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A comparative study of the implementation of the EC Waste Electrical and Electronic Equipment Directive in Sweden and Hungary – Common objectives, different approaches

Miriam MÁRKUS-JOHANSSON

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Miriam MÁRKUS-JOHANSSON

Table of Contents

List of Abbreviations

EEC	European Economic Community
EEE	Electrical and electronic equipment
EC	European Community
ECJ	European Court of Justice
EPA	Environmental Protection Agency
EU	European Union
EOL	End-of-Life (treatment)
EPA	Environmental Protection Agency (Naturvårdsverket)
EPR	Extended Producer Responsibility
IPR	Integrated Producer Responsibility
KvVM	Környezetvédelmi és vízügyi Minisztérium (Ministry for Environmental Protection and Water
LCD	Liquid Crystal Displays
NVMP	Netherlands Foundation for the Disposal of Metal and Electrotechnical Products
OJ	Official Journal of the European Union
SWICO	Swiss Association for Information, Communication and Organisational Technology
WEEE	Waste electrical and electronic equipment

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Miriam MÁRKUS-JOHANSSON
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The EC Directive on Waste Electrical and Electronic Equipment (WEEE) introduced producer responsibility for the financing and treatment of WEEE in the EU. Most of the Member States did not have producer responsibility legislation in place before and the implementation has been a resource-demanding and strenuous process.

The main objective of this thesis is to give the reader an insight to the implementation by, first, giving a brief account of the overall implementation in the EU and secondly, to carry out a comparative study of the implementation in Sweden and Hungary. The author has chosen to compare an „old" Member State (Sweden) with a "new" Member States (Hungary). Although, they have some features in common, there are important differences in terms of existing waste management infrastructure, access to public funding, political and legal framework and consumer awareness. The rationale was to abstract some wisdom and experience of the EPR system for WEEE in Sweden and translate them into recommendations for Hungary.

The main findings of the thesis show that, although, indeed Hungary can learn from Sweden in several aspects, the Swedish system also has its weaknesses and can learn from Hungary as well. The largest differences between the implementation in Sweden and Hungary include the choice of system (e.g. competitive multiple collection schemes or one single nation-wide scheme), the interpretation of the provision of financial guarantees, the size of the national EEE registers and the effectiveness of the compliance system.

The thesis also illustrates a divergent and, at times, inconsistent implementation. Member States have an inclination to interpret the Directive to fit the national and local context and the existing waste management infrastructures. There are also ample problems, which virtually all Member States grapple with, such as free-riders, compliance issues, equity of financing systems, and recyclability issues. The thesis demonstrates that there is no one-size-fits-all EPR policy for WEEE but there is a need for greater clarity and guidance on certain issues. This thesis, contributes to bringing further understanding of the implementation in Sweden and Hungary highlighting some of the major advantages and shortcomings.

Keywords: European Union, environment, waste management, extended producer responsibility, waste electronic and electrical equipment, EC WEEE Directive, implementation, end-of-life treatment, collection, recycling, design change, individual and collective responsibility

1. Introduction

This chapter gives a description of the situation leading to the adoption of the WEEE Directive, as background to the thesis topic. It is also sets out the objectives and aims of the research. Finally, the chapter also gives a brief outline of the thesis content.

1.1. Background

Discarded electronic and electrical equipment, such as old mobile phones, refrigerators, TV sets, PCs, household machines belong to a waste stream, which is growing at an alarming rate both within the EU and globally. According to Bizo (2006), it is estimated that more than 10 million tonnes WEEE are produced in EU ever year. From 1990 to 1995, the amount of waste produced in the EU increased by 10 percent and by 2020, we could be generating up to 45 percent more waste compared to the 1995 baseline[1].

To exacerbate the problem, waste electronic and electrical equipment (WEEE) are complex products comprised of many different materials, including toxic elements, which renders waste management and disposal more difficult and costly. At the same time, there is a growing potential for increasing recycling rates, limiting the use of virgin natural resources and innovation into more environmental friendly products. EU waste management hierarchy, pursuant to Directive 75/442/EEE on waste (as amended by Directive 91/156/EEC), is ranking the preferred waste management options, with prevention and reduction at source as the most favourable options, followed by reuse and recycling and final disposal such as landfilling and incineration are the least favourable. Hence, the EU is interested in creating incentives for increasing the amounts of WEEE recycled as well as to, in the long-term, improve the composition of EEE to include less mixed components and less hazardous substances.

To address this issue the EU adopted Directive 2002/96/EC on waste electrical and electronic equipment (WEEE directive), which aim at reducing the adverse environmental impact of current management of WEEE both at end-of-life and at the design phase. By imposing extended producer

[1] These figures were obtained on the website of DG Environment. URL: http://ec.europa.eu/environment/waste/index.htm [consulted 7 June 2007].

responsibility (EPR), WEEE manufacturers and retailers are obliged to take-back WEEE at end-of-life, free of charge, from consumers and to ensure that recycling is the preferred option for treatment[2]. The WEEE Directive takes a novel approach to EU waste policy as it is aims at minimize waste generation, ensure environmentally sound treatment of WEEE and to give incentives for designing products that have less adverse impact on the environment. Member States had to ensure full implementation of the WEEE Directive by 1 January 2005.

However, given the novel approach and the scope involved, it is not a small task for the Member States to implement it in an efficient and timely manner. Thus, the implementation differs between Member States, depending upon the legislative and administrative framework, the waste management infrastructure (e.g. whether there is capacity for large-scale recycling), the knowledge of authorities and experts and the environmental awareness of the public. It is expected that another couple of years will be required before all Member States have introduced all relevant legislation and compliance procedures including EEE registers and monitoring systems.

It is also anticipated that the market will develop and consolidate as the WEEE collective systems mature. Both governments and industry seems to prefer an approach based on 'learning by doing' and that there is a degree of benchmarking of and diffusion between efficient schemes (AEA Technology 2006). Hence, it is useful to perform comparative studies between the implementation in Member States to identify efficient and less efficient features of the various national WEEE systems. Examples of such studies include those by AEA Technology (2006) and Kollberg (2003). The results of such studies form an important part of the learning curve. Hence, by comparing and analysing the legal and practical implementation of the WEEE Directive in Sweden and Hungary, including the EPR systems put in place, it is possible to identify both advantages and shortcomings. These results will contribute to the existing knowledge of EPR systems for WEEE. They also provide various stakeholders with important case-studies which could be further analysed, particularly anticipating the upcoming revision of the WEEE Directive.

[2] At the same time, the European Union (EU) adopted Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS directive). The RoHS directive goes one step further then the WEEE Directive and requires industry to gradually phase-out toxic materials and substances in their products, providing incentives for producers to design products with fewer toxic elements, which are easier to dissemble and recycle and which have less environmental impact during manufacturing processes.

1.2. Aims and objectives

This thesis explores the implementation of the WEEE Directive in the EU Member States with main focus on the legal framework and practical arrangements for the collection and treatment of WEEE in Sweden and Hungary. The main aim is to analyse and compare common traits and differences of the Swedish and Hungarian WEEE systems, with a view to draw some important conclusions, which can serve both as lessons learned and as guidance for further improvements. Both the legal framework and practical arrangements will be analysed thoroughly to give a holistic view of the relevant systems.

The following issues will be dealt with:

- Describe the general status of implementation in the EU, including common traits, differences in the various national WEEE systems, problem areas and opportunities
- Identify the common traits and differences in the Swedish and Hungarian implementation
- Assess whether the Swedish and Hungarian WEEE systems are user-friendly and efficient
- Assess whether the Swedish and Hungarian implementation attains EC environmental objectives

The research takes an empirical approach rather than a theoretical one. The sources used are primarily legal texts, explanatory documents, research studies and data extracted from interviews. Although, there are a handful of studies addressing the WEEE EPR system in Sweden, there are very scarce sources regarding Hungary. Mainly the chapters on EPR policies and the current status of implementation in the EU are grounded in the results and theories developed by academia and researchers.

1.3. Outline of thesis structure

Chapter 1 is giving a brief background to the research area and important issues which will be dealt with in subsequent chapters. This chapter also sets out the main aim and objectives with the research.

Chapter 2 contains a literature review, guiding the reader through various concepts and policies on EPR and in particular regarding the collection and treatment of WEEE. This chapter maps out research already undertaken and the contributions the thesis sets out to give.

Chapter 3 begins with providing a conceptual framework for the research focusing on the problematic issues associated with the implementation of EU environmental law. This chapter also describes the methodology undertaken and gives a general account of methods employed for data collection and data analysis. It is particularly emphasised that a comparative approach is taken.

Chapter 4 is providing the reader with an introduction to the EC WEEE Directive. Since it is a rather complex piece of legislation and the concept of EPR is relatively novel, it is important to give an account of the objectives of this legislation, the main content and the obligations on part of the producers.

Chapter 5 sketches out the general implementation in the EU Member States, highlighting specific problems and trends. It shows that some areas Member States are opting for similar arrangements such as the preference of collective WEEE schemes over individual responsibility. On other issues, such as the scope of financial guarantees and the definition of producers, the interpretation is versatile.

Chapter 6 is the first chapter where I contribute with my own findings based on interpretation of national legal texts and information obtained through interviews and other research material. The chapter begins with introducing the reader to the waste management situation in Sweden and Hungary. It then, moves on to analysing the national implementation of the countries, identifying similarities and differences.

Chapter 7 focuses on the practical arrangements taken to ensure that producers manage and finance the collection and treatment of WEEE. It gives examples of coordinating organisations and provides a brief account of the collection systems in place. It also analysis the treatment requirements, the general practices in the recycling industry and the possibilities and constraints facing the recycling industry.

Chapter 8 contains the most important findings of the thesis, focusing on particular problem areas as well as successful components. The systems in the two countries are compared and conclusions drawn. This chapter also contains some general recommendations targeted to policy makers and two the producers. Finally, an indication is given for further research.

2. Literature review

Extended producer responsibility (EPR) programmes have existed for almost two decades and a number of product areas are already covered, such as packaging, car tyres, batteries and discarded cars. This chapter is providing a brief account of past research and findings of EPR policies and in particular related to WEEE. It also gives a brief outline of the development of EC environmental policy.

This literature review focuses on the following areas:

- EC environmental policies
- EPR programmes for waste
- Waste management issues relevant to the handling and treatment of WEEE
- Implementation of the WEEE Directive at EU level
- The implementation of the WEEE Directive in Sweden
- The implementation of the WEEE Directive in Hungary

- **EC environmental policies**

The original EEC (European Economic Community) Treaty did not contain any provision on the environment. Environment was brought into the EU policy agenda with the single market. It was thought that the economic objectives with the single market could not be met without incorporating some non-material values such as environmental protection (Lee 2005). The European Union (EU) started to enact environmental legislation under the framework of the First Environmental Action Programme (EAP) in 1973. The EAPs (currently the 6th EAP) set out main objectives and direction for a longer period, which are fulfilled by adoption of mainly directives. Since then EC environmental legislation has independent status and environmental objectives are firmly incorporated into the EC Treaty. Lee (2005) argues that the development of EC environmental legislation has revolved around treaty reform. Lee (2005) states the two main challenges now facing the development of EC environmental law are the stalemate in ratifying the draft Treaty Establishing a Constitution for Europe and the recent enlargement, with 12 new Member States joining the EU.

Waste issues have long been high on the EC environmental agenda, with the framework directive on waste (75/442/EEC) adopted in 1975. Gille (2005) notes that earlier environmental policies and programmes focused on end-of-pipe solutions such as final disposal in landfills or by incineration rather than waste prevention. In 1989, in the aftermath of the Brundlandt Report, a gradual shift was

discernable from end-of-pipe policies to a preventive approach. The Community Strategy for Waste Management established a 'waste management hierarchy' giving highest priority to waste minimisation, followed by reuse, material recovery, energy recovery and final disposal (Gille 2005).

In 1994, the EU started to take steps towards an 'Integrated Product Policy', which essentially aimed at integrating environmental and economic policies. Such policies included eco-taxes, environmental audit systems and EPR programmes. The first on packaging waste came out in 1996. Since then there are EPR programmes for batteries, vehicles and waste of electrical and electronic equipment (WEEE). The principles of the current EU waste legislation are: Prevention Principle, Proximity Principle, Producer Responsibility Principle, Polluter Pays Principle and the Precautionary Principle (the five P's) (Gille 2005).

EC environmental policies have developed from two parallel pathways. Either as legal measures for environmental protection, with a legal basis in Article 175 of the EC Treaty, or as measures facilitating the function of the internal market under Article 95. Weatherill (2005) explains the difference in legal basis and the implications for the shaping of the environmental legislation and for the Member States in its legal transposition. For instance, under Article 175, Member States are allowed to adopt more stringent measures under national law, whereas under Article 95 it is crucial that the implementation is more or less identical in the Member States to ensure a level playing field and to avoid distortion to the competition. Krämer (2003) discusses the decision-making processes in the EU, in related to the development of environmental legislation. In terms of legal basis he distinguishes between production-related directives which largely are based on Article 175 and product-related directives which either can be based on Articles 95 or 175. Waste-related directives falls into the second category as the waste can be traded and is of some economic values. The EPR legislation on batteries and packaging waste was based on Article 95, although the main aim is environmental protection rather than facilitating the internal market. The WEEE Directive was adopted under Article 175 and Member States have a large margin of appreciation in implementing it.

The WEEE Directive contributes to realise a diversion from landfills and incinerators to reuse and recycling, in line with the EU waste management hierarchy, which lists waste management options in order of preference, aiming to promote sustainable waste systems. WEEE is also a waste stream

which is growing rapidly containing hazardous substances, such as heavy metals, brominated flame retardants. Sturges (2001) and Lindhqvist (1998) argue that due to the complexity of EEE, the existence of hazardous substances and the rapid advancement of technology and incomplete information from producers to the treatment facilities, traditional municipal collection and treatment facilities are insufficient nowadays. Furthermore, collection and treatment of WEEE is not only necessary to avoid environmental degradation from landfilling and incineration but it is also important to save valuable resources through recycling.

- **EPR programmes for waste**

There are many studies tackling the general development of EPR for product categories such as packaging materials, tyres, cars, batteries and WEEE. Sturges (2003), Jönsson and Lindhqvist (1998) provide a good analysis of the implementation of EPR policies as well their tangible results. OECD (2001) provided a useful summary of the features of EPR:

- Shifting the responsibility upstream to the producer. The financial and/or physical responsibility of waste management is transferred from municipalities to the producers resulting in internalising these EOL costs into the cost of the product.
- Providing incentives to producers to incorporate environmental considerations in the design phase. According to OECD (2001), producers are taking responsibility "when they design their products to minimise environmental impacts over the products life-cycle and when they accept physical and/or economic responsibility for those impacts that cannot be eliminated by design" (OCED 2001, 18).

EPR programmes also aim at curbing waste production and the decoupling of waste production and GDP as well as to create incentives for producers to invest in more environmentally compatible product design (Sturges 2003). It is compatible with the EU's waste hierarchy, as it promotes waste prevention and reduction, increased use of secondary materials in production and increased resources efficiency (OECD 2001).

Another recurring issue in the EPR debate has been whether to assign producers the full responsibility for EPR waste encompassing both the **financial and physical responsibility**. Full responsibility means that producers should not only cover the costs of collection, recycling or final disposal but also be involved in the actual physical management of the waste (Lindhqvist 1998).

Under conventional waste collection schemes it has been the task of municipalities to finance and carry out the physical responsibility for collection, treatment and disposal. However, producers and scholars alike consider that municipalities do not have the incentives to tackle EPR waste at the design phase. For instance, Serret (1998) notes that only under certain circumstances are municipalities ready to shift from incineration to recycling.

- **EC environmental legislation and the implementation deficit**

Lee (2005) and Krämer (2003) describe the general implementation process in the EU. As noted by Krämer (2003) Treaty articles do not have to be implemented, although Member States have to refrain from introducing national legal measures which compromise or renders more difficult for the EU to introduce more stringent environmental requirements. However, secondary legislation, such as directives, has to be transposed into national legislation. It is not sufficient to implement an EC measure through a policy or administrative tool, it must be based in law, especially since many directives give certain legal rights to physical or legal individuals, which have to be protected (Krämer 2003).

Member States have to transpose all the requirements of a directive including definitions. However, as noted by Krämer (2003) the European Court of Justice (ECJ) has not yet had to make a ruling on the transposition of definitions of a directive into national law. To ensure that there are as few differences or linguistic variations in key definitions such as of "waste" and "hazardous waste", the Commission is of the position that such definitions have to transposed word-by-word into national laws (Krämer 2003). Krämer (2003) states that the transposition must not only be in the form of a legally binding instrument but must also cover the whole territory of the Member State. Furthermore, a correct transposition also requires efficient and dissuasive sanctions for non-compliance with EC environmental provisions.

Krämer (2003) states that the implementation is not complete unless the national authorities ensure that the legal provisions are applied by all relevant subjects. The practical application is not satisfactory and constitutes one of the main reasons for the 'implementation deficit' (gap). Krämer (2003) notes that the application of EC environmental is disadvantaged by the fact that "environment" legislation, compared to transport, agricultural, and industry legislation, does not have a strong vested interests defender (i.e. strong lobbying groups). Krämer (2003) continues that there

is a difference in attitude towards environmental protection. In the northern countries environmental protection is often seen as equal important to economic development. However, in the south, the general attitude among economic operators is that economic progress is first priority and only after a certain economic level has been attained is it necessary to tackle environmental problems. This is also a common viewpoint in the Central and Eastern European countries.

The implementation deficit is a serious problem, not only because it jeopardises the attainment of important EC environmental objectives but also because it undermines the credibility of directives as a legal instrument and the EU as administrative institution (Lee 2005). The enlargement has rendered the situation and magnitude of the problem even worse. Successful implementation largely depends upon the political and public resources of Member States. The new Member States which recently have finalised the transposition of the environmental acquis do not have the human, financial and institutional resources that would be required (Lee 2005).

- **Implementation of the WEEE Directive by the Member States**

AEA Technology (2006) in association with the Regional Environmental Centre for Central and Eastern Europe on behalf of the Joint Research Centre provides an extensive study of the implementation of the WEEE Directive in 25 Member States (not including the two newest Member States: Romania and Bulgaria). This report identifies national regulatory and management approaches to WEEE EPR schemes mainly in the EU but also in a few non-EU countries. It provides a compressed and concise analysis of key trends as well as identifies the most important benefits in the WEEE systems as well as main problems. This report was commissioned by the Joint Research Centre and provides important data in the Commission's work with the upcoming revision of the WEEE Directive. Particularly in terms of opportunities for further harmonisation measures and improvements of the current system in order to address problem areas and inefficiencies.

Van Rossem *et al.* (2006) also analyses the implementation of the WEEE Directive in the EU. Van Rossem *et al.* (2006) particularly assess whether the current the implementation supports individual producer responsibility, i.e. individual, brand-specific collection and recycling schemes, in contrast to collective schemes where many producers share this responsibility within the framework of a collective system. One important finding of this study is that the implementation and in particular the choice of financing schemes for 'new and 'old' WEEE and the form of the financial guarantee,

largely determine whether producers opt for collective or individual responsibility. It is shown that virtually no Member State has implemented the WEEE Directive in a way to give concrete incentives for producers to choice individual responsibility. Subsidising collection of WEEE, mainly through national non-competitive collection schemes, also acts as a powerful disincentive for establishment of individual or alternative systems. Van Rossem *et al*. (2006) conclude that the inadequate transposition is jeopardising one of the objective of the WEEE Directive, i.e. to give incentives for design change and more environmentally friendly products.

One clear advantage of individual responsibility, which was foreseen already in the preparatory phase of the WEEE Directive, is that it gives an incentive for the producer to make design changes to minimise the costs for end-of-life management. Such changes can facilitate the recycling (materials, models which are easier to dismantle, recyclable materials), reduce the environmental impact during its final disposal (substitute heavy metals or other toxic materials or substances which are toxic to health or the environment) or even come up with alternative solutions such as „dematerialisation", e.g. provide services rather than sale of products. As claimed by Van Rossem *et. al (*2006) it is often assumed by government, academia and experts that collective responsibility does not provide incentives for design change since producers may be discouraged to spend extra resources on making their brands more environmentally sound if they anyway have to contribute to cover the higher EOL costs for less environmentally friendly products of the competitors' brands. A producer of an individual scheme is also in full control of its costs and products and by taking-back discarded WEEE he/she is giving incentives to customers to buy a new one (ENDS Report 2002).

The most important downside with individual schemes, especially in a country with a large territory with low-density populations, is the high costs incurred for collection and logistics (ENDS Report 2002). These costs will eventually carry over to the consumers, which face higher prices for EEE. Individual schemes neither solve the problem with orphan products as they only aim at collecting WEEE of own brands. A further disadvantage of individual responsibility is the obligation to provide for sufficient financial guarantee to ensure that there are enough resources to cover the EOL costs. It is difficult to estimate the real price of EOL for long-span products and it is necessary to ensure sufficient resources for WEEE from companies that have ceased to exit. Although, there are a few instruments to address these problems, for instance by setting up an EOL designated fund or through

private insurances, a collective scheme offers better guarantee that funds will exist for the coverage of EOL costs, taking into account orphan WEEE as well as increase in EOL management costs.

Collective systems are capable of bringing about administrative efficiency and costs-efficiency through the collaboration between many producers, in terms of sharing and maximising capacity and resources, a common EOL management infrastructure and a greater power when negotiating with EOL operators (Tojo *et al*. 2001). Especially, larger collection and recycling schemes, including pan-European, can provide economies of scale, where the mere volume of management and the infrastructural arrangements (e.g. outsourcing a part of the waste management, such as the collection, to municipalities which already have made investments into trucks and other infrastructure for collection and sorting) result in cost efficiencies. Collective schemes are also more capable of collecting large amount of WEEE as well as ensuring high rates of recycling. From the perspective of the consumer and the private household, it may be more convenient to have on single collection point rather than returning the waste to each single producer. Especially if the consumer does not desire to purchase a new one, as producers only are legally required to take-back WEEE upon purchase of a new. The two main disadvantages of collective responsibility is the lack of incentives for design changes, due to collective fee structures, which normally do not reflect to what degree a product adversely impacts the environment (e.g. toxic substances, high energy consumption at the use phase, non-recyclable components) (Tojo *et al*. 2001)

- **Implementation in Sweden**

At international level, the report of AEA Technology (2006) covers very few aspects of the Swedish implementation. At national level, there are a few Master theses and PhD dissertations covering the WEEE Directive and its implications for Sweden. Kollberg (2003) in her MSc thesis performs a comparative study of the implementation of the WEEE Directive in Sweden and the United Kingdom with the main aim to determine whether the national WEEE EPR schemes are contributing to environmental improvements and whether design changes are being realised. This research is giving a good account of the Swedish WEEE system, especially regarding the operations of the various stakeholders, such as waste management handlers. One of the conclusions of Kollberg (2003) was that the Swedish EPR system for WEEE did not fully meet the objective of prevention and stimulation of eco-design and that there were ample potentials for improving the environmental effectiveness of EPR programmes. She states it is possible that the potential for EPR to stimulate

waste minimisation (e.g. through design change) may be limited due to the large quantities of historical waste. Local authorities and industry seem to focus on dealing with the existing waste in an environmentally sound manner. Furthermore, Kollberg's study is predominantly focusing on stakeholders' opinion of the WEEE EPR system and does not consider the legal aspects in depth. Finally, the thesis was written on the basis of the EPR legislation for WEEE enacted in 2001 and does not cover the Swedish legal provisions transposing the WEEE Directive into to the Swedish legal system. Kollberg (2003) particularly dealt with one criteria of EPR programmes: to improve environmental effectiveness. She called for further research into other criteria such as economic efficiency, since costs are one of the most important factors for industry in implementing EPR programmes.

Tojo (2004) analysed a number of EPR programmes, including those in Sweden and Japan, with a view to identify incentives for producers to undertake design changes to reduce the environmental impact of products. She concludes that there is empirical evidence that EPR legislation is one important factor promoting upstream changes to the environmental performance of products. Furthermore, Tojo (2004) found that take-back requirements also result in investments into downstream infrastructure.

To put the WEEE implementation into a broader context, Lindhqvist (2000) provides an overview of the origins of EPR programmes in Sweden. The concept of EPR was first brought before the Swedish government in a report entitled Models for Extended Producer Responsibility[3]. This report gave rise to a number of steps by the Swedish government, including drafting a proposal for introducing EPR for producers of packaging. It was perceived that producer should have full responsibility as they, in their capacity as designers of packaging, had most influence over the environmental impact of packaging. The government took the view that it was impossible for the public authorities to track and evaluate environmental impacts of various substances and products. The 1993 Ecocycle Bill (Proposition 1992/93:180) proposed changes to the existing waste legislation facilitating the introduction of producer responsibility.

[3] Lindhqvist, T. and Lidgren, K. 1990. Modeller för förlängt producentansvar (Models for extended producer responsibility). In Ministry of the Environment, Från vaggan till graven – ses studier av varors miljöpåverkan (From the cradle to grave – six studies of the environmental impact of products). Ds 1991:9, pp16-17.

- **WEEE implementation in Hungary**

There are no known academic or practical studies of the implementation of the WEEE Directive in Hungary. The AEA Technology (2006) study only identifies the main Hungarian legal provisions transposing the WEEE Directive and a few collective schemes involved in the collection and recycling of WEEE. Details on the collective schemes in Hungary are mainly found on the websites of the five coordinating organisations (Elektro-Coord, Comp-Cord, Ökomat, Re-Elektro and Elektro-Waste). However, this information mainly stipulates the requirements under the WEEE Directive from the point of view of the participating producers.

In terms of general information on the waste management situation in Hungary, Gille (2005) is providing a good overview over the situation leading up to and following Hungary's accession to the EU. She is claiming that one reason why Hungary's waste management policies were lagging behind is that that throughout the enlargement negotiations EU sent mixed messages to Hungary, which as a consequence, seems to have shifted its waste management policies from a preventive approach, which prevailed up until the late 1980's, to end-of-pipe solutions for which EU is providing financial funding (Gille 2005).

- **The present research**

This thesis adds to the existing research in terms of providing a comparative study of one 'old' Member State and one "new", countries with different political and cultural background. It also looks into the cost-efficiency aspect especially in the sections on financial systems in Sweden and Hungary. It is possible to conclude that financial reasons in both countries have been one of the most important factors shaping the current WEEE systems. Furthermore, the thesis gives an insight to both legal and practical aspects of the implementation.

3. Methodology

This chapter describes the conceptual context, methodology and the overall research approach in terms of collection and analysis of data. It provides justification for the choice of research area and geographic area. It also gives a framework for the research as well as delimitations.

3.1. Conceptual context

It is important to understand something about the implementation process and some of the current implementation issues which the Member States face. First, it must be emphasised that implementation means more than a transposition of a legal text. Implementation encompasses not only the legal transposition but also compliance checking and compliance promotion.

With a few exceptions the predominant EU environmental legal measure is the directive. Directives are not directly applicable to the Member States and the legal and physical entities therein, in contrast to regulations, which are directly binding and do not require any implementation on part of the Member States. Directives do not consist of precise requirements but rather form framework legislation with main objectives, definitions, targets and an implementation deadline. Hence, Member States have a rather large discretion in implementing directives, taking into account local circumstances. Furthermore, environmental directives adopted under Article 175 of the Treaty (on grounds of environmental protection) only set out minimum requirements and Member States can decide to introduce more stringent provisions. These factors result in slightly different levels of environmental protection across the EU, often with higher standards in North and more lenient in the South. It is also expected that most of the new Member States from Central and Eastern Europe will belong to the camp of countries only adopting the minimum requirements.

Member States are not always diligent in ensuring a timely and accurate implementation of EU environmental legislation. Since transposition normally requires some type of positive action on part of the Member States, such as the establishment of waste management infrastructure, ample financial resources are also required. Member States with restricted financial resources and with other important priorities may stall the implementation as long as possible. Key definitions can also be misinterpreted and linguistic differences can cause further barriers to a correct implementation.

Furthermore, a word-by-word translation of a piece of environmental legislation, does not necessarily guarantee a timely and accurate implementation. It is crucial that the implementation ensures that all set objectives are met and that it fits to the national legal and administrative system.

Krämer (2003) states that it is not sufficient that Member States transpose EC environmental provisions into national law. Member States must also ensure that this law is applied and enforced by all relevant subjects and authorities (Krämer 2003). In fact, the practical application of environmental provisions is the most serious problem which the national and EC law face nowadays. It is now the paramount task of the EU and the national authorities, particularly of the new Member States, to ensure that the environmental acquis is not only transposed but also applied by all persons and entities affected.

A part of incomplete implementations come to the attention of the European Commission, normally as complaints by other Member States, legal entities, environmental NGOs or through the Commission's own investigations. However, it is plausible to believe that a large part is not detected by anybody. One could talk about an implementation gap, a grey area, in which EU environmental legislation is not fully implemented and applicable. Wherever the Commission has reason to believe that an environmental directive has not been fully or accurately implemented it can issue a reasoned opinion, detailing its concerns and requesting the Member States to take corrective measures within a given deadline. Where such action is not taken, the Commission can take the country to the European Court of Justice. If the European Court of Justice decides that a Member State has failed to implement a directive, it can impose a fine and orders it to take corrective action. Most Member States have been subject of such proceedings at least once and it is not necessarily only Member States from the South which are sloppy in their implementation. Also countries from the North can misinterpret certain legal requirements or lag behind with their implementation efforts. It is important to guard from too large of a differences in the implementation and interpretation of environmental rules between the Member States. Such differences can have adverse effects on the functioning of the Internal Market, the competition between companies and in general compromise environmental objectives.

Another issue, pointed out by Krämer (2003) is that national environmental law has been developed and elaborated over the years into a structured system with which EC environmental policy does not always fit. This problem is bound to be larger in the new Member States than in the old Member States, which have already experienced 20 years or more of EC environmental policy. Also, as pointed out by Gille (2005) former socialist countries initially built up a different type of environmental policy, which in the case of Hungary, prioritised certain objectives such as recycling of industrial waste. These policies had to be revamped during the accession process, to ensure that the environmental acquis was fully transposed into national legislation. It will take some time before the administrative structures and sanction systems will catch up with the legal provisions.

The implementation has to be monitored both by the Commission and the national authorities. On the basis of national reports, the Commission produces an EU report on the implementation of the directive in question. As Krämer (2003) states the EC requirements on implementation reports are not sufficient to assess the implementation. The national reporting lacks in data and precision and it is not possible to measure the real state of implementation. For some pieces of environmental legislation, such as the WEEE Directive, the Commission has conducted studies of its own. However, Krämer (2003) underpins that the value of these studies are compromised by the fact that it is difficult to gain access to accurate, up-to-date data from the national, regional and local authorities. These authorities are not keen on revealing any information providing evidence that the Member State is not properly monitoring or applying a directive.

However, even if these studies are not providing the full picture of the implementation, they are useful as indicators. The European Commission commissioned AEA Technology to undertake an in-depth study of the implementation of the WEEE Directive in the EU. Moreover, a new study has been contracted which will complement these results. The study of AEA Technology (2006) clearly demonstrates the interpretation of the provisions of this directive is diversified across the EU, also in regard to key definitions and obligations. The general lack of recommendations from the Commission and the different legal, political and financial context in the 27-member EU could jeopardise some of the objectives of the directive, such as ensuring high collection and recycling rates, contributing to waste prevention and to the innovation of products with less adverse environmental impact.

This thesis will look into the implementation in Sweden and Hungary. Although, it is probable to expect some shortcomings in the figures and data obtained from the authorities and producers involved, it gives a good indication of the main issues these countries face. Finally, I believe that comparative studies of the implementation of EC environmental legislation is an important tool in shedding light on problematic and controversial issues as well as contributing in the formulation of environmental policy.

3.2. Selection of research area and geographic area

The product group of WEEE has been selected as this is a waste stream of growing concern. It is also the newest product group to which EPR legislation has been extended. The results of the study of AEA Technology (2006) clearly shows that Member States are in the beginning of a long learning process in understanding and making EPR schemes for WEEE both environmentally effective and cost-efficient.

The reasons for selecting Sweden and Hungary for this research project are multiple.

Firstly, this is the first study comparing the WEEE implementation in these two countries.

Secondly, there are many interesting differences between the two countries. The most notable differences include the availability of public funds for financing of waste management, the size of the EEE market, the territorial size of the country, the choice of collective schemes, the financing system and the current collection and recycling rates. For instance, whereas, Sweden has already developed an efficient collection and management infrastructure for municipal waste, resulting in high collection and recycling rates of WEEE, Hungary still has a long way to ensure efficient waste management, capable of attaining equally high rates. The Swedish EEE market is also larger, partly due to its larger territorial surface but also its historical past as a hot-spot for the IT and EEE industry. 1700 producers are registered to the EEE register in Sweden, compared to 720 in Hungary. Hungary has opted for a clearing-house system with multiple, competitive coordinating organisations, whereas Sweden has opted for a nation-wide, non-competitive collective scheme.

Thirdly, it is useful to compare Hungary's implementation with the one in Sweden since the Swedish WEEE system is rather mature, having been in operation since 2001, whereas the system in Hungary has only been in the operation since mid-2005. It is possible to draw important conclusions from the Swedish system which can be useful in Hungary in their continuous work to extend and ameliorate

the EPR system for WEEE. However, it is also possible that a fresher approach in Hungary and the entrepreneurial spirit prove beneficial for the WEEE system and the recycling market.

3.3. Overall research design

Given that this thesis aims at comparing the Swedish and Hungarian implementation of the WEEE Directive, the research had to be designed around this comparative approach. A large part of this thesis is designed to analyse the Swedish and Hungarian systems, both in comparison to each other and in comparison to the wording and spirit of the WEEE Directive. Thus, before analysing the particular implementation in Sweden and Hungary, the first two chapters describe the objectives and content of the WEEE Directive and the implementation status in EU as such. These two chapters are heavily grounded in the text of the WEEE Directive, guidance published by the European Commission and research studies (e.g. AEA Technology 2006 and van Rossem 2006).

The chapters describing the implementation efforts in Sweden and Hungary are mainly based on archival research, as a primary source of information, and personal interviews as a complementary source. In terms of archival research, the main sources of information comprise legislative acts, explanatory documents, consultancy studies, press releases, news articles and information published on-line. There was a general lack of academic articles in the field, particularly for Hungary, where most information was obtained through the websites of collective schemes, new articles and interviews.

3.4. Methods of data collection

- **Archival**

The main bulk of information in this thesis derives from archival research. The most important source of information is the legislative acts themselves: i.e. the WEEE Directive and the Swedish and Hungarian implementing legislation. This constitutes a primary source of information, which represented the highest value in my research. This thesis also heavily draws from explanatory documents and studies written by the EU institutions or organisations contracted by the European Commission. For instance, the study by AEA Technology provides a good overview of the general implementation of the WEEE Directives in the Member States. However, it is not very specific to

Sweden and Hungary, and thus, information had to be collected elsewhere. In terms of Sweden, given that EPR for WEEE has existed since 2001, there are a number of good sources of information, including the PhD thesis of Tojo (2004) and the MSc thesis of Kollberg (2003), a number of studies carried out by the Lund University and explanatory information provided by the Environmental Protection Agency and El-Kretsen AB. This information covers recycling shares, the functioning of the collective WEEE system, and the administrative supporting structures.

However, the information is much scarcer for Hungary. It was not possible to identify one single study which had dealt with the WEEE implementation in Hungary, including master theses and PhD theses at CEU. Hence, the information was mainly acquired by interpreting the implementation legal texts. In addition, newspaper articles, other journalistic material and the information provided by the Hungarian collective schemes made up the bulk of information. All these texts were in the Hungarian language, which I translated into English. Overall, the lack of good, up-to-date information on the WEEE implementation and the WEEE EPR scheme in Hungary constituted a major barrier to this research, which mainly was remedied by conducting personal interviews.

- **Interviews**

In addition to the archival research, a number of interviews were carried out. The purpose of these interviews was different for the two countries. In Sweden, the two interviews conducted with the EPA and El Kretsen mainly served to give a personal perspective to existing information. However, in Hungary, the interviews were imperative for obtaining first-hand, up-to-date and reliable data. Hence, it was considered necessary to at least carry out interviews with the main stakeholders in Hungary, including the National Inspectorate for Environment, Nature and Water and the coordinating organisations.

In general, the interviewees were first contacted by email and appointments were made for personal interviews. These interviews were largely conducted on the basis of a few pre-prepared questions (see Annex), with a view to increase the reliability of the research. I found it important to ask more or less the same questions to be able to make a valid comparison of the two EPR systems.

However, the number of interviews in Sweden and Hungary was not the same, with most of the interviews carried out in Hungary. Although, the financial constraints to a large number of interviews

in Sweden constituted one explanation, the main reasons was that it was more important to focus on Hungary, given the poor information at hand on its implementation. Initially, it was foreseen that 8 interviews were to be carried out in Hungary. However, a number of interviewees were cancelling the interview and it was in general difficult to find persons willing to participate in an interview. Hence, the final number of interviews was five. It would have been particularly useful to conduct interviews with waste management experts from the National Inspectorate and/or the Ministry of Environment and Water. However, despite help from a former high-ranking official of the National Inspectorate it was not possible to arrange such interviews. The interviews with Hungarian interviewees were conducted in English and the interviews in Sweden in Swedish. There were no issues of anonomity and all persons interviewed were very open and willing to share their knowledge and experience.

Table 3-3: List of interviewees

Organisation	Time and date	Name and position of interviewee
Swedish Environmental Protection Agency	10:00-11:00 22 May 2007	Helen Lindqvist, Case Handler
El-Kretsen AB	16.30-17.30 21 May 2007	Jan-Olof Ericsson, Managing Director
Deloitte RT	13:00-14:00 16 May 2007	Róbert Reiniger, Director Gergely Jancsar, Consultant
Electro-Coord Kht	11.00-12.00 19 June 2007	Enikő Hajósi, IT Manager
Comp-Cord Kht	8 June 2007	Rézső Berenczei, Managing Director

3.5. Methods of data analysis

Data was analysed objectively and put into a comparative perspective. The main objective was not to identify correct or incorrect implementing measures or approaches but to identify major similarities and differences and analyse what these mean for the overall efficiency and functioning of the WEEE EPR systems in Sweden and Hungary. In order to provide for a broader basis of comparison and understanding, these two national systems were analysed in the context of the implementation of other Member States to facilitate comparisons with main stream approaches, trends and other prevailing tendencies within the EU.

3.6. Delimitations:

Initially, the ambition was to have the comparative study encompass the RoHS Directive, as it supplements WEEE directive to ensure an efficient EPR system. RoHS chiefly contains provisions on restrictions of harmful substances or materials incorporated into electronic or electrical equipment, which creates incentives for producers to design products not incorporating hazardous materials and substances. However, the implementation of the RoHS directive is not carried out by the same public authorities as the WEEE Directive, is mainly concentrating on the design phase and more focuses on chemical policy and substance restrictions rather than end-of-life management of WEEE. Hence, incorporating the RoHS Directive would have meant that the research would have been far too broad. I instead opted for a narrower research, focusing on the WEEE Directive and its implications for collection and recycling systems in Sweden and Hungary.

4. General introduction to the EC WEEE Directive

This chapter gives an overview of the situation leading to the adoption of the WEEE Directive and describes the workings of this EC legislation. It tackles the most important elements, including scope, definitions, collective and individual responsibility, financial guarantees. It gives the reader a good understanding of the WEEE Directive rendering it easier to digest the subsequent chapters on the implementation in Sweden and Hungary.

4.1. Background

Since 1987 one of the explicit objectives of the EU is the protection of the environment[4], but a large bulk of secondary environmental legislation was adopted prior to 1987 on the basis of the environmental action programmes. Hence, over the years, the EU has developed an extensive volume of environmental legislation covering virtually all areas, including nature protection, air pollution, spatial planning, soil contamination, chemical regulation, industrial accidents and waste. Its legislation is based on general environmental principles such as the Polluter Pays Principle, Precautionary Principle, and Substitution Principle. In terms of waste, the most important principles are the polluter pays principles and integrated product policy (IPP).

Waste issues were initially dealt with by the conventional 'command-and-control' approach, legislation prohibiting or mandating certain behaviour. However, since the early 90's it has become more common to introduce new types of market-based instruments, providing financial incentives for industry to improve their environmental performance. EPR programmes are one example of such instruments, providing incentives for producers to internalise external costs on the environment. EPR programmes already exist for packaging waste, tyres, waste oils, and batteries. In 2002, the EU extended the producer responsibility to also include discarded electrical and electronic equipment (WEEE). The WEEE Directive entered into force in early 2003 and Member States had to implement by 13 August 2005. Although, a few Member States already had introduced similar EPR requirements for WEEE, most of the Member States were faced with the huge task of implementing its provisions into the national regulatory framework.

[4] Article 2 of the EC Treaty stipulates: The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing the common policies or activities referred to in Art. 3 and 3a, to „promote throughout the Community a harmonious, balanced and sustainable development of economic activities, sustainable and non-inflationary growth, a high degree of covergence of economic performance, a high level of employment and of social protection, a high level of protection..."

The reason EU targeted EEE to extend the existing EPR framework was primarily because of the increasing volumes of WEEE and its relatively toxic and complex characteristics. Initially, the EEE industry lobbied against the WEEE proposal as they perceived it as a threat to its global competitiveness, resulting in excessive costs in setting up and operating collection and recycling schemes. The WEEE legislation has been seen as one of the most ground-breaking piece of EC environmental legislation in history. It is unique since the WEEE Directive and the RoHS Directive are a combination between of command-and-control regulation and a more market-based approach where the industry develops the most cost-efficient approaches to meeting their obligations under the WEEE EPR scheme.

4.2. Main objectives of the WEEE Directive

According to the WEEE Directive and the European Commission (2005), the main purpose is the prevention of WEEE and to promote reuse, recycling and other forms of recovery in order to reduce final disposal. Other important objectives of the WEEE Directive include:

- improve the environmental performance of all operators involved in the life cycle of EEE, including producers, distributors and consumers, with particular emphasis on organisations involved in the treatment of WEEE (European Commission 2005).
- encourage the „design and production of electronic and electrical equipment (EEE) which take into full account and facilitates their repair, possible upgrading, reuse, disassembly and recycling" (EU 2003).

By imposing extended producer responsibility, WEEE manufacturers and retailers are obliged to take-back WEEE at end-of-life, free of charge, from consumers and to ensure that recycling is the preferred option for treatment. It is anticipated under a well-functioning EPR scheme that producers will seek to reduce the EOL costs associated with discarded EEE by designing EEE, which are easier to dissemble and recycle and which have less environmental impact during manufacturing processes (e.g. use less input raw materials, use less energy during manufacturing phase and/or during the use-phase).

In terms of design changes, the RoHS Directive is equally important in triggering design changes at is restricts the use of six hazardous substances in EEE, e.g. lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polycrominated diphenyl ethers in new EEE put on the EU

market from 1 July 2006. The list of restricted substances is extended periodically to include new priority substances for future bans. The RoHS Directive was also originally part of the WEEE Directive, but the two directives were separated as they are based on two different articles in the EC Treaty, internal market and environmental protection.

These directives take a novel approach to EU waste policy as they are both designed to minimise waste generation, by extending producer responsibility beyond the production phase, as well as providing incentives for minimising the use of toxic chemicals or materials.

4.3. Legal basis

Directive 2002/96/EC on waste electrical and electronic equipment (WEEE directive) of 27 January 2003 entered into force on 13 February 2003. In 2003, the WEEE Directive was amended by Directive 2003/108/EC. All Member States had to implement this Directive into national law until 13 August 2004. At the same time Member States also had to implement Directive 2002/95/EC on the restriction of certain hazardous substances of electrical and electronic equipment.

The WEEE Directive is adopted on the basis of Article 175 of the EC Treaty, which has as its aim the protection of human health and the environment[5], by providing for a minimum harmonization measure. Hence, Member States are allowed to introduce stricter measures for environmental protection as long as they comply with other bodies of Community law (e.g. do not constitute an unnecessary and disproportionate restriction against the free movement of goods). For instance, some Member States including the Scandinavian countries, Germany and the Netherlands, may require higher collection and recycling rates than what is prescribed in the WEEE Directive, since the collection and recycling infrastructure is already in place and industry largely in compliance.

A directive is not directly applicable to companies. It first has to be transposed by the national legislator before it becomes applicable. A directive is framework legislation with main objectives, targets, which Member States have a large margin of appreciation in deciding how to achieve. A regulation, on the other hand, is directly applicable and binding on all entities in the Member States, and further implementing measures are unnecessary or even forbidden. Hence, the implementation

[5] In contrast, Directive 2002/95/EC on the restriction of certain hazardous substances of electrical and electronic equipment, was based on Article 37 aiming for harmonisation of legislation to facilitate the functioning of the Internal Market. During the development of the WEEE legislation, Directive 2002/95/EC was an integral part of the WEEE Directive. However, due to different character of the two pieces, e.g. one setting up a collection and

can vary a great deal between the Member States. Although Member States have a large margin of appreciation in implementing a directive, it must be demonstrated that the national implementing measures must be effectively capable of meeting the objectives of the directive. Where this is not the case, a Member State my face legal complaints by national subjects that the implementation is incorrect, incomplete or not timely. The Commission or the ECJ can then declare the implementation insufficient and oblige the Member State to take corrective action within a certain time-period.

Member States had to ensure full implementation of the WEEE Directive by 13 August 2004[6]. However, given the novel approach and the scope involved, it is not a small task for the Member States to implement it in an efficient and timely manner. Thus, the implementation will differ between Member States, depending upon the legislative and administrative framework, the waste management infrastructure (e.g. whether there is capacity for large-scale recycling), the knowledge of authorities and experts and the environmental awareness of the public in general.

4.4. Definitions:

- **Extended Producer Responsibility (EPR):**

Sturges (2003, 150) provides a good definition of EPR: "EPR is an environmental policy approach in which the producer's responsibility is extended to the post-consumer stage of the life cycle". According to the definition of Van Rossem *et al.* (2006, 5), extended producer responsibility (EPR) is a „policy principle to promote total life cycle environmental improvements of product systems by extending the responsibilities of the manufacturers of the product to various parts of the product's life cycle, and especially to the take-back, recovery and final disposal of the product". This definition is broad giving the producers a wide range of responsibilities for their products.

EPR has also been compared with leasing since there are some common traits. However, leasing means that the ownership of the products is retained by the producer, such as for leased cars, office equipment. Furthermore, the fundamental idea with leasing, as underlined by Lifset (2003), is to put value on the services provided for their users rather than on their material make-up.

- **EEE and WEEE**

recycling framework, whereas the other aimed for restricting certain hazardous substances, it was decided to opt for two legal basis.

[6] In addition Commission Decision 2005/369/EC of 3 May 2005 laying down rules for monitoring compliance of Member States and establishing data formats for the purposes of Directive 2002/96/EC of the European Parliament and of the Council on waste electrical and electronic equipment.

In this thesis a number of expressions are employed to describe products falling under the WEEE Directive. They are either referred to as EEE (electronic, electrical equipment) or WEEE. This differentiation is important as they refer to slightly different things. EEE is used when referring to electronic and electric equipment which has not yet become waste, that is has not reached the end of its useful life. WEEE is mainly used when referring to the WEEE Directive and stands for waste electronic and electrical equipment, which is how the EU is defining EEE when it has become waste. These definitions are in accordance with the wording of the WEEE Directive itself and the Commission document on frequently asked questions[7].

Article 3(a) of the WEEE Directive defines **EEE** as "equipment which is dependent on electric currents or electronic-magnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and files falling under the categories set out in Annex IA and designed for sue with a voltage rating not exceeding 1000 volt for alternating current and 1500 volt for direct current".

WEEE is defined as "electrical or electronic equipment which is waste within the meaning of Article 1(a) of Directive 75/442/EEC on waste, including all components, subassemblies and consumables which are part of the product at the time of discarding". According to Article 3(k) of the WEEE Directive, household WEEE include WEEE that comes from households and from commercial, industrial, institutional and other sources, which is similar to that from household in regard to its nature (e.g. type of product) and quantity.

- **Put on the market:**

For the application of the WEEE Directive it is important that an EEE is put on the market, in accordance with Article 10(3) of the WEEE Treaty. According to the European Commission (2005), put on the market means "making a product available for the first time on the Community market... and "this takes place when the product is transferred from the producer to a distributor or final consumer or user on the Community market". Products are placed on the market when they enter the territory of the Customs Union. Putting on the market refers to an individual piece of EEE put on the market after 1 July 2006 and not to a type (model) of product. Hence, putting on the market refers to the first making available of a market in the EU, with a view to distribution or use in

[7] European Commission (Directorate General Environment). 2005. Frequently asked questions on Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment

the EU. The transfer of the product can either be from the manufacturer or from the manufacturer's authorised representative in the EU directly to the final consumer or users or via the importer or distributor in the Community. The transfer means physical hand-over or transfer of ownership (European Commission 2005)[8]. For a product to meet the definition of putting on the market it is important that the transfer of the product to the Community market is intended to be used directly or distributed to final users. Hence, putting on the market does not take place where a product outside the territory of the EU is transferred to a manufacturer in the EU for further reprocessing (assembling, packaging, processing or labelling). Similarly, products are not considered to have been put on the market where they are placed in warehousing or in the stocks of the manufacturer.

4.5. Scope:

Directive 2002/96/EC covers a rather broad range of electrical and electronic equipment, especially in compared to product categories covered by other EPR legislation. The WEEE Directive operates with two annexes. Annex 1A contains a list of categories of products covered, whereas Annex 1B provides a list of products falling within these categories. As underlined by the European Commission (2005), these lists are non-exhaustive and Member States may include other products in their national legislation if they choose. Particularly, since the WEEE Directive was adopted on the basis of Article 175 of the EC Treaty, providing for environmental protection, allowing Member States to adopt more stringent environmental requirements, provided they do not constitute a barrier to the free movement of goods.

and Directive 2002/96/EC on waste electrical and electronic equipment. May 2005.

[8] More guidance on the definition „put on the market" can be found in the Guide to teh implementatio of directives based on the New Approach available on: http://europa.eu.int/comm/enterprise/newapproach/legislation/guide/legislation.htm.

Table 2:4: Categories of EEE equipment in the WEEE Directive

Product categories
Large household appliances
Small household appliances
IT and telecommunications equipment
Consumer equipment
Lighting equipment
Electrical and electronic tools (with the exception of large-scale stationary industrial tools)
Toys, leisure and sports equipment
Medical devices (with the exception of implanted and infected products)
Monitoring and control instruments
Automatic dispensers

Pursuant to Articles 3 (a) and 2.1 of the WEEE Directive, it applies to:

- „Any equipment which is dependent[9] on electric currents or electromagnetic fields in order to work properly, and equipment for the generation, transfer and measurements of such currents and fields"
- Equipment which is „designed for use with a voltage rating not exceeding 1000 volts for alternating current and 1500 volts for direct current[10]
- Equipment falling under the categories set out in Annex 1A, excluding large-scale stationary industrial tools.[11]
- Equipment listed in Annex IB, containing a list of products falling under one of the product categories set out in Annex IA[12]. Explicitly excluded from this list are all types of household luminaries and filament lamps.

[9] According to the European Commission (2005) „dependent" means that the equipment needs electricity rather than fossil fuels as its primary energy in order to fulfil its basic function. If the equipment operates with electricity only for support or control functions (i.e. is not used to perform its basic function), this equipment is not covered by the WEEE Directive. Examples of excluded products include: combustion engine with ignition, pneumatic tools, battery operated teddy bears or other similar toys.

[10] One example of excluded products is high-voltage switchgear (European Commission 2005).

[11] Large-scale stationary industrial tools are excluded from category 6 of Annex 1a. These tools have been interpreted by the European Commission (2005) as „machines or systems, consisting of a combination of equipment, systems, finished products and/or components,e ach of which is designed to be used in industry only, permantely fixed and installed by professionals at a given place in an industrial machinery or in an industrial building to perform a specific task". Oil platforms is one example of these industrial tools. Furthermore, such tools are not intended to be placed on the market as a single fucntional or commercial unit. Further interpretation of these tools have been provided by the Guidelines on the application of Council Directive 89/336/EEC of 3 May 1989 on Electromagnetic Compatibility, available at: http://europa.eu.int/comm/enterprise/electr_equipment/emc/guides/emcguide.htm.

[12] This list is not exhaustive meaning that at least the specific type of equipment listed in Annex IB falls within the scope of the Directive.

- Equipment which is not part of any other equipment that does not fall within the scope of the WEEE Directive. Examples of excluded products are fixed installations, lifts, certain control and monitoring equipment used in oil and gas electronics, frequency converters[13] and car radio and other equipment.
- Equipment which is not covered by „specific Community waste management legislation", according to WEEE Directive, Art. 2.2
- Equipment which is not intended for military purposes, pursuant to WEEE Directive, Art. 2.3

Although, the Annexes provide a good indication of equipment falling under the WEEE Directive, they are not exhaustive and do not provide adequate answers for equipment forming part of another type of equipment and other more complex situations. The Commission normally issues guidelines to assist the Member States in their interpretation of EC legislation. In this specific case, the Commission (2005) has issued a comprehensive document on frequently asked questions, where it attempts to give an interpretation of the scope of WEEE Directive. Although, this guidance document is not legally binding, meaning that the Member States cannot evoke it as a defence should a Member State be submitted to court for inadequate implementation of the WEEE Directive, it provides a good guidance of the intended scope. According to this document, the Commission makes a distinction between finished products[14], fixed installation, equipment which is a part of another equipment in determining the scope of the WEEE Directive. It applies to finished products, rather than equipment which are part of another type of equipment, that has a direct function[15] for its end-users. Fixed installations are explicitly excluded from its scope (e.g. heating plants, industrial installations[16]).

There are a number of products which form components of EEE, which need to be collected and correctly disposed of in accordance with other EC provisions. These products include batteries, ink cartridges, car radios and spare parts. The products are not necessarily EEE as is the case with

[13] However, frequency converters are covered when they are part of a product that falls within the scope of the Directive. Inclusion depends upon the application of these components and is decided upon on a case-by-case basis.

[14] Pursuant to Directive 89/336/EEC and the Official Guidlines for the implementation of this directive, the decision criteria are „finished product" or „fixed installation". Equipment which is part of another type of equipment is not to be considered a finished product. A finished

[15] According to the Commission (2005) direct function is defined as „any function of a component or a finished product, which fulfils the intended use specified b the munfacturer in the instructions for use for an end-user".

[16] According to the Commission (2005), a „fixed installation" is defined as „a combination of several equipment, systems finished products and/or components assebmled and/or erected by an assembler".

batteries and ink cartridges. The question is whether these products fall within the scope of the WEEE Directive or the other more specific provisions. According to the Commission (2005), the following apply:

- Batteries incorporated in WEEE are collected on the basis of the WEEE Directive. Upon collection they are removed and will count for the collection targets under the Battery Directive. Also recycling and further treatment is carried out pursuant to the Battery Directive. Hence, a producer of EEE incorporating batteries has to comply with his/her obligations under the WEEE Directive and the Battery Directive. However, Member States should work to minimise the negative practical implications of the administration of these two separate EPR schemes and avoid double charging of producers where batteries are collected together with the EEE on the basis of the WEEE Directive.
- Ink cartridges incorporated in printers fall under the WEEE Directive, although cartridges themselves are considered to be consumables. Printers fall under the WEEE Directive as they are products under Category 3 of Annex IB to the WEEE Directive. Where a discarded printer, contains an ink cartridge, this cartridge becomes part of the WEEE because it is a consumable which is part of the printer at the time of discarding. Article 4 of the WEEE Directive, encouraging the design and production of EEE, facilitating the dismantling and recovery of components and materials, also apply to cartridges.
- Where medical devices falling under Category 8 of Annex IA is considered an „infected product", it is excluded from the scope of the WEEE Directive and must be disposed of as hazardous waste according to other EC waste provisions.

According to the European Commission (2005), the onus of burden to determine whether a product falls within the scope of the WEEE Directive is one the EEE producers, rather than the Commission. The producer is better placed to determine the characteristics of his/her product (e.g. whether it is a finished product, part of a fixed installation, has a direct function for the end-user). If the producer is in doubt about whether the EEE is covered by the WEEE Directive, he/she must consult with the competent authorities in the Member States which are responsible for the implementation of the WEEE provisions.

The WEEE Directive applies to EEE for both household and professional use. WEEE from private households include WEEE both from private households and from commercial, industrial, institutional

sources that are similar to that from private households in its nature (e.g. type of EEE) and quantity. Where WEEE cannot be defined as coming from private households it is defined as WEEE from other uses. Hence, the distinction is not made according to the source of WEEE, which is normally the case in EU waste legislation (e.g. whether waste is municipal or industrial) but according to the nature and quantity of WEEE. It is possible to imagine that EEE used in small and medium-sized companies, due to its nature and quantity, could be defined as WEEE from households rather than from users other than private households (e.g. mobile phones, tea boilers, radios, fax machines, and telephones).

4.6. Labelling and information requirements

- **Labelling of products**

Producers are obliged to label their products, whether household EEE or for professional use, pursuant to Article 10(3). This ensures that all EEE is duly marked also in situations where it is difficult to distinguish between household and professional EEE. This labelling provides information to the consumers about disposal means and also informs other parties about the identity of the producer and that the product is put on the market after 13 August 2005 and thus falls under the scope of the WEEE Directive. This labelling has to contain:

- Crossed out garbage bin
- Information making it possible to identify the producer
- Date or a thick line indicating that the product has been put on the market after 13 August 2005.

All producers, both for household EEE and other EEE must ensure that their products are labelled with the bin. The general rule is that the EEE itself should be labelled with the bin. However, if this is not possible, due to the size of the product or its function, it is also acceptable to label the packaging or to label the user manual or warranty information sheet.

- **Information to households**

Producers of EEE have to ensure that information is conveyed to those involved in EOL management, e.g. facilities involved in pre-treatment, disassembling, recover, recycling. This information should at least relate to the content of the EEE and EOL management. The main aim is to facilitate the pre-treatment and recycling/recovery on one hand and maintenance, upgrading, reparation on the other. It also aims at minimising the risks of damages to the environment and/or human health related to as a consequence of the incorrect handling of dangerous substances and

materials. This information has to be conveyed, at the latest, one year after the sales. The information duty varies slightly between producers of household EEE and those of other EEE. For instance, producers of non-household EEE have to inform about the purpose of separate handling of WEEE and options for returning WEEE to the producer or collection systems.

4.7. Collection of WEEE

Producers are responsible for the collection of non-household WEEE, i.e. deriving from industrial sources, whereas the relevant authorities must ensure that all WEEE is transported to authorised treatment facilities.

With the objective to minimise the disposal of WEEE as unsorted municipal waste, Member States have to establish separate collection system for **household WEEE** and ensure that as from 13 August 2005:

- Final holders and distributors can return WEEE free of charge,
- Distributors/retailers accept WEEE, free of charge, upon purchase of new EEE, of the same type, on a one-to-one basis (e.g. it is not possible to buy one and return more than one unit)
- Producers ensure financial responsibility either through individual or collective take-back systems
- It is possible to refuse the return of infected or contaminated WEEE, presenting a risk to the health and safety of personnel at the collection or treatment facilities.

By 31 December 2006, all Member States had to ensure an annual rate of collected WEEE of at least an average of 4 kg/capita from private households. This rate will be revised and increased in the near future and the Member States have until 31 December 2008 to reach this new target.

4.8. Individual vs. collective responsibility

Articles 8(2) and 8(3) of the WEEE Directive explicitly assign collective responsibility for 'historical' waste (i.e. put on the market before 13 August 2005) and individual responsibility for 'new' WEEE, e.g. waste generated after the entry into force of the Directive. Individual responsibility means that producers take responsibility and ensure end-of-life management for their own brands, whereas collective responsibility means that producers belonging to the same product group (e.g. TV sets, mobile phones, refrigerators) jointly ensure end-of-life management, regardless of the brand. The rationale of Article 8(2) is to ensure that producers are only required to finance the EOL

management of their own new WEEE and not of other producers' products, orphan products and of non-compliant producers (i.e. free-riders). By assigning this individual responsibility, producers have incentives to reduce EOL costs by producing products with less adverse environmental impact. However, producers are not in a position to influence the design of their products that were on the market prior to the entry into force of the Directive. Hence, Article 8(3) stipulates that producers shall share the EOL costs, proportionally, according to the market share in a particular product category.

Collective systems are based on not-for-profit organisations founded by some of the EEE manufacturers and importers, with the support of the national authorities (WEEE Forum 2007). Manufacturers and importers jointly manage the system and coordinate the collection and the recycling of WEEE throughout the particular Member State, with close participation of retailers, municipalities, municipal waste companies and WEEE recyclers. According to the WEEE Forum (2007), the collective take-back systems cover a wide range of tasks including:

- Take over the producer's individual legal obligation to comply with the WEEE Directive
- Manage the data collection and reporting
- Negotiate contracts with operators
- Arrange the logistical requirements
- Arrange recycling
- Manage the financial aspects of the scheme
- Ensure auditing.

4.9. Treatment and recovery

Producers have to ensure that all collected WEEE is subject to the 'best available' treatment, recovery and recycling techniques. Although, there is some manoeuvre for deciding upon what is 'best' available treatment, Annex II and Annex III set out the minimum requirements. Annex II require the removal of fluids and selective treatment in accordance with certain criteria and Annex III provide details about treatment and storage of WEEE.

Only treatment facilities having obtained a permit from the competent national authorities may be involved in the treatment of WEEE. Participation in the EU eco-management and audit scheme (EMAS) is a further merit for such facilities. In addition, producers have to comply with Article 4 of the WEEE Directive which requires the Member States to encourage the design and production of

EEE, which takes into consideration and facilitates dismantling and recovery of WEEE, their components and materials.

Producers can decide whether to have the treatment of WEEE take place domestically or in another EU Member State or in a third country. However, the transboundary transport of WEEE and the subsequent treatment have to be in compliance with Council Regulation (EEC) No. 259/93 on the supervision and control of shipments of waste within, into and out of the European Community. Furthermore, the producers can only count the treatment abroad against the targets of the WEEE Directive if the exporter can provide evidence that the treatment operations were at least equivalent to the requirements of the WEEE Directive. This provision is to avoid shipments of hazardous WEEE to developing countries, where the conditions for the treatment in terms of environmental and health standards normally are much worse than in the EU. The Basel Convention also provides a ban against all hazardous waste, providing a double protection against such exports.

Producers have to establish individual or collective systems for the recovery of WEEE collected separately from the municipal WEEE. By 31 December 2006, the rate of recovery by an average weight per appliance had to be at least:

- 80 percent for large domestic appliances,
- 70 percent for small domestic appliances, lighting equipment, electrical and electronic tools, toys, leisure and sports equipment and monitoring and control instruments
- 75 percent in the case of IT and telecommunications equipment and consumer equipment

Furthermore, the same deadline applied for the rate of component, material and substance reuse and recycling, calculated by an average weight per appliance:

- 80 percent in the case of discharge lamps
- 75 percent for large domestic appliances and automatic dispensers
- 50 percent in the case of small domestic appliances, lighting equipment, electrical and electronic tools, toys, leisure and sports equipment and monitoring and control equipment
- 65 percent for IT and telecommunications equipment and consumer equipment

Producers have to monitor these operations by recording the weight of the WEEE entering and leaving treatment, recovery or recycling facilities.

4.10. Financial guarantee

It cannot be taken for granted that all manufacturers on the market today will still be active and able to pay the costs when their products are discarded and treated. Hence, a very important part of an effective WEEE system is to provide for efficient financial guarantees. Since some EEE have a long time-span, of up to 15 years for TV sets and white goods, it is essential to ensure that the EOL costs are sufficiently covered. Some product categories are subject to fierce competition and changing consumer patterns and product development and this can result in bankruptcies, mergers and other changes to the legal form of a company. To minimise the occurrence of orphan products and the lack of resources for EOL treatment, the WEEE Directive is requiring sufficient financial guarantees from producers.

Article 8 of the WEEE Directive required EEE producers to ensure the financing of the collection, treatment, recovery and environmentally sound disposal of new WEEE, i.e. products put on the market after 13 August 2005. For new products, i.e. EEE put on the market after 13 August 2005, each producer is responsible for the financial arrangement of his/her own products. He/she must then provide a guarantee, at the time of the sale, regarding the financing of the waste management. This guarantee may take the form of participation in financing schemes. The two most common financing schemes are funds through a blocked bank account or a recycling insurance. This scheme is called an individual scheme and although the WEEE Directive explicitly asks for such arrangement for new products, most producers finance the waste management of new products through collective schemes.

There are two main systems of financial guarantee, the 'pay-as-you-go' (PAYG) system and the 'return-share' system. Under the PAYG system, a producer is paying for the EOL costs of the products collected in the same year and not for future end-of-life costs. This system is mainly applied in collective schemes covering both historical and new WEEE. The participating members agree to fund new WEEE from free-riders and producers that have disappeared from the market (van Rossem *et al.* 2006). Hence, there are no incentives for design change under the PAYG system. This system is not compatible with the concept of individual producer responsibility and it does not encourage design change and development of environmentally superior products.

In contrast, a return-share system is based on true financial guarantees. Van Rossem *et al.* (2006, 11) define true financial guarantees as: „each producer should, when placing a product on the

market, provide a financial guarantee to prevent costs for the management of orphan WEEE from falling on society or the remaining producers and the guarantee system must be such that producers are able to enter and exit a particular compliance scheme". Such a guarantee can be a driver for design change.

5. Brief summary of Member States' implementation of the WEEE Directive

This chapter gives a brief account of the implementation in the Member States. It underlines major differences in approaches, advantages and problem areas as well as trends for the future. It is useful to understand the complexity of the WEEE Directive and the main issues with which Member States and producers grapple in order to be able to make judgements and draw conclusions from the implementation in Sweden and Hungary.

5.1. Introduction

In 2006 AEA Technology in association with the Regional Environmental Centre on behalf of the Joint Research Centre Institute for Prospective Technological Studies published a research study, in which they analysed the implementation of the WEEE Directive in 25 Member States. This study describes the various regulatory and management approaches in the EU Member States to ensuring compliance with the WEEE Directive. It also gives a good indication of problem areas and current trends in the various collective WEEE schemes. It should be pointed out, though, that the information in this study reflects the situation where it stood in late 2005. Hence, although this study forms the basis of this section on the implementation of the Member States of the WEEE Directive, some of the information referred to may have changed since late 2005. One example is the number of participants in El-Kretsen. According to the AEA Technology study, the number of participants is 500, whereas the current figure is 1000. Hence, the number of members increased with 500 in just one year.

Given the complexity of the WEEE Directive, it will take a further couple of years, at least, before all registration systems are fully operational, financing arrangements efficient and recycling targets met. Hence, a further study will be needed in advance of the Commission envisaged review of the WEEE Directive in 2008, to give a more accurate picture of the WEEE implementation and the functioning of the collective WEEE schemes in the EU.

5.2. Current status of implementation

Member States had to ensure the transposition of Directive/96/EC, as amended by Directive 2003/108/EC (WEEE Directive) by 13 August 2004, with the major obligations on producers (such as setting up collection and recycling systems and financing the collection and treatment of WEEE returned to retailers and collection points) coming into force on 13 August 2005. However, several countries have been late with the transposition and some countries, to ensure transposition on time,

simply made a translation of the EC Directive into national law, without further provisions on practical application. Hence, secondary legislation and other guidance documents are necessary to complete transposition. Some of the Member States, including Hungary, got a temporary derogation from the collection, recovery and reuse/recycling targets, which were to be met by the end of 2006. On the basis of Council Decision 2004/312/EC of 30 March 2004 and Council Decision 2004/486/EC of 26 April 2004, Slovenia was granted a 12-month extension and the Czech Republic, (e.g. targets have to be met by end of 2008). These countries claimed that it was particularly cumbersome to meet Estonia, Hungary, Latvia, Lithuania, Slovakia, Cyprus, Malta and Poland received an additional two years these targets by 2006 due to a historical recycling deficit and low population density (AEA Technology 2006).

Furthermore, the implementation is not entirely straightforward as the WEEE Directive interacts and overlaps with other areas of legislation, including provisions on hazardous waste, transfrontier shipment of waste, health and safety labelling.

5.3. Registration of producers and importers

It is the task of the Member States to set up national registers of producers and importers covered by the WEEE Directive. AEA Technology (2006) identified that there is some discrepancy between the national registration requirements, particularly for importers who do not operate in a specific country through a registered seat but operates through direct sales to the end-users, for instance through Internet sales. This is the case for Austria, which only requires registration of importers for businesses with an Austrian address, excluding companies engaged in direct sales in Austria without an Austrian address. As the end-user is responsible for disposing of the WEEE according to national laws, a producer must be identified for ensuring collection and EOL treatment, to avoid a situation of orphan WEEE. To address this problem, many producers are calling for a consolidated, centrally operated EU register, which would also include harmonisation of notification and registration requirements within the EU.

5.4. Collective versus individual producer responsibility

The predominant way for producers to meet the obligations of take-back of WEEE is to join a non-competitive national collective scheme or to employ a 'clearing house system', with multiple coordinating organisations. Both approaches are based on collective responsibility.

15 Member States have opted for a clearing house system, meaning this is the dominant system within the EU. A clearing house system is based on a national framework within which producers, recyclers and waste organisations can provide services (AEA Technology 2006). Particularly Member States which had no pre-WEEE Directive infrastructure for the collection and treatment of WEEE have opted for the clearing house system. The government establishes a national register and defines the allocation mechanisms and the requirements for reporting and monitoring. Some countries, like United Kingdom, France, Hungary and Czech Republic, have 5-6 coordinating organisations. The clearing house system takes a competitive approach with multiple coordinating organisations with the main objectives to prevent monopolies to develop and to reduce costs. Although, one or two schemes could be prevailing, the risk of a monopoly situation is reduced as legislators can withdraw operation licences or impose fines where the terms of the approval are contravened (AEA Technology 2006).

The second form of collective responsibility is based on one single, non-competing system. This system is responsible for collection, recycling and financing of all (or most) WEEE within a given country. Hence, this system is the only available to producers. Van Rossem et al. (2006) note that Member States with a non-competing scheme in operation prior to the entry into force of the WEEE Directive tend to keep these systems. Hence, there appear to be a certain inertia and unwillingness to modify existing systems. AEA Technology (2006) states that collective schemes are generally operated by not-for-profit companies established by one or more trade associations. Some countries such as Denmark and Sweden allow other coordinating organisations to exist, although these organisations are minor compared to the main collective scheme. It is also possible to opt for individual responsibility, although the systems often are construed so as to provide strong incentives for producers to join the dominant collective scheme. Collective schemes are particularly useful for historical waste, where the costs of EOL management are divided between producers, also covering orphan products. A functioning national scheme can be seen as the simplest method to ensure compliance with the WEEE Directive. It does not involve additional costs for managing a national clearing house, separate collection containers, additional logistics etc. and there is a large potential for economies of scale. It is particularly attractive in smaller countries where volumes are not large enough to sustain a viable market for multiple schemes (AEA Technology 2006).

Collective schemes, whether based on a clearing house system or one national non-competitive system, realise a cost-efficiency which individual schemes have difficulty to match. For instance, in order to minimise costs, collective schemes contract with the most competitive service providers and strive for an extensive collection network to realise economies of scale. Presumably, the cost-efficiency aspect and the waver of the individual legal responsibility are the two main reasons that manufacturers mainly opt for collective schemes rather than private systems.

To date there are very few individual schemes. Although, Article 8 of the WEEE Directive mainly aimed for individual schemes for the take-back and treatment of „new" waste, the market situation and the existing infrastructure set-up were some of the drivers for industry choosing collective rather than individual schemes. Only 12 Member States17 have transposed the Directive to reflect the wording of Article 8, favouring individual responsibility and financing of new waste. Two countries (Hungary and Latvia) do not make a distinction at all, while Denmark, France and Poland assign collective financial responsibility for both historical and new WEEE (van Rossem et al. 2006). Other barriers to setting up individual systems include lack of know-how, capacity and resources to fulfil the logistical, technical and administrative tasks. Operators of individual schemes have to ensure that the collection and processing of collected WEEE are in conformity with the requirements of the WEEE Directive both in terms of quantities and the quality of treatment. They also have to meet the informative obligations (e.g. informing all relevant stakeholders about take-back requirements and submitting periodic reports to the regulator) as well as monitoring of the system. Collective schemes also seem to be successful in efficiently managing producers' contributions. Funds are operated to maximise efficiency and funds are being protected from being used-up for other purposes. Furthermore, since collective schemes provide regular input of information about their performance, the enforcement costs for public authorities are reduced. For individual schemes, governments have to make more efforts in ensuring compliance, particularly in order to prevent cheating and free-riders.

Although, individual schemes, making each producer responsible for his/her own brand, theoretically, may provide better incentives for design changes to reduce EOL costs, the same tendency may be plausible in the future also for collective schemes. In their quest to reduce costs, producers may face

[17] Austria, Cyprus, Czech Republic, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Slovakia, Spain and Sweden are Member States which explicitly call for individual financing of new waste.

indirect pressure for design change from their member organisations. Even as the amounts of historic waste for which collective schemes were construed continuously decline, making it easier for producers to make calculations on the actual return share of their own brands, it is plausible to expect collective schemes to be the dominant system for the collection and management of WEEE. The collective schemes are also being promoted by the WEEE Forum, the Association for Collective Organisations. Most major collective schemes in the EU are members and participate in the WEEE Forum, which is providing an excellent discussion forum to address problematic issues such as efficient fee structures, non-recyclable materials, and the existence of free-riders and market developments.

As one of the main advantages of the collective schemes is their potential for administrative and cost efficiencies, there are developments in the direction to find ways to make individual schemes more efficient. Large multinationals operating across the whole of the EU, have to deal with 27 different national schemes with their different fee structures, administrative requirements and recovery standards. A lot of resources are invested in order to ensure compliance with these national schemes. This is the reason why Hewlett Packard, Sony, Electrolux and Braun established their own pan-European compliance scheme in 2002. These companies are strong proponents of Individual Producer Responsibility (IPR) and their system, the European Recycling Platform (ERP), is a hybrid between collective and individual responsibility. It attempts to consolidate the WEEE take-back market and deliver efficiency gains that would benefit both the participating producers and their customers. The idea, as pointed out in the study by AEA Technology (2006) is that by investing in large-scale, high technology treatment and striving for transport optimisation, economies of scale will enabled and overall environmental impacts associated with treatment and transport reduced. A pan-European scheme like ERP is not likely to undertake all the collection, transport and treatment itself but rather contracts various waste operators. It is not certain exactly how ERP will operate, but it is likely that it will have to establish national schemes in several countries and have to obtain approvals to operate and to access waste in each country. It has been proposed that this can be achieved through clearing houses in some of the EU Member States. Other alternatives could be to split the collection responsibility between regions or to compete for local collection agreements with municipalities and other local waste managers. Although, it will take several years before all the structures have been worked out and these pan-European schemes are in full operation, they offer a

theoretical model towards which industry can strive in their attempts to consolidate the market and reach efficiency gains.

5.5. Collection systems

Under the WEEE Directive, producers are fully responsible for establishing and financing the collection infrastructure for **non-household WEEE** (i.e. WEEE from commercial activities and industry). In contrast, Member States have a large discretion in how to allocate both physical and financial responsibility for the collection of **household WEEE**. The actors likely to be involved in one way or another in the collection are producers, retailers and municipalities. Given this flexibility, the Member States have chosen different solution and constellations depending upon existing systems, public financial resources, and the political and cultural context. There is a distinction between physical responsibility, meaning the actor responsible for the actual establishment of a collection site and financial responsibility, meaning who will pay for the setting up of collection points and for their subsequent operation.

13 Member States[18] have chosen to allocate all or some of the **physical responsibility** (although, the financial responsibility often fall on the producers) to municipalities for the setting up of collection sites. In 17 Member States[19] retailers have a role in the collection of WEEE, either entirely or in cooperation with municipalities or together with producers. In 11 Member States[20] producers have the obligation to establish collection systems for household WEEE. There were relatively few Member States that only made producers responsible for this task (e.g. Sweden, Finland and Cyprus). An overwhelming majority of the Member States opted for allocating the responsibility to multiple actors and do not allocate the full physical responsibility to producers. In cases, where producers, retailers and municipalities shared the responsibility for establishing collection sites, municipalities were only involved in the setting up collection points and not in their financing. Only in four Member States (Cyprus, Finland, Slovakia and Sweden) are producers, according to the legal text, entirely responsible for establishing a collection infrastructure. However, in most of these countries, including Sweden, in practice the municipalities are continuously involved in the collection,

[18] Austria, Belgium, Denmark, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Poland, Portugal, Slovenia and Spain.
[19] Austria, Belgium, Czech republic, Denmark, Estonia, France, Greece, Hungary, Ireland, Italy, Latvia, Luxemburg, the Netherlands, Poland, Portugal, Slovenia and Spain.
[20] Austria, Cpprus, Czech Republic, Estonia, Finland, France, Hungary, Latvia, Portugal, Slovakia and Sweden.

e.g. as contracted by the individual producers or the collective organisations (van Rossem *et al.* 2006).

In nine Member States[21] municipalities have been allocated the **financial responsibility** for the collection of household WEEE. In reality, this means that the public authorities and the general taxpayer bear the burden of financing collection. This is at odds with the general concept of EPR programmes, which aim at shifting the financial responsibility from public authorities and taxpayers to producers and ultimately the consumers, mainly as the producers and consumers are better drivers for design change than municipalities and taxpayers (van Rossem *et al.* 2006). There are Member States, like Sweden, which despite of the legal provisions, have entered into agreement with the producers to temporarily finance the collection. To ensure sufficient financing of the collection systems, a few Member States[22] also adopted a tax/charge to supplement the funding from producers, retailers and/or municipalities (van Rossem *et al.* 2006).

5.6. Treatment and recycling requirements:

Article 6(1) and Annex II of the WEEE Directive mandate systems using best available treatment, recovery and recycling techniques. Annex II also sets out substances and components that need to removed from collected WEEE, prior to further treatment. Pursuant to AEA Technology (2006) and van Rossem *et al.* (2006), Member States have largely transposed these requirements word for word. However, it is not certain whether Member States will take the same interpretation when enforcing these requirements at recycling facilities. For the recycling facilities the practical interpretation is of great importance, mainly due to costs involved. For instance, it is possible that the „have to be removed" requirement in Annex II, will be interpreted as having to be removed prior to shredding in some Member States (particularly in the richer ones, with stringent environmental standards), whereas the same requirement might mean removal after shredding in other Member States, which allow for lower costs but also contaminated WEEE. The Netherlands have drafted a guidance document which calls for removal of certain components prior to shredding and some after (van Rossem *et al.* 2006). This guidance document is likely to reflect the practical arrangements in the Member States, since mandatory manual removal of all substances and components listed in Annex II would entail large costs for the recycling facilities. It remains to be seen whether the

[21] Denmark, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Poland and Slovenia.
[22] Hungary, Latvia, Malta, Poland, Slovakia and Slovenia.

Commission during the upcoming revision of the WEEE Directive, will provide greater clarification of how to interpret Annex II.

5.7. Collective schemes and fee structures:

AEA Technology (2006) found that the collective systems in the Member States differed substantially. Some schemes were rather complex and demanding regarding their requirements for reporting (e.g. El-Kretsen in Sweden), whereas other operated with rather high costs to cover reimbursements to certain participants in the schemes, such as collection sites, retailers or kerbside collection services (e.g. Dutch ICT Milieu and NVMP and Belgian Recupel). Very few collective schemes were able to provide accurate figures for administrative and compliance costs, due to the complexity of the systems (AEA Technology 2006).

Producers of information communication technologies (ICT) tend to prefer a system in which real costs for EOL treatment is allocated according to the producers' market share, whereas, producers of white and Brown Goods rather opt for a model based on a visible environmental fee. This difference is largely due to what extent they face historic waste burden. As White and Brown Goods producers have a larger proportion of historic waste than ICT producers they are more in favour of mandatory visible fee, which informs the consumers about the costs associated with EOL treatment.

The financial burden of compliance of the WEEE Directive is different between the various product categories, both due to the volumes sold but also due to the weight of the goods involved. For instance, producers of white goods such as fridges and freezers are responsible for 75 percent of the volume of WEEE to be treated under the Directive. Hence, the tendency is that producers of products only corresponding to a smaller share of the total quantity of WEEE, such as ICT producers dislike informing consumers about the costs of EOL by way of a visible fee and are reluctant to subsidising the costs of producers of white and Brown Goods, which have a larger fraction of historic goods (AEA Technology 2006).

As AEA Technology (2006) points out some national schemes already accommodate for this difference and apply differing financing models, including El Retur (Norway) and El-Kretsen (Sweden). These collective schemes operate with up to 50 categories, each with their own price allocation. The individual product fee reflects actual cost of transport and recycling to the extent possible. These complex, sophisticated schemes are answering to the call for equity between the various producers. However, AEA Technology (2006) points out some downsides. The more

complex a system becomes the less efficient it is to operate and the greater the compliance burden on the producers. For the sake of administrative efficiency, it instead makes sense to bound different product groups together into fewer product groups or, in alternative, to set the fee according to retail price. Such efficiency gains have been made by NVMP, the leading collective scheme in the Netherlands. Similarly, SWICO, the collective scheme in Switzerland, opted for not charging any fee on any products below c.35 Euro, as the administrative costs were likely to exceed the revenue from the product charges. Hence, it appears that the existing collective schemes in the EU, differ greatly in their financing mechanisms with El-Kretsen and El Retur on one extreme, representing equity and NVMP, on the other, representing economic efficiency.

Table 3-7: Estimating contributions to collective schemes:

Contributions:

- According to product type
  - Cover its own costs
  - Avoid cross subsidizing other product categories
- Based on market share of the scheme participants
- Based on arrears on the actual costs
- Part financed by customers:
  - Visible fees where an environmental fee is charged on top of the regular price of a product
  - Non-visible fees, where there is no information about the extra price charged to finance EOL

- Some systems offer possibility for repayment or refunding for:
  - Sale with foreign VAT
  - Defective goods
  - Assembly or processing of new products

(source: WEEE Forum)

5.8. Financial guarantees

Only 12 Member States have explicitly assigned individual financial responsibility for new waste, most Member States take a neutral position or even as in the case of Denmark, France and Poland assign collective financial responsibility for both historical and new waste. This distinction also has ramifications for determining the financial guarantee. As stated by van Rossem *et al. (*2006), a 'true' financial guarantee should be provided for every producer whether deciding to comply with their financial responsibility collectively or individually. The ways Members States have interpreted the provision on financial guarantee, implicitly says something about their preference for collective schemes, which also may limit individual financial responsibility (van Rossem *et al.* 2006).

Most Member States have only introduced mandatory true financial guarantee for producers which are not participating in collective schemes. Such producers are required to make arrangements for either blocked bank account or a recycling insurance. However, AEA Technology (2006) found that producers member of a collective scheme, generally employ the PAYG method, which does not distinguish between historical and new waste. Hence, all members contribute to finance EOL costs from any member that is unable to finance its EOL management. In at least two Member States (the Netherlands and Belgium), attempts have been made to make additional funds to cover new WEEE. The question is whether these funds are sufficient to cover all new WEEE, would the collective scheme collapse.

Only Germany, Italy, Sweden and France have introduced a mandatory financial guarantee for both collective and individual systems (van Rossem *et al*. 2006).

5.9. Problem areas and future trends

- **Problem areas**

In the implementation of the WEEE Directive, Member States have run into problems. The text of the Directive is not exhaustive and does not answer every single detailed query. The Commission has published a FAQ ("Frequently Asked Questions") document, which serves as some assistance for the Member States and their administrative authorities and the coordinating organisations. However, this document is not exhaustive and not legally binding. The implementation, as demonstrated by the findings of AEA Technology (2006), diverges greatly in some areas, which creates problems in terms of difference in environmental standards and in the scope of the WEEE system. There are two camps of Member States, those favouring the current flexibility in interpretation and those calling for greater harmonisation of legal requirements and coordination of national compliance schemes to align processes and reduce administrative burdens and costs. It is expected that the Commission will opt for the second alternative, clarifying existing grey areas and producing clearer guidance. Industry perceived the following problems as the most pressing, calling for further improvements.

1. Different interpretations of key definitions

There is growing divergence between the Member States in terms of the scope of EEE covered, the list of registered producers and importers, and treatment standards for WEEE.

Some countries including Austria are complaining about the growing list of products which amounted to 680 EEE in late 2005. There is also a potential loop hole for some importers as the legal situation for importers for direct sales, who in some countries, including Austria, do not have to register to the EEE register unless they have a registered seat there (AEA Technology 2006).

Furthermore, the Member States do not employ a uniform, harmonised interpretation of what constitutes the 'best available treatment, recovery and recycling techniques'. Since, Annex II and Annex III only set out the minimum requirements, the treatment standards differ between the Member States. All these differences contribute to a situation which fails to guarantee a level playing field between the national producers. Loop holes that jeopardize full compliance and exacerbate the problem with free riders are particularly serious and need to be addressed in the upcoming review of the WEEE Directive.

2. Compliance and enforcement issues

Virtually all the EU collective schemes faced, at least some, problems of free-riders (AEA Technology 2006). As long as there are orphan products and free-riders on the market, members of collective schemes have to cover these additional costs. The level of enforcement was generally reflected to what extent producers and/or government had invested in enforcement procedures. Also the size of the country and the volume of products are additional factors influencing the level of enforcement. For instance, larger countries such as UK, Germany and Italy face larger problems with free riders and orphan products than smaller countries. To improve compliance these countries may have to make additional investments into enforcement procedures and market controls (AEA Technology 2006).

Another issue, picked up by AEA Technology (2006), is the perception by industry and the government of who should finance enforcement. Whereas, the industry regards enforcement as mainly the role of the government through legislation and prosecution, governments would rather pass on this responsibility to the industry, mainly for reasons of the cost for policing compliance. Governments on the other hand tend to rely on collective schemes to self-police themselves, as a way to cut costs for implementing the WEEE Directive.

3. Equity vs. administrative efficiency

AEA Technology (2006) found that the main issue regarding equity among producers and distributors were associated with the charging system used, i.e. to what extent the financing mechanisms allowed for flexibility and variation between the various product categories. Since the extent of historic and orphan goods vary between the various product categories, producers also have different preferences for visible fees, i.e. fees based on actual costs. Only a few countries, including El-Kretsen in Sweden, allow for differentiated fees by using a complex system comprising 50 product categories. Other national schemes such as NVMP in the Netherlands, instead reduce the number of product categories on which it collects fees to rationalise the fee system and make it more administrative efficient. It seems important to have more collective schemes to ensure differentiated financing to ensure equity among the producers. This could also send the right signals to consumers, regarding the real costs for EOL for the various products. However, equity has to be

balanced with administrative efficiency, which is one of the key factors of the success of collective schemes[23].

[23] Financing should perhaps not only be based on volumes and share of historic and orphan waste but also to what extent the components and materials are toxic

4. High participation costs

Multinational companies, operating in multiple Member States, regarded the costs for participating in the national WEEE schemes as "unacceptably high". Such companies may have to face WEEE systems in 27 Member States, plus non-European countries having similar EPR requirements for WEEE. In addition, they also participate in other EPR collection and recycling schemes for packaging and batteries (AEA Technology 2006). Costs and administrative burdens would be reduced considerably with a pan-European approach and/or with a harmonisation of reporting requirements in the EU.

5. In-efficient charging system

The study by AEA Technology (2006) found that the prevailing current model for charging producers, based on current market share or allocation of actual costs to products put on the market, was not the most efficient. In particular, sorting by brand was inefficient because of the high share of orphan WEEE. The problem with the market-based model is that the producers and their market share change more rapidly than the life span of their products. In other words, by the time a TV-set is discarded, its producer may have disappeared from the market or merged with one or more other companies. An EPR system based on a market-share model is difficult for products with long life-time including EEE and furniture. It is easier for other EPR products such as batteries and car tyres.

- **Future trends**

Member States still need time to finalise the legal transposition and put into place the relevant compliance procedures, EEE registers and monitoring systems. It is also anticipated that the market will develop and consolidate as the WEEE collective systems mature. Anticipating the 2008 revision of the WEEE Directive, it is likely that the following issues be addressed:

1. Clearer definitions of producer and products covered

According to the findings of AEA Technology (2006), Member States and the industry find the current situation with a tentative, non-exclusive list in the Annexes to the WEEE Directive, as insufficient to ensure compliance. Some countries have lists with close to 700 EEE covered, whereas others have more confined lists. Some Member States would prefer a single European, exhaustive list of EEE (decided by the Technical Committee), whereas others rather opt for more flexibility for the Member States to decide upon the product scope. Since the second option, potentially would

constitute an obstacle to a level playing field between producers in the various Member States it is likely that the European Commission would primarily consider the first option.

2. More incentives for ensuring design changes

One of the objectives of the WEEE Directive is to create incentives for the individual producer to cut EOL costs by reducing the environmental impact of products through design changes of its own brands. However, industry has opted for collective WEEE schemes, rather than individual producer responsibility schemes. It is likely that the European Commission might put pressure on industry to introduce incentives in the existing collective schemes to ensure design changes. This could take the shape of differentiated fee structures for more environmentally friendly products. The European Commission and the Technical Committee will also continually update the list of restricted substances in the RoHS Directive, which ensures mandated phasing-out of the most hazardous substances.

3. Consolidated EU register of producers and importers or enhanced coordination of national registers

Currently, as identified by AEA Technology (2006) there is divergence between the national registration requirements, particularly for importers who do not operate in a specific country through a registered seat but operates through direct sales to the end-users. As the end-user is responsible for disposing of the WEEE according to national laws, a producer must be identified for ensuring collection and EOL treatment, to avoid a situation of orphan WEEE. Many producers are calling for a consolidated, centrally operated EU register, which would also include harmonisation of notification and registration requirements within the EU. As a second best option, it is thinkable that the EU will attempt to harmonise the requirements for registration and notification.

In addition, it is expected that the current WEEE systems as they develop and mature will allow for:

- Greater integration and coordination between the various national compliance schemes
- The development of pan-European schemes to reduce costs for participation and to reduce the administrative burden for participants:
- More variables in financing (white and Brown Goods) to provide for greater equity between the various groups of producers
- Development of recycling and treatment hubs/centres whereas volumes and close regional proximities will enhance market consolidation and reduce costs. As volumes of household WEEE is expected to increase significantly there is a need for bigger sites with better technologies.

5.10. Conclusions

In consulting with industry, national authorities and other stakeholders, AEA Technology (2006) found that a successful WEEE scheme was characterised by a sound legislative framework, competent authorities, prior consultation with stakeholders, and a scheme reflecting the specifics of culture, geographic region and industry. The WEEE schemes should also build on existing waste management practices and it was generally perceived that a few collective schemes were easier to cope with than individual schemes established by thousands of importers and producers. In addition, it was felt that a WEEE approach based on individual responsibility would be difficult to enforce, cost inefficient and difficult in terms of ensuring a financial guarantee covering future EOL costs.

An important conclusion drawn from the study by AEA Technology (2006) was that it was important to develop a WEEE system as soon as possible and deal with performance and target setting for recycling at a later stage. It was perceived as much better to take a learning-by-doing approach and by experience find out what structures or solutions are the most efficient since there are too many uncertainties regarding volumes and costs. Furthermore, to ensure cost-efficiency and acceptable environmental results it is important that the ambitions for target volumes, costs and environmental standards are realistic and attainable. Otherwise, there is a risk that the collective schemes would only look for the most cost-efficient solutions regardless of the environmental results.

In terms of collection rates and the overall success of a WEEE system, it largely depends upon the clarity of the system, whether it easily can be understood by the consumer and whether the collection is organised in a consumer-friendly way. It is also desirable that the consumer understands the financial aspects, e.g. visible or non-visible environmental fees on EEE, which will cover the EOL treatment. AEA Technology also concluded that it was important how the various stakeholders, primarily EEE consumers, were informed about WEEE collection systems. A few combined systems were generally perceived to be easier to deal with by consumers rather than different collection systems for different products (AEA Technology 2006).

In the implementation of the WEEE Directive, the market has favoured collective schemes. Collective schemes have several advantages. Firstly, the offer cost-efficient solutions to collection, transport and treatment. By providing large-scale operations, there are possibilities for economies of

scale. Secondly, there is no division between „new", historic and orphan waste and most financial mechanisms in a collective scheme cover orphan products and free riders. Although, the WEEE Directive initially foresaw individual schemes for new WEEE and collective for historic and orphan WEEE, industry has not responded in this direction. It seems more efficient to treat all WEEE jointly and have one or two national schemes operate the system rather than hundreds or thousands of individual schemes operated by each and every EEE producer.

The arguments against collective systems include their non-competitive structure, lack of mechanisms to reward companies for investments into eco-design, cross-subsidisation between product groups and lack of transparency. In the development of the WEEE Directive, it was believed that if each producer is responsible for his/her own WEEE than he/she would look to minimising the EOL costs, amongst others by making design changes to reduce the environmental impact of the EEE through a life-cycle approach (e.g. by reducing input raw materials, reducing environmental impact in the manufacturing process, the user-phase and in EOL treatment. However, in a collective scheme, there is a risk that the diligent producer investing in design changes has to subsidise the costs of producers with EEE with poorer environmental standards. Hence, this saving will be off-set by the EOL costs of less environmentally conscious producers. It remains to be seen whether this EU objective of design changes can be incorporated into the existing collective schemes, for instance, through differentiated fees for environmentally friendly EEE.

As experience is gathered, including both positive and negative aspects of the administration of collective WEEE schemes, and benchmarking takes place, it is expected that industry will push for more comprehensive, better integrated and more efficient system. This European system could be in the form of a pan-European system with regional hubs providing large-volume low-cost treatment plants. Currently, all current schemes are mainly nationally oriented. The European association for WEEE producers, the WEEE forum, headquartered in Brussels, may come to play an important role in steering the national systems in this direction or at least to lobby the EU for changes to the current WEEE Directive which allows for further harmonisation of the national systems, in particular for reporting requirements, fee setting and treatment standards.

6. Implementation of the WEEE Directive in Sweden and Hungary

This chapter describes the implementation of the WEEE Directive in Sweden and Hungary. Firstly, it gives a general introduction to the waste management policies in both countries. Secondly, it provides an overview of the transposing legislation, the registration and reporting procedures, the obligations of the producers to ensure compliance, including labelling and information duties, participation in collective schemes and the arrangement of financial guarantees. It allows the reader to understand the legal and administrative systems in both countries and to better understand the choice of practical solutions for collection and treatment of WEEE, which is described in the following chapter.

6.1. Introduction

6.1.1. Sweden's waste management situation

The waste management in Sweden is steered towards achieving Sweden's 16 environmental goals, aiming for sustainable development. These goals, particularly the one pertaining to good spatial environment (god bebyggd miljö), sets out the overall targets for reducing the environmental impact of waste management.

Sweden has made major advancements in minimizing and managing waste, particularly in reducing the amount of waste landfilled and in recycling, with more than 95 percent of household waste being recycled as material, nutrients or energy (Swedish Association of Waste Management 2006).

The Swedish national waste plan, "Strategy for sustainable waste management" aims at dealing with the major waste problems in the medium-term. The Swedish waste management is in line with the EU-established hierarchy of waste prioritising recycling as a first instance and landfilling as last resort. Major players with formal responsibility for waste are the local authorities, responsible for household (municipal) waste, the producers, responsible for their product groups and other waste holders (i.e. industry/business) for waste not falling into the former two categories. Another important waste organisation is the Swedish Association of Waste Management (RFV), which is a stakeholder and

trade association in the field of waste management and recycling (Swedish Association of Waste Management 2006).[24]

Waste is predominantly handled by the local authorities at their own waste management facilities. Local authorities are exclusively responsible for hazardous waste in household waste both regarding collection, transportation and treatment. However, about 60 percent of (non-hazardous) waste transports from households to these facilities are contracted. Where there is producer liability for certain categories of goods (e.g. tyres, electronic and electric equipment, batteries), producers are mainly responsible for the recycling. However, producers can commission local authorities to perform certain functions such as incineration, dismantling of electronic waste and collection of packages.

Sweden has introduced producer responsibility for packaging, cars, tires, paper and waste electronic and electrical equipment (WEEE). The producer for WEEE was introduced in Sweden in July 2001 along with regulations that banned landfilling, incineration or shredding of WEEE that has not first been treated by an authorised operator (Naturvårdsverket 2003. Producentansvarsutredningen (SOU 2001:102) identified that the most important objectives of producer responsibility are to reduce the amount of generated waste, reduce the amount of waste landfilled, develop less energy and material intensive products, reduce littering and reduce the presence of toxic substances in goods and waste.

In Sweden four stakeholder groups are affected by the WEEE legislation: producers, municipalities, pre-treaters and end-users. The responsibilities of producers include: take-back of WEEE upon purchase of a new one (especially if not household WEEE), establish collection points across Sweden, inform customers about the producer liability and take-back possibilities, ensure that collected WEEE is handled in an environmentally sound manner, provide sufficient information about product content. The municipalities collect most of the household WEEE through the system Elretur, which is an arrangement between the municipalities and El-Kretsen.

[24] The association represents its municipal members, whose customers account for 95 per cent of the Swedish population, vis-à-vis politicians, decision makers, authorities, and the EU.

6.1.2. Hungary's waste management situation

Gille (2005) argues that Hungary's waste management policies from the socialist era took a rather preventive approach, with preference of recycling over waste disposal. For instance, in the 1980' Hungary introduced both a system of monitoring of industrial activities to detect toxic by-products as well as waste regulations25 which claimed to have resulted in the reuse of more than half of the waste generated. Hungary also set up an extensive infrastructure for waste registration, collection, redistribution, reuse and recycling.

The infrastructure and waste policies also had shortcomings, for instance, incentives to produce waste to meet waste quotas and a negligence to ensure safe waste dumping. Furthermore, privatisation in the early 1990's and increased consumption and accumulation of packaging waste, put an end to free of charge garbage collection, and a lot of waste was illegally dumped. Also Hungary failed to pass legislation after the privatisation to ensure that both waste producers and waste collection companies fulfilled their duties. The comprehensive Waste Management Act only entered into force in 2001 and some of the positive features of the socialist system, including obligation of companies to prepare material flow charts and state subsidies for rationalisation of material and energy use, were eliminated. Hence, the state authority in the field of environmental protection was diminished until the mid 1990's and it was ill-equipped to enforce existing environmental regulations and to introduce new ones (Gille 2005).

In anticipation of EU membership, Hungary experienced both positive and negative effects regarding its waste policies. On the positive side, was the entry into force of the 1995 Act on Environmental Protection which introduced a number of eco-taxes, such as environmental load fees and environmental product charges26. On the negative side, was the fact that the existing waste legislation and the 1995 Environmental Protection Act were provisional and not fully EU conforming. In addition, the make-up of the waste in Hungary is different from the EU average, which the share of municipal solid waste considerably lower than the average EU but with a higher waste generation by industry. While EU has prioritised recycling of solid municipal waste, with the average recycling rate exceeding 15 percent Hungary has a recycling rate of only three percent. However, for the

[25] The main aim of the 1981 Waste and Secondary Raw Material Management Programme was to substantially increase the use of secondary raw materials as industrial inputs. Although, it did not achieve its goal, it was efficient in recycling and reusing hazardous wastes.

[26] Product charges have been imposed on a number of EPR products such as refrigerators, packaging materials and batteries as well as on WEEE.

situation of hazardous waste produced by industry, the situation is reversed, with a recycling rate of 20 percent in Hungary compared to approximately eight percent in the EU (Gille 2005). Hence, Hungary has favoured recycling of hazardous waste over landfilling and incineration27. However, with the accommodation to the Western waste management systems and technologies and the implementation of the environmental acquis communitaire, Hungary had to, partly, start from a blank page and demolish the old system.

Gille (2005) is arguing that the enlargement negotiations and the adaptation to the EU waste management acquis have not been entirely beneficial for Hungary's waste management situation. And that EU was sending mixed messages which contributed to Hungary being late in adopting the environmental chapter of the EC 'acquis communitaire'28 One of the reasons for the delay in adopting Act on Waste Management and other relevant waste provisions was a discerned shift in its waste management policies from preventive policies towards end-of-pipe technologies. A large part of EU's waste legislation, dating back to the 1970's, tackled environmental problems through end-of pipe technologies. Furthermore, although EU is gradually shifting its waste management policies towards pollution prevention, EU is still financing remedial end-of-pipe solutions such as investments into landfills and incinerators (Gille 2005). Since Hungary only have one major landfill and one incinerator for hazardous waste, only a small fraction of the total amount of hazardous waste can be disposed of this way. With the low rate of recycling of municipal waste, Hungary is forced to shift focus on recycling and reuse of non-hazardous waste rather than industrial hazardous waste. The EU subsidies are also favouring investments into incineration and landfilling of hazardous wastes rather than recycling. In Hungary, this poses a problem as the infrastructure for landfilling and in particular incineration is inadequate. Landfilling has been the dominant waste disposal but only 15 percent of the 665 registered municipal landfills are meeting current technological standards (Gille 2005). Hungary's National Waste Management Plan (Országos Hulladék Terv) for 2003-2008 is planning a number of new incinerators in the country (Gille 2005).

Reiniger and Jancsar (pers. comm.) argue that the main milestones in waste management policies of the last couple of years include Hungary's accession to the EU, the operational programme for the

[27] With only one incincerator for hazardous waste, only three percent of the total quantity of hazardous waste can be incinerated. Gille (2005) is estimating that the ratio of incineration for all types of waste is not more than 11 percent.

[28] Acquis communitaire represents the whole body of EU legislation developed since the establishment of the EU, which all candidate countries have to implement prior to acceeding to the EU.

period of 2004-2006, which contributed to the implementation of regional waste management systems and the remediation of abandoned landfills and the introduction of selective waste management, adopting the German selective waste management scheme. Reiniger and Jancsar (pers. comm) pointed out three main issues for the coming years:

- Extend and improve an insufficient waste collection infrastructure. The number of collection points and waste yards is insufficient. It will be necessary to reconsider the current focus on waste islands and consider a kerbside collection system to increase collection rates.[29] Such a system could also facilitate the collective schemes' obligations to achieve the set collection and recycling targets.
- Efficient implementation of the regional waste management systems. These systems can provide a better quality of waste management services for the residents, and improve the environmental effectiveness. The experience in Hungary of these systems is limited, especially in regard to large integrated waste management facilities that include MBT, composting, sorting and landfill sites
- Ensure the financing for the waste management infrastructure in Hungary. Historically the waste management tax for households is low, amounting to roughly 6000 HUF/year. Although, Hungary is eligible for some EU funding in terms of developing its waste management infrastructure, financial resources are lacking. It will, thus, be necessary to increase this tax considerably (Reiniger and Jancsar pers. comm.).

6.2. Overview of legal transposition of the WEEE Directive:

6.2.1. Sweden

- **Status of implementation:**

Since Sweden introduced EPR obligations for EEE producers already in 2001, most players are well acquainted with the legislation and their respective duties. To ensure full alignment with the WEEE Directive, Sweden had to make some adjustments to the previous system[30]. In addition to the adopted legislation, the EPA has proposed EPA guidance on financial guarantees, which is likely to

[29] In Hungary, WEEE is growing with an annual rate of 8 percent and is now 150 000 tonnes, pursuant to the Association for Environment Service and Producers (Környezetvédelmi Szolgáltatók és Gyártók Szövetség).
[30] One change which had to be made was the shifting of the responsibility for collecting and treating white goods (e.g. fridges and freezers), medical electrical and electronic equipment and household fire detectors from the municipalities to the manufacturers.

enter into force by October 2007. Furthermore, the EPA also needs to finalise the calculation of the market shares of producers, forming the basis for estimating the scope of the producer responsibility for each and every producer. Hence, it is anticipated that the implementation of all the WEEE requirements will be finalised by the end of 2007.

- **Overview of transposing legislation:**

The following legislation has been introduced to transpose the provisions of the WEEE Directive:

- **Ordinance (2005:209) on Producer Responsibility for Electrical and Electronic Products**[31]

  This Ordinance was adopted on 14 April 2005 and entered into force on 13 August 2005. It is covering most of the product categories but not all. For instance lamps and lighting sources are subject to a separate ordinance.

- **Ordinance (2000:208) on Producer Responsibility for Light Bulbs and Certain Lighting**[32]

  This Ordinance covers the EEE categories pertaining to lighting sources, which are not covered by Ordinance 2005:209.

- **EPA Regulations (2005:10) on professional pre-treatment of waste consisting of electrical or electronic products**[33]

  These regulations were adopted on 1 June 2005 and entered into force on 1 January 2006. These regulations contain minimum requirements regarding the treatment of WEEE, including education of employees dealing with processing of WEEE, obligation to adequately record pre-treatment of WEEE (quantities, weight) and precautionary measures

- **EPA Regulations (2006:15) on the submission of information regarding the producer responsibility for electrical and electronic products.34**

  Regulations 2006:15 were adopted on 6 December 2006 and entered into force on 1 January 2007

[31] Förordning 2005:209 om producentansvar för elektriska och elektroniska produkter.
[32] Förordning om producentansvar för glödlampor och vissa belysningsarmaturer.
[33] Föreskrifter om yrkesmässig förbehandling av avfall som utgörs av elektriska eller elektroniska produkter.
[34] Naturvårdsverkets föreskrifter om lämnande av uppgifter med anledning av producentansvaret för elektriska och elekroniska produkter.

- **Environmental Code 1998:808, chapter 30 on environmental sanction fees 30 kap. miljöbalken35**

In the case of non-compliance with reporting obligations in the 2005:09 Ordinance, it is possible to impose an environmental sanction fee, with a view to neutralise any specific gains or advantages a producer has benefited from by his/her non-compliance.

- **Ordinance (2001:1063) on waste**

This Ordinance contains some provisions regarding to the handling of waste, which also must be complied with regarding WEEE.

- **Ordinance (1998:900) on supervision pursuant to the Environmental Code36**

According to Article 13 of this Ordinance, the Environmental Protection Agency (Naturvårdsverket) is the operative supervisory authority in issues related to the Environmental Code, including the EPR programme for WEEE.

- **Proposed EPA general guidance on the provision of financial guarantees (Förslag till allmänna råd för finansiella garantier)**

This guidance is providing details regarding the various ways of providing a financial guarantee.

- **Implementing authorities:**

The EPA is the main authority in charge with the implementation of the WEEE Directive and development of an EPR programme for WEEE. It is responsible for issuing recycling regulations, is an active discussion partner both in Sweden and within discussion forums in the EU and publishes an annual report on the results of the EPR programme for WEEE (Kollberg 2003). EPA is also the operative supervisory authority and it has broad competence and mandate in developing the Swedish EPR programme (Lindqvist pers.comm.).

- **Key definitions:**

- **Electrical and electronic equipment**

In line with the provisions of the WEEE Directive, Ordinance 2005:209 applies to both household and other EEE. Regarding the definition of EEE, the interpretation of EPA (2006) is that household EEE comprise of EEE, which typically exist in a household and therefore can be expected to become household waste. EEE not constituting household waste is EEE, which typically does not

[35] Kap. 30, Miljöbalken.
[36] Förordning (1998:900) om tillsyn enligt miljöbalken.

exist in households. According to the interpretation of the EPA it is irrelevant to whom the product is sold. Whether EEE is household EEE or not is determined by the characteristics of the product.

In terms of the scope of products, Sweden has taken a rather novel approach by providing a list of functions rather than EEE. The Swedish list is also exhaustive whereas the annexes to the WEEE Directive contain non-exhaustive lists of EEE. The Swedish legislator opted for functions because it considered that many categories of EEE are developing at a rapid pace with new products launched annually or monthly. To ensure that these new EEE are covered, the list to Ordinance 2005:209 therefore contains functions, such as devices with which to iron laundry. The EPA is critical towards this list, particularly due to the fact that it is exhaustive. Lindqvist (pers. comm.) stated that there have been occasions where EEE, which otherwise should have been covered, have been exempted due to the fact that these functions were not listed. EPA has, thus, called for a revision of the list to at least ensure that is non-exhaustive.

- **Producers**

Pursuant to the interpretation of EPA, a producer falling under the scope of the 2005:206 Ordinance on WEEE:

- Manufactures and sells EEE under his/her own brand name
- Under own brand name sells EEE not having its own brand name, if it can be attributed to a manufacturer belonging to the first category
- Imports, for commercial purposes, EEE into Sweden or exports EEE to another EU Member State,
- Sells directly (i.e. distance sales) to a user in another EU country, provided that the EEE is not received by a producer in that country.

Not responsible for WEEE under the ordinance is:

- Sales agents (i.e. a physical or legal person not involved in the manufacturing or import of EEE)
- Distributors (retailers)
- Companies engaged in leasing activities

According to Van Rossem *et al.* (2006), it is only the producers of EEE in Sweden who are responsible for the establishment and financing of collection points. Retailers have been exempted

from this responsibility although most Member States have, in their transposition of the WEEE Directive, opted for a combined responsibility between producers and retailers. Lindqvist (pers. comm.) confirms that the Swedish interpretation of producer does not cover retailers. The main reason is that it is easier to hold producers and importers accountable for the WEEE. Where EEE is sold in the third, fourth and fifth channel it is difficult for the retailer to know that he/she is responsible for EOL management. Secondly, virtually all household WEEE is returned to one of the collection sites and not to the retailers where they were purchased. (Lindqvist pers. comm.) Ericsson (pers. comm.) also argued that producers and importers are better placed to improve and influence EEE in a way that retailers cannot, hence it makes sense to place the responsibility on producers and importers. Furthermore, since Sweden has a collection system, whereby consumers return discarded WEEE to one of the 950 municipal collection points rather than returning WEEE to a retailer upon purchase of a new product, retailers will not be involved in the collection of WEEE to the same extent as in other Member States where consumers mainly return household WEEE to the stores where it was purchased.

Although, municipalities do not have a legal duty to participate in the establishment and financing of the collection points, an agreement was entered between El-Kretsen and the municipalities, giving municipalities the main responsibility for the collection of household WEEE, at least until 2010 (van Rossem *et al*. 2006 and El-Kretsen 2006). Furthermore, municipalities are often contracted to perform various other related tasks. For instance, municipalities carry out the regional supervision of the collection and inform the households about available collection points. They safeguard that the producers really carry out collection in a given municipality (Van Rossem *et al.* 2006).

Swedish producers putting EEE on the market in other EU countries are responsible for participating in the collection and recycling in the countries in which the EEE are expected to become waste, i.e. in the country where the products was sold. Hence, such producers are required to participate in collective systems in the country of sales as well as in Sweden if the producer is also selling products in Sweden. In terms of distance sales, it is the seller who takes on the producer responsibility for collection and treatment of WEEE sold via Internet or by mail order.

6.2.2. Hungary:

- **Status of implementation:**

Although Hungary did not have any EPR legislation for WEEE prior to the implementation of the WEEE Directive, it has succeeded in transposing almost all of the provisions of the WEEE Directive. There are still a few legal inconsistencies to be addressed, such as the unregulated status of coordinating organisations (Berenczei, pers. comm.) and the exception for producers as members of a collective scheme to provide a financial guarantee. The environmental product fee regulation might also have to be amended to comply with the WEEE directive and here some steps have been taken. According to Berenczei (pers. comm.), CEO of Comp-Cord, the interest association of the coordinating organisations – MGYOSZ – is an important forum for discussing issues regarding the WEEE implementation and practical arrangements and it informs the Ministry about potential irregularities.

- **Overview of transposing legislation:**

The WEEE Directive has been transposed by:

- **Government Decree 264/2004 on the Take-Back of WEEE of 23 September 2004**[37]

The key piece of law transposing the WEEE Directive was adopted on 23 September 2004, and entered into force on 8 October 2004, except for Articles 3,4, 6, 14-15, and 16(1) which entered into force on 13 August 2005 and Article 16(2) which entered into force on 20 February 2006.

- **Ministerial Decree 15/2004 on Requirements for Treatment of WEEE of 8 October 2004**[38]

The Ministerial Decree, which entered into force on 23 October 2004, sets out detailed rules on the treatment of WEEE, professional qualifications required for the treatment of WEEE, as well as on the reporting obligations of producers.

- **Government Decree 209/2005. (X. 5.) on detailed rules applicable to product fee**[39] **and amendment (Decree 103/2004) to the Product Fee Act**

The Government decree and the amended Product Fee Act impose environmental product fee on EEE. According to the Product Fee Act, producers have to pay waste tax on WEEE as from 1

[37] 264/2004. (IX. 23.) Korm. rendelet az elektromos és elektronikai berendezések hulladékainak visszavételéről.
[38] 15/2004. (X. 8.) KvVM rendelet az elektromos és elektronikai berendezések hulladékai kezelésének részletes szabályairól.
[39] Korm. rendelet a betétdíj alkalmazásának szabályairól.

January 2005. However, producers participating in a collective system are exempt from the product fee.

- **Act XLIII of 2000 on Waste Management**[40]

The framework legislation for waste management in Hungary is Act XLIII of 2000. The Waste Management Act sets out basic environmental principles as foundation for further rules and procedures. Section 11 of the Waste Management Act enables producers to delegate their producer responsibility to coordinating organisations.

- **Implementing authorities:**

The National Inspectorate for Environment, Nature and Water (Országos Környezetvédelmi, Természetvédelmi és Vízügyi Főfelügyelőség)[41] is the main organisation in charge of the implementation and enforcement of the WEEE Directive in Hungary. Its jurisdiction covers the whole area of Hungary. It supervises the 10 regional inspectorates for environment, nature and water – each responsible for one of the 10 regions in Hungary. The National Inspectorate for Environment, Nature and Water plays a role in the implementation of international co-operation independently but can be charged with other government tasks as well. The National Inspectorate has competences to handle the registration and supervision of the treatment of WEEE, approve registration of coordinating organisations and set up and maintain a national register of EEE producers.

Reiniger (pers. comm.), Director at Deloitte RT and former Executive Director of the National Inspectorate, pointed out that not only the EPA has an important function in the supervision and monitoring of the producers' obligations. Also the tax authority has access to the WEEE register and to data gathered by the collective schemes. In terms of authority, the tax authority probably has more weight and influence on producers than the EPA.

- **Definitions**

- **Electrical and electronic equipment**

Articles 1(1), para. a) and 2 a.) of the Government Decree transpose, virtually word by word, the definition of EEE enshrined in the WEEE Directive. Pursuant to Article 2, para. a.), "electrical and

[40] 2000. évi XLIII. törvény a hulladékgazdálkodásról.
[41] The information on the National Inspectorate was mainly obtained from its website [URL: http://www.orszagoszoldhatosag.gov.hu/index.php?akt_menu= [consulted 15 June 2007].

electronic equipment" means equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and designed for use with a voltage rating not exceeding 1000 Volt for alternating current and 1500 Volt for direct current. Article 1(1), para. a.) refers to Annex 1A of the Government Decree which corresponds to Annex 1A of the WEEE Directive. Similarly, Annex B of the Government Decree follows even the same order as Annex B of the WEEE Directive.

There are, however, two notable differences. First, the Government Decree fails to specifically include sports equipment with electrical and electronic components, as well as coin slot machines as part of "Toys, leisure and sports equipment". Second, it provides no details as to equipment specifically included as part of the categories of "Medical devices", "Monitoring and control instruments" and "Automatic dispensers".

Furthermore, equipment for military purposes and for national security is excluded of the scope of the Government Decree. It is not required to use such equipment specifically for military purposes, as set out in the WEEE Directive, therefore, the Government Decree seems to have a broader scope than the WEEE Directive and cover also, for instance, dual-use goods (equipment available for military as well as for other purposes).

- **Producer**

The Waste Management Act defines the principle of producer liability as liability for deciding about the characteristics of the product and technology from a waste management perspective, taking into account raw material input, durability, life-span, recyclability, use-phase and waste disposal. Pursuant to Article 2, para f.) of the Government Decree, the producer is defined with reference to Article 3, para. e.) of the Waste Management Act, that is:

(i) Manufacturer (without specifying whether the producer also sells the equipment or not, and whether the product is manufactured under his own name or not),

(ii) Importer, and

(iii) He/she resells under his/her own brand equipment produced by other suppliers, a reseller not being regarded as the "producer" if the brand of the producer appears on the equipment.

6.2.3. Comparative analysis/conclusion

The Swedish transposition is near completed, with only two issues pending. First, the draft EPA guidance on financial guarantee has to enter into force and ensure that producers provide such a guarantee by October 2007 at the latest. Secondly, the EPA still has to finalise the calculation of producers' market shares, which stipulates to what extent a producer is responsible for financing the EOL for historical and to a limited extent "new" WEEE.

In Hungary the transposition is completed, on paper. However, the interpretation of the financial guarantee, exempting members of collective schemes from the obligation to provide financial guarantee, is likely at odds with Article 8(2) of the WEEE Directive, requiring a financial guarantee for each producer. Furthermore, it appears that the National Inspectorate for Environment, Nature and Water still has to finalise the calculation of the market shares for Hungarian-registered producers.

In terms of definitions, Sweden takes a rather narrow definition of producers, excluding retailers and leasing companies. This means that a company like Xerox will not be held responsible for the waste management of discarded copy machines. This situation can create loop holes for certain producers and products. Retailers, also have a very marginal role in the collection and recycling of WEEE. Instead, Sweden has introduced a complete producer responsibility for producers, although, in practice, the municipalities are financing a large share of the collection of household WEEE. Another peculiarity in the Swedish system is the product list based on functions, which is exhaustive, as compared to the product list to the WEEE Directive which is listing EEE in a non-exhaustive manner. The EPA is acknowledging that this method has led to situation whereby it has been legally impossible to hold a producer responsible under the WEEE legislation, where the product has had a function different from those listed. It is probable, that the list will be replaced in the near future to address these shortcomings

The definitions in the Hungarian Decree are largely in line with the WEEE Directive. Retailers and producers are sharing the responsibility for financing the collection and treatment of WEEE. However, there is no detailed list of products under the categories of "Medical devices", "Monitoring and control instruments" and "Automatic dispensers", which render the practical implementation more difficult.

6.3. Registration and reporting requirements

6.3.1. Sweden

- **National register**

Ordinance (2005:209) on producer responsibility for electrical and electronic equipment contains general provisions of the obligations of producers to register, declare and report regarding their sales of EEE in Sweden. This ordinance requires producers to register to the EPA register for producer responsibility for WEEE, the so- called EE-register, which has been in operation since September 2006,. According to EPA (2006b) companies registered under other systems within the EU can also register to the Swedish national register.

EPA Regulations (2006:15) on the submission of information regarding the producer responsibility for electrical and electronic products contain further provision regarding the data a producer has to submit when registering and in the periodic reports and declarations. Producers already selling EEE on the Swedish market had to register before 31 January 2007. The annual registration fee is 3000 SEK, which is covering the administration of the EE-register. At the time of registration, the producers have to submit certain minimum information including:

- Name of company
- Organisation number or equivalent
- Address
- Address for invoicing
- Contact person and his/her contact information

The main purpose of the EE-register according to the EPA (2007) is to improve the control of WEEE to reduce the pollution associated with dangerous substances in the EEE. The register provides the basis for the declaration and reporting procedures. It is kept in both Swedish and English to facilitate the registration for producers from other EU Member States.

- **Declaration**

Pursuant to Article 7 of EPA Regulations 2006:15 and Article 9(4) of Ordinance 2005:209, the producer has to declare how he/she intends to meet his/her obligations under Ordinance 2005:209.

This declaration has to be produced at the latest two months upon registration to the EE-register, i.e. by 30 March 2007. This declaration has to be in accordance with Annex 2 to the 2006:15 Regulations. The data that has to be declared includes:

- Specification of the product category/categories which the producer puts or will put on the market. The products covered extend beyond household products and also include EEE intended for commercial or industrial use.
- Which systems (i.e. individual or collective) they will apply to collect both EEE put on the market prior to 13 August 2005 (i.e. historic WEEE) and EEE put on the market after 12 August 2005 (i.e. new WEEE). Again, this obligation both applies to household products and EEE used for other purposes.
- Specification about they chosen type of financial guarantees covering future EOL costs.

Producers have to submit new information to the EPA by 31 October 2007 to confirm the data submitted in January and March 2007. Furthermore, a revised declaration must be submitted in case of changing circumstances (e.g. new line of products, expanded activities). Currently, 1075 producers have registered to the EE-register.

- **Annual reporting**

The producer is obliged, pursuant to Ordinance 2005:209, to submit annual reports of the quantities of EEE sold. This report has to be submitted to the EPA by 28 February each year, covering the sales for the preceding year. The first report has to be submitted by 31 March 2007 and it also applies to those producers who have not yet registered to the EE-register. This report covers the period 13 August-31 December 2006 and it has to, as a minimum contain the data set out in Annexes 3-4 to EPA regulations 2006:15:

- Quantities (in kilograms) sold, divided into one of the 10 product categories, both for household products and other products (commercial or industrial)
- Quantities through distance sales (e.g. via Internet or mail order) within the EU
- Collected WEEE has to be divided into the following categories:
    - Recycling without pre-treatment
    - Recycling after pre-treatment
    - Reused after pre-treatment
    - Material recovery

- Energy recovery
- Disposed of by other means
- Exported for treatment

In addition to the general reporting, the producer has to submit an annual report, by 31 October 2007, for the first reporting period, on how he/she meets the obligations of the 2005:206 Ordinance regarding the collection, treatment, the historical waste and financial guarantees.

6.3.2. Hungary:

- **National register**

The National Inspectorate for Environment, Nature and Water[42] has established a national register of producers. It also is responsible for issuing operating permits for the coordinating organisations. The Hungarian register[43] contains 720 companies out of 20 are foreign registered companies. Under Hungarian law, registration is obligatory and a precondition for joining a collective scheme. Registration has to be carried out in accordance with the conditions and form set out in Annex 5 to Decree 264/2004. Producers must apply for registration prior to putting EEE on the market, while coordinating organisations should apply for registration within 8 days from the date of establishment.

Coordinating organisations are registered for 2 years initially, and for 5 years thereafter. Any modifications to registered data regarding producers or coordinating organisations must be notified to the National Inspectorate within 15 days. Producers who carry out activities subject to the Government Decree already prior to the entry into force of the Government Decree were required to register by 31 December 2004.

The National Inspectorate decides on registration within 30 days from application and upon registration a registration number is provided to the producer/coordinating organisation. Producers/coordinating organisations can only be removed from the register if the conditions for registration are no longer met.

[42] The information on the National Inspectorate was mainly obtained from its website [URL: http://www.orszagoszoldhatosag.gov.hu/index.php?akt_menu= [consulted 15 June 2007].
[43] The Hungarian register with EEE producers can be accessed on: http://www.orszagoszoldhatosag.gov.hu/index.php?akt_menu=213&details=429.

The following data/information is required from producers for registration:

- Country code
- Short / long name of the producer
- Location (City/address/etc.)
- Details of contact person
- Categories of EE sold (Annex 5 of Decree 264/2004)

- **Data recording/Monitoring**

Whoever produce, possesses or treats WEEE shall keep records, according to waste category, of WEEE produced, taken over from, or handed over to, others. All waste management activities must be documented as well as quantities of treated waste and secondary materials thereof. This information must also be reported to the National Inspectorate. IT projects have been launched to facilitate administrative tasks concerning data reporting, registration, surveillance and enforcement[44]. The National Inspectorate is authorised to verify any time whether the data submitted correspond to the documents/records held by the producer. The producer must present the requested documents and cooperate during the inspection.

- **Declaration**

There is no first time declaration as to the way the producer intends to meet its obligations under the Government Decree, the volume/weight of WEEE sold or the financial guarantee provided. Such information is submitted in the context of annual reporting to the National Inspectorate. Instead of separating the requirements for declaration and annual reporting Hungary has chosen to employ an integrated reporting system, whereby the producers have to submit data, which normally is included under the declaration duty (i.e. which product categories a producer is putting on the market, the chosen collection system, and data regarding the provision of financial guarantees) every year. This is a positive feature of the Hungarian system as this information can change, e.g. producers may join another coordinating scheme or may decide to market additional product categories in Hungary.

[44] The information on the National Inspectorate was mainly obtained from its website [URL: http://www.orszagoszoldhatosag.gov.hu/index.php?akt_menu= [consulted 15 June 2007].

- **Annual reporting**

Producers must report annually to the National Inspectorate about:

- the volume and weight of product category/categories which the producer sold in Hungary the year before and the anticipate to sell in the preceding year – until 31 January,
- system chosen to meet its obligations on WEEE for the current year – until 31 January
- EEE take-back, reused, recycled and recovered in the past year per volume, category, re-user, as well as waste treated in and outside Hungary per volume and weight in the preceding year – until 20 February
- Financial guarantees for take-back, reuse, recycling and recovery costs in the current year – until 20 February (Article 4, para. 1 of Decree KvVM 15/2004).

Hence, the producers (and retailers) have to report the quantity of collected, take-back, recycled and decontaminated WEEE during the previous year. The first report for the period 13 August 2005 to 31 December 2005 had to be submitted to the Waste Management Department of the National Inspectorate for Environment, Nature and Water by 20 February 2006, in accordance with Decree KvVM 15/2004, Annex 4, para 3, pp. 4-17. Although, reports have to be submitted by the individual producers, the coordinating organisations are assisting in collecting, assembling the data required, including figures for sales and recycling.

Coordinating organisations and other waste operators taking over the take-back, reuse, recycling and recovery obligations from producers shall notify the National Inspectorate about:

- Contracts concluded in the preceding calendar year – until 31 January
- Contracts for the current year – until 20 February.

Reporting about the preceding year should be done by completing Annex 3 of the Government Decree electronically or in paper form.

Correction to, or supplementation of, reporting form can be requested within 30 days from the date of submission by the National Inspectorate. Berenczei (pers. comm.) pointed out the problem of ensuring timely and consistent reporting. It occurs that producers submit incomplete declarations or fail to report on time. Berenczei (pers. comm.) claimed that the coordinating organisations play an important role to ensure timely and accurate data reporting.

- **Other**

An additional requirement is to furnish information relating to the environmental product fee, pursuant to Act LVI of 1995 and Decree 10/1995 on the environmental product fee. Where an exemption has been granted from the environmental product fee, such as for the coordinating organisations, information has to be submitted by the coordinating organisation to the Ministry for Environment and Water (Regulatory and Product Fee Department) on a quarterly basis.

6.3.3. Comparative analysis/conclusion

Both Sweden and Hungary have established national electronic registers of producers. The main difference is the number of producers registered, with 1075 producers registered in Sweden and 720 in Hungary. It not likely, that this difference exclusively is due to a larger number of companies selling EEE in Sweden than in Hungary. Another explanation can be that there are a greater number of free-riders in Hungary or smaller companies which are unaware of their obligation to register to the national register. It is expected that the number of registration will increase to correlate to the number of EEE companies active on the Hungarian market.

Another difference in approach is the manner in which to declare certain data to the supervisory authority. The Swedish legislation is requiring the producer to make a one-time declaration regarding the product categories which he/she puts on the market, the collection system he/she participates in and how he/she is ensuring a financial guarantee. Only in case of changing circumstances must the producer submit new information. However, Hungary has opted for an integrated version and requires the producer to include this information in the annual reporting. Hence, producers are required to re-submit this data even if there have been no significant changes. This requirement provides a more water-tight system, leaving less room for negligence on the part of producers to ensure that changes are duly reported. A one-time declaration relies on the diligence and accuracy of producers.

6.4. Collection systems – allocation of physical and financial responsibility

6.4.1. Sweden

Ordinance (2005:209) on producer responsibility for electrical and electronic products allocates the physical and financial responsibility for establishing collection systems on producers. Sweden is one of few Member States that has opted for full producer responsibility. In most countries, municipalities, at least, share some responsibility in establishing collection systems, although it is more common to pass all or a part of this cost on the producers. Hence, in theory, the legal onus for collecting household WEEE is entirely in the hands of producers. However, the municipalities have entered into an agreement with El-Kretsen, through the collection system Elretur, whereby municipalities have decided to cover the costs of the collection of WEEE, at least until 2010. As argued by van Rossem *et al.* (2006) this practice is giving a competitive advantage to members of El-Kretsen as they can benefit from the free municipal collection systems for household WEEE. Consequently, there is a risk of distorting the economic playing-field for producers preferring to set up brand-specific or competing collective schemes (van Rossem *et al.* 2006). Retailers have not been allocated any responsibility in the collection of household WEEE. However, it is plausible to assume that the retailers will accept take-back of WEEE upon purchase of a new one, as a matter of consumer policy.

6.4.2. Hungary

In Hungary, the physical and financial responsibility for the collection of household WEEE is shared between producers and retailers on the basis of Article 3 of the Government Decree. Retailers are mainly obliged to organise take-back systems, on the basis of the old-for-new rule. Whereas most retailers limit their liability to this rule, some (including CORA and Media-Markt) accept return of WEEE in greater amounts and for products of different functions. Producers are responsible for financing and operating collection of household WEEE which is not returned to the retailers. Furthermore, producers have to provide for the transport and treatment of collected WEEE. Municipalities have no legal duty to participate in the collection of WEEE. Possibly this is largely due to the limited financial resources of the municipalities. Although, there are a number of municipal waste yards, where it is partially possible to bring back WEEE, this collection only corresponds to a small amount of total WEEE. As noted by Hajósi (pers.comm.), the coordinating organisation does

not rely on this infrastructure and most WEEE collected derives from retailers or from other collection systems.

6.4.3. Comparative analysis/conclusion

Common for both Sweden and Hungary is the decision not to allocate a substantial responsibility for the collection of household WEEE to the municipalities. The legislator has opted for a strict interpretation of producer responsibility, which strictly limits the responsibility for municipalities. In practice, however, the Swedish municipalities are financing and operating the collection of WEEE through Elretur. They already had a functioning infrastructure for collection of WEEE since 2001 and have the financial resources for this. The involvement of the municipalities is a temporary arrangement to phase-in of full producer responsibility in the medium to long-term. However, this system is having consequences for other market players and renders it less attractive to establish individual, brand-specific collection schemes and alternative, competitive collective organisations. Hence, the members of El-Kretsen appear to gain the most of the current arrangement. In Hungary, municipalities do not have physical nor financial responsibility for collection of household WEEE. Municipalities do not have the sufficient infrastructure (i.e. collection points or kerbside collection) to ensure efficient collection of WEEE. Neither do they have the financial resources to establish such an infrastructure.

The Swedish system does not involve retailers in the collection of WEEE, although it is plausible to assume that it is possible, to a certain extent, to return discarded WEEE on the basis of the old-for-new rule. The main responsibility falls on producers who have to provide for collection, storage and transport. In Hungary, producers and retailers share the responsibility for collection. Retailers have a legal duty to accept WEEE upon purchase of new EEE. However, since there is no real back-up system in the form of municipal collection points, it is crucial that the National Chief Inspectorate for Environment, Nature and Water of the Environment and Water as well as the coordinating organisation of which the retailers are members are carefully monitoring that this collection is efficient, the service level is adequate, and consumers sufficiently informed about take-back possibilities, in order to guarantee a high collection rate.

6.5. Collective or individual responsibility for WEEE?

6.5.1. Sweden

In line with the wording of the WEEE Directive, Ordinance 2005:209 mandates collective collection and recycling for '**historical' WEEE** (i.e. WEEE comprising of EEE sold prior to 13 August 2005). Currently, most of the WEEE collected from households and from other sources is historical[45]. In terms of '**new' WEEE**, producers have an option between collective or individual responsibility in Sweden.

In Sweden, 90-95% of EEE producers have joined the **national collective scheme**, El-Kretsen. This organisation has been in operation since 2001 and is the dominant scheme in Sweden. The alternative scheme, Eurovironment, only has three Swedish members compared to the 1000 member-strong El-Kretsen. El-Kretsen is a non-for-profit organisation offering strong advantages in terms of territorial scope and economies of scale.

Where a producer chooses to carry out its collection and treatment responsibilities under an '**individual' scheme**, he/she is individually responsible for ensuring that the scheme is compatible with the requirements in Ordinance 2005:206, in particular Article 17, and that it meets its reporting and communication requirements. As mentioned above, for household WEEE, collection points have to be set up in all municipalities of Sweden. The different forms of individual schemes may comprise:

- Producer establishes his/her own individual, brand-specific collection system
- Producer concludes agreement with one or several companies, which carry out the collection and treatment of the WEEE jointly
- Producer concludes an agreement with a transport company, which collects the WEEE at the place of origin and transports it to a certified company, which performs pre-treatment (EPA 2006b)

The interpretation taken by the EPA (2006b) is that producers putting household WEEE on the market have to ensure that collection points exist in all municipalities, either through participating in a collective scheme or by establishing an individual system satisfying this requirement. The rationale

[45] Given the long time-span of some product categories, such as White Goods and Brown Goods, EPA (2006b) anticipates that it will take at least 10 years before historical WEEE is entirely replaced by new WEEE.

behind this requirement is that most of the household WEEE nowadays is historical, for which collective schemes are mandatory. Hence, EPA can grant an exemption from this requirement, if it can be shown that there will be no historic waste in the given product category. Hence, it is expected that individual schemes will only be established in the long-run or only for certain non-household EEE, where the fraction of historical WEEE is negligent[46]. And even where it would be possible to establish an individual scheme, producers will be faced with prohibitive costs for the initial establishment and for its operation, especially in a country like Sweden, having a large territory and a low population density. Furthermore, producers participating in El-Kretsen can take full advantage of the decision of municipalities to take over the legal financial responsibility for the collection of WEEE, at lest until 2010. Individual producers, establishing band-specific schemes or competing collective schemes have to cover all the collection costs themselves.

To date, El-Kretsen AB is the only collective system available to producers in the whole territory of Sweden, covering all product categories. Virtually all producers putting EEE on the Swedish market are members of El-Kretsen. According to Kollberg (2006), very few individual initiatives were taken by producers. However, in July 2003, the TV and radio industry cancelled their membership in El-Kretsen and chose to fulfil their obligations on an individual basis (Kollberg 2006).[47] However, since then the TV and radio industry has rejoined El-Kretsen, with the exception of Siba and On-Off, which are claiming to have set up sufficient individual schemes.

Lindqvist (pers. comm.) pointed out both advantages and disadvantages of having one, non-competitive collective scheme. One clear disadvantage is the lack of competition on the market. There are virtually no other schemes that can match the capacity of El-Kretsen and provide for collection points across the territory of Sweden. However, ensuring collection points is a prerequisite for both collective and individual schemes and EPA is not in a position to offer more lenient conditions, even if it would increase the competition between waste management actors. The most important advantages with the collective scheme operated by El-Kretsen include the high collection rates - an annual rate of 16 kg/person – and easier administration and supervision (Lindqvist pers. comm.).

[46] One could imagine that cellular telephones, falling within the product category: IT and telecommunications equipment, are products, where the share of historic telephones will be phased out relatively rapidly.
[47] The question is whether it is possible under Swedish WEEE legislation for producers to establish individual collection systems for historic waste, as it is mandatory for producers of household WEEE to fulfill their obligations under a collective scheme.

6.5.2. Hungary

Hungary is one of the very few Member States which have made **no distinction** between **new** and **historical** waste in the transposing legislation, in regard to the type of responsibility chosen, i.e. collective or individual (van Rossem *et al*. 2006). Hence, the legislation does not give legal preference for individual responsibility for the collection and treatment of new WEEE. However, the concept of historical waste (i.e. waste from EEE manufactured prior to 13 August 2005) is known in the Hungarian legislation (Article 2, para. c.) of the Government Decree). Pursuant to Article 3 (1) of the Government Decree, the producer is responsible for the take back of

- WEEE he/she sold,
- Historical waste from household appliance, and
- Historical waste from new or identical non-household appliance, or from equipment with identical function with non-household appliance.

Moreover, pursuant to Article 15(1) of the Government Decree, costs of take-back of equipment sold by the manufacturer should be borne by him/her just as the costs of taking back historic waste of household or non-household appliances.

Collection and treatment of WEEE in Hungary is based on a clearing house system, whereby multiple collective schemes provide competitive services to producers. Currently there are five coordinating organisations in Hungary. To be able to set up their operations they first have to gain an approval and licence from the National Inspectorate for Environment, Nature and Water. These licences stipulate the requirements for the coordinating organisations and aim to prevent a monopoly to develop. The five collective schemes are competing but only partially over-lapping as most of them, except Electro-Coord (the dominant organisation), specialise in specific areas and product categories. There are three basic conditions for the setting up of a coordinating organisation: it has to be a public interest entity, it must be open to everybody and it has to provide for a paid-up capital of 75 million HUF.

There are very few examples of companies that have established or contemplate establishing their own individual collection and recycling systems. One example is Metro, which left Electro-Coord

and decided to establish its own collection and recycling infrastructure. Mainly larger companies have the infrastructure and know-how to develop individual systems (Hajósi pers. comm.). It is uncertain how well these individual schemes function in a small market like the Hungarian (Berenczei pers.comm.). In fact, there are several incentives in Hungary, working in favour of joining one of the coordinating organisations. Firstly, members of coordinating organisations are exempt from the obligation to pay the environment product fee and the participation fee is more or less commensurate (or even lower) than the environmental product fee. Secondly, the Hungarian legislation only requires producers opting for individual responsibility to provide financial guarantees. Scheme participants are exempted as the basic capital of the coordinating organisation is considered sufficient as financial guarantee. Furthermore, it is also convenient and reassuring for producers to have a coordinating organisation taking over administrative tasks such as reporting to the tax authorities and the National Inspectorate for Environment, Nature. Given these reasons, most producers in Hungary have joined one of the five collective schemes.

Hungary has many collective schemes, considering its territory and population size, but it is expected that there will be considerable consolidation of the market, with collective schemes merging or leaving the market. Berenczei (pers.comm.) claimed that the competition between the existing coordinating organisations is extremely fierce with the result that the organisations are compelled to reduce fees, meaning that there is less money available for ensuring environmentally sound EOL treatment. As pointed out by AEA Technology (2006), multiple systems are less attractive in small countries since the volumes of WEEE are not sufficient to create a viable market for all the participating schemes. Unless the volumes are of a sufficient order, it is not possible to operate at economies of scale. This is also a problem underlined by many of the coordinating organisations finding it difficult to collect large volumes of WEEE.

6.5.3. Comparative analysis/conclusion

In both countries, there is a preference for collective schemes with virtually no initiatives to set up individual collection and recycling systems by single producers (apart from the initiatives taken by On-Off and Siba in Sweden, which do not appear to be fully conforming to the WEEE requirements). However, the incentives for joining a collective scheme, number of schemes, their size, specialisation and fee structure differ considerably between these two countries.

In Sweden, it appears that producers join El-Kretsen because the Swedish legislation require producers of historic household waste to ensure collection points across the whole territory of Sweden, a requirement which only a large collective, non-competitive scheme with an elaborated network of collection points and recycling facilities can meet. Furthermore, through the collection system, Elretur, municipalities have taken over the financial responsibility for the collection of household WEEE until at least 2010. Producers of individual schemes cannot take advantage of this benefit. Furthermore, since El-Kretsen existed already in 2001, before the entry into force of the WEEE Directive, there was already an existing infrastructure and framework which had proved efficient in terms of ensuring compliance with collection and recycling rates. It is expected that El-Kretsen will continue to be the dominant scheme in Sweden. However, given the size of El-Kretsen it is unlikely to be able to provide its members with tailor-made solutions. Hence, it is expected that alternative approaches will develop to address the conditions and needs of specific markets (e.g. IT sector) and producers.

In Hungary, WEEE collection and treatment is not operated through one collective organisation but through a clearing house system, with multiple coordinating organisations in competition with each other. The preference for this system can partly be explained by an unwillingness to set up a monopolistic structure (given its political past) and an entrepreneurial spirit. There are very few attempts of establishing individual, brand-specific schemes, mainly for economic reasons. Firstly, members of a coordinating organisation do not have to pay the environmental product fee. Secondly, they do not have to provide a separate financial guarantee for the financing of future WEEE since Hungary has interpreted the WEEE Directive in a way which does not require every single producer to provide financial guarantees for new WEEE. Hence, multiple collective schemes is the predominant way of collecting and treating WEEE in Hungary. Given the small size of the country and the relatively small population, it is unlikely that there is a viable market for the existing players. Thus, a certain consolidation in the market is expected, with players merging or leaving the market. The collective schemes in Hungary have different focus and product categories, each finding its own niche area. One of the drivers for joining a collective scheme is the exemption from the environmental product fee, rendering the participation fee equal or sometimes lower than the environmental product fee.

Another difference between the two countries is the number and the size of the schemes. Sweden has one, non-competitive scheme, which was in place already in 2001. El-Kretsen has 1000 members, covering 90-95% of the market. Since El-Kretsen is such a large organisation, with large quantities of collected WEEE, it has power to enter into favourable agreements with municipalities and in negotiating low prices with recyclers. There is only one alternative collective scheme, Eurovironment. However, Eurovironment is focusing on IT equipment and works slightly differently from El-Kretsen. In other words, El-Kretsen can be said to enjoy a monopoly situation, which has consequences for many waste management actors, including recyclers which rely on contracts with El-Kretsen. Given the size of El-Kretsen, covering all product categories except for automatic dispensers, it is not specialised in one particular area. Hence, it is less positioned to offer special, tailored services and solutions for specific product categories.

The Hungarian situation is in stark contrast to the Swedish system, with five coordinating organisations on the market, competing over members and WEEE. Since the municipalities neither have the physical nor the financial responsibility for the collection of household WEEE, the coordinating organisations mainly collect WEEE from producers and retailers (i.e. participating members) or in specifically designated sites. The schemes are not nearly as large as El-Kretsen with members ranging from 8 to 260. They all have a certain specialisation, such as Ökomat, specialising in gambling machines and Comp-Cord on IT equipment. Electro-Coord, the largest scheme, is the most generic covering all product categories, except for one.

Another difference is the fee structure. In Sweden, El-Kretsen is allowing for a diversified fee structure according to product categories. However, in Hungary, the coordinating organisations are basically operating with a flat fee. Furthermore, the Swedish EPA requires financial guarantees from all producers of household EEE, also from producers' part of El-Kretsen. This is not the case in Hungary, where producers participating in one of the collective schemes do not have to provide for financial guarantee. One could argue what the legislator's motive was with this exemption, as it doubtful whether the paid-up capital is sufficient to finance EOL treatment of insolvent producers.

6.6. Financing mechanisms

6.6.1. Sweden

The Swedish system is advantageous to the extent that its financing models depend upon the product category. For instance, as was seen in the AEA Technology study (2006) producers of information communication technologies (ICT), tend to prefer a system in which real costs for EOL treatment is allocated according to the producers' market share, whereas, producers of Brown Goods rather opts for a model based on a visible environmental fee. This different preference is largely due to what extent they face historic waste burden. As Brown Goods producers have a large proportion of historic waste than ICT producers they are more in favour of mandatory visible fee, which informs the consumers about the costs associated with EOL treatment. The Swedish scheme accommodates for this difference and applies differing financing models. Although, there are only 10 categories of EEE in the WEEE Directive, El-Kretsen functions with many more categories in determining the fee.

All producers are responsible for the management of WEEE in terms of historic waste and new waste in proportion to the quantity of sold products in Sweden or for distance sales, the quantity of products sold in other EU countries. The market shares are calculated on the basis of quantities reported to the EE-register. Once the final market shares have been established, producers will receive a letter from the EPA with the final market share for each product category. In calculating the market shares, EPA is mainly relying on the information submitted by the producers (via El-Kretsen) as well as data obtained from the customs office and the "Nordic Group" in terms of cross-border sales. Some data is also obtained from producers' competitors, to prevent free-riders and non-compliers from gaining competitive advantage from non-compliance (Lindqvist pers. comm.)

Pursuant to AEA Technology (2006), EPA will introduce a mandatory visible fee on each and every household EEE until 2011. The purpose of this fee is to inform consumers about the EOL costs associated with a product. Where the fee is not mandatory it tends to be incorporated into the consumer price in the medium-term. Ericsson (pers. comm.), CEO of El-Kretsen, did not consider that visible fees had any concrete advantages. In his opinion, EOL costs are included in the price and that this end-price is the only thing that matters to consumers. The additional information provided to the consumer in terms of EOL costs will not provide any additional advantages for the consumers.

6.6.2. Hungary

The coordinating organisations establish together with their members the levels of fees. These fees have to ensure adequate environmental standards and cover the costs for collection, transport, recycling and other treatment as well as administering the collective schemes. A major problem, as emphasised by Berenczei (2007, June 5), is that the fierce competition between the schemes are leading to price cutting and companies taking on duties under market price. Hence, it is uncertain whether the fees fully cover all the EOL costs and it is plausible that health and environmental considerations will be downplayed. The coordinating schemes are charging its members on the basis of price per item. The recovery fee applying to producers participating in one of the collective schemes is the same, 100 HUF/kg for all product categories, although the recycling rates for the product categories differ (Reiniger and Jancsar pers.comm.).

In terms of having the EOL costs reflected on new EEE put on the market, Hungary has decided not to introduce a visible fee on EEE. One reason could be that the government does not want consumers to perceive this fee as a tax. The coordinating organisations seem to be relatively positive towards visible fees. As Hajósi (pers. comm.) puts it, they communicate important information from a consumer-point-of-view.

Another form of financing which is applicable to producers, importers and distributors is the environmental product fee, which was extended in 2005 to also cover EEE. Pursuant to the Product Fee Act of 1995 and Decree No. 10/1995 on environmental product fees such fees have already been applied for other product categories subject to EPR requirements, such as packaging, batteries and tyres. According to the product fee regulation, the producer first putting EEE into the Hungarian market (Hungary-based producer, importer) is obliged to pay a fee proportionate to the quantity of goods put into the market. However, it is possible to obtain an exemption in so far as the producer collects and reuses the amount of waste commensurate to the quantity of goods put into the market. The amount of product fee[48] exceeds the costs of reuse of waste thereby giving a financial incentive to the producers to reusing waste. It is claimed that the product fee or the costs of reuse are eventually shifted over to customers by increasing consumer prices. However, as a result of the

[48] The environmental product fee for EEE is approximately 10.000 HUF.

polluter pays principle, the legislator has intended that these costs be borne by the individual users not by society at large[49].

In so far the producer or distributor collects and recycles WEEE, it can be granted an exemption from having to pay the fee or the size of the fee is reduced to reflect the value of the recycling. In the case of producers, importers and retailers members of coordinating organisations, they are, per se, exempted from the environmental product fee and this has been a strong incentive for joining on of these collective schemes. Individual producers can be exempted on an ad-hoc basis but they still have to comply with the reporting obligations under the environmental product fee provisions. Although, producers participating in registered collective schemes are exempted from the obligation to pay the environmental product fee, they can be required to pay a proportion of it in case the collective scheme does not achieve the set collection and recycling targets (Reiniger and Jancsar pers. comm.).

6.6.3. Comparative analysis/conclusion

In both Sweden and Hungary, a large proportion of the EOL costs for discarded WEEE, is to be covered by the membership and recycling fees paid by producers participating in a collective scheme. In addition, the Swedish practice is passing over a major part of the financing of the collection of household WEEE to the municipalities.

The Swedish collection system, El-Kretsen, with its 1000 members is using a financing model allowing for a large differentiation depending on the product category and the expected share of historical waste. It is a rather complex financing system but with a fair amount of equity between the members. In Hungary, the five collective schemes use less sophisticated and diversified financing systems but they appear to work to the satisfaction of their members.

One major difference is the position taken on visible fees. Whereas, Sweden opted for a mandatory visible fee until 2011, Hungary is leaving this up to the producers to decide. The Swedish decision was expected, with regard to its strong consumer policy, educational policy and preference for transparency.

[49] The information on the National Inspectorate was mainly obtained from its website [URL: http://www.orszagoszoldhatosag.gov.hu/index.php?akt_menu= [consulted 15 June 2007].

6.7. Financial guarantees

6.7.1. Sweden:

The EPA has issued draft general recommendations on financial guarantees (Förslag till allmänna råd för finansiella garantier), which will be finalised in early autumn 2007. According to these draft recommendations, financial guarantees will be required for all household EEE, excluding commercial and industrial EEE from this requirement. Particularly, as pointed out by Lindqvist (2007, May 22), since these companies normally ensure collection and treatment through contracts directly with recyclers such as Stena Metall.

In line with Article 8(2) of the WEEE Directive, a financial guarantee is mandatory on new EEE and applies both to individual and collective schemes. Hence, being member of a collective scheme, per se, is not sufficient for ensuring financing of EOL management. It is considered that El-Kretsen cannot guarantee the financial wellbeing of its 1000 members. This was particularly apparent after the Brown Goods producers left El-Kretsen in 2003, which almost led to its collapse (Lindqvist 2007, May 22). Producers have to provide evidence of their financial guarantees by October 2007 and this information needs to be incorporated into the national register of EEE producers.

The amount of the guarantee should be commensurate to the total EOL at the end of a product's useful life and the producer is obliged to make assessments of these costs, which can be demonstrated at the request of the EPA. Calculations must be made for each and every category and reflect a product's life-span and the recycling costs involved. The financial guarantees must be sufficient to cover the costs for establishing suitable collection systems, pre-treatment and dissembling and recycling/recovery (including material recovery and energy recovery). However, to date there is no concrete proposal giving figures about the size of the financial guarantees.

The financial guarantee can either be in the form of a recycling insurance, a bank deposit (guarantee) to an amount which is adjusted annually, or a blocked bank account. The two latter options have to be accessible to the EPA in case the producer goes insolvent or for other reasons will not meet his/her obligations. Currently, it is not probable that producers will opt for insurances, in the first

instance, as there is basically only one company[50] on the Swedish market which provides recycling insurance, at a rather high price.

There are a number of alternatives for a producer member of a collective scheme:

- Provide financial guarantees individually
- El-Kretsen is organising financial guarantees, with the advantage of being able to do it at a lower price.
- A producer group can provide for joint financial guarantees (Lindqvist pers. comm.).

In case of collective financial guarantees, the draft recommendations require that this guarantee is used by neither the members nor the coordinating organisation itself. Furthermore, the members have to explicitly agree to finance the EOL costs for each other. A contract must be concluded between the collective financing system and the individual members, reflecting the financial guarantee. The delicate issue is whether producers will accept the idea of guaranteeing the EOL costs for their competitors.

More discussions will be required between EPA and producers in terms of how to set up a functioning system for financial guarantees. El-Kretsen has yet to decide whether to coordinate and administration of financial guarantees or whether the financial arrangements should be left for the members to arrange individually or jointly (Ericsson pers.comm.). However, if El-Kretsen would be involved in the financial guarantee arrangement, membership fees would be increased, which could upset some of its members.

6.7.2. Hungary:

The financial guarantee was introduced on 13 August 2005 on the basis of Decree No. 264/2004 (Art. 16 and Annex 4). The form of guarantee can be a blocked bank account, a cash deposit or a contract with a credit institution or with an insurance company. However, the same legislation does not require financial guarantees for producers that are members of one of the coordinating organisations. The main reason behind this exemption is that one of the conditions for obtaining an approval for coordinating organisations is that the organisation provides for a 'paid-up capital'

[50] Länsförsäkringar is offering insurances covering EOL costs.

amounting to EUR 300,000[51]. Since this amount is three times larger than what is required for a normal company, it is thought to be sufficient as financial guarantee. However, it should be noted that paid-up capital is normally not reserved exclusively for EOL treatment but normally can be used for any other purpose, such as purchase of IT equipment, investments etc.

The Hungarian provisions on financial guarantees are likely to be at odds with the WEEE Directive. Although, the first paragraph of Article 8(2) enables producers to fulfil their obligations under the WEEE Directive for new products, either individually or by joining a collective scheme, the second paragraph of Article 8(2) states that "each producer must provide a guarantee when placing a product on the market showing that the management of all WEEE will be financed". This guarantee is essential to avoid that the remaining producers finance the recycling of free-riders, i.e. producers who have disappeared or cannot be identified. Article 8(2) stipulates that "such guarantee can take the form of participation in appropriate schemes for the financing of the management of WEEE, recycling insurance or blocked bank account". However, it is doubtful whether it was intended that participation of a collective scheme, per see, is sufficient as a financial guarantee. It is possible, however, to make specific arrangements within the frame of a collective scheme that all or some of the members jointly provide a financial guarantee.

Those producers not participating in one of the coordinating organisations were obliged to already on 13 August 2005 to provide financial guarantee every month up until 20 February 2006. Similarly, producers commencing business before the new calendar year should also provide guarantee on a monthly basis. Otherwise, a financial guarantee must be provided for the current year until 20 February. Producers must obtain the permission of the National Inspectorate to release the guarantee, in accordance with reporting, take-back, re-use, recycling and recovery requirements. Any decision on the release of the guarantee must be made by 20 September of the subsequent year.

Table 4-8-2: Amounts of financial guarantees for various EEE categories:

EEE categories	**Financial guarantees in tonne (HUF)**
1. Large household appliances	
a) 8418 KN code – exception	26 000

[51] Decree 264/2000, Article 10(5, p.c), requires paid-up capital for coordinating organisations.

b) 8414 KN code – exception	100 000
2. Small household appliances	70 000
3. Information and telecommunications equipment	100 000
4. Consumer equipment	95 000
5. Lighting equipment	190 000
6. Electrical and electronic tools	85 000
7. Toys, leisure and sports equipment	100 000

Source: Ökomat Kht[52]

[52] Information extracted from the website of Ökomat Kht. URL: www.okomat.hu [consulted 4 June 2007].

6.7.3. Comparative analysis/conclusion

In terms of financial guarantees, Sweden and Hungary have opted for different solutions. Whereas, Sweden has opted for financial guarantees for all household WEEE regardless whether a producer is participating in El Kretsen or not, Hungary has considered it sufficient with a membership in one of the collective schemes on the basis of the initial paid-up capital injection, which could be utilised for EOL.

However, one of the reasons for introducing the provision of a financial guarantee is to deter and minimise the existence of free-riders. If the individual members of a collective scheme are not required to make a financial guarantee on new products put on the market it means that they are also facing a higher risk of later having to finance the EOL of free-riders or other members in the scheme that leave the market. As was seen in the Swedish case of El Kretsen, which suffered a severe blow after the Brown Goods producers left the scheme, no collective schemes are completely shielded from market effects. In regard to the Hungarian situation, with stiff competition between the five schemes and a few schemes having very few members, it is expected that Hungarian WEEE market will consolidate and that some schemes might disappear or reshape in other constellations. It is therefore risky both for the collective schemes, the participating companies and from an environmental point-of-view to exclude scheme participants from the obligation to provide financial guarantees. Given the strong incentives for joining a collective scheme in Hungary, such as exemption from environmental product fee and the provision of financial guarantee, there are very few, if any, individual responsibility schemes in Hungary. Hence, as a result there are very few producers who have to provide for a financial guarantee at all. In other words, the provision of a financial guarantee is only a theoretical obligation in Hungary.

In Sweden on the other hand, the financial guarantee is a requirement for all producers of household waste (i.e. there is no obligation to provide financial guarantee for industrial WEEE). Awaiting the final version of the draft EPA general recommendations on financial guarantees, it remains to be seen how industry and in particular El Kretsen chooses to comply with this obligation. El Kretsen might accept to take on this additional task of arranging for and coordinating a joint scheme of financial guarantee. It is also plausible that some of its members will join forces and provide for their own

financial guarantee. Alternatively, the participating members may choose to provide for the guarantee on individual basis since the whole idea of providing a financial guarantee for competitors is new. It will also be interesting to see figures on the financial guarantee, whether they are in line with the Hungarian or much higher.

6.8. Compliance/Sanctions

6.8.1. Sweden:

One of the tasks of the EPA is to police the compliance with WEEE legislation and it is obliged to report non-compliant producers. In the previous EPR programme for WEEE, which was introduced in 2001, the EPA found that it was difficult to identify free-riders. The local authorities also have responsibilities in monitoring compliance, but limited resources have resulted in insufficient monitoring. The EPA is hoping that the national register of EEE producers will help to solve this problem (Kollberg 2003).

A failure to comply with the requirements for labelling of products, EOL management, provision of financial guarantees and submission of reports and declarations, leads to fines, pursuant to Article 31 of the WEEE Ordinance (2005:209).[53] The Environmental Code, chapter 29, articles 5-6 also prescribes fines and imprisonment, up to a term of two year, in case a producer is compromising the supervisory activities. The EPA can order producers to take corrective measures and in case of non-compliance the EPA can prohibit further activities of the producer. The EPA can also impose Environmental Sanction Fees (Miljösanktionsavgifter)[54], up to 100 000 SEK, where a producer fails to comply with the reporting obligations, pursuant to chapter 30 of the Environmental Code.

Hence, Sweden has adopted legal provisions providing efficient sanctions, including dissuasive fines and environmental sanction fees for non-compliance. Furthermore, the EPA has broad competences as an operative supervisory authority and is working closely with producers in the frame of reporting procedures, the calculation of producers' market shares and in the development of guidance for the provision of financial guarantees.

[53] There is no upper limit of these fines since they are daily fines based on the income.
[54] Pursuant to Ordinance (1998:950) on Environmental Sanction Fees.

However, it appears that these factors are not fully ensuring the absence of free-riders. The evidence of this is the fact that Brown Goods producers, On-off and Siba, after withdrawing from El-Kretsen as a protest of its fees, have not been obliged to join another collective scheme or ensure an adequate, nation-wide individual collection and recycling scheme. Although, it should be encouraged to have alternative WEEE collection and recycling systems based on individual responsibility, it is important to make the appropriate arrangements, including efficient monitoring, to ensure that their brands do not end up in municipal collection points, subject to transport, processing and recycling financed by El-Kretsen or the local authorities.

6.8.2. Hungary:

It is the National Environmental Inspectorate which, formally, has the authority to ensure compliance with the WEEE requirements. However, it is not certain that this supervision will be sufficiently efficient. As Reiniger (former Executive Director of the National Inspectorate) and Jancsar (pers. comm.) put it, it is not probable that the National Inspectorate will confront major companies with request for verification of figures nor is it likely to carry out frequent on-site inspections. It is also questionable, whether the Inspectorate will impose fine on non-compliers.
On the contrary, tax authorities could play an important role in this regard since they perform strict verification of figures of sold quantities etc. Some of the collective schemes also require independent verification of reports of sold quantities EEE, which is serving as an additional mechanism against free-riders and irregularities.

It appears that compliance will have to be self-regulated by industry, notably by the coordinating organisations and by the market, such as in the form of producers blowing the whistle on each other for non-compliance behaviour.

Some stakeholders point out the necessity to strengthen the efficiency of monitoring and supervision. Berenczei, Managing Director at Comp-Cord, considered free riders to be the most pressing problem today and that the enforcement system has to be improved (Berenczei, pers. comm.).

If producers fail to comply with the registration obligation, they are subject to fine pursuant to Article 17(2) of the Government Decree (the amount of which is specified in a separate piece of law). Failure to collect the e-waste committed by coordinating organisations, or failure to comply with

take-back, reuse or recovery obligations by producers leads to dual sanctions. Further to Article 17(1) of the Government Decree, the Chief Inspectorate shall

- Undertake these tasks financed by the guarantee provided for by the producer or at the expense of the coordinating organisation, and
- Impose fines the amount of which is established in a separate law.

6.8.3. Comparative analysis/conclusion

The Swedish sanctions are multiple, including fines, imprisonment and environmental sanction fees. For instance, a failure with the reporting obligations can lead to EPA imposing environmental sanction fees up to an amount of 100,000 SEK (10,800 EUR). Moreover, the EPA has wide competences and supervisory powers, with resources to go after non-compliers. As El Kretsen has 1000 members, corresponding to virtually the whole market, it is plausible to believe that there are relatively few free-riders. Moreover, El Kretsen has, in cooperation with the local authorities, attained very high collection and recycling rates. Hence, whereas it is vital to have a strong and deterrent sanction system incorporated into the legal framework, it appears that industry is self-regulating its behaviour and there is a fruitful and efficient cooperation between the producers and the EPA.

In Hungary, industry is also self-regulating itself to a certain extent. However, pressure to comply with reporting obligations appear to derive from the procedures and inspections of the tax authority rather than from the National Inspectorate for Environment, Nature and Water. It is also becoming more common to contract a third party (e.g. an auditing company) to verify reports such as sales figures prior to submitting the data to the relevant authority. The persons interviewed did not believe that the National Inspectorate is strong enough to impose fines or other sanctions on producers failing to comply with their collection and recycling obligations. Furthermore, most of the coordinating organisations in Hungary considered free-riders one of the most important problems to be addressed. Here, a stronger National Inspectorate and more efficient sanctions could deal efficiently with short-comings in enforcement. Furthermore, as we see from the Swedish system, an open and continuous dialogue between the producers and the EPA is beneficial for all parties.

7. Examples of collection and recycling arrangements in Sweden and Hungary

In this chapter, the focus shifts from the legal transposition to the practical arrangements put in place to ensure adequate collection and recycling of WEEE. Although, there are some similarities between the Swedish and Hungarian systems, such as the preference for collective responsibility, there are also a number of interesting differences, influencing the efficiency of the scheme and the behaviour of waste operators on the market.

7.1. Collection and recycling arrangements in Sweden

7.1.1. Introduction

One of the main successes with the WEEE transposition in Sweden, which is also confirmed by Ericsson (pers. comm.), is the high collection and recovery rates of WEEE. In terms of collection rates, the mutual cooperation between El-Kretsen and municipalities (within the framework of Elretur) in setting up collection points has proven very efficient and consumer friendly. However, as pointed out by Ericsson (pers. comm.), CEO of El-Kretsen, the high recovery rates are facilitated by the Swedish preference for incineration of waste with heat recovery. If EU would introduce legislation, which would not accept incineration with energy recovery as an acceptable waste recovery method, Sweden would not be able to maintain these exceptionally high recovery rates.

7.1.2. Coordinating organisations

The collection of WEEE operates according to a dual system. Firstly, household WEEE is collected by the municipalities, in accordance with an agreement[55] with El-Kretsen AB. This collection system is called **Elretur**, which is a continuation of the cooperation between El-Kretsen and the municipalities since 2001. Elretur constitutes the dominating collection scheme in Sweden. In addition, there is one major collective scheme – El-Kretsen - for the collection and treatment of non-household WEEE, that also contributes to the collection and treatment of household waste. El-Kretsen is the second largest scheme handling all categories of WEEE.

- **Elretur**

In Elretur, producers, represented by El-Kretsen AB and local authorities (represented by the Swedish Municipality Organisation and the Swedish Association for Waste Management) are

[55] This agreement was entered into in the spring of 2005 and is valid until 2010.

sharing the responsibility for WEEE. The collection and treatment system is based on an agreement between El-Kretsen AB, the Swedish Association for Waste Management and the Swedish Association of Local Authorities and Regions. This collective system is called Elretur and the joint agreement is valid until 2010. This agreement assigns the responsibility for the collection of all WEEE from households to the municipalities, whereas the manufacturers are responsible for the treatment and processing of this waste (Swedish Association for Waste Management 2006).

Under this cooperation, municipalities participate but do not have a complete monopoly on waste collection and treatment. Purchasing has to be carried out according to the set procedures for procurement to avoid that local authorities favour public municipal waste companies at the detriment of private waste companies. Otherwise, as Sanadaji (2007) notes, it is evident that there is lack of competition in the waste management sector due to the monopoly situation of municipalities in collecting and handling waste, especially hazardous waste, and that this lack of competition is resulting in above-market prices.

- **El-Kretsen AB**

El-Kretsen is owned by 21 business associations of manufacturers putting EEE on the Swedish market. It is a not-for-profit organisation and the member fees cover their own costs (El-Kretsen 2006). According to Ericsson (pers. comm.), Managing Director of El-Kretsen, it's principal task is to organise and administer the procurement, i.e. contracting third parties for the collection, transport and treatment of WEEE. Hence, it is in charge of the operational part of the WEEE scheme not the actual recycling. The collection system is built on the existing infrastructure of the municipal collection systems.

El-Kretsen has about 1000 member companies, corresponding to close to 100 percent of the total sale of EEE to households and 90-95 percent of the business-to-business sales (Ericsson, pers. comm.). El-Kretsen is covering all product categories except for category 10, automatic dispensers. This collective scheme has been in operation since 2001, when national legislation on producer responsibility for electrical and electronic products was introduced (El-Kretsen 2006). Although, most producers belong to El-Kretsen, a group of producers from the Brown Goods category left El-Kretsen in protest over some elements of the collective scheme. IKEA also took steps to develop its own collection and recycling scheme. However, since then most of the producers from the Brown

Goods businesses, as well as IKEA have rejoined El-Kretsen, with only Siba and On-Off remaining non-members (Kollberg 2003 and Lindqvist, pers. comm.). In general, though, it is possible for its members to participate in other collective schemes. El-Kretsen will then refund the producer corresponding to the volume of WEEE collected and recycled by the alternative scheme. However, in reality it unsure whether this refunding mechanism does not work properly, as some producers complain about the requirement to provide lengthy documents about amounts collected through another scheme (Kollberg 2003).

One of El-Kretsen's major strengths is its size and the large volumes of WEEE handled. Hence, it operates at economies of scales and its size in combination with its good knowledge of the recycling industry gives it a good negotiating position. According to El-Kretsen, it only works with certified recycling companies and its procurement conditions are difficult to meet for small recycling and recycling companies. Ericsson (pers. comm.) pointed out that the requirements El-Kretsen puts on recyclers are stringent and thus, competition has increased between recyclers since the entry into force of the WEEE legislation. Ericsson (pers. comm.) anticipated a further consolidation of the market with larger players on the Swedish market. He claimed that mainly larger companies will be able to make the necessary investments to meet the technical requirements for recycling. In addition, larger recycling companies are more prone to achieve economy of scale and can offer lower prices to El-Kretsen than many smaller operators.

At El-Kretsen about 20 companies are contracted to transport the collected WEEE to processing and recycling facilities. The costs for these transports have been reduced due to efficient logistic solutions and coordination between the actors involved (El-Kretsen 2006). El-Kretsen operates a nationwide logistics system, with maximised usage of large capacity vehicles and time-efficient loading and unloading with special load carriers. All of the transport companies have obtained all the necessary permits for the transport of EEE, which includes hazardous waste. The transport is divided into five categories, according to specialisation of certain categories of waste and geographic area. Ericsson (pers. comm.) stated that some plastic and scrap metal is exported to third countries for reprocessing and recovery to secondary materials. However, such exports do not involve hazardous waste fractions.

The activities of El-Kretsen are financed through membership fees encompassing an initial fee of 3500 SEK when joining the scheme and an annual fee of 500 SEK (El-Kretsen 2007). In addition, members have to pay a monthly fee according to the amount of type of EEE put on the market. For this reason, El-Kretsen has established a list with prices for the collection and recycling of various products. Prices are either determined per piece or per kilogram. El-Kretsen has divided prices into approximately 80 sub-categories, with the highest prices for PCs and TV-sets, which reflect the high costs of recycling of CRTs and LCDs. Members have to declare sold quantities either on a monthly or quarterly (for ICT equipment) basis and the monthly fee is adjusted to these figures. Hence, the costs for recovery and specific services are related to the particular industry segment and product category whereas the common costs are shared among the members (El-Kretsen 2007). The EPA will introduce requirements for a visible environmental fee on new products, which will inform consumers about the real costs for EOL for a given product.

AEA Technology (2006) and Kollberg (2003) found that some producers are critical towards some aspects of El-Kretsen. Particularly in regard to the calculation of recycling fees, based on 80 sub-categories, which could render the system inefficient and the lack of control of the quantity and type of waste that are returned. El-Kretsen has not yet taken an active part in being a driver for design change and more environmentally friendly EEE to reduce the EOL costs. According to Lindqvist (pers. comm.), the fact that El-Kretsen is holding a monopoly situation also has its draw-backs. For instance, it limits the choice for producers and other stakeholders such as recycler and processors.

- **Eurovironment**

Eurovironment AB was established in 2001 and is a daughter company to the Norwegian Eurovironment AS [56]. It has three members: Dell, Crest Computers and Itegra and provides a collection system for IT products. Eurovironment serves as an interface between producers and recyclers (Kollberg 2003). Eurovironment contracts transporting companies and recyclers to ensure environmentally sound transportation and recycling.

Eurovironment's strength is its specialisation on the IT sector and its aim to provide solutions which give incentives for improved environmental performance. Furthermore, Eurovironment prefer solution directed at reuse rather than recycling. Hence, it is amongst other cooperating with retailers to develop the market for second-hand computers. Eurovironment is important as it is the only

[56] Webpage: www.eurovironment.se.

collective scheme providing an alternative to El-Kretsen for the IT sector. Eurovironment is also supportive of the establishment of individual collection systems (Eurovironment 2007). Eurovironment believes it is important to provide producers with alternatives to El-Kretsen and in particular Elretur, the collection system for household WEEE jointly operated by El-Kretsen and the local authorities. However, Kollberg (2003) found that Eurovironment experienced a lack of interest on the part of the local authorities in finding ways to cooperate in the collection of IT products. It appeared that the local authorities, having concluded an agreement with El-Kretsen through the system Elretur, were moderately interested in establishing alternative collection systems. This could possibly be due to the fact that it is easier and less expensive for the local authorities to deal with one coordinating organisation than several.

- **Other arrangements**

Since most producers have joined El-Kretsen and Eurovironment only has three members, there are restricted possibilities for alternative collection and recycling systems, whether individual basis or collective. The Swedish Brown Goods companies, Siba and On-Off, which left El-Kretsen in 2003 have established individual collection systems and have to take-back WEEE under the 'old-for-new' rule. However, Lindqvist (pers. comm.) stated that a lot of TV-sets sold by these companies end up in the municipal collection sites, resulting in the municipalities and El-Kretsen having to finance their collection and recycling. IKEA also initially had its own individual collection scheme, where consumers could return WEEE (e.g. lighting equipment, light bulbs, low energy lamps, white goods and fire alarms) upon purchase of a new. It was a deliberate choice to set up an independent scheme, mainly because the company already had sufficient infrastructure for taking care of WEEE itself. This system was set up through communication with its customers through their catalogues, stores and websites and a network with waste managers (Kollberg 2003). However, IKEA did not reach very high collection rates and it is now also a member of El-Kretsen. In general it appears that producers are sceptical towards establishing their own individual schemes, mainly due to obligation to guarantee a collection system covering entire Sweden. However, producers tend to be open to other third party solutions such as Eurovironment handling IT products.

7.1.3. Collection

The most common way of collecting WEEE is through Elretur, based on the municipal recycling centres. Under Elretur, consumers are returning, free of charge, household WEEE to one of the 950

collection facilities across the country. There are very small amounts of WEEE returned to shops and outlets due to the fact that retailers and sales agents are not responsible for the take-back of household WEEE under the Swedish legal system. Instead the main collective scheme, El-Kretsen, the municipalities and the Swedish Association of Waste Management, are cooperating in collection of WEEE. According to this cooperative system, municipalities are responsible for organising and financing the collection of household WEEE in their respective municipalities, whereas El-Kretsen is responsible for the transportation, pre-treatment and recycling.

Most of these collection points are located in recycling facilities. To enhance the availability of these facilities to the public, they are manned, open five days a week and some municipalities also keep open during evenings and weekends (El-Kretsen 2006). The municipalities have to inform households where they can return WEEE whereas El-Kretsen provides information to companies and organisations returning WEEE, to suppliers and retailers and to employees at the collection stations (El-Kretsen 2006).

In some municipalities this collection system is supplemented with collection close to households (e.g. joint collection points in dwellings or combined collection, where WEEE and bulky waste fractions are collected together). The main task of El-Kretsen in this system is the transportation of the collected WEEE from the collection centres to the recycling facilities.

In the collection facilities, the WEEE is sorted into six different categories:

- Large white goods
- Fridges and freezers
- Small and medium-sized electrical products
- Fluorescent tubes (straight tubes, 60 cm minimum length)
- Compact fluorescent lamps and other low-discharge lamps
- Light bulbs (incandescent)

In addition, El-Kretsen is operating a collection system for WEEE deriving from companies, public administrations, hospitals etc. This system is partly operated in cooperation with municipalities and partly through contracts with private transporters. In 2005, around 300 collection facilities were provided by El-Kretsen, where organisations and companies can return WEEE free of charge. In

terms of volume, the most common collection service has been direct take-back through "take-back certificates" to one of the recyclers, as contracted with El-Kretsen (El-Kretsen 2006). The aim of the certificates is to guarantee that the number of units WEEE returned equals the number of new units purchased. El-Kretsen, where requested, also provides collection services for product categories such as lighting sources and medical EEE

Sweden has reached high collection shares and has had the highest share in the EU in 2004, 2005 and 2006. According to El-Kretsen (2006), 112 million kilos of WEEE was collected in 2005, an increase with 13 percent since 2004. If one further adds the number of fridges and freezes recycled between January and July 2005, the figure amounts to 126 000 tons, translating to 14 kilo per person in 2005. This figure exceeds the 4 kilo per person and year, required by the WEEE Directive. According to El-Kretsen, Sweden is number one in the world in collecting and recycling WEEE and El-Kretsen's collective system is the most cost-efficient EPR system in Europe (El-Kretsen 2006).

Some of the plausible explanations for these high figures and the cost-efficiency are:

- high trust in El-Kretsen's collective system and overall high collection rates
- the pressure from local authorities to achieve high collection rates
- high awareness among Swedish companies and households on how to discard WEEE in an environmentally sound way
- high number of purchases of EEE in 2005 during which consumers returned WEEE
- the broad cooperation with municipalities, recycling and logistic industry, which result in economies of scale
- The involvement and knowledge of municipalities in collection and treatment of WEEE

7.1.4. Recycling and recovery

El-Kretsen is the major player contracting companies for recycling and treatment activities. At the collection facilities the WEEE is sorted into six different fractions. The disassembly is mostly carried out by certified pre-treatment companies, which upon disassembly dispatch the waste for recycling or final treatment. Following the collection and sorting, the discarded WEEE is treated at 28 different recycling plants, both private and municipal. WEEE is only treated in certified facilities, which have

been selected on the basis of their environmental performance, the price, geographical location and technical know-how (El-Kretsen 2006).

Components containing hazardous substances are handled by approved, certified facilities (Swedish Waste Management 2006). Plastic covers are combusted in incinerators with energy recover and metals are sent to smelters for recycling. Fluorescent tubes and low-energy light bulbs, containing mercury are separated in a closed system, within which glass and metals are recycled and the mercury containing powder is subject to final disposal (Swedish Waste Management 2006).

The most important recycling organisations in Sweden for treating WEEE are:

- **Swedish Recycling Industries' Association (Återvinningsindustrierna)**

Swedish Recycling Industries' Association (SRIA)[57] was established in 1998 and most of the recycling companies in Sweden are members. The SRIA particularly aims at attracting recycling companies with a strong commitment to environmental issues. SRIA is representing the Swedish recycling industry in the dialogue and consultation with the Swedish authorities and within the EU. SRIA is supportive of a system where local authorities and producers enter into direct contracts with recycling companies instead of using a 'material company'[58]

- **Ragnsells Elektronikåtervinning**

Ragnsells is one of the major recycling companies of WEEE and it has been in the recycling business for 20 years. In 2001, when the first Swedish legislation on WEEE was introduced, it was the main recycler of WEEE, representing about 25 percent of the recycling contracts. However, since then Ragnsells lost one contract with El-Kretsen, had to lay off many employees, and is no longer the largest recycler of WEEE (Kollberg 2003).

- **H.A. Trade (H.A. Industri)**

H.A. Trade is a small recycling company specialising on recycling paper, plastics and metal. It is not a major recycler of WEEE and it mainly is involved in the transportation and storage of WEEE. Customers of H.A. Industri can contract it to take care of many EPR products, including packaging

[57] Information on SRIA can be obtained on: Swedish Recycling Industries' Association. 2007. URL: http://www.atervinningsindustrierna.se/Templates/Article_image_top.aspx?PageID=8ca14b7c-8e29-4a35-a858-36d9847becba.

[58] A material company is a coordinating organisation, which take over the producer responsibility for EPR programmes such as cars, packaging, glass, plastics, batteries and WEEE.

and WEEE. H.A. Industri, in turn, is contracting the pre-treatment and recycling to other recycling companies.

- **The Swedish Association of Waste Management (Renhållningsverksföreningen).**

The Swedish Association of Waste Management mainly serves the interest of municipalities in waste management. It was also involved in the development of the industry collective scheme – El-Kretsen. El-Kretsen and the Swedish Association for Waste Management have concluded a long-term agreement to cooperate in the collection of household WEEE through the system Elretur.

In general, the monopoly-like situation of El-Kretsen (as a material company for WEEE) is resulting in an enormous pressure on the recycling companies to win the contracts with El-Kretsen. As was illustrated with Ragnsells and the situation after having a lost a contract with El-Kretsen, the recycling industry in Sweden is dependent on a contract with El-Kretsen to survive. Unfortunately, not all recyclers will be able to win these contracts. Furthermore, they will not be able to compete with the lower prices offered by larger recyclers operating at economies of scale. Hence, unless more coordinating organisations are established providing for more opportunities and contracts, it is expected that the number of recycling companies will decrease either by mergers between existing ones or by withdrawal of the smallest companies. Furthermore, El-Kretsen is requiring both low prices and high environmental standards. As a consequence, it is becoming increasingly difficult for recyclers to meet these demands. Recyclers are also less prone to make larger investments into technology, since loosing a contract could lead to a recycler becoming insolvent. As pointed out by Kollberg (2003), ways around this could be to split existing contracts to several smaller contracts and to enter into long-term contracts. More direct contracts between recyclers and producers would also be beneficial for recyclers and producers as they will develop close relationships and recyclers will be in a better position to understand and assist the producer in its waste management and compliance with the WEEE legislation. Such direct contracts would be beneficial for competition, in contrast with the purchasing monopoly of coordinating organisations, and could be a better driver for development of environmentally sound recycling technology. Some recyclers estimate that the position of El-Kretsen will be weakened due to more resort to direct agreements between the recyclers and producers and the establishment of alternative, more specialised coordinating organisations, such as Eurovironment (Kollberg 2003).

Another problem for the recycling companies is the fact that much of the incoming WEEE is unsorted and could also comprise other types of wastes. Due to the great variety of WEEE, it is difficult to undertake an automatic procedure and work is often carried out manually according to the product category. Not only is this more expensive (especially in a country like Sweden with high labour costs) and time-consuming it is also important to ensure that employees are sufficiently trained to handle WEEE and hazardous components (Kollberg 2003).

Table 5-1-4: Recycling of WEEE between 2002-2005

	2002	2003	2004	2005
Large white goods				
(Excluding fridges and freezers)	30 800	32 800	36 800	36 300
Other household appliances, tools	9 800	8 900	10 200	12 300
IT, office equipment, telecom	11 500	14 000	17 700	22 700
TV, audio, video	16 800	18 100	15 700	21 000
Cameras, watches, toys	200	200	200	300
Lighting, armatures	5 600	5 800	5 800	6 700
Others	100	300	900	2 200
Total	74 800	80 100	87 000	101 500
Fridges and freezers	21 100	23 500	21 840	25 000
Total	**95 900**	**103 600**	**108 840**	**126 500**

(Source: El-Kretsen AB 2006)

7.2. Collection and recycling arrangements in Hungary:

7.2.1. Introduction:

In Hungary both producers and retailers are responsible for the establishment and financing of collection points for WEEE through two basic collection systems, the municipal waste yards and take-back of retailers. Municipalities' role is confined to establishing and operating the municipal waste yards.

7.2.2. Coordinating organisations

Hungary is ensuring collection and treatment of WEEE through a clearing house system, comprising of multiple coordinating organisations. There are currently five coordinating organisations in Hungary

that are available for producers. These coordinating organisations are largely dealing with different categories of WEEE, apart from Electro-Coord, the largest collective scheme, which is handling 9 WEEE categories, having 280 participating producers and a total collection and treatment of 20-25 thousand tonnes WEEE.

The main reasons for having as many as five coordinating organisations are the financial advantage it brings in terms of the exception from the environmental product fee, simplified procedures for reporting and declarations for scheme participants and the omission from the obligation to provide a financial guarantee. The competition between the collective schemes is stiff and it has led to reduced prices for processing and treatment of WEEE, which is not entirely beneficial for waste management workers and the environment.

- **Electro-Coord Kht**

Electro-Coord Kht[59] was established by CECED and the Association of Producers of Lighting Equipment in 2004. It started official operation on 1 January 2005 making it the first WEEE coordinating organisation registered in Hungary. It takes over the responsibility of its members regarding its producer liability obligations but it does not carry out any collection, transportation and recycling itself. All these activities are contracted to various logistical, processing and recycling companies. Electro-Coord has concluded contracts with some 190 companies. Electro-Coord initially only covered white goods and lighting but now includes all WEEE categories, except for category 10 (automatic dispensers). It is the largest collective scheme with 260 participating producers and a total collection and treatment capacity of 20-25 thousand tonnes WEEE annually. Since many of its members are large multinationals, including Electrolux, Bosch, Siemens, Gorenje, GE and Philips, Electro-Coord has the largest market share in Hungary, corresponding to about 78 percent. In 2005 it collected 12,550 tons of WEEE, whereof 76 percent was recycled into secondary materials (Electro-Coord 2006).

Electro-Coord mainly collects WEEE by picking-up WEEE, free of charge, at stores and outlets, where discarded WEEE has been returned by customers upon purchase of new. The WEEE is transported to recyclers or other waste processors. The other main way of collection is to use

[59]Information on Electro-Coord was mainly found on its website. URL: http://www.electro-coord.hu. [consulted 4 June 2007].

municipal waste collectors which collect and separate waste prior to ECM transport it to a contracted recycler. Electro-Coord and its recyclers occasionally cooperate in organising local special collections and recyclers are having an increasingly important role in finding new solutions for collection. There are approximately 3000 collection points from which WEEE was collected (Hajósi, pers. comm.).

Participation fees depend upon the price for recycling and the value of WEEE. Environmental considerations are taken into account as well. For instance, for categories 3-4, CRTS are components with environmental adverse impact and they are problematic and expensive to process and recycle. Hence, costs for recycling increases. However, other products consisting primarily of metal and precious metals, including large household appliances, are less expensive to recycle, and the recycling value higher.

- **Comp-Cord Kht**

Comp-Cord (Elektromos hulladékkezelő Koordinációs) Kht[60] was established in December 2005. Comp-Cord is a non-profit organisation and is mainly serving the informatics industry and has 8 members/partners, mainly distributors and retailers. Among its founding members is Minorholding Rt, one of the world's leading companies in information technologies. Comp-Cord is handling 5 categories of WEEE[61].

Among the main challenges for Comp-Cord is the fast pace of technological development in the IT sector. As with the other collective schemes, its members neither have to pay the Environmental Product Fee nor provide financial guarantees.

Comp-Cord is only contracting with companies, which conform with EU-wide standards (e.g. the requirements set out in annexes to the WEEE Directive), for transport, treatment, recycling and destruction (Comp-Cord 2007). It is currently working with two centres for processing, treatment and destruction of WEEE (Berenczei, pers. comm.). In terms of recycling activities, Comp-Cord is cooperating with the Inter-Metal Group.

Berenczei (pers. comm.), CEO of Comp-Cord, estimates that 90 percent of the IT sector have joined one of the collective schemes.

[60]Information obtained from the website of Comp-Cord Kht. [URL: www.comp-cord.hu] [consulted 1 June 2007].
[61] Small household appliances, IT and communication equipment, consumer equipment, electrical and electronic tools and mobile phones.

- **Elektro Waste Kht**

Elektro-Waste is mainly open for producers of IT equipment. It was established on 9 October 2003 by 11 founding members. It was registered by the National Inspectorate for Environment, Nature and Water as a coordinating organisation in 2005. It now has 14 founding members (Elektro-Waste 2007). Elektro Waste is open for producers of EEE in general including fridges and mobile phones. The National Inspectorate for Environment, Nature and Water has granted Elektro Waste exemption from environmental fees for EEE and for fridges until December 31, 2008, while for mobile phones until December 31, 2007.

Elektro-Waste is providing a wide range of services as a coordinating organisation. It tasks include:

- Recycling, recovery and processing of WEEE within the territory of Hungary
- Establishing a network of collection points, including collection from households
- Setting up regional manual and mechanical disassembling facilities (whereof 2000 jobs are planned for handicapped),
- Establishment of processing facilities for plastics and glass
- Preference for processing secondary materials in Hungary with exports as a secondary alternative
- Monitoring of disassembling and processing of WEEE (Elektro-Waste 2007)

- **Ökomat Kht**

Ökomat Kht[62]: founded by 12 companies from the gaming and vending machine sector in late 2004. It has not extended its scope of products to cover all WEEE except mobile phones and refrigerators. It had 60 members in March 2005.

- **Re-Elektro**

Re-Elektro[63] was established in November 2004 by two retailers and it currently has 10 members. Re-Elektro was initially a smaller-scale organisation, which mainly aimed at ensuring compliance with the WEEE Directive for its owners and to guarantee exemption from the environmental product fee. Re-Elektro has expanded its services to include new product categories and extending its network with WEEE handlers. Re-Elektro has a 1500 m2 storage facility where collected WEEE is selected

[62] Information obtained from the website of Ökomat [URL: www.okomat.hu.]
[63] Information obtained from the website of Re-Elektro [URL: www.re-elektro.hu.]

prior to transport. It also cooperates with other coordinating organisations specialised in other EPR areas such as packaging waste and batteries with a view to offer a one-stop-shop approach, facilitating the administrative burdens on the participating producers.

7.2.3. Collection

Reiniger and Jancsar (pers. comm.) note that the collection is mainly performed by the coordinating organisations in cooperation with the municipalities. There are two main alternatives for the owner of a discarded WEEE. Either he/she can bring it back to the place where it was bought or to return it to special waste yards. Normally, retailers will not accept take-back of WEEE unless the consumer purchases a new item of the same function. However, there are exceptions such as the mega-market, CORA, which accepts WEEE regardless of new purchasing and without limitations on the amount returned (Reiniger and Jancsar, pers. comm.). Media Markt is also an exception, accepting different WEEE category upon purchase of new (e.g. it is possible to return a TV upon purchase of a fridge).

Under Hungarian legislation, municipalities do not have the financial and physical responsibility for collecting household WEEE. Thus, the role of municipalities in the collection of WEEE is very restricted. Since the municipalities have scarce resources, they do not have the infrastructure and means to provide for a nation-wide collection of household WEEE (Hajósi, pers. comm.). However, municipalities operate so-called waste yards, where consumers can return a wide range of waste fractions including furniture, chemicals and WEEE. There is about 30 waste yards in Budapest (and about 100 in the whole territory of Hungary) and they are mainly owned by the municipalities and operated by service companies contracted for waste management. These waste yards are not sufficient in attain high collection rates, both due to the confined numbers of yards and the fact that not all of them accept household WEEE or only in restricted amounts. Reiniger and Jancsar (pers. comm.) underlined the existing problem of insufficient collection infrastructure. There are less than 100 yards in the country whereas up to 1000 would be necessary to ensure collection of all discarded WEEE. One of the key issues in the coming years will be the improvement and dispersion of the selective waste collection infrastructure. It will be necessary to reconsider the current focus on waste islands and consider a kerbside collection system to increase collection rates. Such a system could also facilitate the collective schemes' obligations to achieve the set collection and recycling targets.

Given the insufficient capacity of municipal collection of WEEE, the main burden of collecting WEEE falls on producers and retailers, either individually or as partners in coordinating organisations. The coordinating organisations mainly collect WEEE by picking-up WEEE, free of charge, at stores and outlets, where discarded WEEE has been returned by customers upon purchase of new. The WEEE is transported to recyclers or other waste processors. The coordinating organisations also conclude contracts with municipal waste collectors, which collect and separate waste prior to transporting it to a contracted recycler. This cooperation plays an important part in collecting household WEEE. From time to time recyclers and coordinating organisations also arrange special collections in various locations to facilitate the collection of household WEEE for end-consumers. The selection of companies performing collection services is based on an open national procurement procedure. Hajósi (pers. comm.) stated that Electro-Coord occasionally organises collection in schools, especially to collect old mobile phones since mobile owners tend to keep their old phone when purchasing a new or giving it to a relative or friend.

In terms of the collection rates, all of the coordinating organisations claim it is feasible to reach the average collection rate of 4 kilo WEEE/capita by the end of 2008, translating to 40.000 tons of WEEE collected in Hungary during 2008. Most coordinating organisations state that they are already achieving high collection and recovery targets for previous years.

7.2.4. Recycling and recovery

There are a number of well-established and new recycling companies in Hungary and the market is characterised by fierce competition and continued investments into recycling and processing facilities.

The main actor in the recycling sector is the Inter-Metal Group[64], which begun to treat WEEE in 1999. The core activities of Inter-Metal is the collection and processing ferrous and non-ferrous scrap metals and some of its member companies[65] are authorised to collect and treat WEEE. Inter-Metal Group comprises Inter-Metal Recycling and Inter-Metalex which collect and process scrap metals. Initially, the primary source of WEEE was the Hungarian Telecom company MATÁV. The Inter-Metal Group has established a collection network spanning across the entire country and

[64] All of the information regarding Inter-Metal Group is taken from their website [URL: www.intermetal.hu.]
[65] All members of the Inter-Metal Group are ISO90001 and ISO14001 certified.

processes 2500 tons WEEE scrap annually. At the main facility for WEEE collection and treatment in Csepel, Inter-Metal is collecting all 10 categories of WEEE. It carries out the following activities:

- Reception of collected WEEE scrap,
- Weighing by categories and classification
- Manual dismantling and removal of hazardous parts,
- Mechanical treatment with shredder technology and separation,
- CRT glass separation,
- Destruction of floppies, CDs etc.

Most WEEE is processed at the Csepel facility except for refrigerators and fluorescent lamps, which are directly forwarded to waste processors specialised in these categories. The activities include manual and mechanical processing. At the first stage, partial dismantling is performed manually to remove hazardous components and big plastic housings. Decontaminated scrap is subject to mechanical processing, e.g. by shredders and waste separators. Recovered metals are forwarded to Hungarian smelters for re-processing. Printed circuit boards and other copper and precious metals content materials are delivered for metallurgical treatment to specialised companies in Belgium and Sweden to ensure environmentally sound recycling.

Electro-Recycling Group Kft is new entrant and is making investment up to1.2 billion HUF, in the first phase, to erect the establishment. It will process incoming WEEE, with a view to extract and recycle valuable secondary materials. Electro-Recycling is planning its own collection points and has entered into agreement with one of the main collective schemes in Hungary, Ökomat Kht.

Remondis Electrorecycling Kft in Budaörs and **E-Elektra Zrt** in Dunaujváros also provide for selective collection of WEEE since May 2006 can return any WEEE upon purchase of a new EEE having the same functions.

There are a number of conditions a recycler must fulfil to be able to conclude a contract with one of the coordinating organisations. Pursuant to Article 25 of Gov. Decree No 98 of 2001 (VI. 15), a recycling/processing company must:

- have a valid registration in the corporate registry
- guarantee compliance with relevant environmental requirements

- possess environmental and other permits for specific waste treatment activity
- hold evidence of financial guarantee / financial security in sufficient amount
- have a site appropriate for waste management
- hold a site permit issued by the notary clerk of the municipality concerned in which the TEAOR No 90.02 is indicated for waste management
- hold an operational permit
- hold a transport and collection permit issued by the National Inspectorate for Environment, Nature and Water
- possess a treatment permit issued by National Inspectorate for Environment, Nature and Water (Berenczei, pers. comm.)

Recycled WEEE is mainly sold in Hungary but it is also sold to other EU Member States. Waste unsuitable for recycling and further reuse, including some hazardous waste, is disposed of in waste collectors. Iron and coloured metal components can be nearly 100 percent recycled and reused. These metals are reused in Hungary whereas other metals are reused in other countries. Reuse of plastics is more difficult due to the fact that components of one plastic are very different, and they often contain brominated flame retardants, which delay burning. Reuse of glass parts of cathodes of monitors and TV sets can only be reused following special treatment (Prim Online 2006). Although, most recycling takes place in Hungary, it is necessary to export some WEEE components to countries offering a better price, e.g. Belgium and Sweden having high pressure smelters. For instance, the glass from CRTs and LCDs are often exported to recycling facilities offering better prices and superior technology (Hajósi, pers. comm.).

The greatest challenge for the recycling facilities is to get enough quantities of WEEE to be profitable. Although, more and more people are aware of the environmental friendly means of disposing WEEE, the large capacity of the recycling plants puts them into fierce competition with their competitors to acquire enough WEEE. Another problem is the financing as the producers are not too happy about financing the treatment of the WEEE. There are also small recycling facilities with lower treatment standards and manual dissembling (Németh 2006). Due to the large number of coordinating organisations, recycling companies, processing companies, and other waste handlers, the competition has reduced prices for waste management markedly. Hence, many waste processors accept large amount of WEEE at unreasonably low prices. It is doubtful whether these companies

apply the most environmentally friendly technologies, since such technologies would lead to more expensive treatment, which in turn would lead to loss-making for the waste processors (Berenczei, pers. comm.).

The coordinating organisations have experienced some difficulty in ensuring sufficient recycling, i.e. that it is in sufficient amounts and quality to satisfy the National Inspectorate for Environment, Nature. Hajósi (pers. comm.) claimed that it can be difficult to acquire all the necessary documents to prove that WEEE has been recycled or recovered, especially when exported abroad for treatment. Hence, it is necessary to follow the entire chain of WEEE until recycling. Since the amounts of Hungarian WEEE sent to foreign recyclers is negligent compared to the entire amount processed it is difficult to obtain data and papers from these recyclers which can be demonstrated to the National Inspectorate. There is also a certain overlap in the definition of processing and recycling, which coordinating organisations and recyclers have to grapple with.

7.3. Comparative analysis/Conclusion

It is possible to conclude that Sweden and Hungary have some things in common in the choice of practical arrangements for meeting the producer obligations under the WEEE Directive. Both countries have opted for collective responsibility rather than individual, although perhaps for slightly different reasons. Furthermore, there is a steady growing affiliation to these collective schemes. The collective schemes both in Sweden and Hungary take a service-oriented approach and provide its members with a continuous flow of information regarding legal as well as market developments.

However, there are also some striking differences. Firstly, Sweden has one collective scheme covering the whole territory of Sweden, whereas Hungary has five coordinating organisations covering a smaller, and more densely populated area. Where Swedish producers seem to put trust in one well-established and well-known scheme, Hungarian producers are looking for tailored solutions depending upon the product category and the market opportunities. Hungarian producers appear to be more driven by competitive forces and an entrepreneur spirit. Or perhaps, as Ericsson (pers. comm.) puts it, Hungary, with its historical and political past, is cautious of all totalitarian arrangements and thus, would not accept one single WEEE scheme. It is possible that these competing schemes will provide certain concrete advantages for their members, such as lower fees.

However, the fierce competition has also led to a price war, where waste managers increasingly accept WEEE in large quantities under market price. As Berenczei (pers. comm.) points out, it is questionable, whether the WEEE recyclers will be able to ensure full compliance with health and environmental standards, at abnormally low prices. It is plausible that market consolidation, with players merging or leaving the market, will help to address this problem. If not, the National Inspectorate for Environment, Nature and Water might have to step in to monitor that the waste processors and handlers are complying with all relevant health and environmental standards.

In Sweden the situation is different, as El-Kretsen is holding a near monopoly on the purchasing of transport and recycling services. The only other collective scheme, Eurovironment, does not have the same territorial cover, networks and purchasing power as El-Kretsen. As many recyclers are dependent upon winning an agreement with El-Kretsen the competition between the recyclers is fierce, driving down prices and possibly also the environmental technology as it is increasingly difficult to make long-term investments into technology in such a competitive environment. El-Kretsen with its size and good knowledge of the recycling industry also put high demands on recyclers in terms of services and prices. It is possible that it will become more common to enter into agreements directly between recyclers and producers. This would give recyclers an increased financial stability and make them less vulnerable in case of loosing a contract with El-Kretsen. It is also perceivable that recyclers will be able to provide a better service level, tailored to the specific needs of the producers.

Sweden has achieved remarkably high collection rates for several years now. This success depends on many factors, including a functioning collection system through Elretur, the cooperation between El-Kretsen and municipalities, a large public trust in Swedish waste management and environmentally aware consumers. Furthermore, EEE producers, EEE consumers and other stakeholders have had experience with EPR schemes for more than a decade and WEEE legislation was introduced already 2001, giving them ample time to accept and adapt to the requirements. In Hungary, collection rates are far from those of Sweden, although Hungary was granted two-year derogation from the EU collection and recycling rate of 4 kilo/capita. The coordinating schemes are, however, convinced that they will meet, or even exceed, this target by the end of 2008. The reasons for lower collection rates in Hungary are many: the WEEE system is new, the high share of historic waste for which collective responsibility is mandatory, the relatively poor local waste infrastructure, with few public collection

points and the lack of financial resources on part of local authorities resulting in insufficient cooperation with the collective schemes in collecting WEEE. It is also perceivable that consumers are less informed about WEEE, the hazardous components involved, the producer responsibility and take-back possibilities. Since the Hungarian collection system is mainly based on take-back at retailers and shops, it is also vital that retailers comply fully with their obligations, i.e. accept returned WEEE on the basis of the 'old-for-new' rule. Based on the findings of this study, such take-back is not always functioning efficiently and there are relatively few retailers which take their responsibilities seriously and even accept WEEE beyond the minimum requirements.

In regard to recycling and recovery rates, Sweden has substantially higher figures than Hungary. However, as pointed out by Ericsson (pers. comm.), the high recovery rates are facilitated by the Swedish preference for incineration of waste with heat recovery. If EU would not accept incineration with energy recovery as an acceptable waste recovery method, the Swedish recovery figures would be lower. However, the ban and the tax on landfilling are ensuring that only very small fractions of WEEE end up in a landfill. Hungary has yet to introduce such a restriction, which is unlikely until there is a shift from landfilling to incineration and other waste disposal methods. Although, recycling figures in Hungary fall behind those in Sweden, it appears that the coordinating schemes take their obligations seriously and strive to recycle as much as possible, which even include exports of hazardous and more problematic components such as CRTs and LCDs to places where environmentally sound recycling is guaranteed. High prices on virgin steel and other metals in combination with Hungary's strong past with recycling and reusing materials also contribute to favouring recycling and material reuse.

The recycling market is also slightly different in the two countries. In Hungary the competitive system for collection and recycling of WEEE, gives favourable conditions for the recycling market. However, the relatively high number of recycling companies is in competition over relatively low quantities of WEEE. Unless, sufficiently large amounts are obtained it is not possible to achieve economies of scale. Hence, recyclers are increasingly ready to accept WEEE in large quantities under market-price. In contrast, in Sweden the situation is utterly different. El-Kretsen is the national collective system and there are no other collective schemes with which recyclers can conclude agreements. Hence, recycling companies are largely dependent on a contract with El-Kretsen to be able to survive on the market. It could be expected that recyclers and producers increasingly will

conclude direct agreements for recycling services, complementary to recycling provided by El-Kretsen. This is especially likely for the IT-sector.

Both countries are experiencing some problems with free-riders. This should be a bigger problem in Hungary than Sweden due to multiple factors. Firstly, Sweden has 2000 producers registered to the national EEE register, whilst the figure for Hungary is only 700. Furthermore, the system in Hungary is new, operating from 2005, whereas Sweden introduced producer responsibility for WEEE already in 2001. Finally, Swedes are notoriously known as being law-abiding and risk-averters.

8. Final Conclusions

In this chapter, the main findings of this thesis are described. The approaches and solutions taken in Sweden and Hungary are once again compared with a view to draw conclusions about negative and positive aspects. The traits of these two systems will be compared to the general approaches and trends in the EU in regard to EPR systems for WEEE. I will also attempt to make general recommendations, addressed to policy makers and EEE producers. Finally, suggestions for further research will be given.

8.1. Findings of the study

This thesis sets out to explore the implementation of the WEEE Directive in the EU Member States and in particular in Sweden and Hungary in terms of their legal framework and practical arrangements for the collection and treatment of WEEE. The main aim was to carry out a comparative study in which common traits and differences of the Swedish and Hungarian WEEE systems were compared and analysed. It was sought that this analysis could provide for both important lessons to be learned and as guidance for further improvements.

Within the contextual framework, the following issues were dealt with:

- Describe the general status of implementation in the EU, including common traits, differences in the various national WEEE systems, problem areas and opportunities
- Identify the common traits and differences in the Swedish and Hungarian implementation
- Assess whether the Swedish and Hungarian WEEE systems are user-friendly and efficient
- Assess whether the Swedish and Hungarian implementation ensures EC environmental objectives

Each of these issues will be dealt with below, summarising the main findings.

1. **Describe the general status of implementation in the EU**

The implementation in the EU is near completion, at least in terms of the legal transposition. Virtually all Member States have taken the necessary steps to set up a national register of EEE producers and the producers have either jointly or individually provided for collection and recycling schemes, covering both household and non-household WEEE. The systems put in place are, largely, adapted to the existing waste management infrastructure and the political and legal context. Mainly for cost-efficiency reasons, producers have mainly preferred collective responsibility, in the form of either one

national, non-competitive scheme or a clear-house system with several competitive coordinating organisations. On the basis of the findings of past research (notably the study by AEA Technologies), the most important issues, common for all Member States, include:

- How to attain the highest cost-efficiency in a collection scheme, while ensuring that this system is fair to all producers
- How to meet the collection and recycling targets

The Member States and the coordinating organisations seemed less concerned about whether the collection and recycling systems optimised environmental effectiveness and whether there were sufficient incentives in place for design improvements to take place. In general, the impression is that the Member States are in the beginning of a long learning curve and that the discussions and consultations with local authorities and the producers in preparation for the upcoming 2008 revision of the WEEE Directive will be very important in ensuring that all objectives of the WEEE Directive are met.

2. Identify the common traits and differences in the Swedish and Hungarian implementation

In general there were more differences than common traits in the implementation of the WEEE. In common for both Hungary and Sweden was the preference for collective responsibility opposed to individual. In both cases it was mainly market forces and financial incentives acting in favour of collective responsibility.

A distinct difference, though, is in the form of collective responsibility, with Sweden opting for one, nation-wide, non-competitive collective scheme and the Hungarian system based on a clearing house model with several, competitive schemes. A strength of the Hungarian system is the competition and entrepreneurial spirit it brings to the waste management sector. However, the question is whether the clearing house system is suitable in a relatively small country with a confined WEEE market. Furthermore, such a system requires continuous monitoring and compliance checking in order to deter free-riders. The Swedish system is not very good for competition and it has also lead to a reduction in the number of recycling companies in country, due to their dependency on a contract with El-Kretsen. However, it has managed to attain very high collection and recycling rates and seems suitable for a country with a relatively large territory but with low population density. The

mandatory requirement to set up a collection network across the whole territory of Sweden makes it highly inefficient and expensive for a small coordinating organisation to enter the market.

The registration and reporting requirements were very similar. Although, there was a large difference in the number of producers registered to the national EEE register, with 700 producers in Hungary and 2000 in Sweden. It is also a different issue whether the authorities in question obtain accurate and timely reporting.

A sanctioning system with efficient and dissuasive sanctions is another important element of the implementation process. In this regard, Sweden provides for multiple sanctions ranging from fines to environmental sanctions fees (to neutralise any possible gain a non-complier might have enjoyed due to its unlawful behaviour) and imprisonment. Currently, a number of producers are subject to a procedure whereby EPA can impose environmental sanction fees for non-compliance with the reporting obligations. In Hungary, sanctions are confined to fines and the level of fines is in general low for environmental crimes.

Finally, a large difference can be seen in the interpretation of the requirement to provide financial guarantees. In line with the wording of Article 8(2) of the WEEE Directive, every individual producer in Sweden will have to demonstrate the provision of financial guarantee for new products as of October 2007, even those participating in El-Kretsen. This is not the case in Hungary, where producers participating in one of the coordinating organisations are exempted from this requirement. The main reason seems to be the high paid-up capital, which is a condition for establishing a coordinating organisation, could be used as a guarantee. The question remains whether this fund is sufficient to cover all members and whether it really is reserved exclusively for EOL management or can be used for other purposes.

3. Assess whether the Swedish and Hungarian implementation ensures EC environmental objectives

Although it is difficult to make a complete assessment of whether the implementation meets the set environmental objectives of the WEEE Directive, a few points will be made here.

The high collection and recycling rates in Sweden is contributing to attaining the objective of safer waste management and high rates of material recovery. In this regard, the lower figures of Hungary are an indication of a need for further efforts.

Both Sweden and Hungary opted for a full producer responsibility with a very small responsibility on part of the municipalities. This is in line with the very concept of EPR programmes. However, the agreement between the municipalities and El-Kretsen, whereby the municipalities finance the collection of household WEEE until 2010, is undermining the responsibility of the producers.

The collective schemes in Hungary and Sweden do not at this point seem to give priority to design change, which is one of the objectives of the WEEE Directive. However, the financing systems in El-Kretsen and Electro-Coord seem to indicate a differentiation in participation fees, depending upon product category and the existence of hazardous substances/materials which render recycling more difficult and expensive.

It is not only important to attain high collection rates, high quality recycling is also necessary to attain the environmental objective of increased environmental effectiveness. However, the fierce competition on the Hungarian market is resulting in under-market prices, which in turn can compromise the environmental (and health) standards for recycling.

4. Assess whether the Swedish and Hungarian WEEE systems are user-friendly and efficient

The Swedish collection and recycling system through Elretur and El-Kretsen is both user-friendly and efficient. It is user-friendly, because the households and businesses have several options for how to return their discarded WEEE. For instance, households can either return their WEEE to municipal collection points in the vicinity or to the shops upon purchase of a new EEE. In the municipal collection points there is no limit in terms of number of EEE or its weight. Households are also aware of the producer responsibility for WEEE and of their obligations to ensure that WEEE is safely disposed of. Hence, the incidence of WEEE being dumped is quite small.

That the Swedish WEEE collection system is efficient is proven by the fact that 16 kilo WEEE/person was collected in 2005. It also appears that the efficiency partly is due to the cost-

efficiency of Elretur and El-Kretsen. With their size, they can operate at economies of scale and ensure the lowest prices possible for its members for the collection and recycling of WEEE. 95% of the WEEE market is covered by El-Kretsen and there are few incentives for not joining it. It also means that there is a relatively low incidence of free-riders on the Swedish market, which is also a sign of efficiency. In general, the cooperation and synergies between producers and local authorities has proven successful since they all contribute with knowledge, infrastructure, financial resources and networks.

As we have seen in the case of Hungary, the lack of financial resources on part of the local authorities has crippled the system for municipal waste collection in Hungary. The existing infrastructures, mainly relying on waste islands (drop-off points) are not adequate in number or capacity. A person who would like to dispose of WEEE, either have to buy a new EEE of the same function, take the journey to one of the waste yards (provided that the WEEE is accepted) or wait for the coordinating organisations to organise special collection events in a place nearby. This system is obviously not very convenient to the households. They have very little incentives to dispose of their WEEE according to the legislation. It is highly likely that many people sit on their WEEE for a long time, dump it somewhere or give it to friends and relatives (common for mobile phones). Hence, in terms of use-friendliness the Hungarian system does not score very high. The main challenge for Hungary is to ensure high collection rates and an environmentally safe disposal of WEEE.

In terms of efficiency, the five Hungarian coordinating organisations are competing with each other over the collection and treatment of WEEE. One advantage of these competitive schemes is the variety in services and niche it brings to the producers. There are IT-focused collective schemes and more generic ones. However, due to relatively small size of the organisations (with roughly 300 members in the largest one) it is difficult to attain a high cost-efficiency and operate at economies of scale. For this to happen, large amounts of WEEE must be collected, transported and treated. Hence, although the Hungarian coordinating organisations are efficient in the sense of fulfilling their purpose under the WEEE provisions, the operations are not necessarily cost-efficient. Cost-efficiency, however, has proven to be one of the most important objectives for the producers.

A further issue is that it is more expensive to supervise the activities of five coordinating schemes that one single. This was emphasised by the Swedish EPA as being one of the main advantages of having one single scheme - efficient use of public resources.

8.2. Recommendations

There are shortcomings both in the Swedish and Hungarian implementation and practical application of the WEEE Directive and there are ample potentials for further improving. The following recommendations could be useful in improve the existing WEEE systems.

Hungary:

- **Ensure efficient and consumer-friendly collection systems**

This is perhaps the most important recommendation for Hungary, as this component is crucial for attaining high collection rates. As the existing waste management infrastructure is inadequate for the collection and treatment of ordinary municipal waste, the local authorities should prioritise the extension of waste islands, waste yards and even contemplate other forms of waste collection such as kerbside collection. Furthermore, every waste yard should allow for limitless take-back of household WEEE. Increasing the collection at municipal waste collection points ought also to be in the interest of coordinating organisations as they normally strive to collect as much WEEE as possible to be able to operate at economies of scale. If need be, producers could contribute to financing the extension of waste yards, provided that they are consumer-friendly and efficient.

- **Greater involvement of municipalities/local authorities in collection of WEEE**

The main reason for not attributing a partial responsibility for the collection and treatment of WEEE on municipalities is most likely financial. The scarce resources municipalities have would not be sufficient to guarantee attainment with the recycling and collection rates set out in the WEEE Directive. However, current studies of the WEEE systems in Europe give a clear indication of the connection between high collection rates and the involvement of local authorities.

Even if municipalities do not share the financial or physical burden of WEEE collection it is crucial to create synergies between the work of producers and local authorities in Hungary. The local authorities should also be the key actors in raising the awareness of WEEE and its safe collection

and disposal as well as to encourage and facilitate the take-back of WEEE. Continuous monitoring and supervision is also a must for the National Inspectorate and the EPA in order to reduce the number of free-riders on the market.

- **Ensure adequate supervision of the take-back of WEEE at producers**

The Hungarian system largely is based on the take-back of WEEE at shops and wholesales on the basis of the old-for-new rule. Hence, it is important to monitor that the producers and retailers involved really do accept this WEEE. This collection should be consumer-friendly and consumers buying a new EEE should not be told that they have to travel to another destination to drop of their old equipment. Hence, the take-back should always be the same place as where the new EEE is bought.

The supervisory authorities might also try to induce shops and retailers to accept WEEE in numbers exceeding the quantity of new EEE as well as WEEE of other types (e.g. a used iron could be returned upon purchase of a new coffee machine), as this would improve the collection rates. At least until it is easier to return WEEE to municipal collection points.

- **Introduce sanctions that are dissuasive and efficient in case of non-compliance**

The Hungarian authorities ought to contemplate introducing more efficient sanctions to reduce the incidence of non-compliance and free-riders. Since the producers bear most of the burden for the collection and recycling of WEEE, it is reasonable to expect the national authorities to provide for efficient and dissuasive sanctions, imposed in case of non-compliance. The fines should be increased sufficiently to be dissuasive and it might also be efficient to introduce an imprisonment penalty for particularly grave violations. The sanction system should also be coupled with improved monitoring in order to catch the non-compliers.

- **Reconsider the existing interpretation of the financial guarantee to cover all producers**

To meet the objectives of the WEEE Directive concerning waste minimisation, adequate financing of the EOL costs for new WEEE and design improvements, each individual producer should have to provide financial guarantees. Participation in a coordinating organisation, per see, should not be

sufficient, unless this organisation is taking measures to manage the provision of financial guarantees on behalf of its members. Further studies are necessary to investigate whether the paid-up capital of 75 million HUF is sufficient to cover EOL costs for producers who have disappeared from the market. Furthermore, the coordinating organisations should ensure that these funds are only reserved for EOL management, through a blocked bank account or similar arrangement.

Sweden:

- **Encourage and facilitate the establishment of alternative collection systems:**

Most producers in Sweden belong to El-Kretsen. As we have seen above there are ample reasons for this, particularly on financial grounds. The agreement between municipalities and El-Kretsen, to finance household WEEE until 2010, which bring financial advantages to members of El-Kretsen, the experience and high collection rates of El-Kretsen are some of the main reasons. Furthermore, El-Kretsen with its size and coverage in Sweden is attaining a cost-efficiency which other producers have a difficulty to match and it has a great bargaining power in entering into agreements with pre-treatment and recycling companies. Hence, the incentives for joining other schemes or for establishing individual schemes are virtually non-existent. It is therefore important that the local authorities and the Swedish EPA are supporting initiatives for alternative collective or individual schemes. These schemes are important both from the point of view of competition and for innovation. El-Kretsen will continue to be the dominant scheme and that is acceptable because it is performing remarkably well. However, there should always be possibilities for alternatives solutions. The EPA might consider imposing slightly less stringent conditions on such schemes, at least during the start-up phase, and not necessarily require them to ensure national coverage for their WEEE collection straight away.

It would also be beneficial if El-Kretsen facilitated the possibility for its members to belong to more than one collective scheme. Such producers should not have to face too burdensome administrative tasks and the participation fee should reflect the actual figures of WEEE collected and treated.

- **Not extend the agreement between municipalities and El-Kretsen beyond 2010:**

El-Kretsen is having a dominant position in the collection of household WEEE, through the collection system Elretur, which it has established in cooperation with the municipalities. Pursuant to agreement concluded between El-Kretsen and the municipalities, the latter are financing the collection of

household WEEE until 2010. This is giving an advantage to producers participating in El-Kretsen compared to other producers.

By 2010 there will be less historic waste, especially in some product categories such ITC equipment and consumer goods (toys, games). Only the White Goods and Brown Goods sectors are expected to still have a large share of historical WEEE. Since the WEEE Directive particularly foresaw individual responsibility for new WEEE, it is important to ensure that there are incentives for such arrangements. Continued financing by the municipalities of the collection of household WEEE through Elretur mainly gives financial advantage to the members of El-Kretsen and is counter-productive to the establishment of alternative schemes.

8.3. Suggestions for further research

The study of AEA Techonology (2006) on the implementation of the WEEE Directive in the EU Member States has been very useful in shedding light on some of the most problematic issues. The European Commission recently contracted a continuation of this research, which will provide further important information to take into account in the 2008 revision of the WEEE Directive. Although, these studies are crucial in giving a general picture of the overall implementation, it is also important to carry out more, in-depth, research covering a few countries and WEEE systems.

More research is particularly needed into cost-efficiency criteria since cost-efficiency appears to be the main objecive of collective schemes. It is also important to study aspects of the financing systems and in particular how financial guarantees work and whether individual or joint financial guarantees are preferable. Although there is a relatively fair amount of studies on whether collective responsibility gives the right incentives for design into more environmentally friendly products, most of these studies seem to prefer individual responsibility. Since the market has opted for collective responsibility, I believe we need more research into how one could create criteria or incentives for coordinating organisations to put pressure on their members for design improvements.

It would also be interesting to undertake a study comparing the collection and recycling rates between countries with strong involvement in waste management of local authorities with countries where municipalities have a minor role to play in the collection of WEEE. If such a study

demonstrates higher environmental performance and efficiencies in countries with strong involvement of local authorities, then this is a clear signal to support this type of cooperation in waste management, both by the relevant governments and in form of financial assistance (e.g. EU funds).

8.4. Final remarks:

In general it was expected that the Swedish implementation and application of the WEEE Directive would be more advanced than the Hungarian and that Hungarian producers and authorities could draw important lessons from the Swedish system. Indeed, there are a number of important aspects from which Hungary could indeed learn, such as the high collection rates, the cost-efficiency of the collective system, the high number of producers which are participating in a coordinating organisation, the fruitful cooperation between producers and local authorities in collection, and the enforcement system. However, the Swedish system also has its flaws and the Hungarian approach with multiple, competing schemes appear to stimulate entrepreneurship and competition in the recycling market.

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10. Appendices

10.1. Appendix 1: List of collective take-back and recycling systems in the EU

Country	System	Inf	Web	System Manager
Norway	Elretur		el:retur	Hans Løken
Sweden	El-Kretsen		El-Kretsen AB	Jan-Olof Eriksson
Finland	SER-TY		SERTY	Timo Valkonen
	ELKER			Veikko Hintsanen
Ireland	WEEE Ireland		WEEE Ireland	Leo Donovan
Estonia	EES Ringlus		EES-Ringlus	Margus Vetsa
Germany	Lightcycle		Lightcycle	Frank Rosner
Netherlands	NVMP		NVMP	Jan Zanen
	ICT Milieu		ICT MILIEU	Jan Vlak
Belgium	Recupel			Willy Quinart
Luxembourg	Ecotrel		ecotrel	Bernard Mottet
France	Eco-Systèmes		Eco-systèmes	Christian Brabant
Spain	ECOLEC		ecolec	José Ramon Carbajosa
	ECOTIC		ecotic	Joan Riba Rovira
	ECO-RAEE's			Jose Miguel Vendrell Guillem

	Tragamovil			José Pérez Garcia
	Ecofimatica			José Pérez Garcia
	Ecoasimelec			José Pérez Garcia
Portugal	Amb3E			Fernando Lamy da Fontoura
Czech Republic	Elektrowin			Roman Tvrzník
	ASEKOL			Jan Vrba
	RETELA			Jaroslav Vladik
	REMA			David Benes
Slovakia	Envidom			Martin Ciran
	SEWA			Jiří Mikulenka
Austria	UFH			Helmut Kolba
Switzerland	SENS			Robert Hediger
	SWICO			Peter Bornand
Hungary	ELECTRO-COORD (H)			Zoltán Tóth
	Ökomat (H)			Dr. Endre Erdös
	Comp-Cord			Reszö Berenczei
	Elektro-Waste			Árpád Kovács
	Re-electro			Csaba Orbán
Greece	Appliances Recycling SA			Spyridon Efthimiou

Associated Members (from north to south and regions)

Country	System	Info	Web	System Manager
United Kingdom	REPIC			Philip Morton
	Lumicom		lumicom	Ernest Magog
	B2B Compliance			David Burton
Latvia	LZE			Uldis Vīte
Poland	ElektroEko		ElektroEko	Grzegorz Skrzypczak
Slovenia	ZEOS		ZEOS	Emil Šehič
Italy	ECODOM		ECODOM	Giorgio Arienti
	Re.Media		CONSORZIO ReMedi@	Danilo Bonato
Date: April 2007				

Source: WEEE Forum (WEEE-forum.org)

10.2. Appendix 2: Overview of Directive Implementation

Country	Transposition	Visible fee	Register	Registration date	Model
Austria	Dec 2004	Allowed (2011-2013)	UBA (Ministry of Environment)	30 Sept 2005	Clearing house
Belgium	Mar 2005	Allowed (2011-2013)	3 Regional Environmental Agencies	1 Aug 2005	Collective system
Cyprus	Jul 2004	NA	Ministry of Agr, Nat. Resources and Environment	NA	Collective system
Czech Rep	Jun 2005	Allowed (2011-2013)	Department of Waste Management	13 Oct 2005	Clearing house
Denmark	May 2005	NA	Environmental Protection Agency	1 Oct 2005	Clearing house
Estonia	Sept 2005	NA	Environmental Information Centre	NA	Clearing house
Finland	Sept 2004	Allowed (2011-2013)	Prikannma Regional Environmental Centre	NA	Clearing house
France	2005	Allowed (2011-2013)	Environment Agency	NA	Clearing house
Germany	Mar 2005	Allowed (2011-2013)	Federal Environment Agency	24 Nov 2005	Clearing house
Greece	Apr 2004	Allowed (2011-2013)	Environment Ministry	Jan 2006	Clearing house
Hungary	Jan 2005	Allowed (2011-2013)	National Environmental Inspectorate	1 January 2005	Collective system
Ireland	July 2005	Allowed (2011-2013)	Independent Committee	20 Jul 2005	Collective system
Italy	Late 2005	Allowed (2011-2013)	Local Chamber of Commerce/ Environment Ministry	90 days after decree	Clearing house
Latvia	Dec 2004	NA	Delegated by Environment Ministry	Oct 2005	Clearing house
Lithuania	Oct 2004	NA	Ministry of Environment/EPA	-	Clearing house
Luxembourg	Jan 2005	Mandatory (2011-2013)	-	-	Collective system
Malta	Late 2005	NA	Malta Environment and Planning Authority	-	NA
Netherlands	Jul 2004	Allowed (2011-2013)	Ministry of Housing, Spatial Planning and Environment	Jul 2004	Collective system
Poland	Sept 2005?	Allowed (2011-2013)	Chief Inspector of Environmental Protection	-	Clearing house
Portugal	Sept 2004	Allowed (2011-2013)	Producer Associations/Compliance under licence	-	Collective system
Slovakia	Dec 2004	Allowed	Ministry of Environment	30 Jun 2005	Clearing house

		(2011-2013)			
Slovenia	Jun 2005	Mandatory (2011)	Ministry of Environment and Spatial Planning	30 Jun 2005	Clearing house
Spain	Feb 2005	Mandatory (2011)	Autonomous Region and National Register	-	Clearing house
Sweden	Apr 2005	Mandatory (2011)	Environmental Protection Agency	Early 2006	Collective system
United Kingdom	Early 2006	Allowed (2011-2013)	Department for Trade and Industry	Jan 2006	Clearing house

Source: AEA Technology (2006)[66]

[66] This table represents the situation as it stood in late 2005. It is probable that there have been several modifications to this data.

10.3. Appendix 3: Examples of interview questions

In the course of the research, a number of interviews were carried out. Although, the questions differed depending upon the role and functions of the organisations in implementing the WEEE Directive, some core questions can be identified. Below is a sample of the most common interview questions.

1. What role and responsibilities does your organisation have related to the implementation of the WEEE Directive?

2. What is your opinion about the current status of implementation of the WEEE Directive?
- What has been particularly successful?
- What are potential problem areas?
- How can the implementation be further improved?

3. What issues are you mostly focussing on in administering the EPR scheme for WEEE?

4. What are the major opportunities and challenges for EPA regarding the implementation? Could the mandate be further extended to include more responsibilities?

5. How do producers and importers perceive their obligations regarding collection and recycling of WEEE

6. Explain your role in running the producer register and tell me about your experiences so far?

7. What has been your experience regarding the declarations and reporting by producers?

8. What are the sanctions available in case of non-compliance with the WEEE legislation?

9. What is the responsibility of your organisation in implementing the WEEE Directive?

10. Which system does your organisation prefer – collective or individual schemes?

11. Is your organisation in favour of an EU-wide register and harmonised notification and registration requirements and/or one central EU register?