties. The competitive activity shall not be subsidised by activity conducted under exclusive rights or protection. According to Article 16 of the Competition Act, the ICA can take measures against "*acts of public entities to the extent that they may have detrimental effects on competition, provided that no special legislation contains any specific provisions regarding authorisation or obligation for such acts*". The ICA may also write opinions and formal letters of concern.

Norway

The Norwegian Competition Act does not include any special provision granting the Competition Authority competence to tackle competitive neutrality issues. The rules regarding abuses of dominant positions are of course applicable to public entities engaging in economic activity, but beyond this there is also a provision that empowers the Authority to issue formal letters of concern. Pursuant to Section 9(e) of the Norwegian Competition Act, the Competition Authority may issue a formal letter of concern targeting any public regulation or activity. The receiving entity must reply, addressing the competition concerns raised by the Authority. This tool has been used in the waste management sector, targeting a lack of proper separation of personnel and procurement procedures.

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[210] Based on the exemption provision in the Finnish Local Government Act (410/2015), 127 §.

Sweden

A prohibition on anti-competitive sales activities by public entities was incorporated into Swedish legislation in 2010. It provided the Swedish Competition Authority with a tool to tackle competition neutrality issues. The prohibition can be applied to sales activities carried out by public entities in a competitive market, including publicly controlled/owned undertakings, if the sales activity distorts the conditions for effective competition in the market and impedes the development of such competition. There are two kinds of prohibitions in the Act. The *conduct prohibition* is applicable to a certain conduct within the sales activity (e.g. below cost pricing) and it can be applied to all public entities if the market conduct is not justified by public interest. The *activity prohibition* is applicable to the sales activity itself (e.g. tourist trips by a municipal bus company) but can only be applied to sales activities by municipalities or municipally owned undertakings.

4.2 Different types of competitive neutrality issues

An OECD report states that *"[p]ublic, private and third sector operators may face different tax treatment as a result of their ownership structure or legal form. This applies to a range of direct or indirect tax regimes including corporate/income taxes, value-added taxes (VAT), property taxes, registration and other special taxes."* The challenge for competitive neutrality is therefore to determine the extent to which the public undertakings´ advantages distort the competition.[211]

The OECD has also concluded that insufficient competitive neutrality limits the effectiveness of competitive tendering. "*A lack of competitive neutrality can, for example, arise, but is not limited to, when a publicly owned company bids in competition with private companies and is able to offer its services below its competitors´ prices due to a lower cost of capital, as it cannot be declared bankrupt, or because it can cover any revenue shortfall from general tax funds. Such advantages can discourage equally or even more efficient private companies from bidding. Other factors are also important in the design of the tenders. For example, the duration or scope of the contracts should be based on the length of time required to recover necessary sunk costs. If duration is too short then the sunk costs must be recovered more quickly, resulting in higher prices. If duration is too long, then some of the benefits of competition are lost and entrants' attainment of minimum efficient scale is delayed since fewer contracts are tendered during a given period."*[212]

Municipal enterprises have been reported to also enjoy significant regulatory advantages in areas such as land-use planning and registration processes, access to

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[211] OECD, 2012, Competitive Neutrality: Maintaining a Level Playing Field between Public and Private Business, OECD Publishing, Paris, p. 60.

[212] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 6.

land use as well as other forms of undue protection from new entrants. Furthermore, possible self-regulatory aspects may, in addition to the issue of regulatory neutrality, give rise to concerns about transparency when un-incorporated business activities undertaken by units of the general government sector are concerned.[213]

However, there is also a risk of over-compensating a lack of competitive neutrality. Such over-compensation could result in unnecessary restrictions for municipal enterprises to utilise economies of scale and scope or other advantages which in turn may result in inefficiencies, higher prices and the creation of an absence of a competitive constraint on other actors. It is therefore essential that it is determined to what extent a municipal enterprise's advantages distort competition in order to be able to address harmful advantages.

4.3 Sources of competitive neutrality problems in waste management markets

Competitive neutrality problems in waste management seem to originate from three sources. *Firstly*, the municipalities have multiple roles in waste management. For example, they are often responsible for creating local or regional waste management plans and for granting relevant licenses and permits. At the same time, municipally owned undertakings may be competitors to private undertakings in waste collection services. Municipalities also often own incinerators or other waste treatment facilities.

Secondly, municipalities enjoy exclusive property rights to certain waste fractions to which they can exert lawful control, and in some countries the municipalities can, to some extent, classify waste according to their own preferences. These exclusive rights to waste streams enable municipalities or municipally owned undertakings to leverage market power from the markets where they enjoy the exclusive position to competitive markets.

Thirdly, public undertakings may have other undue advantages (or disadvantages) compared to private undertakings. Undue advantages can be related, for example, to tax treatment or to financial advantages. Disadvantages might include, but are not limited to: greater accountability obligations, the requirement to provide universal service obligations, reduced managerial autonomy, the requirement to

[213]OECD, 2012, Competitive Neutrality: Maintaining a Level Playing Field between Public and Private Business, OECD Publishing, Paris, p. 66.

comply with government wages, employment and industrial relations policies, and higher superannuation costs.[214]

4.3.1 The municipalities' multiple roles

The municipalities' multiple roles in waste management have been described above.[215] Municipalities can be active in different stages of the market - as organisers and administrators, as regulators and as service providers. Sometimes the boundaries between those different roles are unclear. In addition to that, sometimes it is unclear what kind of waste fractions the municipalities are responsible for and how the responsibility should be carried out. The municipalities have the possibility to use local regulations and waste tariffs as an instrument to increase the recycling or incineration of different waste fractions.

If municipalities have a right to classify waste they have a potential to influence whether waste is classified as recyclable, and thus outside the municipal exclusive rights, or combustible and thus within the municipalities' exclusive rights. Legal uncertainties with regards to the limits to the exclusive rights may also prove problematic in the same way since they create a scope for vagueness in the application of the law. It has been argued that many municipally owned companies have wrongfully considered certain waste to fall under the responsibility of the municipalities.[216]

Another possible negative consequence of the municipal right to classify waste is that it may create a heterogeneous application of the law. This would affect companies active in the local territories of two or more different municipalities. The industries therefore risk higher costs with regard to waste handling since waste may be considered to fall within the municipal exclusive rights in one territory and the opposite in another territory.

Competitive neutrality may be at risk if regulatory or administrative powers are delegated to municipal undertakings, i.e. waste management service providers. They are often directly involved in the actual development of the municipal waste management plan. Some municipal undertakings have allegedly been entrusted with the task of producing a draft version of those plans.

Some municipalities have invested in and operate their own incinerators, wholly or partially. Incinerators are large-scale investments and require a large and stable

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[214] Office of Fair Trading (OFT), July 2010, Competition in mixed markets: ensuring competitive neutrality, OFT 1242, p. 12.

[215] See for example Section 1.2.4 and Chapter 2.

[216] Regarding the application of the definiton of waste (commercial and/or industrial) similar to household waste in Finnish law.

influx of waste. Incinerators often have excess capacity which strongly encourages owners to sell the remaining capacity. Incineration exhibits economies of scale, with unit costs falling as the volume of waste processed is increased. Hence unit costs increase significantly if waste processing is below the capacity for which the plant was designed. Waste with a higher calorific value generates more heat or electricity and hence more revenue. Therefore, incinerator owners prefer waste with a higher calorific value, all things being equal.[217] There may also be contractual reasons or obligations for trying to channel waste to incinerators.

Ownership of treatment facilities like incinerators may affect municipalities' willingness to arrange competitive tendering, for example, waste collection services. "Flow controls," i.e. laws, regulations or contracts determining the destination of waste, or other barriers to accessing waste transfer stations, landfills or incinerators can distort competition as well by limiting the pool of potential bidders.[218] Municipalities might be more likely to govern provisions of waste collection services (provide it themselves) than to either contract for the services or use private markets, if they own or operate incinerators or other considerable investments in waste treatment facilities.[219] A regional excess capacity in incineration may cause municipalities that have made significant investments in incineration facilities to direct as much waste as possible to incineration in their efforts to secure return on investment.[220] The move towards a circular economy is, as a result, halted or at least momentarily delayed.

It is therefore of great importance that the municipalities continuously evaluate their operations and consider market solutions, including the procurement of waste management services, and focus on the creation of well-functioning markets. Exploring market solutions would allow municipalities the possibility to compare the status quo with the potential benefits of market solutions and it would ensure that the municipalities make well-founded decisions. In order to accurately evaluate current practices and assess the potential benefits, municipalities must keep separate accounts for waste management.

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[217] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 27.

[218] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 18.

[219] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 23. Based on Walls, M., M. Macauley and S. Anderson,2005, Private Markets, Contracts, and Government Provision: What Explains the Organization of Local Waste and Recycling Markets?, Urban Affairs Review, May 40:5, 590–613.

[220] "*For example, the Netherlands has invested heavily in waste incineration only to find itself in a position of having far too much incineration capacity for the country's needs, resulting in competition for waste and a substantial lowering of incineration prices, thus jeopardizing the economic viability of the facilities. This is of particular concern to the authorities if they made the investment with public money. In such cases, in their efforts to secure return on investment, authorities may inadvertently slow down broader societal trends towards waste prevention and enhanced environmental practices.*" See UNEP/ISWA (2015) Global Waste Management Outlook, page 133.

4.3.2 Exclusive rights to waste streams

As described above, municipalities are, as a rule, responsible for the collection of household waste and they are authorised to choose between providing the service themselves, perhaps joined by other municipalities, and contracting the service out to either a private or a public provider.[221]

Some municipally owned waste management companies offer services to the commercial and industrial enterprises in addition to the services they provide with regards to municipal waste, notwithstanding the fact that the municipalities are responsible mainly for municipal waste. Several municipal undertakings state that they want to become the leading provider when it comes to covering the whole package of waste management services. Subsequently, these undertakings may attempt to increase their turnover, often in markets where they may meet competition.

Municipally owned waste management undertakings may try to leverage their market power from markets where they enjoy an exclusive position to competitive markets.[222] In addition to the municipal waste market, they may try to reach a prominent position in the market for commercial waste in their home region, or they may compete with private undertakings in tenders for municipal waste in other regions.[223] When there is limited transparency regarding cost allocation between activities performed in competition with others, and activities performed in markets characterised by the municipalities' exclusive position, cross-subsidisation is possible and quite often suspected.

In some cases the municipal waste management undertakings provide electricity, sewer services and district heating as well as waste management services, and some stakeholders claim that such municipal undertakings sometimes offer to supply all these services at a relatively low price. The municipalities often hold an exclusive position with regard to sewers, district heating and household waste; it can therefore be difficult for any private undertaking to compete with such bundled offers. If cross-subsidisation, for example, leads to price levels that competing private companies cannot match, this is often regarded as an unfair advantage that may cause a harmful lack of competitive neutrality and may constitute an infringement of competition law by e.g. predatory pricing. Increased transparency and an obligation to keep separate accounts could help distinguish low prices

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[221] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 18.

[222] In the "Blue bins" case (Icelandic Competition Authority's opinion no. 1/2014) the Icelandic municipalities in the capital area entered the market for collection of recyclable waste in competition with private undertakings. For further details see under 4.3.4 and Box 5 under Section 5.5.4.

[223] See for example the Reno-Vest case reviewed in OECD, 2013, Working Party No. 2 on Competition and Regulation, Waste Management Services – Norway, DAF/COMP/WP2/WD(2013)43.

resulting from cross-subsidisation from low prices that are due to, for example, operations that are more efficient than those of their competitors.

4.3.3 The undue advantages of public undertakings

Municipal undertakings may have several advantages compared to private undertakings, which could distort competition. In order to ward off such distortions of competition, tax neutrality, regulatory neutrality and debt neutrality should be promoted.

In Iceland, for example, municipalities and the undertakings for which they are liable (other than limited liability undertakings), are not obliged to pay income taxes from their revenues. In addition, the municipalities and their undertakings do not collect value added tax (VAT) for their services. In some cases this jeopardises competitive neutrality when municipalities and their undertakings are in competition with private companies.

Municipal undertakings may have financial advantages compared to private undertakings. In order to finance their activities, municipally owned undertakings may use municipal resources or seek funding from financial markets. Sources of finance include commercial banks, capital markets, government owned credit institutions as well as dedicated public funds.[224] Financing through the market does not mean that municipally owned undertakings may not obtain unintended advantages due to their ownership. The financial risk of lending to municipally owned undertakings (that are not limited liability companies) is virtually non-existent as municipal undertakings in many cases cannot go bankrupt. This provides public undertakings with cheap and ample credit which could give them an undue advantage in competition with private undertakings.

In Norway there is currently a legislative proposal to remove inter-municipal companies' credit advantages by addressing the fact that such companies cannot become bankrupt, and by removing unlimited liability. These changes are signifycant to the waste management sector due to the extensive involvement of inter-municipal companies and the presence of private competitors which do not have the same financial advantages.

In Finland, according to the Local Government Act, municipalities are obliged to corporatise their business activities when competing in the market. Through this obligation, bankruptcy protection and any possible tax benefits are withdrawn. Only in some exceptional circumstances is there no obligation to corporatise, for

[224] OECD, 2012b, Competitive Neutrality: National Practices, Background Report, p.67. http://www.oecd.org/daf/ca/50250966.pdf

example, if the activity in the market is of minor proportions and occasional. In such cases, the pricing has to be market-based.[225]

Municipal undertakings should try to achieve a commercial rate of return in competitive markets in order to maintain competitive neutrality. If there is no required rate of return, for example because of the prime cost principle[226], this may distort competition. Competition from private enterprises is unlikely to arise when they have no substantial cost advantages vis-à-vis the municipal undertakings. Private enterprises will not be interested in markets where it is not possible to make sufficient profit.

If municipal waste management undertakings are simultaneously active in competitive markets and markets where they enjoy an exclusive position, it is crucial to separate the respective accounts. Issues regarding cost allocation may raise suspicions of cross-subsidisation, predatory pricing and/or different forms of discrimination.[227] Even if rather strict conditions for finding predatory conduct are not met, low prices resulting from undue advantages as, for example, the possibility of cross-subsidisation, may cause a harmful lack of competitive neutrality. It is therefore essential to determine to what extent the municipal undertaking's advantages distort competition in order to be able to address harmful advantages. Increased transparency and an obligation to keep separate accounts could help distinguish a lack of competitive neutrality resulting from undue advantages.

The Icelandic Competition Act includes a rule which is designed to ascertain that finances from the part of the operations relating to exclusive rights are not used to subsidise the operations that are conducted in competition. In its decisions according to this article of the Competition Act, the ICA has demanded that the separation of accounts is transparent and in accordance with legal provisions on accounting. However, these rules have not been used in practice in waste management, inter alia because of special legislation for the waste management sector. In Norway the regulations regarding the waste fees are complemented with guidelines that contain similar demands for a proper separation of accounts.[228]

The Finnish Waste Act contains an obligation for a municipality or a municipally owned company to itemise those posts in the accounts which are attributable to the competitive market and to release the relevant information. These obligations, inter

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[225] In spite of this rather equivocal term, lawmakers in fact envisaged competitive prices. Market-based pricing refers to a price in competitive markets. Although monopoly pricing is market-based in monopoly markets, it is not what is meant by the term in the Local Government Act.

[226] The prime cost principle entails that the price for the services must not exceed the actual cost of providing the service.

[227] See Section 4.3.4. for case examples from Sweden and Iceland.

[228] See Section 4.3.4. for description of an ESA decision regarding financing of municipal waste collection in Norway, ESA case no. 69911.

alia, are intended to ensure transparent pricing, to prevent cross-subsidisation and to protect competition neutrality.

The Swedish Competition Authority has recommended that public entities should be required to separate the financial accounts of their competitive activities from their non-competitive activities and also that the accounts should be made public to improve transparency.[229] This recommendation is considered especially important in the waste management sector where there is a perceived risk for cross-subsidisation and below cost pricing because of the municipal exclusive rights to household waste. Also, Avfall Sverige, which is a trade organisation primarily for the municipalities and municipally owned waste management companies, recommends that its members keep financial accounts for operations conducted in competition properly separated from accounts for operations conducted within an exclusive position.

4.3.4 Case examples

Norwegian ESA case

On 27 February 2013, the EFTA Surveillance Authority (ESA) concluded that the financing of municipal waste collectors in Norway constituted state aid which was incompatible with the functioning of the EEA Agreement.[230] The ESA stated in its decision that there were two main areas of concern. *Firstly*, there was a specific tax loophole that meant that waste collectors were subject to differing tax systems based on whether they were publicly or privately owned. Where a publicly owned waste management company provided services in a municipality other than that of its owner, it was exempt from income tax. The Norwegian government accepted the appropriate measures proposed by ESA, and consequently this part of the case was closed.[231]

Secondly, in the same case the ESA found that "*the system of financing municipal waste collectors offering services on the market put in place by the Pollution Control Act by way of the waste collection fee constitutes state aid which is not compatible with the EEA Agreement*"[232]. The ESA proposed that the Norwegian government would take appropriate measures to comply with state aid provisions, and the decision went on to present the following three suitable measures to ensure compliance:

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[229] The Swedish Competition Authority's report "Konkurrensen i Sverige 2013", Rapport 2013:10.

[230] ESA decision no: 91/13/COL, case No. 69911 (http://www.eftasurv.int/media/decisions/91-13-COL.pdf)

[231] ESA decision no: 174/13/COL, case No. 69911 (http://www.eftasurv.int/media/decisions/174-13-COL.pdf)

[232] ESA decision no: 91/13/COL, para 67.

"First, the Norwegian authorities should introduce a legally binding obligation requiring municipal waste collectors carrying out economic and non-economic activities to keep separate accounts for the two types of activities. The Norwegian authorities should ensure that the waste collection fee will be calculated on the basis of the costs directly related to the non-economic activity as well as a proportionate share of fixed common costs,

Second, the Norwegian authorities should introduce an adequate system of control that prevents any form of cross-subsidisation between the non-economic and economic activities of the municipal waste collectors, and

Third, the Norwegian authorities should ensure that municipal waste collectors carrying out economic and non-economic activities are not empowered to set their own waste collection fees without approval by a state body (i.e. the municipality or central government)."[233]

The Norwegian government has made efforts to comply with these proposals in order to ensure that it does not infringe the state aid provisions of the EEA agreement. In a letter to the ESA, Norway has outlined its plan for compliance. The ESA found that "*the proposed regulatory and legislative changes to the scheme for the financing of municipal waste collectors will ensure the abolishment of the existing system of aid*", and subsequently closed the case.[234]

As a direct result of these proceedings the waste fee calculation regulations have been incorporated into the Waste Regulations, with guidelines that explicitly demand the proper separation of accounts.

The change imposes a more specific requirement to allocate all costs proportionally between the part of the entity providing service to its inhabitants, i.e. the property rights to household waste, and waste from other sources such as industrial waste or waste from other municipalities. This has particular impact on the tipping fees of municipally owned incinerators which have as a rule been built with capacities in excess of the current flow of household waste. This excess capacity has generally been offered at prices that private competitors claim is impossible to match. At the same time, the incinerators have priced the municipality's residents at a much higher level in order to cover fixed or long-term costs.[235] The change in the Waste Regulation is aimed at forcing municipalities to allocate a proportional share of the total cost to each type of waste, which may result in increased prices. As the change was enacted from 2015 onwards, it remains to be seen what the consequences will be.

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[233] ESA decision no: 91/13/COL, para 68.

[234] ESA decision no: 174/13/COL, para 10.

[235] See "Avfallsbehandling, Disponering av avfall – Kryssubsidiering", a report issued by Norsk Industri og Maskinentreprenørenes forbund, 2013, report no. 20130018-1 and "Samfunnsøkonomiske effekter av å oppheve kommunenes enerett på behandling av husholdningsavfall - Utarbeidet for Norsk Industri og Maskinentreprenørenes forbund", a report issued by Oslo Economics, 2013, report no. 2013:17.

Icelandic abuse of dominance case (SORPA)

An Icelandic private waste management undertaking claimed that the discount system operated by SORPA, an inter-municipal undertaking, was in violation of the ban on abuse of dominant position[236] since it provided discounts based on a non-objective scale.[237]

In this case the relevant product markets were the markets for the operation of waste transfer and sorting stations based on the nature of the sorting stations, i.e. on the one hand the market for waste sorting and processing, where SORPA had a 65-75% share, and on the other hand the market for waste disposal, where SORPA had a monopoly. The relevant geographical market in this case was the greater capital area in Iceland.

SORPA had a price directory in place, where discounts were included. The discounts were percentages based on the total amount of the customers' business with SORPA within a given period of time. In SORPA's waste transfer and sorting stations every person and organisation was included in the same discount system, except for the municipalities in the greater capital area that are the owners of SORPA. The municipalities in question always received a higher percentage of discounts, without consideration for their total amount of business with SORPA. The Icelandic Competition Authority (ICA) investigated whether the amount of business between SORPA and the aforementioned municipalities warranted such a system, and found that it did not.

The ICA found SORPA to be in violation of the Icelandic Act on Competition, i.e. the ban on abuse of a dominant position, and ordered that SORPA should pay an administrative fine of ISK 45 million as a result. Furthermore, the ICA instructed SORPA to reconsider its price directory and to put in place a new one that was not arbitrary and which would comply with being neutral, transparent and objective, so that the same discount system would apply to all of SORPA's customers.

SORPA appealed to the competition appeals committee and later the courts. The decision was upheld and the fine was confirmed by both the appeals committee and the District Court of Reykjavik. The case is currently being reviewed by the Icelandic Supreme Court.[238]

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[236] Article 11 of the Icelandic Competition Act no. 44/2005, cf. Article 102 TFEU.

[237] Icelandic Competition Authority's decision no. 34/2012.

[238] Following the decision, SORPA changed its price directory. SORPA repealed all discounts and set a flat fee for all waste management. Icelandic Competition Authority has received complaints arguing that this also constitutes an abuse of a dominant position and an infringement of the Competition Act.

Icelandic Blue bins case

An Icelandic private waste collection company complained to the Icelandic Competition Authority about the City of Reykjavík's decision to set up a paper and cardboard waste collection/recycling service referred to as Blue bins (I. Bláar tunnur), in competition with private undertakings.[239]

It was claimed that the City's entry into the market would damage competition in that market due to the City's superior competitive position and that this would therefore infringe the Icelandic Competition Act.[240] The City's superior competitive position was said to stem from its substantial tax revenues and its size. Additionally the City offered the Blue bin services to homes in the city for a price which was claimed to be too low, as it did not cover all costs related to the services in question. On that basis, it was also claimed the City was engaging in predatory pricing.

In Iceland there is a law on waste management obliging each municipality to make its own arrangements with regard to the collection of household and commercial waste in their respective communities. The provision also states that each municipality is responsible for the transportation/collection of household waste. Paper and cardboard waste fall under that definition of household waste.

The Icelandic Competition Authority therefore concluded that it did not have the authority to intervene by prohibiting the City's service as the municipalities in Iceland are required by law to arrange the collection of household waste. However, the Icelandic Competition Authority simultaneously concluded that certain indications suggested that the Blue bin project might be damaging to competition in the recycling market. It therefore decided to look into exercising its advocacy efforts towards the City of Reykjavík and the government.[241]

Swedish cross-subsidisation cases

The Swedish Competition Authority (SCA) has investigated three complaints with regards to competitive neutrality issues in waste management markets.

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[239] Icelandic Competition Authority's decision no. 69/2007.

[240] It was claimed it infringed Article 16 Section b of the Icelandic Competition Act no. 44/2005, which allows the Icelandic Competition Authority to take action against public parties if they could be damaging to competition (provided that no special legislation contains any specific provisions regarding authorisation or obligation for such acts; lex specialis).

[241] See as well Icelandic Competition Authority's opinion no. 1/2013 that also concerns collection of paper and cardboard waste in the capital area, detailed in box 5 under Section 5.5.4.

In one of the cases[242] a municipally owned company covered the costs relating to operations in a competitive market with the household waste collection tariffs rather than revenues from services sold in the market where the costs were incurred. This, it was argued, resulted in a cross-subsidy which was detrimental to competition. However, the SCA did not find that the magnitude of this cost shift was substantial enough to also result in below cost pricing in the commercial waste market by the company in question.

In another case[243] a company owned by three municipalities offered rebates on household waste fees on condition that the households also purchased kerbside collection of packaging waste, and the effective price was found to be below cost. The SCA's investigation considered whether the company in question was abusing a dominant position. However, the municipalities chose to change local waste management rules to allow for competition, and the case was subsequently closed.

In the last case[244] a company owned by two municipalities did not keep separate accounts regarding operations in competitive markets and markets where it had an exclusive position. The household waste fee therefore covered costs from both the competitive packaging waste market and the market for household waste and thus resulted in cross-subsidisation. However, due to a low interest from private undertakings in this market, the SCA concluded that competition was in fact not inhibited and the case was subsequently closed.

4.4 Conclusions

The municipalities' longstanding position with regards to responsibilities and exclusive rights has characterised and shaped how household waste has been managed in the Nordic countries. The challenge for the Nordic waste management sector is to find appropriate ways to utilise the market mechanisms and competition to boost innovation towards increased material recovery and reduced environmental impact. Issues with competitive neutrality can have negative effects on market mechanisms and competition.

However, it is important to stress that the mere existence of municipally owned companies does not in itself constitute a problem. It must also be emphasised that not all differences between enterprises, even when there are both public and private enterprises in the same markets, are problems of competitive neutrality. It is only natural that enterprises have different strengths and weaknesses on which their competitive strategies are based, and institutional factors may lead to competitive advantages and disadvantages for some market players. Reference to competitive neutrality between public and private entities operating in mixed markets does not

[242] Swedish Competition Authority's case no. 76/2011.

[243] Swedish Competition Authority's case no. 536/2011.

[244] Swedish Competition Authority's case no. 226/2011.

automatically imply privatisation of public undertakings. Neither does it mean that no firm can enjoy a competitive advantage. Competitive advantages help drive the dynamic competitive process where more efficient firms expand whilst inefficient firms lose customers and exit the market. However, a lack of competitive neutrality may artificially distort these competitive dynamics, and this in turn may lead to less well-functioning markets.

There are several reasons why competitive neutrality problems may potentially arise in relation to waste management. The municipalities have multiple roles in all of the Nordic countries, amongst others as organisers, administrators, regulators and as service providers. A municipality could potentially use those roles to the benefit of a municipal undertaking, the municipality also has the exclusive rights to household waste and their undertakings may have other undue advantages compared to private companies. Issues like these can, either individually or combined with others, cause disturbances to the market and this can reduce the private companies' incentives to be present in that market. To avoid creating a harmful lack of competitive neutrality, it is therefore recommended that municipal waste management undertakings as a rule should be as separate from their owners as possible. For example, a clear separation, by way of personnel, finances, etc. would help to create safeguards against a lack of neutrality. Meanwhile, as discussed in Chapter 3, there are potential benefits for the municipalities of having competition in or for the different parts of the waste markets.

It is therefore important for all Nordic countries to try to counteract competition neutrality issues in the waste management sector in order to facilitate more efficient markets. The Nordic competition authorities possess a variety of different means to counteract a harmful lack of competitive neutrality. Some Nordic countries have legislative tools explicitly intended to ensure that competitive neutrality issues are avoided or dealt with, but even in those countries there is still room for improvements to ensure that the instruments are effective and sufficient. Legal requirements to keep separate accounts regarding finances from the operations relating to exclusive rights and the operations that are conducted in competition on a free market would increase the transparency and could help prevent cross-subsidisation. Further improvements to the competitive neutrality in the market may also necessitate amendments of regulations on tax and credit benefits.

Even if the causes of the lack of competitive neutrality are removed, there are probably going to be differences that affect the competitive environment. For example, the peculiarities of public ownership will most likely always have an effect, even in a corporatised setup. Publicly and privately owned undertakings will, with the current institutional setup, always have different advantages and disadvantages, and differences in ownership and legal form will probably persist, even if the most essential competitive neutrality issues among them have been settled. The aim is not to remove all differences, but rather to reduce or remove the harmful impact to which some of the differences give rise.

5 Extended producer responsibility schemes

OECD has defined extended producer responsibility (EPR) as "*an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle*"[245]. Accordingly, the main purpose of EPR schemes is to extend the responsibility for products in the post-consumer stage to the producer and away from municipalities (local authorities) and consumers. In practice, EPR implies that producers and importers take over the responsibility for collecting or taking back used goods and packaging, for sorting and treating prior to their eventual recycling. The responsibility may be merely financial or organisational as well.[246] This way of thinking is in line with the polluter pays principles in principle 16 of the 1992 Rio Declaration on Environment and Development.

The shift of responsibility encourages producers to improve the overall cost-efficiency of collection and recycling processes, to increase the recyclability of their products, to diminish the amount of material used in production and to find ways to reduce waste and recover used products. These objectives contribute to a move towards sustainable consumption and production practices.[247]

Since the early 1990s, EPR schemes have contributed to significant increases in recycling rates and reductions of public spending on waste management in many countries, as producers involved in such schemes are incentivised to maximise the material benefits from their products throughout the value chain.[248] As an example of this, about 15% of the budget spent on municipal waste management in France is now financed by producers via EPR schemes.[249]

During the last decade, EPR schemes have spread and developed rapidly around the world and policy makers in the OECD and emerging economies are now implementing EPR policies as an efficient target-oriented environmental tool along with traditional instruments and regulations such as landfill taxes or emission standards for waste treatment facilities. EPR schemes have been adopted in most

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[245] OECD,2001, Extended Producer Responsibility: A Guidance Manual for Governments, OECD Publishing, Paris.

[246] Development of Guidance on Extended Producer Responsibility (EPR) Final Report, 2014, a report commissioned by the European Commission DG Environment.

[247] Development of Guidance on Extended Producer Responsibility (EPR) Final Report, 2014, a report commissioned by the European Commission DG Environment.

[248] OECD, 2014, Issues Paper - The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges, Global Forum on Environment: Promoting Sustainable Materials Management through Extended Producer Responsibility (EPR), 17–19 June 2014, Tokyo, p. 3.

[249] OECD, 2014, Issues Paper - The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges, Global Forum on Environment: Promoting Sustainable Materials Management through Extended Producer Responsibility (EPR), 17–19 June 2014, Tokyo, p. 9.

OECD countries and today there are approximately 400 EPR schemes around the world.[250]

The main objectives of EPR schemes in the Nordic countries are the same as in the rest of the world. *Firstly*, to increase the collection and recycling rates of the products and materials targeted and *secondly*, to shift the financial responsibility from municipalities to producers.[251] The key idea of shifting the responsibility away from municipalities is to incentivise producers to take into account environmental considerations when designing their product and, thus, create products and packaging that are easier or less cost-intensive to reuse and recycle.

EPR is an individual obligation which implies that each producer or importer is responsible for and required to take the necessary steps to ensure that its products will be collected and treated at the end of the products life. In a great number of cases, however, producers create a joint collective structure, a producer responsebility organisation (PRO) to execute their legal obligations, e.g. the obligation to take back products at the end of their life cycle.[252]

All of the Nordic countries have to some degree implemented EPR schemes that cover a wide range of products. Those schemes differ in their setup between individual Nordic countries and even within each country. The structure of EPR waste markets in the region therefore varies significantly. An overview of the EPR schemes in the Nordic countries can be found in the table below.

Table 2 Overview of the EPR schemes in the Nordic countries

	WEEE	BAT	ELV	Packaging	Disposable drink containers	Tyres	Graphic Paper	Medical waste	Agricultural film
Denmark	x	x	x		x	x			
Faroe Islands	x			x[253]					
Finland	x	x	x	x	x	x	x		
Greenland				x	x				
Iceland[254]	x	x	x	x	x	x		x	x
Norway	x	x	x	x	x	x			
Sweden	x	x	x	x	x	x	x	x	x

Note: WEEE (Waste from Electrical and Electronic Equipment), BAT (Batteries), and ELV (End of Life Vehicles).

[250] OECD, 2014, Issues Paper - The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges, Global Forum on Environment: Promoting Sustainable Materials Management through Extended Producer Responsibility (EPR), 17–19 June 2014, Tokyo,p.4.

[251] Development of Guidance on Extended Producer Responsibility (EPR) Final Report, 2014, a report commissioned by the European Commission DG Environment.

[252] OECD,2001, Extended Producer Responsibility: A Guidance Manual for Governments, OECD Publishing, Paris.

[253] Paper, cardboard, glass, plastic, scrap metal.

[254] All EPR materials fall under the Icelandic Recycling Fund (IRF) system described below. The system covers vehicles, cardboard, plastic, packaging, tyres, plastic from hay bales, batteries and accumulators and various hazardous materials.

In some of the Nordic countries, there have been issues with specific EPR schemes and challenges arising as the markets affected by the EPR obligation evolve and change in many aspects. Legislation may not foresee or be set for the changes, e.g. when a sole PRO goes from being the only player to competing with other PROs, something which creates challenges in the respective markets, i.e. when the market for PROs changes from being a legal monopoly to a competitive market. A PRO could also hold a dominant position which can potentially be used to distort competition in the market.

The remainder of this chapter is organised as follows: Section 5.1 describes the legal framework, whilst Section 5.2 provides an introduction to the roles and responsebilities within the EPR schemes in the Nordic countries. Sections 5.3 and 5.4 highlights the key similarities and differences and describe the current state of competition for the EPR schemes for packaging waste and WEEE in the Nordic countries respectively. Finally, the competitive issues related to the organisation of the EPR schemes are discussed in Section 5.5, whilst conclusions regarding the EPR schemes are presented in Section 5.6.

5.1 The legal framework for EPR

The legal framework concerning EPR in Sweden, Norway, Finland, Iceland and Denmark follows EU law, to a large extent.[255] The EU Waste Framework Directive provides the overall framework for waste management in the EU and three other directives set out collection and recycling targets in specific industries, i.e. Batteries, ELVs and WEEE[256]. EPR is also used in support of the implementation of the Packaging and Packaging Waste Directive (94/62/EC), although the Directive itself does not impose the EPR approach.

This legislation encourages and/or requires the implementation of EPR measures for the prevention, recycling and recovery of waste. For instance, the WEEE Directive seeks to limit the amount of EEE waste that is not recycled, reused or in other ways processed to reduce the disposal of waste, whilst setting minimum collection rates to be achieved by the individual member states. Other European instruments have an indirect effect on EPR policies across the EU, such as the EU Ecodesign Directive[257], which provides EU-wide rules for improving the environmental performance of energy-related products.[258]

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[255] In Norway and Iceland through the EEA agreement.

[256] The ELV Directive 2000/53/EC, the WEEE Directive 2012/19/EU and the Batteries Directive 2006/66/EC.

[257] Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products, OJ L 285, 31.10.2009, p. 10–35.

[258] Development of Guidance on Extended Producer Responsibility (EPR) Final Report, 2014, a report commissioned by the European Commission DG Environment.

Despite the fact that the national legal framework is, to a large extent, based on EU law, the implementation of the national legislation in this area is somewhat heterogeneous. National EPR schemes may cover additional products including, for example, used tyres. A study conducted by the European Commission shows that EPR policies have been designed and implemented in a very heterogeneous manner across the whole of Europe.[259]

5.2 Roles and responsibilities within the EPR Schemes

When looking at the issues and challenges regarding an EPR scheme it is important to take into consideration the regulatory setup and respective roles and responsebilities of the actors within the EPR scheme as these may affect the competitive situation.

5.2.1 Producers and the PROs

The nature of EPR schemes requires an allocation of responsibility among the stakeholders (producers, PROs, municipalities, consumers, companies performing collection and treatment services, etc.). The EPR imposes an obligation on the producers and, thus, the producer is essential to the performance of the EPR scheme. Since the producer has control over the decisions relating to materials and product design it is the producer that is in the best position to influence the final environmental impact of the products, or to correct failures. Although EPR is an obligation imposed on the producers individually, producers often create or enter into agreements with existing producer responsibility organisations ("PROs") that collectively assume the obligations associated with the producer responsibility, including collection, processing, etc. The degree of responsibility that a PRO has varies in the Nordic countries and may be shared with the government and/or other actors in, or connected to, the production chain.

In most cases, the PROs do not provide waste management services themselves, instead they purchase the collection and treatment services from other companies. Accordingly, most PROs choose to challenge the waste management market collectively and use competitive procurement and negotiation.

Today, the Nordic PROs are active in the registration of producers, the registration of the amount of products placed on the market, the reporting of waste collected, the financing of waste management and the raising of awareness with regard to recycling. PROs have a central role in coordinating and fulfilling the collective responsibility of their members. PROs are also a forum for dialogue between a

[259] OECD,2001, Extended Producer Responsibility: A Guidance Manual for Governments, OECD Publishing, Paris.

diverse group of stakeholders in EPR, e.g. the government, waste collectors, recyclers and other waste management service providers.

Despite the fact that PROs are most often owned by producers, they might not have sufficient control to ensure efficient operations.[260] From the producers´ point of view, their responsibilities should be carried out with as low cost operations as possible. PROs that enjoy a monopoly position might not have similar incentives themselves. Competition between PROs might relieve the problem, as it gives producers another option and also puts pressure at an operative level.

5.2.2 Municipalities

Despite the fact that the objective of EPR is to shift the responsibility for managing products and packaging in the post-consumer stage from municipalities to producers, the municipalities have a crucial role to play in most EPR schemes including WEEE and packaging in the Nordic countries.

In most EPR schemes, municipalities remain in charge of some aspects of the waste management of products covered by the EPR obligation. Under the packaging schemes in, for example, Norway, the municipalities retain responsibility for the collection, sorting and recycling of the packaging waste from households. In Denmark, the management of packaging waste has been internalised and the municipalities have the responsibility.

In other Nordic packaging schemes, the municipalities retain partial responsibility for packaging waste, which means that the responsibility to some extent is shared between the producers and municipalities. In Finland, municipalities organise "take-back" collection of packaging waste from households and PROs from industries. In the Danish WEEE scheme the responsibility is shared, municipalities are obliged to establish collection points and hand over the collected WEEE to the producers for treatment. In most cases this shared responsibility stems from the responsibility that municipalities have with regard to the collection and sorting of household waste in general.[261]

In other cases, municipalities have a role to ensure that the waste is properly handed over to a collective scheme. In Norway, for instance, the municipalities have an obligation to ensure sufficient provisions for the reception of WEEE, while the

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[260] Kalimo, Harri, & al., What Roles for Which Stakeholders under Extended Producer Responsibility?, Review of European Comparative & International Environmental Law, 24 (1) 2015, pp. 52–53.

[261] The Swedish government recently appointed an inquiry to investigate and develop a proposal on how the responsibility for collecting packaging waste and waste paper from households can be transferred from the producers to the municipalities. Of course this is a debated issue and there is a clear division between those in favour of such a change and those against it.

further management of the waste is the responsibility of the producers through a PRO.

5.3 EPR schemes for packaging waste

Sweden, Norway and Finland all have specific EPR schemes for packaging waste, whilst the Icelandic scheme is part of the same EPR scheme as the one covering WEEE and other products such as vehicles and batteries[262]. In Denmark and Greenland, there are no EPR schemes regarding packaging waste and the management of packaging waste is therefore a municipal responsibility.

The packaging waste flow is however the same across the Nordic countries:

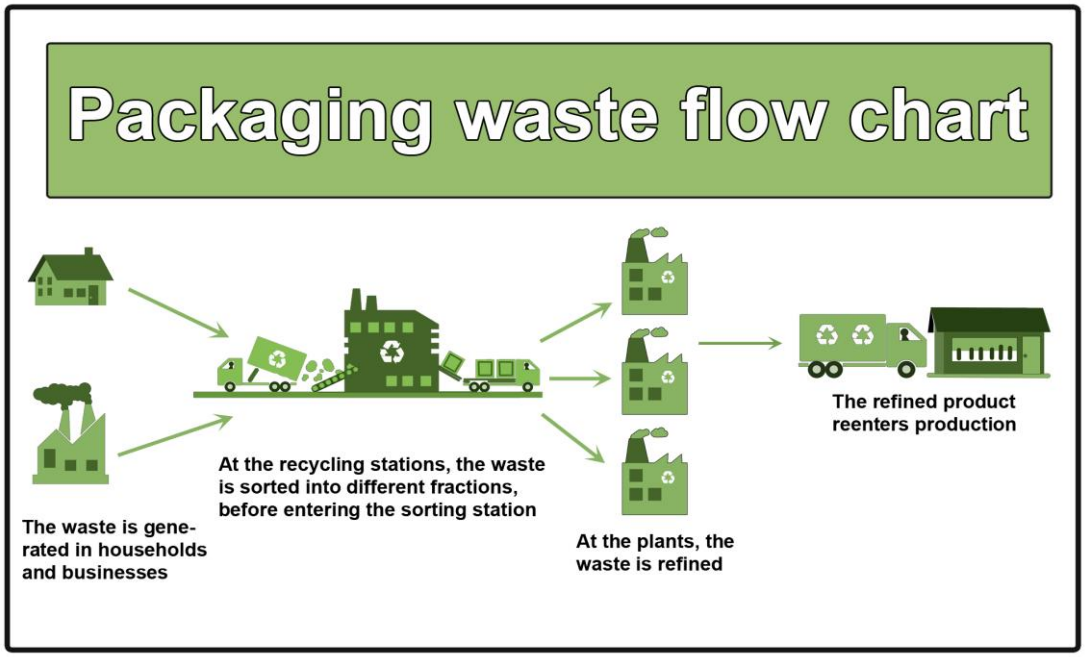
1. The waste is generated in households or businesses. It is then taken to collection points (recycling stations) or collected by an authorised collection system or municipality (kerbside collection).

2. At the collection points (recycling stations) the packaging waste is sorted into different fractions – paper, plastic, metal, glass and newspaper. The packaging waste is then transported to sorting stations where it is sorted still further. Kerbside collection is a complementary collection system to the recycling stations in which the waste is sorted at the source in different fractions using, for example, colour tagged waste bags or different containers.

3. After further sorting the packaging waste is then transported to various treatment facilities where the waste is further refined before it can finally re-enter production.

[262] OECD, 2001, Extended Producer Responsibility: A Guidance Manual for Governments, OECD Publishing, Paris.

Figure 10 General flow chart for packaging waste



5.3.1 Key similarities and differences

Although there are differences across the Nordic countries with regard to the handling of packaging waste, there are also basic similarities. The following table describes some of the main features of the schemes for handling packaging waste in the Nordic countries:

Table 3 The main features of the packaging system

	Main actors	Collection systems	Kerbside collection	Recycling and sorting stations
Denmark	Municipalities	Each municipality is obliged to implement incentives and recycling opportunities for packaging waste in the local municipal waste management plan. Households: Recycling stations or kerbside collection depending on the local waste plan Industries: Recycling stations	Municipal or tendered out to private companies. The EPR scheme is financed by the waste collection fee paid by the households. The fee differs between the municipalities. Undertakings pay directly to the operator or waste management company.	Owned by the municipalities.
Faroe Islands	Municipalities			

Continued

	Main actors	Collection systems	Kerbside collection	Recycling and sorting stations
Finland	Mepak-Kierrätys Oy (metal) Puupakkausten Kierrätys PPK Oy (wood) Suomen Keräyslasiyhdistys ry (glass) Suomen Kuitukierrätys Oy (paper, cardboard and industrial fibre-based materials) Suomen Uusiomuovi Oy (plastic) Rinki Ltd (former PYR Oy) (service provider)	Recycling stations are considered the main collection system. Area terminals to which waste management firms and municipalities can bring package waste, free of charge.	Complementary to the recycling stations. Private company or municipal. Kerbside collection is financed with municipal waste fee.	Organised and managed by PYR/Rinki. Financed by the producers through PROs and PYR/Rinki.
Greenland	Municipalities			
Iceland	IRF: The Icelandic Recycling Fund SORPA bs. Gámaþjónustan hf. Íslenska gámafélagið ehf.	The IRF system does not dictate the collection of EPR waste. Municipalities have an exclusive right regarding the collection of waste from households, similar to other wastes.	Usually private undertakings, except for in Reykjavík where an in-house department performs collection. Collection is primarily financed by the holder of the waste, either the household or commercial undertakings.	Either owned by the municipalities or private waste management undertakings. The IRF system does not finance recycling stations directly. However, the IRF pays a recycling incentive fee to private and public waste management undertakings that manage EPR waste.
Norway	Norsk Resy AS (Corrugated cardboard) Norsk Returkartong AS (Cardboard) Norsk Glassgjenvinning AS (Glass and metal) Plastretur AS (Plastics) Tomt & Tørt (Packaging that has contained hazardous waste, e.g. paint.)	Recycling stations or kerbside collection	Some municipalities offer separate kerbside collection of plastic and paper/cardboard. However, this varies between municipalities.	Financed by environmental fee on new products

Continued

	Main actors	Collection systems	Kerbside collection	Recycling and sorting stations
Sweden	Förpacknings- och Tidningsinsamlingen AB (FTI)(PRO) TM Responsibility AB (TMR)(PRO)	Recycling stations are considered the main collection system.	Complementary to the recycling stations. The kerbside collection is primarily offered to apartment blocks	Owned by the FTI. TMR is allowed access to the stations by agreement with FTI. Primarily financed by the producers through producer fees to FTI, but also from incomes from the sale of secondary raw materials

Note: Annex III gives a further description of the national packaging schemes and regulations.

The Nordic competition authorities have gathered information regarding the performance at the area of packaging waste. The table below shows the total amount of packaging waste collected and the overall recovery rates in the respective Nordic countries.

Table 4 Total packaging waste (thousands of tonnes) collected and recovery rate (percentage)

	2006	2007	2008	2009	2010	2011	2012
Denmark	970	978	902	693	693	883	894
	94%	97%	98%	108%	108%	91%	89%
Finland	677	696	701	654	702	702	716
	77%	84%	90%	88%	86%	91%	93%
Iceland	N/A	N/A	50	40	44	44	45
	N/A	N/A	56%	60%	48%	65%	57%
Norway	484	501	510	512	516	528	516
	71%	69%	68%	70%	72%	73%	71%
Sweden	1,420	1,443	1,410	1,420	1,262	1,295	1,295
	81%	82%	80%	77%	77%	80%	80%

Source: Based on information collected from the individual national competition authority.
Note: Greenland and the Faroe Islands are left out due to missing statistics. In 2009 and 2010 Denmark recycled more than 100%. This is a result of the fact that some collected amounts in one year were not processed at once and was instead included under a later year.

5.3.2 Competition regarding packaging waste

In Sweden there is competition between two PROs, FTI and TMR[263], in certain parts of the market for the collection of packaging waste, and at times it has been claimed

[263] Förpacknings- och Tidningsinsamlingen AB (FTI) and TM Responsibility AB (TMR).

that competition rules have been violated. However, the competition in the market for collection has been claimed to have been a positive driving force for the development of the collection systems, in particular kerbside collection from single households.[264] The services are, in these cases, procured by associations of homeowners in respect of specific residential areas.[265] There is very little competition regarding the collection points (recycling stations) and transfer and sorting stations where FTI seems to enjoy a massive dominant position. There is, however, no exclusivity regarding the recycling stations since the two competitors have signed a contract allowing TMR access to FTI's collection system. The Swedish Government has declared that it intends to make the municipalities exclusively responsible for the collection of the packaging waste instead of the PROs. The Government believes that this will increase the amount of packaging waste being sorted by the households and subsequently recycled. The proposal and interconnected issues are currently being investigated.[266]

In Norway there is generally limited competition between different PROs due to the fact that the recycling schemes are differentiated. In addition, there are regulatory barriers to entry. Since all producers are obliged to participate in a recycling scheme, a potential entrant must attract a sufficient number of customers from the incumbent in order to reach the necessary economies of scale required to be competitive. The collection and sorting of waste is largely conducted by the municipalities. The majority of the packaging waste collected by the recycling schemes comes from households, and the municipalities have an exclusive position with regards to the collection of household waste. The collection and sorting of commercial or industrial waste is, on the other hand, open for competition. In order to collect and sort packaging waste, the recycling schemes usually hire sub-contractors. Although the recycling schemes often lack side-by-side competition, there is still competition for the market when it comes to the collection and sorting of packaging waste. According to the agreements between the Norwegian Government and the industry, the recycling schemes also have an obligation to secure downstream competition.[267]

In Finland, the competition between the different PROs is limited for the same reason as in Norway since the PROs in Finland are also differentiated. The

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[264] TMR's opinion on the report SOU 2012:56 "Mot det hållbara samhället – resurseffektiv avfallshantering", 10 January 2013.

[265] Återvinningsindustriernas (the Swedish Recycling Industries Association) opinion on the report SOU 2012:56 "Mot det hållbara samhället – resurseffektiv avfallshantering", Annex 1"Marknaden för fastighetsnära insamling av tidningar och förpackningar", page 3.

[266] Press release from the Swedish Departement for Environment and Energy 07/05/2015. http://www.regeringen.se/pressmeddelanden/2015/05/kommuner-far-utokat-ansvar-for-insamling-av-hushallsavfall/

[267] E.g.the agreements between Grønt Punkt Norge AS ("Green Dot Norway plc") and the Ministry of Environment are available at: http://www.grontpunkt.no/selskapet/bakgrunn-og-rammebetingelser

collection and recycling services are tendered out either by the respective PRO or by Finnish Packaging Recycling RINKI Ltd (previously The Environmental Register of Packaging PYR Ltd), which acts as a service company for PROs.

The Icelandic Recycling Fund (IRF) system has received positive feedback from the business community as well as the municipalities. The IRF system is neutral in the sense that it does not set up its own collection and management system, but relies on the capacity of the service providers in the market. The level of competition mainly depends on how the market is regulated from time to time. For example, as long as the municipalities enjoy an exclusive position regarding the collection of household waste, they will be able to dictate which market participants, if any, have access to EPR waste from households. It is attractive for service providers to secure as much IRF waste as possible since they will receive payments from IRF. Of course it is therefore also attractive for municipalities and their undertakings to ensure that as much recyclable household waste as possible goes through their own system.

The municipalities have an exclusive right to waste generated by households and can decide to what extent competition is allowed in the collection and further management of that waste stream. In all but one case the municipalities procure the collection services from private undertakings. However, municipalities or inter-municipal undertakings are in some cases active in the market for transfer and sorting stations. The municipalities control the waste stream and can – and in some cases do – decide that valuable waste streams must be handed over to their facilities. However, the collection and further treatment of waste generated by private undertakings is open to competition. The same applies in most cases regarding waste from public institutions, ministries, schools, authorities, etc.

5.4 EPR schemes for WEEE

Sweden, Norway, Finland and Denmark all have EPR schemes specifically for EEE waste, whilst the Icelandic scheme is part of the same EPR scheme as the one covering packaging waste and other products. In Greenland there is no EPR scheme regarding WEEE, it is instead a municipal responsibility.

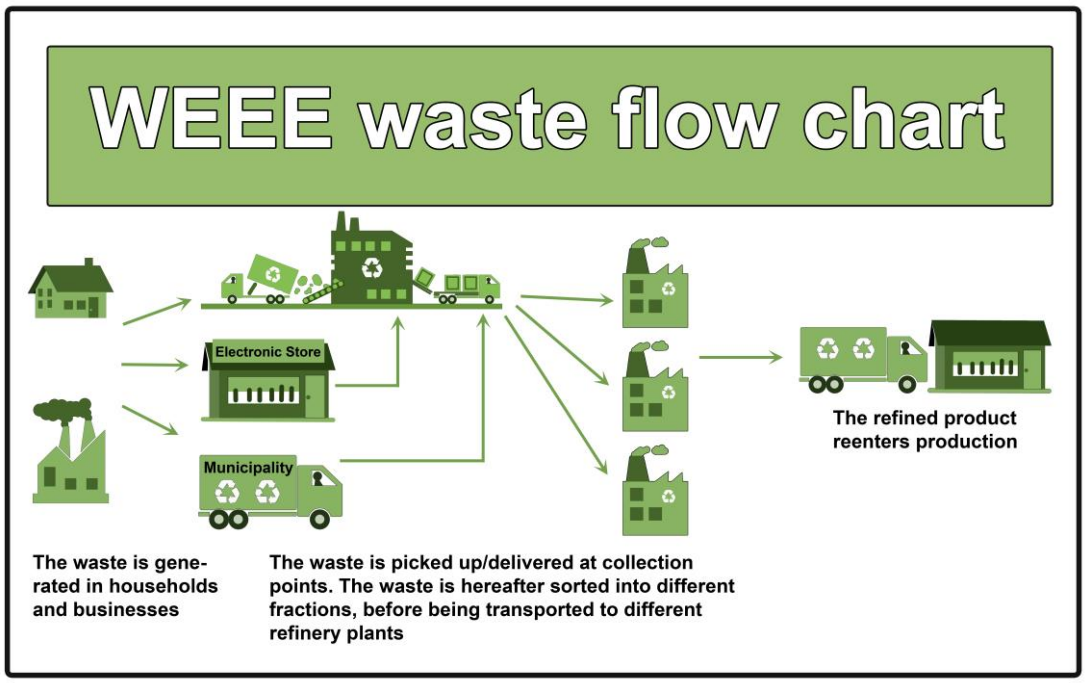
However, the waste flow is largely the same across the Nordic countries:

1. The waste is generated in households or businesses. It is then taken to collection points (recycling stations), to stores selling electrical products, or collected by an authorised collection system or municipality (kerbside collection).

2. At the collection points (recycling stations) the EEE waste is sorted and to some extent dismantled into different fractions.

3. After further sorting the waste is then transported to different treatment facilities where the waste is further refined before it can finally re-enter production.

Figure 11 General flow chart for the EEE waste stream



5.4.1 Key similarities and differences

The following table describes some of the main features of the EPR schemes for WEEE in the respective Nordic countries:

Table 5 Main features of the EPR schemes for WEEE

	Main actors	Collection systems	Kerbside collection actors	Recycling and sorting stations
Denmark	DPA-System Municipalities (collection points) PROs	Households: Municipalities are obliged to establish collection points e.g. at the recycling stations where the producers or PROs can pick up the WEEE. PROs have set up complementary regional collection points. Undertakings: Recycling stations or the regional collection points set up by the PROs.	Some municipalities organise kerbside collection of WEEE depending in the local waste plan. This is performed by the municipality itself or tendered out to a private company. It is financed by the municipal waste fee.	Most recycling stations are owned by the municipalities. The PROs collect their share of allocated WEEE from the municipal collection points. The individual company or PROs enter into agreements with transporters and recycling companies of WEEE to practically collect and treat the WEEE in line with the rules.

Continued

	Main actors	Collection systems	Kerbside collection actors	Recycling and sorting stations
Faroe Islands	Municipalities			
Finland	Electrical and Electronics Equipment Producers' Association (SELT ry) Elker Ltd. The Association of Electric and Electronic Equip-ment Manufacturers and Importers (SER-tuottajayh-teisö ry, SERTY) The European Recycling Platform Finland (ERP Finland)	WEEE sorting stations. Collection points.	WEEE is not usually collected from households or undertakings. Each waste holder must transport the waste to a private or public waste management undertaking. Individuals do not usually have to pay for dropping off WEEE.	Private operators in contract with PROs
Greenland	Municipalities			
Iceland	The Icelandic Recycling Fund (IRF). The system is quite new so the main actors are as yet unknown, although they will probably be the same as those involved with packaging waste.	IRF does not perform collection of WEEE. WEEE is usually returned by private citizens to local collection stations that are in most cases operated by municipalities. WEEE is not allowed to be disposed of with mixed household or commercial waste.	WEEE is not usually collected from households or undertakings. Each waste holder must transport the waste to a private or public waste management undertaking. Individuals do not usually have to pay for dropping off WEEE.	Municipal and privately run. The IRF system does not finance recycling stations directly. However the IRF pays a recycling incentive fee to private and public waste management undertakings that perform EPR waste management services.

Continued

	Main actors	Collection systems	Kerbside collection actors	Recycling and sorting stations
Norway	Elretur AS Elsirk AS ERP Norway AS Eurovironment AS RENAS AS	Households must ensure that WEEE is transported to sorting facilities or retailers selling the same types of product as the EEE product being discarded. Commercial waste holders may contract collection on site or transport to sorting facilities.	Not unless specifically contracted by commercial waste holders	Households are entitled to discard WEEE at municipal sorting facilities. For a fee, most municipal waste facilities will also accept commercial WEEE.
Sweden	El-kretsen i Sverige AB (El-Kretsen) (PRO) Elektronikåtervinningsföreningen (EÅF) (PRO) WEEE Clearing in Sweden non-profit organisation (WEEE Clearing) Municipalities	Elretur is considered the main collection system. It consists of the municipal recycling centres and is the result of a cooperation between El-Kretsen and the Swedish municipalities. EÅF mainly organise their collection through collection points at its members' shops. El-kretsen also provides services to individual companies.	El-Kretsen in some areas and in cooperation with the respective municipality Individual recycling companies offer kerbside collection services primarily to apartment blocks which creates a parallel collection system outside the two PRO systems since there is no obligation to hand over the collected waste to the PROs.	El-kretsen and EÅF procure the services. Some municipalities have invested in recycling facilities.

Note: Annex IV gives a further description of the national WEEE schemes and regulation.

The Nordic competition authorities have gathered information regarding performance in respect of WEEE. The table below shows the total amount of WEEE collected and the overall recovery rates in the Nordic countries.

Table 6 Total WEEE (thousands of tonnes) collected and recovery rate (percentage)

	2006	2007	2008	2009	2010	2011	2012
Denmark	54	80	78	84	83	84	76
	57%	87%	88%	89%	98%	99%	99%
Finland	40	49	55	53	51	53	53
	83%	83%	86%	91%	91%	92%	91%
Iceland	N/A	1.8	1.5	1.0	1.6	2.1	2.5
	N/A	N/A	N/A	76%	81%	80%	87%
Norway	133	143	147	152	138	147	144
	88%	89%	90%	94%	99%	93%	94%
Sweden	130	156	150	154	161	177	169
	94%	90%	90%	92%	92%	91%	92%

Source: Based on information collected from the individual national competition authority.

Note: Greenland and Faroe Islands are left out due to missing statistics.

5.4.2 Competition regarding WEEE

In Sweden there is competition between two PROs, El-kretsen and EÅF, and they have set up a clearinghouse (WEEE Clearing) to ensure the fair distribution of costs for the operation of their respective collection systems, and also the profits from the sale of recycled materials.[268] However, one issue still remains. The contract establishing Elretur creates an exclusive position for El-kretsen with regards to how to organise the collection system through which the vast majority of WEEE is channelled. EÅF bears the costs for the Elretur system in proportion to its members' market shares through the clearinghouse model. However, a substantial part of the total mass of EÅF's WEEE is collected through Elretur. The clearinghouse solution has therefore the effect that both Elkretsen and EÅF share more or less the same costs, which in turn means that it is very difficult for both PROs to compete on price. This situation can have a negative effect on the incentives to increase efficiencies and lower the costs. If, for example, Elkretsen successfully manages to lower the cost of its collection system, this would also benefit EÅF indirectly since they share the costs. However, if the costs of running the collection system increased, it would simultaneously increase the burden on EÅF, regardless of whether or not EÅF could affect the efficiency level or costs of the collection system.

In Norway there are five different PROs in the market. The national regulation not only put restraints on the competition in the market, in some cases it also incentivises behaviour that is disruptive to the overall collection of WEEE. To attain

[268] A clearing house provides a financial clearing system, which ensures that each PRO bears the costs to collect and recycle their proportion of discarded products in relation to the combined market share of products sold by the respective PRO's members.

certification, the recycling schemes must meet extensive requirements for geographic coverage. During the previous six months, the recycling schemes must have obtained or received WEEE from dealers and/or direct from the municipalities themselves in at least 75% of Norway's municipalities, and simultaneously cover the entire country. Furthermore, over the previous three years, the PRO must have obtained or received WEEE from dealers and/or municipalities in at least 90% of the municipalities. These requirements may pose a significant regulatory barrier to entry for new PROs.[269]

In Finland, the EPR scheme for WEEE originally consisted of two PROs, SERTY and NERA (current ERP Finland). Both had their own centralised collection and treatment systems through which WEEE was transported nationally from collection points to just a few treatment points. Elker on the other hand promoted a nationwide decentralised logistics network with over 30 pre-treatment stations and several transport service providers. The regional handling of WEEE also included the sorting of collected WEEE into reusable and recoverable fractions. After the first operating years, PROs have begun to collaborate more. As a consequence, SERTY and ERP Finland have also moved towards a more decentralised system with several regional contractors and, today, most of the reception points are collectively financed by the PROs. Collection networks are managed in cooperation with PROs and there are no competitive networks. There is instead competition between recycling facilities.

In Iceland, the EPR scheme for WEEE is fairly new. There is no experience from competition under the new regime but there have been some issues with the incorporation of WEEE into the IRF system. The main problem has been the allocation of service fees (for the collection and storage of WEEE) to transfer and sorting stations operated by municipalities. Municipal transfer stations are obliged to accept WEEE at their premises at no cost to the consumer. At the same time, the producers and importers of electronics and electrical equipment are obliged to fund all management of WEEE except for kerbside collection. This means that producers and importers are obliged to bear the operational costs associated with the handling of WEEE at the municipal transfer and sorting stations.

The IRF only provides monetary incentives directly to IRF service providers. For that reason, the IRF service providers (the waste management undertakings) need to pay fees to transfer and sorting stations whenever they collect WEEE from them - provided the collection station is not the service provider's own facility.

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[269] An amendment of the Norwegian regulation is currently being prepared by the Norwegian government. For information about the proposal see the Norwegian Environmental Agency's webpage: http://www.miljodirektoratet.no/no/Nyheter/Nyheter/2015/Juli-2015/Forslag-til-ny-forskrift-om-elektronisk-avfall/

Under the preceding EPR scheme for WEEE, the Icelandic Ministry published a tariff list[270] for storage of WEEE at municipal collection/transfer stations. The municipalities complained that the tariff was too low and did not cover their costs. After its incorporation into the IRF system, SORPA (the largest inter-municipal waste management undertaking in Iceland) has tried to tender out the storage of WEEE at its collection/transfer stations. According to the Icelandic Competition Authority's (ICA) sources, the minimum asking price is quite high (probably higher than the cost of the service) and SORPA is asking for a premium on top of that as well. If this situation is not solved, it may have a negative effect on competition in the long term. Almost all of the WEEE from consumers is handed in to municipal collection/transfer facilities. SORPA or other municipal waste management undertakings could therefore potentially shut out other IRF service providers from the WEEE market. The ICA has not, to this date, investigated the potential effects on competition.

In Denmark, the DPA system[271] handles the producer register and it is also tasked with allocating waste to the producers and the PROs. The PROs operate on a competitive basis to manage the producer responsibility for companies. The PROs specify their own prices, settlement terms, etc. In principle, anyone with the ability and capacity to undertake the tasks associated with producer responsibility on behalf of producers can establish a PRO and there are very few requirements.

5.5 Competitive issues with the EPR schemes

From the previous sections it is clear that competitive issues in markets covered by EPR schemes often relate to either the PROs' or the municipalities' activities in the markets. The competition problems that arise in the PRO markets may also cause competition problems in other neighbouring or related markets.

5.5.1 Competition issues related to a PRO's activities

It has been observed that, to a varying degree, all PROs in the Nordic countries purchase transport, sorting, treatment and recycling services from waste management operators. In Denmark, the PROs for WEEE use several collection and recycling operators that are selected through competitive tenders with short contract terms.

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[270] This tariff list is no longer valid.

[271] The Danish Producer Responsibility System ("DPA system") is responsible for administrative tasks following from the rules regarding EPR under the Danish environmental law.

However, competition issues may arise if participation in a PRO is required in order to fulfil the EPR obligation. Collaboration between producers (who may be direct competitors) increases the risks for market players to engage in illegal collusion that either eliminates competition among the existing market players or creates barriers to other competitors, e.g. by setting excessive fees or by charging discriminatory fees for the waste management services.[272]

In many cases where EPR schemes have been introduced they seem to have started with one PRO or a similar entity bringing producers together. An argument for restricting the number of PROs to one is that it may benefit from economies of scale, which may be especially efficient in specific countries due to geographic conditions, for example. Furthermore, the activities of one PRO may, from a governmental perspective, be easier to monitor than those of two or more. However, a monopolistic PRO could be able to abuse its dominant position in the market by, for example, restricting access to the market or by imposing excessive pricing. Below is a description of a competition case regarding a potential abuse of dominance by a Norwegian PRO.

Box 1 Competition case from Norway regarding abuse of dominance

A Norwegian PRO (Elretur AS) was allegedly "overcharging" its own members in order to build a legally mandated security fund covering 6 months running costs.[273] The fund eventually became far bigger than what was necessary to cover the required 6 months. This created a situation where the members would have significant funds locked up in the scheme. This naturally led to higher switching costs, and thus decreased mobility amongst the customers. Elkjøp Norge AS, a customer, sued to have its "share" paid back, but it lost the dispute. When the scheme sought to return to the obligatory 6 months security fund, it reduced the environmental fee to such a degree that competitors complained about predatory pricing.

If a PRO, for instance, charges relatively high prices, it will increase the incentive for producers to set up a competing PRO. However, it may be difficult to set up a competing PRO due to the significant entry barriers for new entrants described below.

5.5.2 Competition issues related to the competition between PROs

There may be a number of significant entry barriers for new PROs entering the markets. *Firstly*, significant investments may be required in order to set up a new PRO. *Secondly*, it may be difficult for a new PRO to achieve sufficient economies of scale in order to run competitively alongside existing systems. *Thirdly*, legislation also regulates access to the market by defining terms and conditions for the setting

[272] Development of Guidance on Extended Producer Responsibility (EPR) Final Report, 2014, a report commissioned by the European Commission DG Environment.

[273] Norwegian Competition Authority's case no. A2008-20, see also 2009/568.

up of a new PRO. However, an incumbent PRO may, due to economies of scope, be in a position to enter into another EPR scheme and to start competing within different EPR markets.

In most of the Nordic countries, a minimum requirement for geographic coverage is to some degree imposed on producers and PROs. In Finland, producers through PROs, following an amendment of the EPR scheme for packaging waste, will be required to establish collection networks covering the whole country, to set up a specific number of collection points and to organise a range of terminals for municipal packaging waste. In Norway, PROs for WEEE, as described above, must meet extensive requirements for geographical coverage. The requirements for national coverage and a minimum geographical "take-back" from at least 75% of the municipalities have been highlighted by the industry and by the Norwegian Competition Authority as problematic, since the market is characterised by a range of exclusive agreements. Below is a case that briefly illustrates this issue.

Box 2 Competition case from Norway regarding restricted access

In Norway, the market for management of WEEE has been subject to several issues of concern over the last decade. In 2010, the Norwegian Competition Authority (NCA) received a complaint concerning an exclusive agreement between Elretur AS and Avfall Norge.[274] At that time, Elretur was the largest recycler of WEEE in Norway. Avfall Norge is an organisation for companies in the waste industry including most of the municipal companies that collect household waste. The complainant was a competitor to Elretur in the market for organisation of EPR systems, Ragn-Sells Elektronikkretur AS.

The complainant argued that the exclusive agreement prevented them from collecting WEEE at disposal sites controlled by members of Avfall Norge. The agreement would secure Elretur AS an exclusive right to more than 50% of the WEEE collected in Norway. In addition, Elretur AS collected WEEE from its own members. The exclusive agreement could therefore limit access to WEEE, and preventing competitors from meeting the geographical coverage criteria stipulated in legislation. During the case proceedings, the complainant gained access to disposal sites controlled by members of Avfall Norge, and the NCA closed the case.

In Norway, there is competition among the PROs in the market for packaging waste. However, the competition is limited as the scope of the PROs is somewhat differentiated. There may therefore be an opportunity for increased competition, and a potential to reduce prices. In Sweden, the competition between the two PROs for packaging has been pointed out as a driving force for improving the collection system, especially regarding the development of kerbside collection from single households.

In Sweden, before a PRO can be authorised to establish a new collection system it has to consult the municipality and the operators of existing collection systems. The purpose of this consultation is to facilitate coordination with municipal waste

[274] Norwegian Competition Authority's case no. 2010/0176.

collection and to find coordinative efficiencies within existing collection systems. Municipalities and existing collection systems thus have great influence over the future organisation and development of the market. The obligation to consult municipalities and collections systems may in itself be a barrier to entry.

In order to be authorised, collection systems in Sweden are also required to be nationwide. This entails maintaining collection points in every municipality with a geographical distribution, taking factors such as population density into account. The PROs must therefore consider the local conditions in each of the 290 municipalities before setting up a new collection system. The two PROs for WEEE have solved this through mutual access to the nationwide collection system Elretur. Such a solution may ease the barriers to enter the market, but as long as one stakeholder has an exclusive position with regards to the organisation and management of Elretur, it will at the same time raise competition concerns, as described above.

It has been emphasised that one of the main problems with the old EPR scheme for WEEE in Iceland was that each PRO was required to collect waste from all over the country. In combination with the fact that only one PRO was allowed to have a contract with each municipal transfer station, it was difficult for the PROs to collect their share of allocated WEEE.

EPR schemes for disposable drink containers are not analysed in this report. However, it should be noted that, whilst the EPR schemes for packaging waste and WEEE are often characterised by competing PROs, the EPR for disposable drink containers differs in this regard. In many Nordic countries there is only a single PRO operating the deposit systems for disposable drink containers and the PRO often has the status of a legal monopoly.

This is the case in Denmark, Iceland and Greenland. In Denmark, the current PRO "Dansk Retursystem" has an exclusive right to operate the EPR schemes for disposable drink containers. The Danish Competition and Consumer Authority has previously emphasised that it should be assessed whether tendering out the exclusive right is optimal from an economic viewpoint. Counter-arguments have claimed that multiple PROs would lead to inefficiencies.

In Finland and Norway, however, there are several PROs operating within the drink container market. In Norway there are twelve approved "take- back" systems. However, those PROs target different types of packaging for drinking containers, which is the reason why the competition between the PROs is in fact quite limited. Furthermore, in order to switch PRO, a producer might be prompted to switch packaging.

In some cases it is possible for producers to set up a parallel system where there is currently only one PRO. This is the case in Iceland, for example, where it is possible

to establish a new PRO for WEEE parallel to the current system. These examples suggests that, whilst competing PROs could compete side-by-side, it might still be inefficient to set up a parallel system as it could be difficult for a new PRO to achieve sufficient economies of scale in order to cover the initial costs and compete alongside an existing system. Alongside other possible entry barriers it may discourage new PROs from entering.

Competition between PROs may generate efficiencies, push prices down, and promote innovative solutions. As an example, the Duales System Deutschland (DSD) in Germany used to enjoy a monopoly in the market for packaging waste. The market was opened up for competing PROs allowing new entry. The new entrants contributed to a significant increase in cost-efficiency within the market for packaging waste. The competition between the two PROs for packaging in Sweden has also been cited as a driving force behind improvements in the collection system, especially with regard to the development of kerbside collection from households.

Box 3 Experiences from the German EPR scheme for packaging waste

In Germany, the EPR scheme for packaging waste has undergone a number of changes, including the introduction of competition among PROs and competition to supply services to PROs. In 2003, DSD began to procure collection and sorting services, which led to a cost reduction of over 20%.

The changes have, over time, resulted in an increased vertical separation of DSD, which has opened up the market for PROs in respect of packaging waste in Germany. In 2011, DSD, which in 2003 was the single packaging PRO, had a market share of 44%. The total costs of the PROs had decreased from € 2 billion in 2003 to € 1 billion in 2012.[275]

Different PROs can, however, choose to utilise different business models which, in turn, will create different incentives in the market. In Sweden, for example, the two PROs, FTI and TMR, have two completely different business models regarding the kerbside collection of packaging waste. FTI, for example, subsidises companies that offer collection services for packaging waste to households. The same compensation per tonne is payable regardless of whether it is a private or municipal operator offering the service. All waste is, however, required to be handed over to FTI. In contrast, TMR merely gives companies permission to offer the collection services to collect packaging waste and TMR waives the rights to the waste collected to the companies collecting the waste who can then sell the recycled material themselves. TMR's only requirement is that the companies report the statistics to TMR.

[275] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 31.

Considerations may be given to whether, from the point of competition and economic efficiency, there is the potential for improvements in the different markets covered by EPR. Removing restrictions and minimising entry barriers can be key to promoting entry by competing PROs. More attention should therefore be directed at how PROs are regulated. This could improve the efficiency of the systems and increase competition between them.

Box 4 The previous EPR scheme for WEEE in Iceland

Prior to the recent changes there was a separate EPR scheme for WEEE in Iceland. In 2008 an EPR scheme for WEEE was incorporated into the Waste Management Act. The system was supposed to be fully operated by the producers of the waste themselves. Each EPR scheme was supposed to collect waste according to its members' market shares and if a PRO did not collect enough waste it was supposed to pay a fee for the collection and management to the other PROs. According to the Waste Management Act, each PRO was required to collect waste from all municipalities in Iceland. Furthermore, only one PRO at one and the same time was permitted to have a contract to collect waste from recycling station operated by or for each municipality.

Initially there was only one PRO. Some producers wanted to create competition in the market and founded a competing PRO. The system described above was, in the opinion of the Icelandic Competition Authority (ICA), destined to fail from the outset. The requirement that each PRO was required to collect waste from all around the country was impractical, and preventing municipal collection stations from having contracts with more than one PRO simultaneously made it near impossible for more than one PRO to fulfil its quota and requirements. What's more, the settlement system between PROs mentioned above never worked in practice. In the opinion of the ICA, these problems could all have been addressed in the Waste Management Act, for example by mutual or regional collection by the PROs.

The recent amendment to the Waste Management Act abolished the EPR scheme for WEEE and instead incorporated it into the Icelandic Recycling Fund's (IRF) system, described above. According to the amended Act, producers and importers can operate their own collection system and get a refund from the IRF. However the likelihood that they will do so is limited.

5.5.3 Competition issues related to having more than one PRO

A presence of multiple PROs in the market may create a risk for a conflict of interests between the PROs in respect of the coordination of operational and administrative activities. It may therefore be necessary to create a central mechanism for the coordination of specific activities, e.g. if a PRO collects either more or less waste than its proportionate share.

A fair allocation of amounts of waste, costs and revenues is a relevant issue for most EPR schemes. [248] In Sweden, the PROs representing producers of EEE products have initiated "WEEE Clearing". WEEE Clearing is a financial clearing system which ensures that each PRO bears the costs of collecting and recycling their share of discarded EEE products in relation to the combined market share of products, which are sold by the respective PRO's members. In Norway, the Norwegian Environmental Agency sets the quotas for the share of WEEE that the PROs are required to sort, store and send for recycling.

Participating in a PRO means, in most cases, that the producer has to notify the PRO of current sales figures; this may, of course, increase the risk of sharing confidential market information. In Denmark, the Danish Environment Protection Agency has delegated administration and transparency tasks relating to the EPR scheme for WEEE to a non-profit organisation. This organisation acts as a clearing house and producer register, whilst also collecting data and monitoring the PROs.

A clearing house or similar monitoring body may act as an important tool to ensure that each PRO and individual producer takes their due responsibility for the collection and recycling of EPR waste, and they may otherwise intervene and discipline the PRO to guarantee compliance. Such a mechanism may prove necessary to ensure a neutral, non-discriminatory and transparent allocation of EPR waste that is to be collected and, thereby, overcome the risk of "cherry-picking". It is important, however, that a coordinative mechanism is developed and designed in a way that limits possible anti-competitive effects.

Clearing houses or similar monitoring bodies may also increase transparency in the market, and thereby increase the risk of collusion. The information that participants in the various PROs exchange through such a system should be scrutinised. There is also a need to consider to what extent the balancing and allocation may limit the incentives to compete, since the PROs will be able to secure their share anyway, which may reduce the competitive pressure still further. Whether or not competition may be hampered is very much a question of how the mechanism is constructed and regulated, and of how the market is structured and organised.

5.5.4 Competition issues related to the municipalities' activities

A municipality's activity often has a significant impact on the competition in the markets related to the collection of waste. Below is a description of a case that illustrates how municipalities can restrict competition by performing activities that are also performed by private companies.

Box 5 Case related to the activities of municipalities in Iceland

In Iceland, the collection of paper and cardboard by municipalities has been subject to competition concerns by the Icelandic Competition Authority (ICA).[276] In 2005, two private waste management undertakings had started marketing and selling recycling bins for households in the capital area, in which residents could dispose of packaging waste (paper, cardboard, plastics and metals, and also batteries). This constituted an extra service that households could purchase from private actors.

In 2007, the municipality of Reykjavík entered the market with its own solution, a blue bin for paper and cardboard. In Reykjavík, residents can choose between three options as far as paper and cardboard packaging waste is concerned: they can buy the "Blue bin" service from the City, they can deposit the waste in special containers located around the city, or they can buy recycling bins and collection from private companies. The private companies provide a more extensive service than the City, i.e. additional materials are collected separately.

In 2013 other municipalities in the capital area entered the market for collection of paper and cardboard waste from households. In contrast to the municipality of Reykjavík, the other municipalities do not allow free competition in the market and require households to purchase the municipal collection service. The municipalities also require that all recyclable material that is collected in the blue bins is sent to and sorted by SORPA, which is a waste management undertaking owned by the municipalities.

The ICA received a formal complaint from a private waste management undertaking active in the market for collection of recyclable materials from households in the capital area. The ICA also received informal complaints from residents in the municipalities because of the aforementioned conduct.

The complaints stated that by entering the market in the way they did, the municipalities in the capital area other than the City of Reykjavík were destroying a market that previously had been subject to lively competition. Households in the municipalities cannot refuse to buy the service from their municipality and therefore free competition in the market is no longer feasible. Those municipalities tender the collection of recyclables collected in the blue bin but do not procure further management of the waste, e.g. sorting, recycling, use, and sale of the secondary material, etc. There is therefore no longer competition regarding the further management of the waste and SORPA, the inter-municipal undertaking, receives all the material collected.

The ICA concluded that the arrangement was harmful to competition but that special provisions in the Waste Management Act prevented the ICA from intervening with a binding decision.[277]

The Icelandic case thus stresses the importance of a clear definition of the roles and responsibilities of the various operators involved within the EPR schemes. In Sweden, stakeholders have expressed their concern over the fact that municipalities seem to be allowed to collect WEEE without prior authorisation and without an express obligation to hand over collected WEEE to producers or PROs. The PROs have therefore called for a clear definition of what municipalities and other actors are allowed to do, and what they are not allowed to do, with regards to waste falling under the definition of WEEE. If a municipality, for example, decides to recycle and sell the material itself, it may erode the market for the PROs. A municipality (unlike a PRO) is not obliged to recycle all WEEE and could therefore

[276] Icelandic Competition Authority, opinion no. 1/2014.

[277] Icelandic Competition Authority, decision 11/2013.

have an incentive to cherry pick the WEEE of greatest value and to choose to hand over any other material that it has collected, which has no or very little value, to the PROs, who are required to recycle it. If the PRO's market is eroded it may have a negative effect on the willingness to invest in further innovations.

5.6 Conclusions

The main purpose of EPR schemes is to assign the responsibility for products in the post-consumer stage to the producer, and away from municipalities (local authorities) and consumers. Producers often establish a PRO to handle their responsibilities outlined in the EPR schemes.

The shift of responsibility encourages producers to improve the overall cost-efficiency of collection and recycling processes, to increase the recyclability of their products and packaging, to diminish the amount of material used in production and to develop new ways to reduce waste and recover used products. These objectives promote sustainable consumption and production practices. Thus, EPR schemes may generate socioeconomic benefits.

However, the implementation of EPR schemes has also generated some competition problems within the markets covered by the EPR schemes. Typically, a new EPR scheme initially has a monopolistic PRO. Consequently, a monopolistic PRO could abuse its dominant position in the markets, for example, by imposing excessive pricing or by restricting access to the market.[278]

The entrance of new PROs could challenge the existing PROs' dominant position and thus limit the competitive problems and potential higher prices stated above. Competition between PROs could also increase efficiency and innovation within the markets covered by the EPR. For instance, the use of competitive tendering and negotiation has not only been reported to contribute to cost reductions, but they have also been reported as being the foundation for the development of new recycling technologies.[279] In Germany, for example, recycling costs for packaging waste have fallen from almost €2 billion to €1 billion, as a result of increased competition between PROs.[280] There may, however, be a number of significant entry barriers for new entrants. Legislation regulates access to the market by setting up terms and conditions for the setting up of a new PRO. It is important that the regulation does not unnecessarily restrict access to the markets covered by EPR schemes.

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[278] See for example the cases described in box 1 and box 2 above.

[279] OECD, Economic Aspects of Extended Producer Responsibility, 2004.

[280] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 106.

Multiple PROs in the market could create a risk of conflicts of interest between the PROs in respect of the coordination of operational and administrative activities. One of the PROs may collect more or less waste than its proportionate share. There may therefore be a need for a central mechanism, e.g. a clearing house, which coordinates the PROs' activities. However, a clearing house can also lead to competition problems, for instance, the risk of collusion through increased transparency in the market. Whether or not competition will be hampered is very much a question of how the mechanism is structured and regulated.

Finally, it has been shown that the municipalities' activities in the market covered by EPR schemes can also lead to problems relating to competitive neutrality[281]. In order to promote effective competition within these markets it is important that all actors, public or private, compete on similar, if not equal, terms.

In general, EPR schemes in the Nordic countries place responsibilities on municipalities and this may produce challenges. The EPR schemes that rely on municipalities should ensure clear definitions of the rights and responsibilities of the various actors involved in in the scheme, in order to ease the coordination between municipalities and producers. It is critical that the relationship between the producers (and PROs) and municipalities is clearly defined to avoid inefficiencies, and also to ensure equal terms of competition for the PROs.[282]

[281] See forexample the case described in box 5 above.

[282] The European Commission's recently adopted Circular Economy Package contains proposed amendments to the articles in the Waste Framework Directive outlining the general requirements for EPR schemes. One of the proposals entails an obligation for member states to ensure that the roles and responsibilities of producers, PROs, private or public waste operators and local authorities involved in the national EPR schemes are clearly defined. See Proposal for a Directive of the European Parliament and the Council amending Directive 2008/98/EC on Waste, COM(2015) 595 final.

6 Recommendations

The waste management sector is moving towards becoming a part of the circular economy. In a circular economy, waste materials are no longer viewed or treated as a problem, they are considered resources of value. Society would benefit from utilising competition to facilitate this change and it would result in improved price signals and dynamic efficiency. Embracing market solutions may create opportunities for new and innovative solutions which could bring about cost savings, reduce resource scarcity, and provide other benefits.

Through this report, the Nordic competition authorities have attempted to uncover issues where there is a lack of, or distortion to, competition in the waste management sector. This is an industry in which several authorities have encountered problems over the years and, by publishing this report, the Nordic competition authorities wish to highlight some fundamental underlying issues and contribute to appropriate measures being implemented to address these issues.

The initial fact-finding revealed that the main issues in this sector are of a structural and regulatory nature. Moreover, the structural and legal framework in each country leaves substantial scope for societal gains through increased efficiency.

When market solutions are not chosen in the waste management sector this might be for sound economic reasons and it might be because of regulations that restrict competition. Market solutions are, however, sometimes not chosen because the potential benefits of competition are being overlooked. In all the Nordic countries, albeit to a different extent, public sector participation in waste management contributes to unclear roles, a lack of competitive neutrality and potentially inefficient solutions.

In order to reduce the negative effects on competition that stem from the current legal frameworks and market structures, we have outlined several recommendations below. Our proposed measures can be divided up as follows: those which address the fundamental issues (issues that restrict competition and require substantial changes in regulation and mind-set), and those which, whilst easily implemented, would also bring about instant improvements.

It is in the long-term interest of society to open up markets for competition and innovation. However, even without regulatory changes, there is still substantial scope for producers, consumers, regulatory bodies and municipalities to increase competition. Measures such as an increased use of public procurement, increased dialogue between municipalities and private stakeholders, focus on value enhancement throughout the value chain, and facilitating trade are all within reach in the short term.

It should also be noted that it is not necessarily easy to bring about change, or to obtain increased overall dynamic efficiency; it may be necessary to sacrifice some current partial and static efficiencies. Restructuring and allowing more waste to move up the waste hierarchy may potentially result in increased costs to municipalities and residents in the short term, but still improve overall welfare in the long term.

The following recommendations are based on the issues highlighted in the previous chapters.

6.1 Recommendations

The Nordic competition authorities believe the following six measures could greatly increase societal benefits through an increased and improved use of competition in waste management:

- Increased use of market solutions
- Clarification of public roles and goals, and increased dialogue
- Sufficient tools to tackle competitive neutrality issues
- Better use of procurement procedures
- Improved statistics and common definitions
- Ensuring the efficiency of EPR schemes

These suggestions are relevant for consideration in all the Nordic countries.[283] There are many similarities, and some differences, between the countries, and with the latter in mind, additional country-specific recommendations may be issued by the individual authorities to supplement this report.

[283] As mentioned in the preface of this report, the legal and geographic conditions for Greenland and the Faroe Islands are such that the report's findings, and consequently its recommendations, may not be applicable to these jurisdictions. In addition, as detailed in Chapter 2 and Section 3.2.2, Finnish law incorporates a possibility for municipalities to decentralise waste collection to property holders. As such a system leaves the households to themselves to contract out waste collection, the recommendations regarding municipal tendering would not necessarily be appropriate and, as such, recentralisation of waste management responsibility would not necessarily create efficiencies.

6.1.1 Increased use of market solutions

A fundamental issue in the waste management sector in the Nordic countries is the way in which municipal activity and decision-making affects efficiency and innovation. Any regulation creating an exclusive position for municipalities provides municipal undertakings with a comfortable existence and little incentive for efficiency or innovation. There is potentially a risk that municipalities, and ultimately their residents, will get less value for money than they would if there was no exclusive right to household waste. At the same time, other benefits of competition, such as increased incentives to innovate, are lost to society overall.

This report is not intended to argue that the entire current system of waste management ought to be dismantled, or that every household should have to buy its own waste management services. Waste markets will continue to need adequate regulation, ensuring efficient organisation for the foreseeable future. The overall responsibility for the functioning of the waste management organisation should remain a public task, and the organising entity must be accountable to its residents.

Nor is a wholesale privatisation of municipal waste management undertakings called for and, as described in 3.2.2, a fully vertically integrated organisation of waste management may under certain circumstances be quite an efficient solution, for example, if there is no or only very limited access to capacity from private operators in the waste management market, or if there are no private operators prepared to make investments to develop or create the necessary infrastructure. Considering the many well run waste management undertakings in public ownership, we do, however, recommend that these incumbents be subjected to competition – either in the market, or for the market. By facing competition, these undertakings would continuously need to increase their efficiency; otherwise they would lose customers and, ultimately, go out of business. Either way, more innovative solutions would probably be introduced and the costs for waste management would be reduced. As detailed in 3.3.3, several studies show that the introduction of competition would probably result in a cost reduction of 10 - 47%, compared with the likely cost if the municipality offers the service themselves.

By increasing the use of competitive tenders and utilising the markets, municipalities could thus provide their residents with cheaper and more environmentally friendly waste management services. Municipalities should seek to ensure that the waste management organisation is as cost-efficient and environmentally friendly as possible. Municipalities should therefore continuously evaluate their operations and consider market solutions, including the procurement of waste management services; and they should focus on the creation of effective markets. Exploring market solutions will allow municipalities the possibility to compare the status quo with the potential costs and benefits of an alternative. However, it may be difficult to ascertain in advance the benefits of breaking out of the status quo, but they could be significant, and they are attainable. As discussed

in Chapter 3, training procurement divisions in how to construct the best calls for tenders, and by changing their mentality from problem-solver to market-facilitator, municipalities could lead from the front in creating the waste markets of the future.

By relinquishing ownership of the waste, municipalities could increase incentives for innovation and efficiencies. Simply outsourcing collection will only do so much as long as those collecting have no incentives to preserve or increase the value of the waste collected. Undertakings that have an interest in the value of the waste will seek new and more efficient solutions to fit the needs of the next stage in the value chain. Introducing competition will further increase the pressure to innovate and increase the value of waste, as different solutions will be measurable against each other.[284]

As a start, municipalities would benefit from allowing their own waste companies to compete on equal terms with private firms. An important aspect of this, as described in Chapter 4, is to determine to what extent a municipal enterprise's advantages distort competition. In that regard it is essential to distinguish between a harmful lack of competitive neutrality and differences between public and private undertakings due to advantages that may in fact increase competition. It may even be positive to allow municipal undertakings to bid for contracts in a wider area than the owner's municipal needs, on the condition that they compete on equal conditions and that their participation does not diminish the benefits of competition in any other way.[285] As long as there is a level playing field, it is not so important who the owner of a given company is, but rather that there is undistorted active competition.

Municipalities that do not facilitate markets, in all parts of the value chain, not only risk losing out on short-term cost benefits, but also obstruct long-term societal benefits, such as innovation. Innovation is particularly important now as we move into the circular economy. As described in Chapter 3, to ensure that materials are reused and recycled to the greatest possible extent, markets need to be allowed to attach value to these materials and develop ways to increase this value. By considering the whole value chain when designing waste management systems, municipalities can help optimise the value of waste. The circular economy requires frameworks and municipalities that incentivise innovation and efficiency.

The use of market solutions should be encouraged, both by regulators and through legislation. Moreover, regulators must consider the impact on all related markets whenever policies are introduced or amended. Decisions and plans devised by municipalities or sector regulators should include a competition impact study to

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[284] See for example the discussion about property rights in Section 3.2.3.

[285] Note that legislation may restrict municipal undertakings from acting outside their own geographical area in some Nordic countries.

ensure that the structures and mechanisms are conducive to well-functioning markets. Awareness and consideration of the benefits of competition should be reflected in all decision-making processes involving the waste management sector.

Creating the right incentives for consumers to treat waste in a way that increases its value and/or lowers costs is important for achieving both environmental targets and efficiency, as is described in Chapter 3. Aligning the incentives of consumers with the needs of waste treatment facilities and users of secondary materials would probably facilitate an environment where it is possible to reach a higher level of the waste hierarchy, whilst keeping costs down.

Legislators and regulators in the Nordic countries should lead the way in adapting to the circular economy. Legislation in the waste sectors should reflect the notion of waste as a resource, by enabling trade and competition throughout the value chain. Market creation, both at home and through trade, will help create more competition for waste materials. Municipalities should be incentivised to tender out waste services and create markets – not only for the cost benefits, but also due to the overall societal gains of increased innovation.

As detailed in 3.2.4, trade already plays a major part in waste management, with large volumes crossing borders every year. It is essential that cross-border trade is allowed to continue to provide a more efficient waste management market.[286] There are safeguards to ensure that cross border trade does not come at the expense of other important policy goals, for example environmental and social objectives. However, administrative requirements that are otherwise legitimate can become disproportionate, or they may be applied with a disproportionate effect, which may result in unnecessary barriers to trade. They should therefore be removed or amended.

The current Waste Framework Directive advocates cooperation between EU member states to create cross-border waste management networks where it is necessary and advisable. It also clarifies that the principles of proximity and self-sufficiency are not intended to impose a responsibility for each EU member state to possess the full range of treatment facilities themselves. This clearly advocates not only cooperation between countries but also the concept of seeking the most efficient solutions through the cross-border trade of waste.

[286] As described in Section 3.2.4, the European Commission has acknowledged that it is essential to facilitate cross-border circulation of secondary raw materials to ensure that they can be traded easily across the EU. In so doing, the Commission envisages simplifications of cross-border formalities but other barriers to the smooth circulation of waste in the EU will also be examined. See Communication from the Commission to the European Parliament, the Council the European Economic and Social Committee and the Committee of the Regions, *Closing the loop - An EU action plan for the Circular Economy*, COM(2015) 614/2, p. 12.

To ensure innovation and efficiency it is necessary to help market players understand the benefits of competition, and to increase incentives for the use of market solutions through legislation and advocacy. However, the Nordic governments should also look for solutions that fit their country's specific needs. The Nordic competition authorities therefore recommend that sector regulators and ministries set up comprehensive review commissions with the aim of ensuring the proper exploitation of market solutions by municipalities, and to look at how to best facilitate the waste markets of the future.

- Municipalities should be obliged to continuously evaluate their operations and to consider market solutions, including the procurement of waste management services, and to focus on the creation of well-functioning markets. Exploring market solutions would allow municipalities the opportunity to compare the status quo with the potential benefits of market solutions. In order to accurately evaluate current practices and assess the potential benefits, municipalities must keep separate accounts for waste management activities.

- Sector regulators should facilitate the creation and maintenance of waste markets, including market facilitation as a fundamental instrument when adapting or amending regulations. Innovation through competition will be key to unlocking the potential of waste resources.

- Efficiency-enhancing international trade should be encouraged, and barriers to trade should be removed.

6.1.2 Clarifying public roles and goals, and increasing dialogue

The activities of municipalities on several levels in the waste management sector create competition concerns. By having regulatory, monitoring, and market design tasks, as well as performing one or several services themselves, problems with a lack of clearly defined and divided roles appear. Having been assigned the task of ensuring the removal and proper treatment of municipal waste, the municipalities' ultimate aim is to ensure that the services that are provided to the residents does not cause public health risks and that they are environmentally friendly. Furthermore, the responsible municipal entity should have clear ambitions to keep costs down and to facilitate industrial development and innovation. All of these aims fall naturally within the scope of the municipal entity responsible for the regulation of waste management.

Municipalities ought not to mix this role with their role as participants in markets. As detailed in Chapter 3 of this report, municipalities often control undertakings in which they combine operating in the market with the tasks assigned to them as organiser and regulator. This is likely to lead to less use of market solutions, less

cost efficient services, less dynamic and innovative markets, and suboptimal price signals. At the very least, there should be total separation and transparency regarding the municipal regulatory tasks on the one hand and the provision of services on the other. There should also be full transparency and separation of accounts for any of the municipalities' service provision activities.

Moreover, in order to find efficient means to achieve the goals whilst creating stable waste markets, municipalities would benefit from having regular meetings with other stakeholders. Stakeholders, including private waste management undertakings, should be consulted at an early stage when waste management plans are being designed. Local and regional waste councils consisting of both private and public stakeholders may prove beneficial for the strategic development of waste markets. As is detailed in 3.3.2, waste management plans should be required to contain organisational aspects, including a description of the allocation of responsibilities between the various public and private operators carrying out the waste management, and an evaluation of the usefulness and suitability of the use of economic and other instruments in the tackling of various waste problems. It is currently optional for member states to make such requirements, according to the Waste Framework Directive.

Furthermore, transparency in decision-making is paramount in order to earn the trust of all interested parties. Municipalities should ensure that their public procurement and market-regulating tasks are kept separate from their market participation to ensure that there is confidence that the municipalities have created level playing fields.

The different roles of municipalities need to be clearly defined and reassuringly separated. Participating in both regulatory and market activities may create issues such as a lack of competitive neutrality and less than optimal market design. Municipal participation in competitive markets must only occur after a careful balancing of potential harm and gains, for both the municipality itself and its residents.

- There should be a clear separation between the municipalities' roles as, on one hand, the providers of waste management services and, on the other hand, public authorities.

- Municipalities should avoid entrusting the same departments or persons with responsibilities for governance tasks and service provision tasks. Specifically, municipal waste undertakings should not participate more than other market actors in municipal decision-making regarding the monitoring, regulation and design of municipal waste management.

- Municipalities should consult stakeholders when creating waste management plans and deciding how to organise municipal waste management.

- Waste management plans should be required to contain organisational aspects, including a description of the allocation of responsibilities between public and private actors carrying out the waste management and an evaluation of the usefulness and suitability of the use of economic and other instruments in tackling various waste problems.

6.1.3 Sufficient tools to tackle competitive neutrality issues

As is detailed in Chapter 4, competitive neutrality is a recurrent and particularly important issue in the waste management sector. This is due to the high degree of market participation of public undertakings, in a sector where municipalities are entrusted with regulatory duties as well as exclusive rights.

However, it should be emphasised that public participation in waste management markets is not, in itself, the problem. The potential problems manifest themselves through the way this participation affects the markets. All the Nordic countries have significant public ownership as a fundamental way of governing, but in the world of waste management the ties, which in other markets have been severed by deregulation, remain prevalent. Municipalities are granted exclusive rights to household waste, and the lack of competitive pressure may not only cause inefficient solutions, but it may also leave scope to cross-subsidise from this market (with exclusive rights) to other markets.

A lack of competitive neutrality may result in inefficient, and ultimately costly, services. Contracts are not awarded to the most efficient undertaking. By favouring the incumbent undertaking, innovation and dynamism may also be lost to the market. A lack of competitive neutrality could prove costly - not only to "locked-in" customers, but also in terms of the harm it could extend to adjacent markets. It would therefore benefit all stakeholders in the long term if regulators could limit the advantages granted to public undertakings in the waste management sector.

To avoid creating a harmful lack of competitive neutrality, it is recommended that municipal waste management undertakings should, as a rule, be kept as separate from their owners as possible. For example, a clear separation, by way of personnel, finances, etc. would help create safeguards against a lack of neutrality. Furthermore, the corporatisation of municipally owned waste management undertakings could further contribute to a level playing field with private competitors, for example, with regard to taxes and other fee issues.

In order to ensure that municipal entities do not cause a harmful lack of competitive neutrality through cross-subsidising market presence from exclusive rights there needs to be transparency at all levels. Accounts must be separate, sufficiently detailed and transparent, as must be the decision-making processes of public entities. Furthermore, calls for tenders should be neutrally designed so as not to favour the municipalities' own undertakings.

The Nordic competition authorities possess a variety of different means to counteract a harmful lack of competitive neutrality. It is important to ensure that these instruments are effective, and sufficient to deal with competitive neutrality. Legislators must also ensure that the legal requirements for waste management undertakings, such as the necessary permits, do not unduly favour public or private ownership.

Ensuring that regulators have the correct and sufficient tools to counteract a harmful lack of competitive neutrality is important.

- Different tools can be implemented to address issues related to competetive neutrality. The competition authorities' tools to address a harmful lack of competitive neutrality should be effective and sufficient.

- Regulations regarding municipal participation in markets should, as far as possible, seek to ensure competitive neutrality. Transparent and detailed accounts, rules regarding cost allocation, the separation of the municipal role of governing from the provision of waste management services, and the removal of financial advantages are important steps towards a level playing field.

6.1.4 Better use of municipal procurement procedures

The Nordic Countries have similar but differing regulations regarding public procurement. In some countries, municipalities are subject to very strict and extensive public procurement regulations. Such rules may affect the willingness of municipalities to call for tenders, and the overall efficiency of utilising market solutions, by raising the costs of procurement relative to in-house solutions. By reducing the regulatory burden on municipalities, they are more likely to choose the most efficient waste management solutions.

It is important that municipalities have the means to not only manage the procedures correctly, but also to focus on getting the best possible contracts. A lack of resources at municipal level could create disincentives to opening up the market to competition in fear of falling foul of the regulations. It could also have the effect that municipalities with insufficient resources could design tenders that are not optimally suited to encourage the most innovative and cost efficient bids.

In order to ensure the optimal procurement procedures there is a need for adequate resources and a general openness to innovative solutions. Procurement divisions must be appropriated sufficient funding to allow expertise and confidence to grow, and to allow for the proper evaluation of the consequences of different tender designs. Every waste management procurement should be the result of a thorough process where market conditions, industrial and optimal scopes and scales are considered. Procurement divisions should be encouraged to look for new and inventive public procurement procedures to facilitate tenders with a focus on efficiency and innovation, whilst remaining within the applicable legal requirements.

Networking between municipalities across the Nordic region should be encouraged in order to share experiences and spread knowledge about good practices. Collaborative efforts could ensure more robust procurement divisions, whilst also aiding the proper size and scope of waste management contracts. The use of central purchasing bodies for routine contracts could potentially free resources for more specialised procedures tailored for the particular municipality's needs. State support for such networks should be considered as such endeavours could increase overall efficiency in all procurements, and not only within the waste markets.

The optimisation of waste value requires a continuous dialogue with the market. By considering the whole value chain when designing waste management organisation, municipalities can help to optimise the value of waste. These ambitions should therefore be a natural part of how municipalities design procurement procedures, but this could also require dialogue with current and potential market actors and a thorough understanding of the differing incentives for each actor.

- Relevant bodies in the Nordic area should evaluate whether their procurement regulations could be revised in order to ensure that there is sufficient scope and incentive for municipalities to create innovation-friendly and cost-efficient tenders.

- Municipalities should be encouraged to explore the possibilities of collaborating with other municipalities on procurements in order to facilitate economies of scale to increase efficiency. Likewise, some larger municipalities may increase competition by segmenting their total need into smaller packages.

- Relevant bodies should offer increased support and tools to improve municipal procurement of waste management services.

6.1.5 Improving statistics and common definitions

One important motivation for a Nordic report on joint competition concerns is that it allows comparison and identification of efficient approaches. However, as described in 3.3.1, available data is from a market study perspective both scarce and unreliable. This problem was compounded by a lack of common definitions of waste. An example of this, discussed in 3.2.3, is the fact that the Nordic countries have differing legislation on the definition of household waste.

The lack of solid and comparable data on procurement and the allocation of costs have meant that a comprehensive survey of the actual status quo and the benefits of market solutions has proved elusive. A lack of precise and universal definitions, as well as definitions that change from year to year, means that the tracking of efficiency and productivity becomes unreliable. Without a proper statistical foundation, the cost difference between market-based systems and in-house organisation is difficult to ascertain, and the analysis must instead rely on experience, individual examples and economic theory. Meanwhile, an absence of benchmarking data will prevent municipalities from accurately evaluating their current practices and assessing the potential benefits from alternatives. Consequently, it is unlikely that they will know if they have chosen the best possible solutions.

With improved statistics on costs, treatments, efficiencies, trade, procurements and other important measurements from a market study perspective, municipalities would be better equipped to find the most efficient methods for waste management. Having reliable and comparable data is important when deciding, for example, whether to outsource part or all of the municipal waste management responsibility. Better statistical data would also improve the ability of sector regulators to monitor the waste streams, ensuring, for instance, that increased trade would not come at the expense of environmental targets.[287]

Furthermore, regulators and legislators would have a better basis for designing the entire system, enabling evidence-based decision-making – leading to more efficient systems, and better goal attainment. Innovative new technologies would also benefit by having fair and correct assessment tools, to ensure that only the most efficient innovations win through.

The waste management sector would benefit greatly from the introduction of internationally recognised definitions of waste that match the needs of all stakeholders. Introducing proper definitions and qualities of waste would

[287] As described in Section 3.3.1, the European Commission has proposed new rules with regards to the calculation of the attainment of the targets laid down in the Waste Framework Directive. See Proposal for a Directive of the European Parliament and the Council amending Directive 2008/98/EC on Waste, COM(2015) 595 final.

encourage trade. It would not only provide buyers and sellers with confidence in the commodities traded but it would also encourage public authorities involved in cross-border trade. It would allow for exchanges to evolve and the exchanges would facilitate correct price signals, making the market more efficient. Municipalities would also benefit from expanded and more efficient markets in which to purchase, for example, treatment services.

Furthermore, the introduction of common definitions of waste would counteract the issues relating to municipalities defining commercial waste as "waste similar to household waste" which therefore falls within the municipalities' exclusive rights.[288] By aiding the creation of a level playing field, the system would become more efficient, resulting in lower prices and better services.

- Relevant bodies in the Nordic countries are encouraged to amend data collection to include details on procurement.

- Data collection should prioritise and disseminate information on costs and efficiency in order to provide decision-makers with the necessary tools to create efficient waste markets at all levels of trade.

- Sector regulators and legislators should work towards establishing EEA-wide standards and definitions that are relevant to both the achievement of environmental targets and the facilitation of trade and commerce.

6.1.6 Ensuring the efficiency of EPR schemes

Even though the EPR schemes in the Nordic countries share the same objectives, they vary in design and in structure, and the underlying issues have manifested themselves in different ways. The Nordic competition authorities have identified several joint challenges and issues related to EPR. This is also an area in which the Nordic competition authorities have received and handled a number of cases. The problems highlighted by these cases are clearly a reflection of the issues and challenges that currently characterise EPR schemes.

The inadequate design and implementation of EPR schemes is a source for issues and challenges in the Nordic countries. One of the central issues, which is entangled with many of the other issues and challenges, is the often unclear responsibility and role of municipalities and producers.[289]

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[288] See Section 3.2.3 for a further dicussion on this topic.

[289] The European Commissions has also highlighted the need to introduce clear definitions of the roles and responsibilities of producers, PROs, private or public waste operators and local authorities in the national EPR

Some countries seem to have achieved both high collection rates and high degrees of competition, whilst others have achieved one of these, or neither. There seems to be a lack of competition in, or alternatively for, the market for many of the products in question. Introducing competition may lead to increased efficiency, for example, when the Duales System Deutschland (DSD) in Germany began to procure collection and sorting services it led to a cost reduction of over 20%.[290] Sector regulators in all the Nordic countries should look at how to introduce competition in an effective way, to ensure the most efficient EPR schemes. Sector regulators should consider evaluating the entire range of systems operating today to find potential improvements. In the long run, the necessity of maintaining EPR schemes must be evaluated anew when the value of materials under respective EPR scheme increases.

To ensure competition in EPR markets, the regulatory framework must not create prohibitive entry barriers. Complex regulations with high financial requirements, as well as conditions for geographic coverage may constitute such entry barriers. There are also indications of high switching costs in certain EPR markets, increasing entry barriers and locking in producers, resulting in a further reduction in competition.

Some EPR markets have several competitors present. The Nordic countries have found that issues of overfulfilment, and as a result, underfulfilment of quotas have caused problems in these markets. To avoid this, sector regulators should consider the possible benefits of creating balancing schemes such as clearing houses. If clearing houses are to be established, however, these must be careful not to eliminate uncertainty and competitive pressure, nor to facilitate collusion. Neutral third parties may be required to ensure the avoidance of issues of information exchange. Finally, introducing joint purchasing and tendering of collection services where prudent could increase efficiency.

- Relevant bodies in the Nordic countries should consider if there are potential efficiency benefits to be gained by increasing competition in the markets for extended producer responsibility.

- Relevant bodies should implement concrete measures to lower entry barriers where needed.

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schemes. See Proposal for a Directive of the European Parliament and the Council amending Directive 2008/98/EC on Waste, COM(2015) 595 final.

[290] See Box 3 in Section 5.5.2 for more details.

6.2 Moving from waste management to waste market management

This report has focused on the waste management sector in the Nordic countries, in order to uncover situations where competition is either lacking and/or distorted. As the world moves forward into an age where waste is no longer considered a problem but rather a resource, municipalities and regulators ought to utilise market solutions to achieve the most efficient solutions possible. To encourage the necessary innovations to find value in materials where none is found today, municipalities must participate in the creation of fertile grounds for industry and competition. Moreover, clear public roles and level playing fields are necessary conditions for well-functioning waste management markets.

Many municipalities may not currently be providing their residents with the most cost-effective and efficient waste management system. By avoiding market solutions, and awarding contracts directly to their own undertakings, municipalities are denying their residents the potential benefits of competition.

In conclusion, the Nordic competition authorities believe that implementing the proposed recommendations above would significantly benefit the waste management sector. Moving from the past ways of command and control to the circular economy, from focusing on how to solve a problem to resource utilisation and value maximisation, the means to achieving this inevitably involves allowing for market solutions throughout the value chain. Innovation and efficiency will be paramount in the development of the future of waste management, and competition is the most efficient way to ensure this.

Concluding remarks: From waste management to waste market management in a circular economy

The transformative challenge for the legal and structural frameworks of waste management of today in order to adapt to a circular economy is profound. The challenge is not solely confined to waste management. Policies and legislation regarding taxation, environmental protection, research and innovation are just a few examples of relevant arenas that can create the necessary foundation for a circular economy waste management system. But waste management itself must also prepare for its role in a circular economy, and the institutional set-up is likely to undergo substantial reforms. However, what does the necessary transformation look like, and how can competition and markets be involved? Is waste management attuned to the emergence of a new economic era?

In one way or another, the transformation of waste management implies that even fewer waste materials will be placed in landfills, which potentially could become obsolete, as these materials instead become destined for treatment, reuse and recycling. For that reason, sorting must be further developed, either at source or at post-collection sorting facilities. Another ramification of this transformation is a more or less substantial diversion of waste materials from incineration to treatment for reuse and recycling. As previously untried possibilities for treatment for reuse and recycling emerge, they can be implemented only by gaining reliable and sustainable access to the waste material itself, and this presupposes an agreement with waste holders. Innovators are likely to strive for the supply of certain substances only. This might lead to waste being sorted at source and then transported to specialised treatment facilities. Post- collection sorting also needs to be developed so that an increased number of materials and substances can be rerouted to specialised treatment facilities for reuse and recycling. From the viewpoint of public policy, it will be important to keep the market as open and neutral as possible for entry, innovations and new solutions. New forms of treatment, reuse and recycling may conceivably be introduced and waste holders must be able to come to a decision in respect of who is to be the recipient of their waste material.

An important aspect of future development is the minimum efficient scale that characterises new treatment facilities. The smaller the minimum efficient scale and the more substantial economies of scope, the more gradual the transformation is likely to be. If the opposite is the case, the bumpier the future development of municipal waste management will be and the implementation will require more coordinative efforts within the industry.

New ways of utilising waste materials divert a stream of waste from other types of treatment. The cost and revenue of other channels of waste disposal are thereby

affected when a new process is implemented. Costs and revenues will be re-distributed, but at the same time the new possibilities imply an overall increase in revenue and/or a reduction in the total industry cost. Nevertheless, it will probably still be necessary to maintain an infrastructure of stand-by capacity. An evolving distribution of cost and revenues is also bound to necessitate readjustments and ultimately materialise a new structure of industry coordination.

The current structural framework of waste management probably needs to be adjusted so that it is conducive to the transformation into a circular economy. One issue that needs to be properly addressed is the necessity to incentivise long-term infrastructure investments whilst also allowing the embracing of new and innovative ways to utilise waste materials. Competition for agreements with waste holders must be possible and securing the availability and maintenance of necessary stand-by infrastructure facilities should be guaranteed in ways other than through exclusive rights.

Waste management of a circular economy implies a market and competition-based industry. Competition for waste resources could make them available for new uses, although systemic adjustments usually ensue. Well-functioning markets and competition are essential within a circular economy, albeit in an institutional framework of ambitious environmental regulation and public policy. Moreover, the concept of circular economy also implies a move from a thinking of *waste management* to a thinking of waste *market management* on the authorities' side.

Glossary

Term	Explanation
Anaerobic digestion	A collection of processes by which microorganisms break down biodegradable material in the absence of oxygen.
Circular economy	A term used to describe an industrial economy characterised by "reusing, repairing, refurbishing and recycling" resources in contrast to the linear industrial economy of "take, make, consume and dispose".
Collection	The gathering of waste, including the preliminary sorting and storage of waste for the purposes of transport to a waste treatment facility.
Competitive neutrality	Competitive neutrality means that state-owned and private businesses compete on a level playing field.
Cross-subsidisation	The act of charging a high price to one group in order to lower the price for another group.
Disposal	Any operation which is not recovery, even where the operation has as a secondary consequence the reclamation of substances or energy.
Economies of Scale	The cost advantage that arises with increased output of a product. Economies of scale arise because of the inverse relationship between the quantity produced and the per-unit fixed costs.
Economies of Scope	An economic theory stating that the average total cost of production decreases as a result of increasing the number of different goods produced.
EEA agreement	The EEA agreement enables Iceland, Liechtenstein and Norway as member states of the European Free Trade Association (EFTA) to participate in the EU's Internal Market without being members of the EU. They adopt almost all EU legislation relating to the internal market, except laws on agriculture and fisheries.
EFTA	The European Free Trade Association consists of the following member states: Iceland, Liechtenstein, Norway, and Switzerland.
Environmental Externalities	Environmental externalities refers to the economic concept of uncompensated environmental effects of production and consumption that affect consumer utility and enterprise cost outside the market mechanism.
EPR scheme (see also PRS)	A framework set up by one producer or several producers to meet the EPR obligation.
Extended Producer Responsibility (EPR)	An environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle.
Green-listed waste	Green-listed waste may be imported/exported for recovery without the need for prior written notification and the consent of the Environmental Protection Agency. Refers to *Regulation 1013/2006 on shipment of waste.*
Incumbent	A company which is holding a position in a market and has typically the largest market share or other competitive advantages over new entrants.

Continued

Term	Explanation
Kerbside collection	A service provided to households, typically in urban and suburban areas, whereby household waste is removed. It is usually conducted by personnel using purpose-built vehicles that pick up household waste in containers.
Landfill	A landfill site is a site for the disposal of waste materials by burial and is the oldest form of waste treatment.
Life cycle assessment	A technique to assess the environmental impacts associated with all stages of a product's life, from cradle to grave
Minimum efficient scale	Is achieved when the firm produces the lowest level of output at which long-term average costs are minimised.
Municipal Waste	In Directive 1999/31/EC on the landfill of waste, municipal waste is defined as waste from households, as well as other waste which, because of its nature or composition, is similar to waste from households.
Municipalities	A municipality is a general purpose administrative subdivision of a State, governing local areas.
Polluter Pays Principle	National authorities should endeavour to promote the internalisation of environmental costs and the use of economic instruments, taking into account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest and without distorting international trade and investment.
Precautionary principle	Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Predatory pricing	A price strategy where the price is set very low (below cost) in order to drive other competitors out of the market.
Prevention	Measures taken before a substance, material or product has become waste, that reduce: (a)the quantity of waste, including reuse of products or the extension of the life span of products; (b)the adverse impacts of the generated waste on the environment and human health; or (c)the content of harmful substances in materials and products;
Prime Cost Principle	Prime cost is a way of measuring the total cost of the production inputs needed to create a given output. The prime cost principle is often a legal requirement applicable to municipal pricing. The price must not exceed the actual cost of providing the service.
PRO	Producer Responsibility Organisation.
Procurement (public)	Procurement is a structured procedure designed to consult the market for the purchase of goods and services. A procurement procedure leads to the conclusion of a public contract. Can under certain circumstances be called *Tendering*.
Property right	The ownership (rights to the proceeds generated by the property) and control over a resource or good.

Continued

Term	Explanation
Property holder	A property holder is for the purpose of this report defined as the owner of a real property or the holder of the lease on the property,
Proximity Principle	Waste should be recovered in one of the nearest appropriate installations, by means of the most appropriate methods and technologies, in order to ensure a high level of protection for the environment and public health.
PRS (see also EPR scheme)	Producer Responsibility Scheme.
Reuse	Any operation by which products or components that are not waste are used again for the same purpose for which they were conceived.
Recovery	Any operation, the principal result of which is waste, serving a useful purpose by replacing other materials which would otherwise have been used to fulfil a particular function, or waste being prepared to fulfil that function, in the plant or in the wider economy.
Recycling	Any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations.
Self-Sufficiency principle	Appropriate measures shall be taken in order to enable the Community as a whole to become self-sufficient in waste disposal as well as in the recovery of waste and to enable member states to move towards that aim individually.
Sunk cost	A cost that has already been incurred and cannot be recovered.
Treatment	Recovery or disposal operations, including preparation prior to recovery or disposal.
Waste	Any substance or object which the holder discards or intends or is required to discard.
Waste hierarchy	A priority order in waste prevention and management legislation and policy set out in the Waste Framework Directive (Directive 2008/98/EC on waste and repealing certain Directives).
Waste holder	The waste producer or the natural or legal person who is in possession of the waste.
Waste management	The collection, transport, recovery and disposal of waste, including the supervision of such operations and the after-care of disposal sites, and including actions taken as a dealer or broker.
Waste producer	Anyone whose activities produce waste (original waste producer) or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste.
WEEE	Waste Electrical and Electronic Equipment.

Annex I - Summaries of previous reports

Nordic Reports

The Nordic competition authorities have on two occasions looked into the Nordic waste management sector. In 1998, a report on creating markets for municipal services was published and in 2010 the subject was competition and green growth. In 2013, a report on stable and sustainable economic growth was published by the Nordic competition authorities. One of the main findings of that report was that competition should be used as a tool to maximise efficiency and welfare, especially in the national service sector.

1/1998: Outsourcing of municipal services

In the 1998 report "Konkurrenseutsetting av kommunal virksomhet" [Competition in municipal operations], the topic was the opening up of traditional public service markets for competition in the Nordic countries.[291]

In the chapter on waste management it was stated that the level of liberalisation was high and rising, and that there were considerable cost savings to be enjoyed in the market-based collection of waste. The report states that cost savings of around 10% can be expected when competition is introduced to these markets. When it comes to quality of service, a survey among municipalities in Norway showed that quality remained at the same level following the introduction of competition.

The report states that competition authorities should be wary of two main problems. *Firstly*, the situation where a municipality chooses to maintain a public monopoly, even if efficiency gains can be made from competition. *Secondly*, that the process of granting access to the market can reduce efficiency gains otherwise possible. In particular, the report stated that the EU legislation on public procurement might not allow municipalities to consider the competitive effect of public procurement, and also that municipalities might not have the incentives to consider the long-term effects of public procurements on competition.

It is interesting that this report from 1998 mentioned competition neutrality as a potential problem area. Sometimes a municipality can choose to grant access to a former public monopoly market, but later on gives the incumbent public undertaking special or preferential treatment. The report states that the reason for

[291] The Nordic competition authorities, Konkurranseutsetting af kommunal virksomhet, Report no. 1/1998.

this rather paradoxical behaviour can arise from the conflicting interests of political leadership of the municipality and operational management of the municipality.

1/2010: Competition Policy and Green Growth

The report from 2010 focused on the role that competition authorities play in the shift towards an economy based on green growth and environmental sustainability. [292] The report states that there has long been an understanding in developed countries that the current economic system is not environmentally sustainable in the long term.

Green Growth occurs when economic growth effectively enhances the quality of life without environmental degradation. A successful shift from a heavily carbon-based economy to a sustainable economy can only be achieved through coherent, cost-efficient policies. Competition policy plays an important role in this context. It is the responsibility of the competition authorities to ensure that this relationship receives due attention.

The report's main points and recommendations on Competition Policy and Green Growth are:

- Environmental and competition policy share the common objective of safeguarding and promoting enhanced social welfare.

- Effective competition facilitates the transmission of relevant price signals that reflect environmental externalities.

- Environmental benefits may be cited as justification of horizontal agreements otherwise deemed restrictive under competition law. Such agreements must show that the measure is proportional to its aim, and the net economic benefits, in terms of reduced environmental pressure, must be clear.

- Environmental regulation may harm competition, for instance by raising barriers to market entry. The OECD recommends that legislators and other authorities conduct competition impact assessments to minimise negative effects.

- To maximise social welfare, the execution of environmental policy and competition policy should be mutually supportive.

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[292] The Nordic competition authorities, Competition Policy and Green Growth – Interactions and Challenges, Report no. 1/2010.

On the subject of waste management, the report states that when it comes to environmental policies in waste management, the competition concerns can be divided into three categories:

Spill-over effects:
Green Schemes can result in the harmonisation of certain production costs and/or the exchange of information between competitors (producers), and they can lead to part of the production cost not being subject to competition between the cooperating companies. This problem is greater if the cost associated with cooperation is the "lion´s share" of the production costs. Information exchange between participants in a Green Scheme is also a competition concern, as the risk of cartel behaviour or tacit collusion increases.

Bundling of demand for collection and sorting services:
Often the bundling of demand is a necessity if a scheme is to be viable when it comes to collection/sorting and recycling, due to network economics, but this can limit the choice of companies. In these cases it is important that competition in the downstream market (competition between collectors) or the upstream markets (competition between systems) is not unjustifiably restricted.

Pricing and Fee Structure:
In many instances the pricing structure of different waste management schemes is regulated in some way. In such cases measures should be taken to guarantee that the pricing structure reflects the actual cost of collection and recovery. In most cases problems stem from some kind of legal or natural monopoly. A common fix is to require that the scheme is of a non-profit nature; however, this does not solve all pricing problems.

Furthermore, the pricing structure itself could have a discriminatory effect, for instance, between participants and parties outside the scheme or between participants within the scheme.

The report mentions that, in most instances, there are better, competition-based approaches by which the environmental authorities can reach their objectives in a more cost-efficient way.

1/2013: A Vision for Competition – Competition Policy towards 2020

The aim of this report is to show how an effective competition policy and effective competition authorities can contribute to addressing future challenges to economic growth and welfare in the Nordic countries.[293]

The threats to future economic growth and stability are threefold, according to this report: *firstly*, the decline in productivity rates in the Nordic countries; s*econdly*, global competition from fast-growing economies in Asia, Africa and Latin America constitute a challenge to the competitiveness of the Nordic countries; *and thirdly*, the aging population and relatively shrinking workforce is a threat to economic growth.

The report has identified three important areas where competition policy and the competition authorities play, and will continue to play, an important role: public procurement (including innovation procurement); development and implementation of systems of choice in the public sector; and ensuring that public and private businesses compete on equal terms.

EU contribution

The challenge of waste has been a concern within the EU for a long time. The first policies and declarations on the subject were enacted in the 1970s.[294] The two following contributions from the European Commission are of interest to this report.

22/9 2005: DG Competition Paper – Concerning Issues of Competition in Waste Management Systems

The report focuses on the management of packaging waste, end-of-life vehicles and electrical and electronic equipment waste (WEEE).[295] The report recommends three main competition policy objectives:

- Preventing anti-competitive practices, e.g. market sharing, price fixing and the exchange of sensitive information.

- Ensuring choices between several waste management systems for the companies that are obligated under national legislation to recycle their waste (EPR).

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[293] The Nordic competition authorities, A Vision for Competition – Competition Policy towards 2020, Report no. 1/2013.

[294] The first EU Environmental Action Programme was enacted in 1973.

[295] European Commission, DG Competition Paper Concerning Issues of Competition in Waste Management Systems, 22 September 2005. http://ec.europa.eu/competition/sectors/energy/waste_management.pdf

- Avoiding exclusive arrangements of all kinds without solid and convincing economic justification, thus allowing for increased competition and lower prices.

Waste management and competition policy are closely intertwined with environmental goals. On the one hand, efficient waste management policy relies on functioning markets and therefore competition policy can contribute to better environmental policy. On the other hand, adopting efficient, market-based instruments to achieve environmental objectives also ensures that competition problems are reduced to a minimum, once a waste management scheme is in place.

The DG Competition paper points out some more specific issues concerning the relationship between obligated companies (producers and importers), between systems and obligated companies and between systems and collecting/sorting/ recovery companies.

The main competition concerns with the relationship between obligated companies are:

- **Spill-over effects:** There is the risk that cooperation at the packaging waste level may result in a common design of the packaged product or packaging. This risk depends on the homogeneity of the products. There is also the risk of a commonality of cost for the products through uniformed recycling cost. Finally, there is a risk that sensitive information will be passed between the participants. This is only a problem if the participants are competitors.

- **Effects of bundling of demand:** There is a risk that cooperation between obligated companies may lead to the bundling of demand for collection, sorting and recovery services for waste. This risk depends on the market share of the system. It is important that, when considering the bundling problem, any possible network effects also need to be taken into consideration, as well as economies of scale. Often a system is only viable if some degree of bundling can occur.

As far as the relationship between systems and obligated companies is concerned, the main competition concerns are:

- **Membership Criteria:** Generally speaking, collective systems should apply objective, transparent and non-discriminatory conditions with regards to membership criteria and fees levied by the system.

- **Fees for the systems:** Fees based on membership and not the services provided are in violation of the principle “no service, no fee”. Fees should reflect the cost of the collection and recovery. A fee system that offers

rebates designed to attract the entire amount of packaging of any obligated company may be considered abusive.

As far as the relationship between systems and collecting/sorting/ recovery companies are concerned, the main competition concerns are:

- **Exclusivity in favour of companies:** Many collective systems contract with only one collector for each collection district. This establishes an exclusive contractual relationship in favour of the collection/recovery companies.

  These exclusive contractual relationships will seldom be granted an exemption from Article 3(1) of the Block Exemption Regulation on vertical agreements, particularly since the market share of the supplier will typically exceed 30%. A case by case analysis is therefore required.

- **Exclusivity in favour of systems:** Collectors and recyclers should not be obligated to contract exclusively with one system. In both the Duales System Deutschland (DSD) and Altstoff Recycling Austria (ARA) the undertakings pledged that they would not impose exclusivity clauses on their collectors.[296]

- **Shared use of the collection infrastructure:** Investment in competing collection infrastructure might not be economically viable. A good example of this is the collection of household packaging waste because it requires a collection facility at each individual household.

  Unrestricted access and unlimited sharing of such infrastructure is a necessity if competition in the down-stream market is to flourish. The collection companies operating these facilities must also be allowed to offer the same facilities to competitors of the dominant system.

The European Commission's contribution to the OECD report of 4 April 2014, Waste Management Services DAF/COMP (2013)

In the view of the European Commission, competition enforcement plays an important role in the waste management sector.[297] Competitive and efficient waste management markets will result in lower prices paid by consumers. The Commission states that competition issues in the sector traditionally stem from the dominant position of the incumbent system (municipalities or incumbent systems

[296] Commission decision of 16 October 2003, ARA, ARGEV, ARO, OJ 2004 L 75/59; Commission decision of 17 September 2001, DSD, OJ 2001 L 319/1 (Article 81 EC); and Commission decision of 20 April 2001, DSD, OJ 2001 L 166/1 (Article 82 EC).

[297] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 71–73.

for producer responsibility) and the measures taken to exclude competitors from the market. The fact that the waste management sector is regulated adds a further complexity to competition enforcement. The Commission believes that a careful distinction has to be made between competition problems that arise from the behaviour of undertakings and competition problems that arise from legislation. For this reason, it is important that member states design their waste management legislation in a way that allows for effective competition.

In the European Commission's contribution to the OECD report, past decisions and recent developments relating to the application of European competition law to waste management are summarised.[298]

It is interesting that the Commission is considering the potential application of Articles 106 and 102 TFEU together in cases concerning waste management, e.g. the abuse of a dominant position related to exclusive or special rights. Private waste management undertakings frequently complain that public authorities, often municipalities, reserve the most profitable segments of household waste management for public undertakings, e.g. the management of packaging waste. Furthermore the Commission states that *"[t]he fact that special or exclusive rights are granted to a specific company (be it public or private) is not in itself a violation of Article 102 TFEU in conjunction with Article 106 TFEU, even where e.g. the collection and recycling services used to be performed by several competing players in the past. However, for there to be a breach of Article 106 TFEU in conjunction with Article 102 TFEU it is sufficient that the measure creates an inequality of opportunity which distorts competition".*[299]

OECD papers of interest

The OECD´s involvement in environmental policy spans several decades. Due to the global effect of pollution, the OECD was a natural forum for the developing countries to discuss their environmental concerns. In 1971, the OECD Environmental Committee was created, but it was not until the 1990s that the OECD was given the mandate to assess each member country's progress towards the achievement of their environmental commitments.

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[298] The Commission recaps three decisions it made in the early 2000s regarding systems for collection and recovery of packaging waste in France, Germany and Austria. The cases commenced following notifications for contracts with collectors, producers and recyclers under the former notification procedure pursuant to Regulation 17/62. The Commission had cleared the contracts on the condition that they comply with certain principles, for example that public tenders should be used and that the duration of contracts was acceptable. Also, the systems were not allowed to impose exclusivity conditions on their regional collectors. The Commission also summarises an ongoing case regarding potential abuse of dominant position by ARA, the Austrian system for collection of packaging waste.

[299] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 73.

Four papers from the OECD are of interest to this report.

2010 OECD Roundtable Paper on Pro-Active Policies for Green Growth and the Market Economy

In this roundtable paper it was clear from the discussion that there was a preference for market-based environmental policy instruments over "Control and Command" (CAC) policies).[300] There were three main reasons for this. *Firstly*, CACs tend to promote inefficiencies because regulators often have limited information about the range and the cost of alternative abatement opportunities. *Secondly*, CACs do not give firms incentives to exceed their environmental obligations, since overcompliance with current standards means more stringent standards in the future. *Thirdly*, CACs can hinder the development of new technologies since firms have no incentive to invest in R&D.

Market-based environmental policies on the other hand encourage firms, through market signals, to achieve desired environmental goals. Well-designed market-based policies can align the interest of firms and individuals with broader environmental goals, simply by altering the economic system.

The roundtable singled out the issue where multiple policy instruments are used to address a single environmental problem. There was a clear consensus that the use of multiple policy instruments could have a negative effect, and should only be used if a clear rationale was adopted. A rationale for multiple instruments could be to achieve more than one environmental goal or to provide a stronger basis for meeting environmental targets. But multiple environmental instruments can also have an adverse effect, for example, a prevailing credit price might be incorrect because a tax or subsidy has altered market conditions.

2013 OECD Roundtable Paper on Waste Management Services

In this roundtable paper from 2013 the subject of discussion is recent developments in the management of municipal solid waste (MSW), and the implications they have for competition in the market.[301] These recent developments include more waste being diverted towards treatment that allows the reuse of waste, the recycling of waste, or where energy is recovered from waste. Also, producers have in more instances been made responsible for the product they have put on the market at the post-consumer stage of the product's life cycle.

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[300] OECD, 2010, Pro-Active Policies for Green Growth and the Market Economy, DAF/COMP(2010)34.

[301] OECD, 2013, Waste Management Services, DAF/COMP(2013)26.

These changes have created new competition issues and in the paper it is stated that, *"Environmental objectives, taxonomy, and historical practices govern much of the law and regulation that applies to the waste sector, including the management of municipal solid waste (MSW). Although these regulations constrain the conduct of the firms operating in this sector, competition can nevertheless be relied upon to provide incentives for efficiency. Competition authorities' advocacy can help to ensure that laws and regulations achieve environmental goals in a least-anticompetitive way."*[302]

The experience of competition law enforcement does not support any special treatment for the waste management sector. Several decisions have managed to balance the different objectives of competition and environmental protection. If special legislation or contracts are needed to ensure environmental protection, the path that harms competition the least should be chosen.

The collection of MSW is a legal monopoly under most circumstances. Several empirical studies show that costs are higher when there is more than one collector in the market. The use of competitive tendering therefore seems to be a more effective use of resources than side-by-side competition. The effectiveness of tendering can also be hampered by poor design of the procurement documents; they may either not address competitive neutrality issues or they might ignore the essentiality of disposal services for collectors. Furthermore, waste transfer stations, landfills and incinerators exhibit scale economics, and unequal access to them may cause high entry barriers.

Finally, although the introduction of extended producer responsibility (EPR) schemes has been successful in building markets for secondary raw materials, they are often characterised by monopolies or operators enjoying a dominant position. Hence, the terms of their contracts with service providers may harm competition. These can include anti-competitive bundling, excessive contract duration, excessive charges and exclusivity terms that prohibit the provider from dealing with other EPR schemes.

Successful opening of EPR markets has been achieved for the management of packaging waste in Germany, where annual costs were reduced from €2 billion in 2003 to €1 billion in 2011. Other more indirect gains from increased competition are innovations, such as sorting, which have increased the market value of secondary raw materials.

[302] OECD, 2013, Waste Management Services, DAF/COMP(2013)26, p. 5.

The OECD issue paper - The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges, Global Forum on Environment, 17-19 June 2014, Tokyo, Japan

Over the last two decades, EPR has developed as a key policy to help improve recycling and reduce landfilling in both the OECD and developing countries. The basic principle of EPR is that producers or importers should assume responsibility for managing waste generated by their products, lessening the burden on municipalities. To this date there are around 400 EPR programs operating around the world.

According to the OECD, a successful EPR system can reduce public spending on waste management, dramatically improve recycling rates and even influence more environmentally friendly product design.[303] For example, in France, public spending on waste management has decreased by almost 15% due to EPR programmes. In addition, producers who are part of an EPR system are incentivised to maximise the benefits from their materials throughout the product value chain.

The multi-stakeholder nature of EPR programs and its ownership by private undertakings make the programmes potentially prone to trade and competition concerns:

- *Product market competition* can be hampered by producers if they choose to meet their obligations collectively through a Producer Responsibility Organisations (PRO). This applies especially if the producers agree collectively on the fee to be passed on to consumers for handling waste. This can reduce price competition for the original products. Increased competition between competing PROs and the way that PROs are organised can offset this problem.[304]

- *Competition among different PROs* can stimulate cost efficiency and technological developments. A single PRO may benefit from economies of scale and administrative oversight. Monopolistic PROs, however, can lead to abuse of dominant position and empower the PROs to unilaterally impose high fees on producers, particularly new competitors in the product market. Barriers to entry are also heightened.

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[303] OECD, 2014, Issues Paper - The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges, Global Forum on Environment: Promoting Sustainable Materials Management through Extended Producer Responsibility (EPR), 17–19 June 2014, Tokyo.

[304] Duales System Deutschland (DSD) was a monopolistic PRO in Germany. The market was opened up for competition between PROs after the German Federal Cartel Office's recommendation. The cost of packaging waste for PROs in Germany has fallen from € 2 billion in 2003 to less than € 1 billion in 2011. Please see OECD,2014, Issues Paper - The State of Play on Extended Producer Responsibility (EPR): Opportunities and Challenges, Global Forum on Environment: Promoting Sustainable Materials Management through Extended Producer Responsibility (EPR), 17–19 June 2014, Tokyo, page 12.

- PROs can have a negative or positive effect on *competition in waste collection markets*. The markets for collection are, in the opinion of the authors of the paper, generally a natural monopoly, i.e. large economies of density tend to make it more efficient to have one single collector per area. However, lengthy exclusive agreements between PROs and collection providers are likely to disrupt competition and increase the cost of service. Shorter contracts and the use of tenders can lower the cost of collection by more than 20%.[305]

- *Competition between PROs and recycling/recovery providers* is less of a concern since that market is more competitive. However, exclusive agreements between PROs and recyclers may hinder competition.

2015 OECD Green Growth Studies on Material Resources, Productivity and the Environment

This paper points out that establishing a resource-efficient and sustainable economy is central to achieving green growth.[306] The criteria for such an economy is that it shall supply enough materials, but still manage all the environmental impacts associated with their extraction, processing, transport, use and disposal, and that natural resources are not degraded.

Some key points from the paper:

- Materials extracted from natural resources consumed worldwide continue to rise.

- Materials consumption in the OECD countries increases, however, more slowly than the global rate. Economic growth in the OECD countries has not therefore witnessed corresponding increases in environmental pressure.

- One fifth of the raw materials extracted worldwide end up as waste and the OECD Countries account for about one third of global waste generation.

- Efforts to transform waste into a valuable resource are starting to pay off. Recycling rates for some high-volume materials have increased, whilst they remain low for the rest.

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[305] The introduction of tenders and the decreased duration of contracts for collection of waste for which the DSD PRO in Germany was responsible,, reduced the cost of collection by more than 20%. The conditions were set by the European Commission DG Comp. (See page 13 of the OECD issue paper).

[306] OECD, 2015, Material Resources, Productivity and the Environment, OECD Green Growth Studies, OECD Publishing, Paris.

- Markets for secondary raw materials have expanded, but have to cope with volatile commodity prices. Unexploited "urban mines", i.e. the materials locked in the economy that could one day be available for reuse or recycling free of technical or economic constraints (e.g. buildings, cars, electric and electronic equipment), are important sources of raw materials for the future.

The paper points out that there are formidable economic and environmental challenges ahead, as the world economy is expected to quadruple and the global population is expected to grow to 9.5 billion by 2050. There will be a greater need for global effort as production and consumption become displaced with increasingly globalised value chains. It is only natural that this raises the question of distribution of the global environmental burden.

Annex II - The legal frameworks of the Nordic countries

The Faroe Islands and Greenland

Greenland and the Faroe Islands have two of the smallest populations of the Nordic countries. The population of Greenland is also rather dispersed and there are many fairly small settlements. For that reason, special conditions apply to the legal framework and structure of waste management in these countries. Neither Greenland nor the Faroe Islands are members of the EU or the EEA area, although waste management regulations are in some cases inspired by EU legislation.

In the Faroe Islands, the political objectives of waste management are to prevent and reduce the pollution of air, water and ground. This is to be achieved by, for example, reducing packaging, by recycling and through energy recovery. The goals are regulated at a national level, but the execution is outsourced at local level. There are two municipal organisations active in the waste management market in the islands: KBR (Kommunala Brennistøðin) the municipal undertaking of Tórshavn, the largest municipality in the islands, and IRF (Interkommunali Renovatiónsfelagsskapurin L/F) an inter-municipal undertaking that executes the responsibilities of other municipalities in the islands.

The environmental legislation was adopted in 1988 and has since then been amended several times. IRF and KBR, the municipal undertakings mentioned, are tasked with all waste management in the Faroe Islands. For that reason free competition is very limited. There is some competition regarding the management of scrap metal and KBR and IRF can also outsource waste collection.

Fees for the use of waste facilities, transfer and sorting stations, landfills and incineration plants are decided at national government level. They are based on a prime cost principle. Producers and importers are supposed to bear the cost of managing the waste they produce. This EPR scheme is run by KBR and the IRF.

The new government of Greenland has announced its goals for the environment. An action plan for the management of waste must be implemented and the cooperation of municipalities with regard to the sorting of waste, hazardous waste, incineration, recycling, etc. needs to be strengthened. Greenland is a member of the *Basel Convention* and it ships some of its waste to Denmark for further treatment. The four municipal councils are responsible for waste management in Greenland. The councils also decide which materials are regarded as waste and the scope of waste management.

The waste management market in Greenland is small. In larger settlements a private undertaking is usually tasked with the collection of waste. The municipalities can also opt to use in-house operations. The smallest settlements in

Greenland have populations of around 30 people whilst Nuuk has approximately 16,000 residents. There is no public procurement regulation in Greenland. Most municipalities differentiate between the collection of municipal solid waste from households and commercial waste from undertakings.

In Greenland, the fee for collection of waste and sewage is decided by each municipality. The lack of infrastructure limits the possibility for competition in waste management, for example, there are no roads between some of the settlements. All waste transfer stations, landfills and incinerators in Greenland are owned and operated by municipalities. Waste management services for private citizens are funded through the tax system. The fee payable to undertakings is decided by the municipalities.

A trial scheme for the separate collection of paper and cardboard has been initiated in Nuuk. Households can deliver dry cardboard and paper to local recycling centres free of charge. Undertakings can also take part in the scheme but need to pay to participate.

Denmark

The legal framework is found partly in the *Environmental Protection Act* and partly in the *Statutory Order on Waste*. According to the *Statutory Order on Waste*, the municipalities shall, within the legal framework in the *Statutory Order*, prepare and adopt local regulations for waste produced respectively by households and by companies. With those ordinances, the *Waste Framework Directive 2008/98/EC* has been implemented into Danish law.

Municipalities are responsible for handling all waste that goes to incineration plants or landfills both from households and companies. Municipalities are not allowed to offer collection or to handle recyclable waste from companies, unless it comes from the municipality's own institutions and undertakings. However, municipalities may operate collection schemes for dry recyclable fractions, such as paper and glass, in properties which simultaneously serve as both residential and industrial buildings. The collection schemes for organic waste from households can also be made available to all companies. Furthermore, companies can use the municipality recycling centre if they have signed up for this scheme.

Municipal waste management is financed with fees that are to be cost-genuine and based on a non-profit principle. In many cases, the municipalities procure waste collection services from private undertakings. In these cases, the municipalities are obliged to follow procurement procedures.

The municipalities are involved in the classification of waste, including whether waste is recyclable or not, which is crucial when it comes to whether or not the municipalities are allowed to handle the waste. Some municipalities, due to their

ownership of incineration plants, have an interest in ensuring waste for incineration by classifying a large percentage of waste as being suitable for incineration. This could present a problem for competition.

In the Statutory Order on Waste, waste from households is defined as: *"Waste that is generated by households, including domestic waste, garden waste, bulky waste, source separated waste fractions and soil from households. Household waste can be either hazardous or non-hazardous."* As stated above, the municipalities are to classify waste as hazardous waste, packaging waste, waste suitable for material recovery, waste suitable for incineration or waste suitable for disposal.

In the Statutory Order on Waste, commercial waste is defined as: *"Waste that is generated by businesses, including waste similar to domestic waste, garden-park waste, bulky waste, construction and demolition waste, production waste, industrial waste, source separated waste fractions and soil. Commercial waste can be either hazardous or non-hazardous."*

The main sector regulator is the Danish Environmental Protection Agency (DEPA) – its authority is delegated from the Danish Minister of the Environment and Food. A large part of the administration is delegated to municipalities. The municipalities are obligated to ensure that there is compliance with the statutory order's provisions in respect of waste. As stated above, they are also involved in the classification of waste. All undertakings in the sector are obligated to apply for environmental approval from the local municipality. If the services fall outside the scope of the competence of the municipality, the undertaking must apply to the DEPA, which in turn will assess the application.

Finland

Finland's waste management legislation was amended in the spring of 2012. The legislation applies to all kinds of waste, with the exception of some special categories such as nuclear waste. The negative environmental impact of various kinds of waste is also addressed in legislation on environmental protection. The waste legislation is largely based on EU legislation, but in some cases it provides stricter standards and limits than those applied in the EU as a whole. There are also some stipulations in the Waste Act that provide for responsibilities and duties not covered at all in EU legislation.

The *Waste Act* regulates the duties and role of the municipalities. In practice, many municipalities have assigned most of their waste management duties to local municipally owned undertakings, which purchase some of the requested services by putting them out to tender among individual waste management undertakings. In some cases, municipalities can also decide that waste collection and management is the responsibility of each individual household. The Centres for Economic Development, Transport and the Environment (ELY Centres) guide and monitor

waste management by municipalities.[307] ELY Centres also monitors compliance with environmental permits and prepare regional waste management plans.

The *Competition Act* does not prohibit public organisations from carrying on business or competing with privately owned undertakings on the same market. The objective of the act is to establish competitively neutral conditions between public and private sector business activities. The *Local Government Act* provides an obligation for the municipalities to corporatise business operations, if the business in question is engaged in competition with private operators in a market.

Certain sections of the *Finnish Waste Act*, and the municipalities' interpretations of them, have raised concerns. It has been argued that municipally owned waste management undertakings are actively marketing their services and expanding their activities into collecting waste for which they have no responsibility (in other words, on the basis of an exclusive right). In practice, it has also been argued that the municipalities do not grant exceptions in order to protect the interests of municipally owned waste management undertakings. There are examples where local waste companies have been actively involved in drafting the local regulations; according to the law, this is a task with which only the municipality itself is to be entrusted. This has caused concern about the impartiality of the local rules and it has raised questions of competitive neutrality.

According to Section 6 of the *Waste Act*, municipal waste is defined as *"waste generated in permanent dwellings, holiday homes, residential homes and other forms of dwelling, including sludge in cesspools and septic tanks, as well as waste comparable in its nature to household waste generated by administrative, service, business and industrial activities."* Municipal waste is subcategorised into packaging waste fractions that have specific recycling targets. There is no particular definition for commercial and industrial waste in Finnish legislation. In practice, commercial and industrial waste is generated by commercial and industrial operators, and the waste is not comparable to municipal solid waste.

The Ministry of the Environment is responsible for the guidance, monitoring and development of operations under the *Finnish Waste Act*. Municipalities are responsible for organising the municipal waste management in their jurisdiction. Local and regional authorities are entrusted with supervising the functioning of the system. The municipalities have powers to enact regulations that can impact the market. Municipalities may issue general provisions due to local circumstances. Municipal waste management provisions concern both municipal waste and, in some respect, other waste.

[307] For more information about the ELY Centres please visit https://www.ely-keskus.fi/web/ely-en

Iceland

The main legal text regarding waste management in Iceland is the *Waste Management Act no. 55/2003*. It has been amended a couple of times since 2003. This Act establishes the main rules regarding waste management. The legislation incorporates the *Waste Framework Directive* into Icelandic law. Other legislation that affects waste management includes *Act no. 7/1998 on Hygiene and Pollution Control*, *Act no. 162/2002 on Recycling Fees* and *Act no. 52/1989 on Measures Against Environmental Harm Caused by Disposable Drink Containers.* Act no. 7/1998 concerns the possible pollution that can emanate from waste management activities. All parties that operate in waste management need permits in accordance with the *Hygiene and Pollution Control Act*. Acts no. 162/2002 and 52/1989 concern *Extended Producer Responsibility*.

According to Article 3 of the *Waste Management Act*, waste is defined by its source rather than its form. Household waste is defined as waste from households, and food scraps, paper, cardboard, plastics, garden waste, glass, etc. are listed as examples. According to the same Article, commercial waste is defined as waste from production, service or commerce. This type of definition does not entirely conform to the definition of municipal waste found in *Commission decision no. 2000/532/EC*, establishing the list of wastes mentioned above. In the Commission decision, municipal waste is described as waste from households and similar waste from other sources.

The role of municipalities regarding the management of waste is decided by Article 8 of the Waste Management Act. Municipalities shall decide how household and commercial waste is managed within each municipality. Each municipality is responsible for the collection of household waste and shall see to it that transfer and sorting stations are operated for waste generated within the municipality. Municipalities also have considerable freedom to pass waste management ordinances for their territory. For example, municipalities could decide that all collection of household waste should be an "in-house operation". In other words, the collection of household waste is reserved exclusively for municipalities - an exclusive position for the municipalities.

Municipalities can also decide to what extent household and commercial waste is sorted at collection points. Municipalities' decisions regarding waste management can have a dramatic effect on how much competition there will be in the market.

Municipalities and their undertakings are usually not active in the market for collection of commercial waste. Nevertheless, municipalities and their undertakings are in most cases somewhat involved in the collection of household waste, usually as organisers of the service. Reykjavík is, in fact, the only municipality in Iceland that performs the collection of household waste through an in-house service. Other municipalities procure the services on the open market. Municipalities are also

active in the markets for transfer and sorting stations, landfills and incinerators. In fact, all landfills and incinerators are owned and operated by municipalities or their undertakings.

Article 23 of the *Waste Management Act* concerns the financing of the system. According to the Article, all parties, public and private, that operate a landfill or incinerator need to cover their costs with their service fees. Such facilities are currently only run by public operators. A municipality shall collect a fee for all management of waste that it undertakes. The fee can only be determined by factors that affect the cost. A municipality is also allowed to charge a fixed amount per home for these services. The Article is a "service fee" provision. According to the provision, fees collected by municipalities for waste management shall never exceed the cost of providing the service. The fee structure for private undertakings is not regulated, except for that stated above.

As stated above, all parties, be they private or public undertakings, need permits to operate in waste management in Iceland. Supervision of waste management is carried out both by the Environment Agency of Iceland (national level) and by 10 Local Health Boards, (*LHBs)* (municipal/regional level). LHBs operate at municipal level and they conduct important supervision of the market. LHB members are largely appointed by municipalities. At the same time, municipalities and their undertakings are also active in waste management. Supervision and business operations in the waste management sector therefore operate at the same level of government. This can naturally lead to problems in regulating the market, despite the supervision of the Environment Agency. The ICA has received informal complaints that permits and the conditions that municipalities and their undertakings need to fulfil are not as strict as those that private undertakings need to fulfil.

Norway

The legal framework for waste management in Norway is made up of several layers of regulation and guidelines. The *Pollution Control Act* is the main sector-specific piece of legislation. The *Waste Regulation* adds category-specific rules, and both the *Ministry of Climate and Environment* and the *Environment Agency* provide guidelines and additional regulations that may affect the sector. The *Waste Framework Directive* is fully implemented in Norwegian law. The Waste Framework Directive was, at the time of implementation, assessed to have a slightly stronger emphasis on material recycling and reuse than incineration, when compared to Norwegian policy up to that point.

Pursuant to Section 27 of the *Pollution Control Act*, solid waste is defined by its source, rather than by its form. Any waste from non-household premises is the responsibility of the company producing the waste. The municipality must ensure that waste emanating from industries which is similar to household waste is

properly collected and that there is compliance with the relevant regulations. The relevant regulations allow the municipality the discretion to choose appropriate waste management solutions. Municipalities may handle the collection of household waste themselves but some municipalities tender out their responsibilities, which results in privately owned companies providing household waste collection in certain municipalities.

The task of collecting and sorting household waste has historically been a public task in Norway and it is still reserved exclusively for municipalities pursuant to Section 34 of the Pollution Control Act. As a result, there are many municipally owned waste management entities of differing legal status. There are very few things the municipally owned entities are legally barred from doing. Nevertheless, the task of performing the collection and sorting of household waste within the municipality that owns it would create a natural barrier to moving headquarters, or to focusing on offering local market services in faraway areas. The municipal undertakings are obligated to keep separate accounts if they perform services in markets in addition to their legally entrusted exclusive rights to household waste. Furthermore, they are not to cross-subsidise between the two business areas. However, municipal undertakings in waste management are not obliged to structurally separate the two business areas. Inter-municipal undertakings are also currently barred from going into bankruptcy, and they enjoy unlimited liability.

The waste fee charged to residents in the municipality should reflect the costs of managing the household waste. In some cases, the waste management fee is decided by municipal waste management undertakings. It is likely that municipalities must from now on decide the fee internally as a result of a recent decision made by the ESA (EFTA Surveillance Authority), either directly in the municipal parliamentary council or the governing council. They may still rely on recommendations made by the undertakings. The municipalities are empowered to control whether industrial waste within the municipality is managed correctly. However, no municipality has outsourced this task to municipal companies.

Household waste is defined as: "*waste from private households, including large objects such as furniture*". Commercial waste is defined as: "*waste from public and private enterprises and institutions.*" The waste categories that are permitted for incineration, trade, landfilling and so on are prescribed in each relevant chapter of the Waste Regulation. The solid waste emanating from industries, even if it is otherwise similar to household waste, is not subject to the same regulations as household waste, e.g. the municipal exclusive rights.

The main regulatory body is the Environment Agency, which is legally responsibility for the majority of the supervision and monitoring. The Agency is responsible for ensuring compliance with the *Waste Regulation*, and it is tasked with designing and suggesting solutions within waste management. As municipalities hold an exclusive position with regards to household waste, anyone wishing to

perform collection services may only do so with the explicit permission of the local municipality. The municipality has to monitor waste emanating from industries, which is similar to household waste, and ensure that it is properly collected, and that there is compliance with the relevant regulations. Municipalities have a general responsibility for deciding what areas are to be utilised for different types of industry, e.g. the issuing of building permits, etc.

Sweden

The foundation of the waste management and producer responsibility legislation can be found in the Environmental Code,[308] which implements the *Waste Framework Directive 2008/98/EC*. The Environmental Code contains definitions and the basic rules setting out the municipalities' and producers' responsibilities. Many of the rules in the Code are defined further in the *Waste Ordinance*. The *Waste Ordinance* contains definitions that establish general rules and principles regarding the management of waste and the distribution of responsibilities between different actors operating in the waste management sector.

The *Swedish Environmental Protection Agency* is the national administrative authority that, amongst other things, is tasked with the issuing of regulations and permits, along with the monitoring and evaluation of waste management in Sweden.

Municipalities are responsible for the disposal of household waste and "*waste similar to household waste*". The principal of municipal autonomy is laid down in the Swedish Constitution and this means that there should be an independent and, within certain limits, unrestricted right of self-determination for municipalities and county councils. Municipalities therefore decide themselves how to organise their waste management activities. The Local Government Act[309] sets out the prime cost principle which means that municipalities may not charge higher fees than those corresponding to the cost of the services or goods that the municipality is providing. The underlying reason for the prime cost principle in the Local Government Act is that the municipalities shall not be able to exploit their position in markets which can sometimes be compared to legal or natural monopolies.

Municipalities are required to draw up a local waste management plan setting out, amongst other things, a description of current conditions, details of facilities for the recycling and disposal of waste in the municipality and the goals and targets for waste management.

According to the *Environment Code*, each object or substance that the holder is disposing of, or which they intend to, or are responsible for disposing of is

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[308] Chapter 15 of the Swedish Environmental Code (1998:808).

[309] Chapter 8 Section 3C of the Local Government Act (1991:900).

considered waste. There is no specific definition of commercial and industrial waste. Commercial waste is, therefore, any waste which is not household waste.

In Sweden, household waste is defined as "*waste from households and waste similar to household waste*". Waste similar to household waste refers to waste that is a direct consequence of people gathering in a particular place, regardless of the reason for such a gathering. Examples of such waste similar to household waste are waste from office canteens, restaurants and public toilets. The exact interpretation of what is considered waste similar to household waste is not laid down in the law or in general regulations but is rather for each municipality to define. Since the municipalities are solely responsible for the collection of household waste, the exact interpretation is important. However, the interpretations vary across Sweden. Some municipalities apply a strict interpretation allowing for more waste to fall within the definition of waste similar to household waste, and thus under municipal responsibility and control. Others apply less strict definitions which open up for competition in respect of waste collection.

Annex III - Nordic EPR schemes for packaging waste

Denmark

In Denmark, a scheme for the management of packaging waste was in effect several years before the adoption of the EU Directive on packaging and packaging waste. As a scheme was implemented, the responsibility of packaging waste management was internalised rather than either transferring the responsibility to the industry or establishing parallel schemes. The collection of packaging waste is therefore under the responsibility of the municipalities; cf. the Statutory Order on Waste.

The municipalities are obligated to implement incentives and recycling opportunities for packaging waste in local municipal waste management plan. All municipalities are obliged to establish a collection scheme for packaging waste (e.g. cardboard, paper, plastic, metal, etc.) from households. The municipality has some degree of autonomy in defining the scheme. The autonomy is highly influenced by the density of population in the municipality in question. Households and private businesses are obligated to follow the waste management scheme established by the municipality.

The collection of packaging waste is in some municipalities implemented by kerbside collection (pick up scheme), where there are separate bins for different types of waste (e.g. paper, cardboard, metal, etc.). In other municipalities, the different types of waste are to be handed in and disposed of at the municipal recycling centre. As a result, part of the packaging waste from households is mixed with household waste, which is mainly incinerated in Denmark.

Recyclable industrial packaging waste from private companies, as opposed to household recyclable waste, is not covered by the municipal waste plan. Private companies producing recyclable packaging waste are responsible for sorting and then managing their own packaging waste. This includes transporting packaging waste to a treatment or recycling facility approved by the municipality. Private commercial companies often enter into agreements with authorised waste management companies and recycling operators, who then take over the responsibility of the packaging waste. The waste management company and recycling operator can be a private or a public undertaking.

The Faroe Islands

In the Faroe Islands, the EPR scheme for packaging waste is internalised in the same way as in Denmark and Greenland. It is therefore the responsibility of the municipalities and is basically non-commercial. Apart from packaging waste, the scheme covers paper, cardboard, glass, plastic, scrap metal and electronics. There are separate bins for the different types of waste.

Finland

In Finland, EPR for packaging waste came into effect on the 1st of May 2015. Until then, producer responsibility for packaging waste was partial under the former Waste Act[310]. In practice, this means that municipalities have organised the collection of packaging waste from households, and producers and PROs from industries. The obligation for producers to establish a certain number of collection points (recycling stations) for consumer packaging will come into effect on the 1st of January 2016.

In accordance with the former regulation, packaging waste management is partially the responsibility of the municipalities and partially the responsibility of the producer. Municipalities have organised collection points for households. Municipalities have also issued rules on the separate collection of glass, metal and cardboard in the waste management regulations.

The producers have a right of precedence to organise waste management. Pirkanmaa ELY Centre (Centre for Economic Development, Transport and the Environment) is the supervising authority, which gives approval to producers and PROs, and it keeps a register of them. The producer has the right to predefine the content of the waste transported to their facilities, and to refuse to accept the waste if it contains waste other than packaging waste.

A municipality may supplement the transport of separately collected packaging waste and reception of the packaging waste insofar as the producer does not arrange it. The supplementary reception can be organised offering regional collection points. In all cases, the waste must be delivered to the producer's facilities. If a municipality ensures supplementary transport from properties or issues rules on separate collection, then it has to enter into an agreement with the producer. The producer must also, if possible, take into account separate collection from properties in the region when positioning the collection points.

The property holder may arrange transport for separately collected packaging waste, if packaging waste is not transported as part of waste transport from properties. Waste shall be delivered for waste management, which is organised by the producers' service provider.

Greenland

As is the case in Denmark, there is no EPR system for packaging waste in Greenland. Some private undertakings have agreements with other transport companies

[310] Finnish Waste Act 1072/1993.

regarding the transport of bulky waste. All the waste is taken to local incinerators or dumps, which are managed and owned by the municipalities.

The municipality of Kommuneqarfik Sermersooq has initiated a scheme in Nuuk, regarding the collection of paper and cardboard for recycling. The scheme is voluntary and aims to increase the recycling of paper and cardboard waste in Nuuk. The collected paper and cardboard are pressed and sent for recycling. Households and individuals can deliver clean, dry cardboard and paper for recycling to the recycling centre. There is no fee for the delivery of the waste. Private companies may also deliver paper and cardboard to the recycling centre, but they pay a fee for this.

Iceland

In Iceland, the packaging waste scheme is part of the same EPR scheme as the one covering WEEE and a number of other products. The scheme is built around the Icelandic Recycling Fund (IRF), a state-owned authority, assigned with the task of creating economic conditions that acre conducive to reuse and recovery, for lowering the volume of waste going into final disposal and for ensuring the proper disposal of hazardous substances.[311]

The IRF is not active in the waste management market but uses monetary incentives for waste management undertakings that are validated IRF service providers (public and private) to reuse, recycle or dispose of waste in the correct manner. The IRF service provider ensures that the waste is properly treated by validated IRF recyclers, or in validated disposal facilities, in the case of hazardous waste.[312] Once the IRF-validated recycler has accepted the waste/material, they send a receipt to the IRF service provider, which in turn sends the receipt to the IRF. Following the reporting duties, the IRF pays a recycling incentive fee to the IRF service provider.[313] If the market value of certain materials changes, the IRF changes its incentive fee, either up or down. If the market value becomes positive (more than the cost of collection, sorting and shipping) the IRF does not pay for the material.

The waste streams covered by the IRF include various packaging materials, WEEE, hazardous materials and ELVs, etc. Products covered by the Act on Recycling Fees are classified into several categories, for example, paper, cardboard, plastics, tyres,

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[311] The board of the IRF is composed of stakeholder representatives that have the greatest interest in waste handling being as efficient as possible, i.e. representatives from municipalities and the commercial sector. The chairman of the board is appointed by the Minister for the Environment and Natural Resources.

[312] The recyclers are validated by the IRF and consist mainly of foreign undertakings, due to the absence of recycling plants in Iceland.

[313] Fees for products covered by the IRF are decided by the Minister of Finance upon a proposal from the Minister for the Environment and Natural Resources. That proposal is based, amongst other things, on suggested fees from the IRF. The recycling fees are collected from producers and importers of goods through either the tax (production) or tariff systems (imports).

paint, car batteries, etc., with the recycling fee amount collected within each product category being solely intended to support the expenses of handling waste originating in that category. This method prevents the transfer of costs from one product category to another and is supposed therefore to ensure that the recycling fee for each product category reflects as exactly as possible the cost due to that category.

The main actors in the collection, sorting and sale of packaging materials are SORPA, the inter-municipal undertaking of the municipalities in the capital area and Gámaþjónustan hf. and Íslenska gámafélagið ehf., two of the largest private waste management undertakings in Iceland. Other players in the market are active on a smaller scale. The packaging waste handled by SORPA is mainly from households whilst the private undertakings collect considerable amounts of packaging waste from commercial operators.

Norway

Various collection schemes ensure that packaging waste in Norway is collected and sent for recycling treatment. Most types of schemes for the collection of packaging waste are based on agreements between the Norwegian Government and the packaging industry. As a result, recycling companies have been established through cooperation within the industry. The recycling companies have to report their recycling and how they work to optimise packaging waste handling to the Environment Agency.

One example is Grønt Punkt Norge, which is responsible for developing, organising, operating and administrating recycling schemes for packaging waste. Grønt Punkt Norge was established in 1997 in order to increase the effectiveness of recycling schemes.

Grønt Punkt is currently running recycling schemes on behalf of Plastretur AS and Norsk Returkartong AS, whilst Norsk Glassgjenvinning AS, Norsk Resy AS and Norsk Metallgjenvinning AS run their own recycling schemes.

Sweden

Producers are required to either set up a collection scheme or to ensure that somebody with authorisation to run a joint collection scheme undertakes to handle the producers' products when they become waste. To run a collection scheme requires authorisation from the Environmental Protection Agency. However, there are exemptions. The collection of packaging waste conducted by municipalities and/or the collection of waste generated in connection with business activities do not require authorisation.

In order to be authorised, collection schemes are required to have nationwide coverage and to be "adequate". A collection scheme is regarded as adequate if it is non-discriminatory, easy to access, free of charge, accepts waste that the municipalities have collected and accepts waste generated in connection with business activities free of charge. A collection scheme is regarded as being nationwide if it consists of collection points in all municipalities with a geographical distribution that is considered reasonable, taking population density and other factors into account.

Before a new collection scheme is set up, the municipality and the operators of existing collection schemes must be consulted. The purpose of the consultation is to facilitate coordination with municipal waste collection and to find coordinative efficiencies within existing collection schemes.

In order to comply with the extended producer responsibilities, producers have formed sector-specific trade organisation companies. There is one such company for the glass, metal, plastics, cardboard and newspaper sectors respectively. Those companies co-own Förpacknings- och Tidningsinsamlingen AB (FTI),[314] which is a joint collection scheme consisting of approximately 6,000 recycling stations all over the country. The recycling stations in the respective municipalities are operated by companies hired by FTI. The treatment and recycling of the materials is also conducted by companies hired by FTI. The companies hired by FTI can be either private companies or municipal companies.

The recycling stations are regarded as the main collection scheme, whilst kerbside collection is complementary. The producers do not offer kerbside collection as a service through FTI. They do, however, co-finance the cost of the kerbside collection of packages, whether or not this is performed by municipalities or private companies, provided the waste is handed over to FTI.

TM Responsibility AB (TMR)[315], which competes with FTI, has entered into an agreement with FTI regarding access to FTI's collection scheme in order to fulfil the requirement to have nationwide coverage. The two PROs share the costs for the collection scheme in proportion to their respective market shares.

TMR offers kerbside collection in partnership with both private and municipal waste management companies. TMR's business model is to waive their rights to the waste collected and transfer those rights to the waste management company performing the actual collection, provided that all statistics are reported to TMR.

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[314] FTI is a privately owned company owned by Plastkretsen AB, RK Returkartong AB, Svenska Metallkretsen AB, Pressretur AB and, Svensk Glasåtervinning AB. They in turn are owned by trade organisations representing companies that fall under the ordinance's definition of producers.

[315] TMR is a privately owned company which is not tied to any specific sector's interests.

The collecting companies are thus free to exploit the waste they collect and also to receive payments from the households for the collection services.

The municipalities play an important role with regard to packaging waste. The municipalities are responsible for ensuring the collection schemes are adequate and that the requirements for consultation are met. The municipal waste management plan has to include a specific section on packaging waste and locations for the collection points of packaging waste. The municipalities must inform households about their obligation to sort out packaging waste from other waste and the collection schemes available.

Annex IV - Nordic EPR schemes for WEEE

Denmark

The Danish Producer Responsibility System ("DPA System") is in charge of the administrative tasks associated with the rules on producer responsibility under the Danish Environmental law, in respect of WEEE.[316] The DPA System is supervised by the Danish EPA and the National Audit Office. The DPA System also administrates the rules on producer responsibility for end-of-life batteries and accumulators (BAT) and for end-of-life vehicles (ELV).

The purpose of the DPA System is to establish and operate a producer register, as well as to design and administer an independent and non-distortive producer responsibility scheme for the affected players in the market.[317] The activities of the DPA System organisation operate by a cost-of-service principle and are financed by fees charged to the producers. The fee consists of a one-off registration fee, and a fee for the administration of reported quantities and calculation of the WEEE allocation. The fee rates are fixed once a year by the Ministry of the Environment and Food.

Producers of electrical and electronic products are required to register in the producer responsibility register administrated by the DPA System in order to legally sell these types of products in the Danish market. The producers are required to annually report the quantities of products distributed in the market (according to the end-user; either household or business), products taken back (at municipal collection sites, collective scheme collection sites and own collection), products treated and the treatment facilities used during the previous calendar year.[318]

Producers can assume the producer responsibility individually (individual compliance) or enter into an agreement with a PRO. Producers have mainly chosen to fulfil their producer responsibility and take-back obligation by entering into agreements with PROs. Only a few producers and importers are assuming their responsibility individually. The PROs are private businesses operating on a

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[316] The DPA System was originally established at the initiative of producers represented by DI (Confederation of Danish Industry), DE (Danish Chamber of Commerce) and a number of sector trade organisations. Upon the implementation of the WEEE Directive in 2006, the DPA System was delegated part of the administration of the producer responsibility system and the specific tasks are described in detail in the Statutory Order regarding WEEE.

[317] The DPA System is managed by a board consisting of seven members. The election of the board members is based on the recommendations of six industrial associations. The chairman of the board is solely appointed by the Minister for the Environment and Natural Resources. The board of directors is obligated to ensure that the scheme and decisions by the board members do not impede competition, cf. the articles of the DPA System organisation.

[318] Producers distributing electrical and electronic products in the market must have the reported quantities validated through an auditor's attestation or accompanied by a management statement.

commercial and competitive basis. Collective Schemes operating in Denmark are 1) Elretur, 2) ERP Denmark, 3) LWF (light sources), 4) RENE AG and 5) Returbat.

The municipalities have a number of dedicated tasks in connection with WEEE. The municipalities must establish and fund the establishment and operation of municipal collection sites. Furthermore, the municipalities are responsible for ensuring that WEEE is separated into the correct fractions, and they have to record the number of municipal collection sites in the DPA System.

The DPA System acts as a clearing house. Once a year, the DPA System calculates and allocates (i.e. clears) the WEEE quantity that the producer or their PRO is to collect and have responsibility for. The quantity is calculated on the basis of a proportionate share of quantities (divided in fractions) placed in the market by the producer. The DPA System also allocates a collection point (geographical area) from where the WEEE must be collected by the producer. Generally, the allocation is not notified directly to producers affiliated to a PRO. In this case, the interplay takes place between the DPA System and the PRO.

It is the responsibility of the producer to collect the allocated share of WEEE at the municipal collection sites (recycling centres) and to ensure that the WEEE is managed in accordance with the regulation, i.e. sent for treatment at an environmentally approved waste facility. The producer is further obliged to report to the DPA System the quantities of WEEE sent for treatment and to which treatment facilities, including the rate of recovery. This reporting is typically managed by the PROs.

PROs assume the task of tendering out the collection of the allocated amount of WEEE to recycling operators who, for a given period, will be in charge of take-back logistics and the treatment of WEEE on behalf of the producers, including the fulfilment of the minimum requirements for the recovery, reuse and recycling of WEEE.

In connection with the environmental treatment of WEEE, the materials and substances contained in WEEE may have a value. The waste is then traded as a commodity in the market for secondary raw materials. Secondary raw materials are not covered by the Danish waste regulation.

Faroe Islands

In the Faroe Islands the EPR scheme for WEEE is part of the same system as for packaging waste, described above.

Finland

In Finland a producer of an EEE product (i.e. a manufacturer or importer of the equipment, or a party selling their sells equipment under their own brand name) is required to take care of their producer responsibilities individually, by establishing a producer responsibility organisation (PRO) together with other producers, or by joining a PRO. Producers must organise the free take-back of WEEE as well as the reuse and recycling of WEEE. Producers have to establish 400 reception points for consumer WEEE. Producers are also required to organise the reception of other kind of WEEE.

Producer associations promote a nationwide, decentralised logistics network with over 30 sorting and pre-treatment stations and several regional transport service providers across the country. Collection of WEEE is arranged mainly on a permanent basis; in 2011 there were approximately 450 collection points around the country. Permanent collection points are, in most cases, provided by the municipality and, in some cases, by private companies or social economy enterprises. Private users and households can bring end-of-life (EOL) products to the collection points free of charge. Non-private users, such as enterprises and institutes are generally not allowed to return WEEE to collection points; they are usually required to have an individual contract with regional operators to remove and take care of their electronic equipment.

In the smallest or the most sparsely populated Finnish municipalities, the recovery of WEEE has been organised as a mobile collection once or twice a year. Furthermore, since May 1st, 2013, end-of-life EEE can also be returned to the retailers in association with the purchase of a new, corresponding device. Moreover, small WEEE including lightning equipment can be returned with no purchase obligation to the larger shops, albeit it with certain limitations.

Pirkanmaa ELY Centre is the supervising authority that grants approval to producers and PROs and keeps a register of the PROs. PROs have contracts with waste management operators who take care of the actual reuse and recycling operations.

Greenland

There is no EPR scheme in Greenland for WEEE. WEEE products must be submitted separately to the municipalities' transfer stations or sites.

Iceland

Prior to January 2015 there was a special EPR scheme for WEEE in Iceland similar to the scheme in Norway. In 2008, a special producer responsibility scheme for EEE waste was initiated. The scheme was supposed to be fully operated by the

producers alone. Each producer responsibility scheme was supposed to collect waste according to its members' market shares and if a certain PRO did not collect enough waste it was supposed to pay a fee for the collection and management to the other PROs. In the law there was a condition that each PRO was supposed to collect waste from all municipalities in Iceland. There was also a condition that only one PRO was permitted to have a collection agreement with recycling stations operated by or for each municipality.

In the beginning, there was only a single PRO. Some producers wanted more competition in the market and founded a competing PRO. The requirement that each PRO was supposed to collect waste around the whole country was impractical. The fact that municipal collection stations were not allowed to have contracts with more than one PRO at the time made it almost impossible for more than one PRO to fulfil its quota and requirements. What's more, the settlement system between PROs mentioned above never worked in practice.

Today, the original scheme has been incorporated into the IRF scheme described above in the context of packaging waste. In all main respects, the scheme for WEEE within the IRF is the same as for other waste streams.

According to the amended Act, producers and importers can nevertheless operate their own EPR scheme for WEEE and get a refund from the IRF. However, it is unlikely that they will do so, primarily due to practical and cost considerations.

Norway

In 1999 the importers and distributors of EEE products entered into agreements with the Norwegian Environment Agency which made them responsible for the collection and recycling of WEEE, for both commercial and household waste. In order to carry out their responsibility, the importers and distributors established recycling schemes. Today, the collection of WEEE is regulated in the waste regulations, and the aforementioned agreements have become superfluous. The regulative framework for WEEE is currently being reviewed in Norway.

Distributors are to accept the return of EE equipment from households free of charge at the shop's premises. Moreover, the municipality has an obligation to ensure that sufficient provision exists for the reception of WEEE. The producers and importers have to ensure that WEEE is sorted, stored and forwarded. Quotas for the collection of WEEE are set by the Environment Agency.

There are five recycling schemes for WEEE in Norway: Elretur AS, Elsirk AS, ERP Norway AS, Eurovironment AS and RENAS AS. However, since Eurovironment AS and Elretur AS have the same owner, only four recycling schemes actually compete with each other.

Sweden

WEEE originating from households is differentiated from other WEEE. However, WEEE from households also covers WEEE from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households.

Producers are required to either set up a collection scheme or to ensure that somebody with authorisation to run a joint collection scheme undertakes to handle the producer's products when they become waste, in addition to the producer's share of the historical EEE waste.

Collection systems are required to have nationwide coverage and to be adequate in order to be authorised, and municipalities and existing authorised collection systems must be consulted in the same way as collections systems regarding the Swedish EPR scheme for packaging waste, as described in Annex III. As of October 1, 2015, stores selling electrical products will be obligated to accept EEE waste from consumers.[319]

El-kretsen i Sverige AB (El-Kretsen)[320] offers a collection system that has been designed in close cooperation with the Swedish municipalities and they provide approximately 1000 collection points, usually at municipal recycling centres. The municipalities' cooperation with El-kretsen has taken the shape of a partnership called Elretur**.** The partnership means that the municipalities provide and pay for manned collection sites where households can return their old electrical products for free. Meanwhile, El-kretsen is required to arrange and pay for the transport and further treatment of the collected WEEE. Apart from the collection system at the municipal recycling centres, El-kretsen provides services to individual companies as well and, in some areas, kerbside collection in cooperation with municipalities.

Elektronikåtervinning i Sverige Ekonomisk förening (EÅF)[321]offers, in competition with El-Kretsen, producers a collection scheme mainly through collection points at some of the members' shops.

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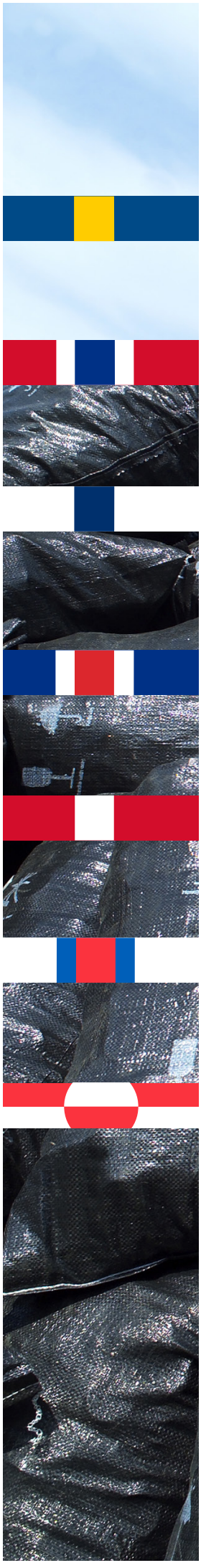
[319] The obligation applies to stores with a retail area just for electrical equipment of at least 400 m^2 and it is applicable even if the consumer does not purchase anything. However, they will not be obliged to accept EEE waste products if the size of the product exceeds 25 cm in width, depth and height. In addition to this obligation, all stores, even those smaller than 400 m^2, are obliged to accept EEE waste according to a one-for-one exchange principle, i.e. they have a duty to accept EEE waste from consumers that buy a new product of the same type or function.

[320] El-Kretsen is a privately owned company. The owners consist of 21 trade organisations, which represent member companies active in different markets and sectors, all of whom are producers, according to the definition set out in Ordinance (2014:1075) on producer responsibility for electrical products.

[321] EÅF is a member association. Its members are at the same time affiliated producers but EÅF also offer its services to affiliated producers.

El-kretsen and EÅF have set up WEEE Clearing in Sweden, a non-profit organisation (WEEE Clearing) to provide a financial clearing system which aims to ensure that each collection system bears the costs of collecting and recycling their share of the discarded products in relation to the combined market share of products sold by the respective collection system's members.

Both EÅF and El-Kretsen procure the treatment and recycling of the EEE waste that is channelled through their respective collection systems. At the treatment facilities or recycling plants the waste products are sorted and dismantled. The disassembly is carried out partly to remove hazardous materials and components that require special handling, and partly to separate materials such as metals and plastics to enable them to be effectively recycled in processes that are specific to each material. The secondary raw materials that are recovered in the process, for example metals, are then sold. Other materials, glass for example, is crushed, washed, melted down and reused.



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