



LOST IN TRANSPOSITION?

A STUDY OF THE IMPLEMENTATION OF INDIVIDUAL PRODUCER RESPONSIBILITY IN THE WEEE DIRECTIVE

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Report commissioned by Greenpeace International, Friends of the Earth and the European
Environmental Bureau (EEB)

Prologue by Greenpeace International, the European Environmental Bureau and Friends of the Earth Europe

This study commissioned by EEB, Friends of the Earth and Greenpeace, shows that Individual Producer Responsibility (IPR) as set up in the European Waste from Electrical and Electronic Equipment (WEEE) Directive can “make the market work for the environment”. This is a key objective both of Europe’s Sustainable Development Strategy and the Sixth Environment Action Programme. However, the inadequate transposition of the relevant requirements that ensure that IPR can function is likely to put this in jeopardy. This needs to be urgently corrected so as not to undermine the credibility of EU law and to avoid missing an important opportunity for Member States to use this powerful driver for innovation, prevention and cleaning up our waste streams.

EEB, Friends of the Earth and Greenpeace believe that eco-design is key to tackling pollution and environmental impacts at source, especially given the growing importance attached to avoiding pollution and impacts from ‘dispersed sources’ caused by waste and products moving around the world. Improvements in products’ environmental performance require the elimination of hazardous substances in products to prevent harmful emissions and wastes being generated when products are discarded at end-of- life; and the reduced use of resources during the whole life cycle, for example by designing more efficient, durable and/or reusable products and eventually products that are 100% recyclable.

Creating a legal framework that provides economic incentives for ecological design change is crucial. Specific eco-design requirements are necessary to remove the worst-performing products from the market and set a minimum level of environmental protection (e.g. substance bans or a minimum level of energy efficiency). However, they are almost invariably brought into effect ‘behind the innovation curve’, after innovation has occurred, pushing innovative developments into mainstream manufacturing. Economic incentives are needed in addition to minimum requirements, so as to spur ‘green’ innovation ‘ahead of the curve’. Producer Responsibility, and particularly Individual Producer Responsibility, can create such incentives.

The WEEE Directive is one of the world’s first laws specifically assigning Individual Producer Responsibility. It makes individual brand owners directly responsible for the end-of-life costs of their own products, and thus creates a system that offers economic advantages for innovative producers who design to reduce these costs. Thus the law moves the economic system towards ‘making the polluter pay’, or more importantly, ‘allowing the non-polluter to pay lower end-of-life costs’.

This study confirms that the WEEE Directive intended to allow individual end-of-life costs to be directly transmitted to the individual producer, thus allowing the IPR economic incentive to function. It clarifies how IPR is a policy tool that relies on economic signals from treating end-of-life products (environmental ‘cost’ signals) getting through accurately to the producer, to drive design change. Therefore, there must be, as far as possible, an ‘economic level playing field’ or minimal distortion of these cost signals for the economic advantages of product design change to be reaped. The financial guarantee that producers are required to provide to cover the costs of end-of-life treatment of WEEE and whether the guarantees are required equally for all compliance schemes¹ will determine this to a great extent.

¹ ie the different systems that producers can choose to get their waste products collected and treated should all demand the same guarantee to avoid that some do and some don’t – which could disincentivise producers from choosing freely the best system for them in terms of lower costs for well-designed products (eg products that are easy to dismantle and recycle)

The correct transposition of the EU WEEE Directive's requirements on individual producer responsibility, to be implemented into national legislation through proper financial guarantees in all 25 European Member States, is vital to ensure that the IPR system becomes a common reality throughout the EU. However, the study also reveals that many national transpositions are potentially frustrating the functioning of IPR by distorting the economics on at least two critical fronts:-

a) most national law will probably not require correct or 'true' financial guarantees² for all 'future' WEEE (WEEE from products placed on the market after 13 August 2005). Also, most national law appears to only require financial guarantees from those producers not joining their main 'collectively-organised' collection and treatment scheme (i.e. for producers wanting to join alternative own-brand or limited-brand schemes). In so doing, they are creating disincentives for producers who would gain benefits from lower end-of-life costs by using these alternatives;

b) there is a potential risk of distortion of economic 'feedback' through subsidising collection of WEEE for certain compliance options, namely the main collectively-organised compliance scheme, but not for alternative schemes that may be set up. This will again create costs disincentives for producers to choose alternative schemes where they may be able to get lower treatment prices for their better designed products.

It also appears there is a risk of diluting economic signals, that would encourage design-for-de-pollution or design-for-removal of hazardous components, in particular through potentially allowing cheaper options like shredding instead of dismantling.

The Commission's review process on implementing the WEEE Directive should look thoroughly into any barriers to implementing IPR as anticipated by the Directive – including an in-depth compliance investigation of the transposition of the relevant provisions for making IPR work. Guidelines on the correct interpretation and definition of a 'true' or 'appropriate' financial guarantee are urgently needed and inadequate transposition needs to be corrected without delay.

Backtracking on IPR could have damaging consequences. Some producers have already made investments – as is illustrated by the design responses from the anticipation of the WEEE and RoHS Directives (see IIIIEE report by the same authors: 'Extended Producer Responsibility – An examination of its impact on innovation and greening products').



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² ie a 'true' financial deposit, made upfront when the product is placed on the market, providing a proper insurance that other producers and taxpayers won't end up paying for its end-of-life treatment.

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Executive Summary

This report, commissioned by Greenpeace International, Friends of the Earth and the European Environmental Bureau (EEB), examines the implementation of the WEEE (Waste Electrical and Electronic Equipment) Directive in the Member States (MS) of the European Union. The focus of the report is the possibilities for the Extended Producer Responsibility (EPR) principle, embedded in the WEEE Directive, to promote design change of the products covered by the Directive.

It is especially important and timely to highlight the importance of taking a product-perspective to environmental policy making, and in particular waste policy, in which EPR programme implementation provides positive outcomes. Within the European Commission, there has been increased discussion over the available policy approaches to encourage the prevention and recycling of waste. In some policy documents there has been increased pressure to challenge how appropriate it is for EPR to achieve these goals, for example by calling for more material-based³, as opposed to product-focused, waste policies.

In this paper, EPR is given the broad definition of “a policy principle to promote total life cycle environmental improvements of product systems, by extending the responsibilities of the manufacturer 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 means that the RoHS (Restriction of Hazardous Substances) Directive can be seen as a supplementary piece of legislation that is also in line with the EPR principle, as further elaborated in Section 1.3.

There is both implicit and explicit evidence of the impact of EPR on product design

Although it is recognised that determinants of product innovation are likely to come from a variety of push and pull factors including legislation, consumer preferences, and customer requirements, it is clear that anticipation of EPR legislation has been central to specific design changes. The research findings of Tojo (2004) provide empirical evidence that EPR legislation does offer tangible incentives for environmentally-conscious design in the case of EEE and cars in Japan and Sweden. The analysis of her interviews in 2001 revealed that all manufacturers that were interviewed considered anticipated regulatory requirements posed by EPR legislation, in their product development strategies. Many have anticipated this cost to be significant and have accordingly already changed product design in the 1990s.⁴ Similar studies of other countries have not been identified. In addition to the findings in Tojo (2004), the authors’ personal experiences support these conclusions. Moreover, evidence from corporate environmental and sustainability reports, as recently as 2005, explicitly

³ Material-based measures, as opposed to product-specific measures, include setting European collection and recycling targets for material types in general (e.g. PET), regardless of source, instead of targeting specific product groups or waste streams (e.g., PET packaging). This strategy is meant to provide a more flexible approach to achieving the goal of decreasing the disposal of materials in landfill through general recycling targets for specific materials, as opposed to targeting individual products or waste streams containing those materials. What is unclear with the material-based approach is who would be delegated as the responsible actor for achieving such targets and the fact that this approach would largely ignore waste prevention incentives directed at producers as a result of product-focused strategies.

⁴ This view was frequently encountered by Tojo (2004) when conducting her interviews with manufacturers. Other authors have also experienced it talking to company representatives during the period when the Directives were discussed and developed. The impression from these interviews and conversations is that all manufacturers were expecting what we today call ‘individual responsibility’.

mention the influencing effect of both the WEEE and the RoHS Directives on product design.⁵

Implementation of Individual Producer Responsibility

We see that the debate over individual vs. collective responsibility with respect to their ability to provide incentives to producers to design their products for improved end-of-life processing, although easy to conceptualise, has led to confusion on behalf of many actors involved in the debate over implementing EPR. It seems that there is a common misunderstanding that individual producer responsibility will always imply that a single producer develops separate infrastructure for collection and treatment of his or her own WEEE. This is clearly not the case and there is evidence that individual financial and individual physical responsibility (hence, individual producer responsibility) can and does occur in collectively-organised compliance systems operating today in addition to brand-specific or limited brand producer compliance systems. This is further emphasised in the section below.

It should be stressed that the distinction of products does not require the physically separate handling of individual producers' products. Existing practice where elements of individual producer responsibility exist within collective systems, suggests that the distinction of products can be made in various stages of the downstream operation. Timing of product identification includes: (1) the point when the end-user discards the products; (2) at product aggregation points and (3) at recovery facilities. The methods of distinguishing products, the actors involved, and the roles of producers also vary. Influencing factors that affect selection of the form of individual implementation include the end-value of the products, feasibility and the producers' ambition to establish their own downstream infrastructure, types of end-user, and the existence of other producers that share the same degree of ambition regarding end-of-life management of their products.

Requirements for EPR to drive design change

To develop EPR systems that drive design change, it must be understood that only design of new products – products introduced in the market after the EPR programmes' entry into force – can be improved. Historical products, that is products put on the market before the EPR legislation, must be taken care of, but how the costs are allocated will not directly affect the development of new products. Design incentives stem from the possibility of differentiation of fees paid for end-of-life management and in this regard individual producer responsibility is a necessary condition to assure this feedback loop is in place. Provision of financial guarantees for future costs is the way to ensure that producers take these costs into account when designing products and product systems. True financial guarantees not only ensure there are funds to pay for these costs, but provide flexibility and possibilities for competition on the market, allowing market forces to develop efficient solutions. Such efficient solutions must also secure an environmentally-responsible treatment of products and their components and materials. By internalising these costs, avoiding subsidies for collection and other activities, and establishing a true financial guarantee system, a level playing-field will result, that rewards corporate responsibility and innovation in product design.

⁵ For more info on EPR driving innovation and greener products, see IIIIEE report "Extended Producer Responsibility – An examination of its impact on innovation and greening products" (2006).

Highlights from Member State transposition of the WEEE Directive

Reviewing Member States' transposition of the WEEE Directive reveals that transposition methods may hamper the goal of realising the spirit of the Directive in a number of critical areas, as elaborated further below.

Collective historical vs. individual future WEEE responsibility

On the central issue of allocating financial responsibility for historical and new waste, the WEEE Directive is explicit in assigning collective financial responsibility for historical WEEE from households, and individual financial responsibilities for new WEEE. However, it is clear that only 12⁶ of the 25 Member States (MS) have adequately transposed the Directive to allow this distinction to be made. A further eight⁷ MS only make reference to historical WEEE and the need for collective financing based on current market share. Two⁸ make no distinction at all, and the remainder (three)⁹ explicitly assign collective financial responsibility for both historical and new WEEE. Additionally, and importantly, it remains to be seen whether compliance schemes will uphold this distinction, where described in national law.

Unequal demands on financial guarantees

It is also clear that nearly all MS have discouraged the development of brand-specific or limited brand compliance systems by producers that want to develop¹⁰ such systems to recover their own WEEE put on the market after 13 August 2005 (or the national equivalent date), by requiring a true financial guarantee (in essence blocked bank account or recycling insurance) when placing these products on the market, while at the same time failing to place the same or equivalent demand on producers that join collective schemes (scheme membership is presumed to be a guarantee). This directly penalises individual producer responsibility and thus sets up an economic barrier to this important driver for future eco-design.

Treatment and recycling requirements

It is important that the treatment and recycling requirements represent a high level of environmental protection and lead to the efficient use of resources. Current criticisms of the way targets are formulated and implemented must be taken seriously. To reach the stated goals it is also necessary that the targets are real and challenging, that is that they do not promote the status quo, but a dynamic development of product properties and treatment processes. Additionally a list of hazardous substances and components that need to be removed prior to treatment must be enforced. This would promote more upstream approaches to pollution prevention rather than relying on end-of-pipe pollution control equipment to ensure depollution. For example, if the "have to be removed" wording in Annex II is interpreted as these components do not have to be removed *prior to shredding*,

⁶ Austria, Cyprus, Czech Republic, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Slovakia, Spain and Sweden

⁷ Belgium, Estonia, Finland, Greece, Lithuania, Malta (based on draft legal text), Slovenia and the UK (based on draft legal text)

⁸ Hungary and Latvia

⁹ Denmark, France and Poland

¹⁰ These could either be developed both through contractual relationships with recycling service providers or independently financed and developed infrastructure.

manual disassembly would be unnecessary, allowing for lower costs, but creating a potential loophole on depollution and diluting the signals to design out these substances.

Disparate responsibilities for collection across MS

MS have also assigned municipalities varying degrees of financial and physical responsibility for collection. In practice it appears that in most MS municipalities will be physically involved in collecting WEEE from households. However, the degree to which producers compensate them varies significantly. This not only poses 'level playing-field' issues between MS where collection is state- subsidised, but also deters the development of individual producer systems. This is because own-brand or limited brand compliance systems are often not given access to subsidised collection facilities. This also highlights the issue of shifting the financial burden of collection from municipalities to producers and consumers, where this has only partially happened in many MS.

Lack of harmonisation

Scrutiny of the transposition process also reveals the lack of standardisation of certain administrative features of producer registers among MS. This has led to a striking variation between MS systems on issues like definition of categories of EEE products and different reporting formats. This places an extra administrative burden on producers and/or importers, and challenges the argument that: "the objective of improving the management of WEEE cannot be achieved by MS acting individually. In particular, different national applications of the producer responsibility principle may lead to substantial disparities in the financial burden on economic actors." (preamble, recital (8))

Necessary steps forward

For the moment it appears that if individual producer responsibility is to become a reality for WEEE in Europe, many MS will need to be directly challenged over how their national laws have been constructed, namely on the distinction between historical and new WEEE financing obligations, and the lack of a suitable financial guarantee to avoid future orphan new waste. It seems necessary to clarify the wording on financial guarantees in the WEEE Directive, so that the "appropriate other" guarantee option is not interpreted against the spirit of the Directive and to the detriment of creating design incentives, i.e. by allowing membership in a collectively-organised compliance system to qualify as a financial guarantee.

Individual implementation should be made a feasible alternative particularly considering its central importance as a driver for eco-design in new products. Producers should be given opportunities to explore alternative solutions on when and how they wish to distinguish their own products from the rest in collective systems. In the light of the global destination of products, it is desirable that products carry (embedded radio frequency identification tags, for example) the information necessary for distinction of their properties, by way of, among other things, marking on components.

Levelling the playing-field will promote Individual Producer Responsibility

In order to re-install the incentives for design changes as intended in the WEEE Directive, measures must be taken to level the economic playing-field between collectively-organised compliance systems and own brand or limited brand compliance systems. This assessment has concluded that the following points must be dealt with:

- 1) A true financial guarantee for the future end-of-life costs of 'new' products is essential. This demands clarification that the provision of joining an appropriate scheme for financing WEEE as a means to secure a financial guarantee must not mean that collectively-organised

systems are allowed to operate with only limited funding resources for the future treatment and recycling. All systems must create a sufficient guarantee for future costs. No systems should present barriers to producers choosing alternative compliance schemes so long as they also provide a true financial guarantee.

2) To give signals for optimising all parts of the systems, collection costs should also be covered by producers. The present situation, where collection costs are covered or partially-covered by municipalities in many MS, sends the wrong consumption signals through subsidised end-of-life cost.¹¹ The situation also impedes a level playing-field for producers interested in exploring individual producer responsibility by setting up own-brand or limited brand compliance systems, as they may not be given access to the subsidised collection infrastructure.

3) The economic signals from treatment and recycling WEEE will be part of the drivers for eco-design. Consequently, it is essential that these costs reflect the appropriate level of environmental protection through full, high-quality recycling (i.e. not down-cycling, shredding and export). Although this approach may mean an increase in current end-of-life treatment costs in the short-term, innovative responses by the recycling industry and product designers combined with new markets for certain materials may lead to superior environmental practices and cost reductions in the long-run. This should bring improvements not only in the treatment of WEEE, but also reduce the negative impacts of products that are not collected. Or those which are exported for re-use and whose future end-of-life management may be in conditions that are considerably lower than standards in the EU. It is also crucial that the requirement to remove hazardous substances prior to shredding is maintained, as this is another important driver for eco-design.

The report on EPR and design changes,¹² referred to earlier and produced in parallel with this study, clearly shows EPR's potential to bring design improvements of products and product systems that, with time, will substantially reduce their environmental impacts. When Europe resolves the present implementation problems of the WEEE Directive, the signals to manufacturers for product eco design can come more strongly into play, providing a continuous driver for future improvements.

¹¹ Lack of internalisation of all end-of-life costs would result in lower product price than would have otherwise been the case if these costs were included in the price of a product.

¹² IIIIEE report "Extended Producer Responsibility – An examination of its impact on innovation and greening products" (2006)

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1 Introduction

1.1 Background

In 2003, two EU Directives on electrical and electronic equipment (EEE) came into force: Directive 2002/96/EC on WEEE (Waste from EEE) and Directive 2002/95/EC on RoHS (restriction of the use of hazardous substances) in electrical and electronic equipment. It is not surprising that WEEE was designated as a priority waste stream, given the combination of increasing volumes of WEEE disposed of in the EU and the negative impacts associated with improper recycling, landfill disposal and incineration owing to the presence of hazardous substances in these products, not to mention the loss of valuable resources.

With respect to the inclusion of the producer responsibility principle, the Commission notes, that “the establishment, by this Directive, of producer responsibility, is one means of encouraging the design and production of EEE which take into full account and facilitate their repair, possible upgrading, reuse, disassembly and recycling”. It is worth mentioning that the RoHS Directive 2002/95/EC, which restricts the use of six hazardous substances in EEE was originally part of the WEEE Directive, but was separated due to internal market issues.

This report aims to explore the experiences to date in transposing and implementing the WEEE Directive. The report focuses on the possibilities for the EPR (Extended Producer Responsibility) principle, embedded in the WEEE Directive, to promote design change of the products covered by the Directive. A key reason for allocating responsibility to producers is their capacity to make changes *at source* in order to reduce the environmental impacts of their products throughout their life cycle. Such measures include elimination and reduction of hazardous substances, enhancement of resource efficiency, reusability and recyclability. It is essentially the producers that decide the features of the products they manufacture at the design phase of the products. Assigning responsibility primarily to one actor would avoid the situation where everyone’s responsibility becomes no one’s responsibility (Lindhqvist and Lifset, 1997).

1.2 Methodology

To provide an assessment of how Member States (MS) have transposed the key requirements of the WEEE Directive, a literature review of existing studies and reports on WEEE Directive transposition was conducted as a starting point for the research (see bibliography). Where there were uncertainties, either from expected changes in legislation, developments in the transposition process or where there were suspected anomalies in the reports, MS legal texts have been used as primary sources.

Informal discussions with compliance scheme operators, legislative authorities, producers and representatives from industry associations were undertaken to confirm the understanding of developments in the ongoing transposition and implementation process of the WEEE Directive.

1.3 What is EPR?

In this paper, EPR is understood as:

...a policy principle to promote total life cycle environmental improvements of product systems by extending the responsibilities of the manufacturer 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 (Lindhqvist, 2000).

This definition means that the RoHS Directive can be seen as a supplementary piece of legislation that is also built on the EPR principle. The broad definition of EPR as stated above implies all measures that concern the extension of producers' responsibility to parts of the life cycle beyond those for which they are conventionally responsible. Substance restrictions as in the RoHS Directive are mainly introduced because of the impacts in the end-of-life phase of the product, while the measures have to be taken during manufacturing. The EU Directive for end-of-life vehicles and the proposal for waste batteries both include substance bans. This is a reflection of the supplementary nature of such substance bans to other EPR measures (for instance recycling requirements). When analysing EPR programmes, it has been found useful to distinguish various aspects of the responsibilities which can be allocated to producers. It has proved to be particularly valuable to examine financial and physical responsibilities separately. In this report, a producer has *financial responsibility* when the producer covers *all or part of the costs for e.g. the collection, recycling or final disposal of the products* he is manufacturing. These costs could be paid for directly by the producer or by a special fee. Systems where a producer has *physical responsibility* are those where the manufacturer is involved in the *organisation of the actual physical management of the products* or of the products' effects.

1.4 Application of the EPR principle in EU Directives

The European Commission has explicitly applied the principle of producer responsibility in two key Directives at EU level, namely the WEEE Directive 2002/96/EC and the ELV Directive 2000/53/EC. Although the Packaging Directive 94/62/EC as amended by Directive 2004/12/EC is not formally based on the EPR principle, most Member States (MS) have implemented it in ways that at least partially include aspects of EPR. The proposed Battery Directive adopted by the Commission COM(2003)723 final, which is intended to replace Directive 91/157/EEC has also explicitly applied the EPR principle in terms of financial obligations for collecting and treating spent batteries and accumulators.

Looking at the recitals of the respective Directives listed above, it is clear that the WEEE Directive is a step forward in terms of the degree of responsibility placed on producers not only to ensure that products are collected and treated appropriately at their end-of-life but also to influence these products' design to prevent potential impacts from occurring in the first place. For example, in the Packaging Directive, EPR is only a suggested measure in recital (10) while in the ELV Directive, recitals (7)¹³ & (22)¹⁴ refer primarily to the requirement that producers fund systems to manage ELVs. Recitals (12) and (20) in the WEEE Directive highlight the increased application of the EPR principle for end-of-life electronics. These are as follows:

Recital (12) - *The establishment, by this Directive, of producer responsibility is one of the means of encouraging the design and production of electrical and electronic equipment which take into full account and facilitate their repair, possible upgrading, reuse, disassembly and recycling.*

Recital (20) - *..... In order to give maximum effect to the concept of producer responsibility, each producer should be responsible for financing the management of the waste from his own products. The producer should be able to choose to fulfil this obligation either individually or by joining a collective scheme. Each producer*

¹³ Recital (7) ... MS should ensure that producers meet all, or a significant part of, the costs of the implementation of these measures;

¹⁴ Recital (22) Producers should ensure that vehicles are designed and manufactured to allow the quantified targets for reuse, recycling and recovery to be achieved. To do this the Commission will promote the preparation of European standards and will take other necessary measures to amend the pertinent European vehicle type-approval legislation.

should, when placing a product on the market, provide a financial guarantee to prevent costs for the management of WEEE from orphan products from falling on society or the remaining producers.

The recitals in the ELV and WEEE Directives are translated into allocation of concrete responsibility on producers. The content of these responsibilities found in the WEEE Directive is discussed in detail in Chapter 2.

1.5 Individual vs. collective responsibility

On the implementation mechanisms of take-back and other requirements related to the downstream operation, a notable distinction can be made with regard to the degree of co-operation among producers in fulfilling their responsibility. This distinction is often referred to as individual versus collective responsibility. That is, in essence, if individual producers take responsibility for the end-of-life management of their own products (*individual responsibility*) or producers in the same product group together fulfil their responsibility for the end-of-life management of their products regardless of the brand (*collective responsibility*). The significance of this issue was demonstrated, among other things, in the lengthy discussions during the WEEE Directive's development.

The distinction touches upon a fundamental question surrounding EPR: how should producers fulfil their responsibility in order to create incentives for design change? Industries, government and experts generally assume that an EPR programme based on individual responsibility would promote design change better than one based on collective responsibility.¹⁵ If producers need to take care of discarded products similar to their own irrespective of brand, there are few or no incentives to spend extra resources enhancing their product design to reduce environmental impacts from end-of-life. If the responsibilities were distributed among the brands without considering the difference of the products' environmental properties, producers who work harder to reduce environmental impacts from their products would end up subsidising the producers who did not make such efforts.

For the purposes of this report and within the specific context of implementing the WEEE Directive by MS, it is important to use consistent language when referring to various compliance approaches commonly discussed in this document.

The argument for pursuing individual responsibility is to provide incentives for producers to strive to enhance the environmental performance of their products' total life cycle. In the light of this objective, and reflecting the current practices (see Appendix I), individual responsibility in this report means the following. A *producer* bears an *individual financial responsibility* when *he/she pays* for the end-of-life management of *his/her own products*. A producer bears an *individual physical responsibility* when 1) the *distinction* of the products is made at the very least by *brand* and 2) the producer has *control over the fate of his/her discarded products* with some degree of involvement in organising the downstream operation. When products are physically handled together, the distinction of the *properties* of the products, including their features on end-of-life management, should be made.

It is possible to achieve individual producer responsibility (IPR), as we define it, both within collectively-organised producer compliance systems and compliance systems organised by individuals or a limited number of producers (see Appendix I). This makes it inappropriate only

¹⁵ See, for example, ENDS (2001, May 11), ENDS (2002, February 15), Joint Press Statement (2002), Ferrigno (2003), Lindhqvist & Lifset (2003) and Electrolux (2004).

to use the terms 'collective' or 'individual' when referring to compliance systems as it will only lead to misunderstandings. Therefore, in this report the following terminology is used to refer to compliance schemes or possible ways of organising compliance schemes:

When producers organise compliance systems collectively, that is they join to build or contract collection and recycling infrastructure, we call this *collectively-organised compliance systems*. In certain MS there may be a single collectively-organised compliance scheme or multiple competing collectively organised compliance schemes. When producers develop systems exclusively to collect their own brands (for new WEEE) and mixed brands (for historical WEEE) we call this *own-brand or limited brand compliance systems*, instead of using the term individual compliance systems. See Appendices I.A and I.B for more information on Producer Compliance approaches.

1.6 Evidence of design change in response to EPR programmes

The few studies conducted, as well as numerous statements by manufacturers,¹⁶ point to the fact that individual producer responsibility encourages the improvement of products' environmental performance, particularly with respect to reduction of hazardous substances and improved recyclability and recycling. It is also evident to date that these changes have so far been more the result of anticipating such regulatory requirements, than the actual incentives that are provided when the EPR programme is implemented and in operation. It is worth remembering that most producers during the beginning of EPR discussions viewed EPR as a future demand to manage their own products, that is, what later came to be called individual producer responsibility.

In 2000-2001 Tojo (2004) conducted a study of manufacturers of EEE and cars in Sweden and Japan. She investigated their perception of the role of EPR on their environmentally-related activities and especially on their development of environmentally- conscious design. The study was primarily based on interviews with representatives of a total of 13 EEE manufacturers (nine in Japan and four in Sweden) and eight automotive manufacturers (five in Japan and three in Sweden).

One of the main findings of the study is that EPR legislation does provide tangible incentives for environmentally-conscious design. Upstream measures, both in terms of reducing hazardous substances and enhancement of source reduction of material use, reuse and recycling, have been undertaken in the two industry sectors in both countries. Analysis of the interviews showed that all the manufacturers interviewed consider regulatory requirements in their product development strategies, in this case the anticipated requirements posed by EPR legislation. Expected compliance costs were considered significant and have accordingly already changed product design in the 1990s.¹⁷ Meanwhile, apart from the Swedish EEE manufacturers, consumer demand as a driving factor is either non-existent (car manufacturers) or very low (EEE manufacturers in Japan). For more information on EPR driving innovation and greener products, see IIIIEE report "EPR – An examination of its impact on innovation and greening products" (2006).

¹⁶ See - LG, <http://www.lge.com/about/environment/Recycling.jsp> , Samsung, http://www.samsung.com/AboutSAMSUNG/ELECTRONICSGLOBAL/SocialCommitment/Greport/02_management/ec_ho_05.htm , Dell, http://www.dell.com/downloads/global/corporate/environ/recovery_policy.pdf , Electrolux, <http://www.electrolux.com/node215.aspx> ,

¹⁷ This view was frequently encountered by Tojo (2004) when conducting her interviews with manufacturers. Other authors have also experienced it talking to company representatives during the period when the Directives were discussed and developed. The impression from these interviews and conversations is that all manufacturers were expecting what we today call 'individual responsibility'.

2 Waste Electrical and Electronic Equipment (WEEE)

This chapter outlines the main requirements of the WEEE Directive as stated in the legal text of 2002/96/EC. It includes the objectives, scope, and allocation of physical responsibility for collection, treatment and recovery, as well as the provisions that lay down the mechanisms to allocate financial responsibility for the management of WEEE by producers – considered crucial for providing incentives for better product design.

2.1 Main objectives

The main stated objectives are principally to prevent the generation of electrical and electronic waste and to promote re-use, recycling and other forms of recovery so as to reduce the quantity of such waste to be eliminated, while also improving the environmental performance of economic operators involved in its treatment. As shown in Section 1.3, recital (12) of the WEEE Directive clearly states that the Directive aims to encourage design changes to reach these goals.¹⁸

2.2 Scope

Directive 2002/96/EC covers a diverse scope of electrical and electronic equipment (EEE). EEE is defined as any equipment which is dependent on electric currents or electromagnetic fields to work properly and includes equipment for the generation, transfer and measurement of such currents and designed for use with a voltage rating not exceeding 1000 volts for alternating current and 1500 volts for direct current. In total, there are 10 broad categories of EEE included in the box below. Compared with other EPR legislation for electronics around the world, the scope of WEEE is incredibly broad.

WEEE Directive 2002/96/EC - Product Categories
1. Large household appliances
2. Small household appliances
3. IT and telecommunications equipment
4. Consumer equipment
5. Lighting equipment
6. Electrical and electronic tools
7. Toys, leisure and sports equipment
8. Medical devices
9. Monitoring and control instruments
10. Automatic dispensers

Figure 2-1: Categories of EEE equipment in the WEEE Directive

¹⁸ Article 4 of the Directive requires MS to “encourage the design and production of electrical and electronic equipment which take into account and facilitate dismantling and recovery, in particular the re-use and recycling of WEEE, their components and materials.....”

2.3 Collection

For WEEE from households,¹⁹ Article 5 of 2002/96/EC obliges Member States (MS) to ensure that by 13 August 2005, systems are set up for consumers and retailers to return, at least free-of-charge, their end-of-life EEE. The Directive does not explicitly identify either producers or municipalities as the responsible party to set up this infrastructure and the legal text leaves MS the interpretation/discretion to make this decision. It also puts the onus on retailers to accept WEEE from consumers on a 1:1 basis when selling new products, although MS can deviate from this requirement if they can show that an alternative procedure is just as convenient for consumers.

For non-household WEEE, MS must ensure that producers or those acting on their behalf provide for the collection and finance of this waste stream. For WEEE from households there is a collection target of 4 kg/capita/year, while for non-household WEEE (e.g. B2B (business to business)) there is no such target.

2.4 Treatment & recovery

Article 6 outlines the requirement for producers to develop systems to treat WEEE using the best available treatment, recovery and recycling techniques in accordance with Community legislation. More specifically, Annex II outlines certain requirements for selective treatment of WEEE. These are listed below:

¹⁹ The Directive uses the terminology "private households". In this document the term "households" are used for simplicity. Likewise, the term "non-household WEEE" in this document refers to "WEEE other than WEEE from private households" in the Directive.

Annex II: Selective treatment for materials and components of WEEE in accordance with Article 6(1)

As a minimum the following substances, preparations, and components must be removed from any separately-collected WEEE

- *PCB containing capacitors*
- *Mercury containing components, including backlights*
- *Batteries (only external and hazardous internal batteries)*
- Printed circuit boards of mobile phones; or if surface area is greater than 10 cm²
- *Toner cartridges, liquid and pasty, and colour toner*
- Plastics with brominated flame retardants
- *Asbestos containing components*
- Cathode Ray Tubes
- CFCs, HCFCs, HFCs, HC
- Gas discharge lamps
- Liquid crystal displays greater than 100 cm² and those backlight with gas discharge lamps
- External electrical cables
- *Components containing refractory ceramic fibres*
- *Components containing radioactive substances with exceptions*
- Electrolyte capacitors containing substances of concern

Note: Italicised font added by authors to reflect notation in later text

Figure 2-2: Selective treatment for materials and components of WEEE as specified in Annex II of the Directive 2002/96/EC

Many of these requirements have a potentially significant impact on the treatment paths employed by the national WEEE schemes operating before Directive 2002/96/EC was transposed and subsequently brought into force in MS. Specifically, these include the selective treatment requirement to remove circuit boards greater than 10 cm², mercury-containing components such as switches or backlighting lamps, and plastic containing brominated flame retardants. If the 'have to be removed' wording in Annex II is interpreted as the requirement to remove these components *prior to shredding*, manual disassembly would be necessary, significantly increasing the cost of treating WEEE in certain categories.

In terms of recovery, Table 2-1 below outlines the weight-based recovery, recycling and component re-use targets for the various categories of WEEE as outlined in the WEEE Directive. The difference between recovery required and component, material and substance re-use/recycling required is the amount that can be incinerated with energy recovery or treated through another recovery operation such as feedstock recovery. This amount is, for instance, 5% for large household appliances.

Table 2-1: Recovery, recycling and re-use targets by weight of the WEEE Directive

WEEE Category	Recovery by weight required	Component material and substance reuse and recycling by weight required
Large household appliances (1) Automatic dispensers (10)	80%	75%
Information & Communication Technology (3) Consumer equipment: (4)	75%	65%
Small household appliances (2) Lighting equipment (5) Electrical and electronic tools (6) Toys, leisure and sports equipment (7) Monitoring and control instruments (9)	70%	50%
Gas discharge lamps	80%	80%

2.5 Financial responsibility

WEEE from households

Producers are required to finance **at least** the collection (collection from collection sites onwards), treatment, recovery and environmentally-sound disposal of WEEE from households deposited at collection sites. The significance of the term 'at least', is that it also allows MS to place the financial burden on producers to set up and operate the collection systems.

Recital (20) of the WEEE Directive (see Section 1.3) clearly shows that, in order to allow for the maximum effect of the producer responsibility principle, each producer of electrical and electronic equipment (EEE) should be financially responsible for managing waste from his/her own products. This is meant to provide the necessary financial feedback mechanism to producers to design their products for better end-of-life management that results in lower treatment costs and environmental improvements. In other words, it is not the intention to have a collectively-financed end-of-life management system where all costs are divided equally based on current market share. In this scenario, producers with better-designed products are not financially rewarded, as the cost savings attributed to their products are shared by all producers.

But it is not possible for producers to influence the design of their products that were already on the market before the Directive came into force (historical waste). Therefore, in terms of allocation of financial responsibility for WEEE from households, Directive 2002/96/EC distinguishes between historical and new WEEE. This is reflected below:

For products placed on the market after 13 August 2005 (new WEEE)

Article 8(2): *"For products put on the market later than 13 August 2005, each producer shall be responsible for financing the operations referred to in paragraph 1 relating to the waste from his own products. The producer can choose to fulfil this obligation either individually or by joining a collective scheme."*

"Member States shall ensure that each producer provides a guarantee when placing a product on the market showing that the management of all WEEE will be financed and that producers clearly mark their products in accordance with Article 11(2). This guarantee shall ensure that the operations referred to in paragraph 1 relating to this product will be financed. The guarantee may take the form of participation by the producer in appropriate schemes for the financing of the management of WEEE, a recycling insurance or a blocked bank account. "

For products placed on the market before 13 August 2005 (historical WEEE)

Article 8(3): *“The responsibility for financing of the costs of the management of WEEE from products put on the market before the date referred to in paragraph 1 [13 August 2005] (historical waste) shall be provided by one or more systems to which all producers, existing on the market when the respective costs occur, contribute proportionately, e.g. in proportion to their respective share of the market by type of equipment”*

Article 8(2) clearly allocates individual financial responsibility to producers for their own products put on the market after 13 August 2005. Since this Article ensures that producers are only required to pay for the management of their *own* new WEEE *and not* of others that go out of business (orphan products) or producers that might try to avoid their obligations (free riders), a financial guarantee is necessary for individual financial responsibility to work in practice. Thus, producers must, when placing a product on the market (after 13 August 2005) show that the management of all future WEEE will be financed. The guarantee can take the form of one of three options (as specified in Article 8.2 second paragraph); (1) participation by the producer in appropriate schemes for financing the management of WEEE, (2) recycling insurance or (3) a blocked bank account.

Given that Article 8 (3) requires that all players in the market pay a proportion of the costs to manage historical waste based on, for instance, their market share when those costs are incurred, systems must be developed to record all new products placed on the market by each producer today as well as all the historical WEEE collected by all compliance schemes. MS are required to set up **national registers** to provide the market share calculation that will determine the relative share of historical waste financed by each producer. Additionally, the register needs to confirm that for products placed on the market after August 13, 2005, there is a suitable financial guarantee covering the future costs of WEEE management.

Non-household WEEE

Directive 2003/108/EC amends 2003/96/EC with regards to financing WEEE from users other than households. The Commission acknowledged industry concern over the impact of retroactive financial responsibility for historical non-household WEEE, due to changing market share structure over time. For historical non-household WEEE, producers are only responsible when they supply new products on an old-for-new basis. The amendment does not change the obligations with respect to individual responsibility for new waste.

3 Requirements for EPR to drive design change

This chapter introduces the fundamental requirements of an EPR system with the properties to drive design change. These requirements constitute various elements of individual producer responsibility and distinguish between historical and new products, cost differentiation, guarantees for future waste management and provisions ensuring the possibility for producers to select end-of-life management options (Sections 3.1 to 3.4). One of the overarching conditions these requirements aim to fulfil is to provide a level playing-field (Section 3.5). With the text of the WEEE Directive, these factors will be used in later chapters when examining the transposition and implementation of the WEEE Directive in MS.

3.1 Only future products can be re-designed

Allocating *individual financial responsibility* to the producers for historical products – products that were put on the market before an EPR programme – is limited from the viewpoint of design change, as design cannot be retroactively altered.²⁰ In principle, historical products can be financed in any manner suitable for the respective society. However, the *physical involvement of the producers* would provide them with learning opportunities in design for end-of-life.

During a transition phase (from historical to new products), a system based on individual responsibility requires consideration of the treatment of historical products. When it comes to the WEEE Directive, it stipulates that historical products must be financed by a fee based on products put on the market in the same period, that is a fee on new products put on the market after 13 August 2005. Hence the decision on how to finance historical products has already been made. As producers of new products are also obliged to finance their own future end-of-life costs, there will be a transition period when producers of all new products are paying into two systems. The Swedish system for end-of-life vehicles is an illustration of how the two systems can be run in parallel, as described further in Section 3.4.

3.2 Provision of incentives through differentiation

In terms of EPR programmes providing incentives to producers to design products for improved environmental performance from a life cycle perspective with a specific focus on end-of-life, the arguments are fairly straightforward –if a producer is financially responsible for his own products at end-of-life, he/she will be rational and design products to minimise this cost. Of course, not all producers would consider this cost as a decisive factor influencing design (especially weighing up all design factors). However, many have anticipated this cost to be significant and have accordingly already changed product design in the 1990s.²¹ If substance restrictions are considered to come under the EPR ‘umbrella’, design change implications are even more evident, especially in global market product groups such as electronics. It is crucial that to maintain this trend, EPR programmes are designed so that there is at least the possibility that the efforts of these producers might be acknowledged in terms of *differentiated end-of-life costs* when they are realised.

²⁰ Individual responsibility for historical products will also create problems, as it does not provide adequate financing for orphan products. It could also put producers with previously high market shares in a difficult position.

²¹ This view was frequently encountered by Tojo (2004) when conducting her interviews with manufacturers. Other authors have also experienced it talking to company representatives during the period when the Directives were discussed and developed. The impression from these interviews and conversations is that all manufacturers were expecting what we today call ‘individual responsibility’.

It is also essential that there are incentives to stimulate design changes not only of products as such, but also of the whole product system. For instance, the end-of-life impacts of a product depend on the collection system as well as the sorting, treatment and recycling systems. System changes, maybe leading to new business concepts, potentially have the greatest opportunities for radical improvement. The treatment requirements should also be formulated and implemented to give incentives to producers to strive for real environmental improvements.

3.3 Guarantee for future waste

We cannot assume that all manufacturers will still be active in the market and able to pay the costs when their products are discarded and treated. Some will have departed and it will be impossible at that point to enforce a legal requirement for covering the costs. A system based on individual producer responsibility requires a supplementary system to handle 'orphaned products': products whose producers have ceased to operate in the market. To ensure that producers remaining in the market do not have to cover the cost of orphaned products, a guarantee is needed. This guarantee should be set up when the products go on the market.

A 'pay-as-you-go' system²² (PAYG) with reciprocal guarantees is contradictory to a system based on individual producer responsibility with true guarantees. Under the pay-as-you-go system, when a product is put on the market, its producer pays not for future end-of-life costs of the product, but the costs of the products that have been collected in the same year. This does not reward design change and hence does not encourage the development of better products. Additionally, a producer that participates in a PAYG compliance system for both historical and new WEEE, essentially agrees to fund new WEEE from any producer that has left the market.

We define a true financial guarantee 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.* This is in line with Recital (20) of the WEEE Directive and a necessary condition for an EPR system for WEEE that has the potential to drive design changes. In this report we will investigate if MS are requiring a true financial guarantee and if they are creating a system that promotes design change. This will be further developed in Chapters 4 and 5.

Only a system based on return-share²³ with accompanying true financial guarantees, and adequate collection rates has the potential to stimulate and drive design change. This could occur both within collectively-organised compliance schemes or own- brand or limited brand compliance schemes.

3.4 Choice of end-of-life management and treatment options

Most businesses outsource many of their activities and use suppliers to provide them with various materials, components and services. This holds true for the end-of-life management. Given that producers are presumably rational economic actors, it is unlikely that they will directly provide the capital to finance new collection or recycling infrastructure, if existing economic

²² We define the PAYG financial model as a mechanism to allocate costs of WEEE management to producers proportionate to their market share when those costs occur. The definition includes systems that charge producers a flat fee when placing a product on the market, which is usually based on an estimate of the number of products that are expected to be sold and the amount of all brands of WEEE expected to be returned in a given reporting period (usually annually).

²³ In the return-share model, end-of-life costs are allocated to each producer based on the actual amount of their own WEEE that is returned. Where WEEE without a current producer are collected the financial guarantee associated with that product would be used to finance the end-of-life management costs.

actors, which could be contracted for this service are available on the market. A producer assuming individual producer responsibility through an own-brand or limited brand compliance scheme must be able to do the same as long as the fundamental requirements of the EPR system are fulfilled. An essential condition for a viable design-change promoting EPR system is that it provides the flexibility for various solutions to take place.

One option for a producer is to buy some services from a 'collectively-organised compliance system'. However, it is important in these cases that participation in the collective system makes the producer fulfil the same obligation as any other solution. Only with this last requirement will we create conditions for real competition between solutions and thus innovation on product design and design of systems for collecting and treating the discarded products.

We see that the dualistic nature of collective vs. individual responsibility in the debate is often falsely positioned. It is clear that it is, and has been, possible to implement individual producer responsibility within collectively-organised industry-run compliance schemes for a variety of EEE product groups (See Appendix I.C). Therefore this phenomenon may be better described as a continuum of different individual and collective approaches. It is possible to have both completely collective and completely brand-specific or limited brand systems for compliance at the extremes of the continuum, as well as hybrid-type systems which are designed to include the strengths of both systems (i.e. collectively organised compliance systems with individual financial responsibility), all operating simultaneously.

The Swedish implementation of the ELV Directive is a good example of implementing individual responsibility for new products, while at the same time using a common infrastructure – in this case, building on the existing car-scraping and recycling industry. It also demonstrates that it is possible to put in practice financing historical waste collectively while establishing individual responsibility for new products for the subsequent end-of-life management. The system set up by car manufacturers does establish individual responsibility for cars put on the market from 1 January 1998. Consequently, today there are two financial systems: one manages cars which pre-date this requirement (historical products) and a second covers 'new' cars. The first system is a collective system paid by fees on new cars when they are first registered. The system is based on the same principle as the WEEE Directive. New cars also finance the second system, but the money is earmarked for future use: a financial guarantee for future recycling costs has been created. The fact that the law allows funding inside the company, through liabilities in the balance sheet, could make the system vulnerable if companies leave the market. This is mainly because of the potential difficulties of ensuring that in the event of bankruptcy creditors would not be able to seize these funds. Hence, the system lacks a safe guarantee.

3.5 Level playing-field

An overarching condition that the requirements covered in this chapter aim to address is the provision of a level playing-field. Competition is a fundamental prerequisite for efficiency. It means that it must be possible for new actors to enter the market and to compete on equal terms. A well-designed system ensures that no unnecessary barriers hinder new players on the market. For the management of WEEE, this means that it must be possible for alternative collection, treatment and recycling systems to be established. It also means that it must be possible for producers to select the way they want to exercise their producer responsibilities: by establishing their own systems as well as partly or fully using the services of other organisations.

For economic efficiency it is essential that a producer can leave one system and join another or establish his own. This will force the various actors to continuously improve their systems. This is equally important when it comes to the system for financial guarantees. A producer must be

able to shift the way he/she organises the financial guarantee without jeopardising the guarantee for the products which are already on the market and without jeopardising the guarantees of an organisation to which he/she previously belonged. To have a level playing-field and a system with competition to secure efficiency, it is necessary that all accepted ways of fulfilling the producer responsibility face the same requirements to fully cover the costs of the end-of-life phase and provide a guarantee for these costs that allows a dynamic development in the market.

4 WEEE Directive transposition by Member States

Since WEEE is an EC Directive and not a Regulation, Member States (MS) were required to transpose the main provisions into their own national statutes, as outlined in the EC Treaty. Additionally, since the WEEE Directive is based on Article 175 of the EC Treaty, MS must transpose the minimum requirements outlined in the Directive, but are not prevented from setting more stringent requirements than those outlined. This chapter accordingly highlights the ways in which MS have transposed the WEEE Directive on each of the main provisions outlined in Sections 2.1-2.5, as well as other key issues that may influence the implementation of EPR for WEEE in Europe.

This section highlights the wide differences between how MS have transposed the main provisions of the WEEE Directive, which will likely result in differing applications of the producer responsibility principle in the European Union. It specifically looks at how MS (for WEEE from households only) have allocated responsibility for setting up collection facilities (physical responsibility for collection) and who should pay for these activities (financial responsibility for collection). Variation on this factor illustrates the degree to which the total costs of managing WEEE (collection and treatment) is placed on producers vs. how much is paid by municipalities and general taxpayers.

This section also highlights the variation between how MS have transposed the requirements laid down in Article 8 with respect to financing historical and new (future) WEEE collected. This is considered crucial for creating the right financial incentives for producers to invest in product design to facilitate end-of-life processing. Specific issues perceived to be instrumental in creating the right framework for individual financial responsibility, such as what is considered to be a suitable financial guarantee and the definition of producer are also discussed in the context of how MS have addressed these in national legal texts.

MS were required to transpose Directive 2002/96/EC into their national statutes by 13 August 2004, with the major obligations on producers (mainly setting up systems and financing the collection and treatment of WEEE deposited at collection sites and retailers) coming into force on 13 August 2005. At the time of writing, two MS (the UK and Malta) had still not transposed the Directive and many others lacked key provisions required to implement the national statutes. Many MS missed the 13 August 2005 deadline and to date many countries do not have operational systems. It should be noted that in the following sections, all transposition highlights refer to the obligations as they are outlined in the legal text, and do not necessarily reflect what happens in practice. This will be discussed in more detail where appropriate. Information sources include actual MS transposition text, as well as Perchards (2005) and Mayers (2005). Detailed tables on Member State transposition can be found in Appendices II and III.

4.1 Financing of historical vs. new WEEE

As noted in Section 2.5, the Directive requires producers to assume financial responsibility for **at least** the collection (from collection facilities onwards), treatment, recovery and disposal of WEEE deposited at collection facilities from households. With respect to financing the management of WEEE, Article 8 differentiates between historical and new WEEE obligations.



Figure 4-1: Allocation of financial responsibility for treatment, recycling and treatment of WEEE from households – Member State transposition outcomes

Figure 4-1 illustrates that only **12** (Austria, Cyprus, Czech Republic, Germany²⁴, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Slovakia, Spain and Sweden) of the 25 MS have transposed the Directive to (theoretically at least) reflect the requirement in Article 8. That is, producers finance historical waste collectively and new (future) waste individually. A further eight (Belgium, Estonia, Finland, Greece, Lithuania, Malta, Slovenia and the UK)²⁵ MS only make reference to historical WEEE and the need for collective financing based on current market share. Two (Hungary and Latvia) make no distinction at all, and the remaining three (Denmark, France and Poland) explicitly assign collective financial responsibility for both historical and new WEEE. However, it remains to be seen whether compliance schemes will uphold this distinction where described in national law.

4.2 True financial guarantee

The way in which MS have chosen to interpret the financial guarantee requirement for **new WEEE**, may be a strong indication of their preference for collective systems solutions that may inevitably limit individual financial and/or physical responsibility in the future. As can be seen

²⁴ In Germany, a producer can decide whether his obligations for new WEEE will be calculated based on statistical sampling or by continuing with the market share allocation.

²⁵ This is based on draft versions of the legal texts in the cases of Malta and the UK

from Figure 4-2, most MS have so far mandated a true financial guarantee only for producers that are **not** joining a collective compliance scheme. That is, producers developing individual own-brand or limited brand compliance approaches are required to have a blocked bank account or recycling insurance to ensure that all future WEEE (put on the market after 13 August 2005) will be financed by them and not by others. Producers that are members of collective organisations that use the PAYG method of allocating both historical and future WEEE obligations with reciprocal agreements, finance the WEEE of any member that disappears from the market. However, in some MS, namely in the Netherlands (NVMP) and Belgium (Recupel) the collective compliance schemes do claim to be accruing funds to cover new WEEE although it is unlikely that these limited funds would cover all future WEEE if the system were to collapse. These show that while the collective system(s) in MS have an exemption from a true financial guarantee, certain MS have taken some precautions to ensure that collective systems based on reciprocity have a short limited running guarantee.

As far as can be determined **only four** MS (Germany, Italy, Sweden and France) **have mandated a financial guarantee irrespective of the system joined**. However, in the case of Germany and France, the guarantee required for new WEEE from producers participating in collective schemes is limited and is not a true financial guarantee. In Germany producers that have opted to have their new WEEE obligations calculated based on their market share in the previous year (PAYG), hence agreeing to finance new WEEE of any producer that may go bankrupt, are only really required to provide a financial guarantee based on the event that all manufacturers in a broad product group leave the market. Similarly, in France, the financial guarantee that producers are obliged to provide whether in a collective or individual own-brand or limited brand system, basically ensures that funds are available for only one year after bankruptcy, that is a requirement similar to the one for collective compliance systems in Belgium and the Netherlands.

Although specific criteria for financial guarantees have not been established in Sweden, a financial guarantee is required for all producers regardless of compliance option chosen. On the Swedish Environmental Protection Agency's website there is further information on how the Agency qualifies what it considers to be a suitable financial guarantee. However, the meaning varies depending on whether the Swedish or English language webpage is viewed, creating further uncertainties on what will be the final outcome.²⁶ Given this, we still lack the details for Sweden and likewise the Italian system.

²⁶ Swedish Environmental Protection Agency - Producer responsibility for electrical and electronic products (2006). [On-line]. Available: <http://www.internat.naturvardsverket.se/index.php3?main=/documents/issues/prodresp/prodresp.htm>. The Swedish EPA staes – "Criteria for requirements on financial guarantees will be established in 2006".



Figure 4-2: Member State interpretation of financial guarantee for WEEE from households

4.3 Development of compliance schemes to date

There appear to be two main approaches that can be identified to date to how producers are organising systems to meet their obligations for the take-back of WEEE from households in the 25 MS. These include either multiple collective systems operating within a MS or a single non-competing collective system. Figure 4-3 shows that in seven MS (Belgium, Cyprus, Greece, Latvia, Luxembourg, the Netherlands²⁷ and Sweden) a non-competing collective system(s) is or will be the only compliance option available to producers (other than a brand-specific or limited brand compliance option). Interestingly, in all MS where a non-competing collective system has been in operation prior to the WEEE Directive (Belgium, the Netherlands and Sweden) these systems will remain the only compliance system in the respective country. This shows a general tendency for actors to want to avoid changing established systems, all of which have been operating and developing for many years. This inertial effect perhaps partially explains why there has been such resistance to changing financial models from the PAYG approach to a true financial guarantee enabling individual financial responsibility.

²⁷ Even though there are two collective systems in the Netherlands there is no overlap over the categories of WEEE that they accept, therefore they are non-competing in this sense.



Figure 4-3: Compliance schemes in practice in the EU

4.4 Treatment and recycling requirements

Article 6 (1) and Annex II of the WEEE Directive outline that systems need to be set up for the treatment of WEEE using best available treatment, recovery and recycling techniques. Additionally, Annex II stipulates substances and components that need to be removed from any separately collected WEEE.

For the most part it seems that MS have transposed the treatment requirements of Article 6 and Annex II word for word from the WEEE Directive. However, there has been much discussion over how these requirements will be interpreted by Member States when enforcing treatment standards at recycling facilities. For example, if the “have to be removed” wording in Annex II is interpreted to mean that as these components do not have to be removed *prior to shredding*, manual disassembly would be unnecessary, allowing for lower costs, but creating a potential loophole on depollution and diluting the incentive to design out these substances.

On this point, the Dutch Ministry of Housing, Spatial Planning and the Environment has, in cooperation with stakeholders, presented a draft Guidance Document on Annex II and Article 6(1) of 2002/96/EC to the Technical Adaptation Committee (TAC) meeting on 3 November 2005. In particular, the document provides guidance to MS on how to interpret the requirement to remove certain substances, preparations and components either manually before shredding or after shredding. It suggests that only certain components should be removed prior to an initial

treatment step such as shredding.²⁸ These are italicised in the list (Figure 2-2) of components that were to be required to “be removed” as outlined in Annex II. The Guidance Document suggests that the remaining (non-italicised) substances, preparations and components shall be removed from WEEE as an identifiable fraction, or as part of an identifiable fraction after shredding as an initial treatment step. According to the document, the rationale for making this distinction is based on “technical knowledge of this moment”. This ‘removal as part of an identifiable fraction’ as the VROM guidance document specifies, undermines proper dismantling of certain categories of WEEE as it would allow shredding of products that still contain substances, preparations and components of concern. Separation of the fractions post-shredding brings the risk of the dispersion of these materials of concern into other material fractions from the shredding process and, consequently, to a reduced depollution effect from the removal requirement.

Presumably, when the original requirements to remove components and substances in Annex II were drafted by the Commission, this was to improve the treatment of WEEE from an environmental perspective over the long-term. The subsequent implications of having to remove these manually, as the text implies, would most definitely increase end-of-life costs of products being recycled today. This would also send a signal to producers to develop product designs that would in turn avoid those materials and substances outright or facilitate their removal. However, with the suggested changes made by the Dutch delegation, this incentive would be lost. That does not mean, however, that certain suggestions brought forward in the guidance document are unreasonable, but the response of producers and recyclers to meet these new requirements and the subsequent improvement and cost reduction potential should be adequately considered.

4.5 Allocation of responsibility for collection of WEEE

Since MS have discretion on how to allocate both physical and financial responsibility for collection (not including subsequent costs of transportation and processing at recycling facilities), the varied outcome from the transposition process is not surprising. As previously indicated, the three likely actors that would have a role in collection of WEEE from households are municipalities, retailers and producers. Again, it is important to note that these obligations refer only to how responsibility has been allocated in the legal text, and what happens in practice may be completely different.

Actors physically responsible for collection of WEEE from households

Breaking down the figures in Table 4-1, it can be seen that in at least **13 MS** (Austria, Belgium, Denmark, Germany, Greece, Ireland, Italy, Luxemburg, the Netherlands, Poland, Portugal, Slovenia and Spain) **municipalities** have been assigned all or some of the physical responsibility of setting up collection sites. In **17 MS** (Austria, Belgium, Czech Republic, Denmark, Estonia, France, Greece, Hungary, Ireland, Italy, Latvia, Luxemburg, the Netherlands, Poland, Portugal, Slovenia and Spain), **retailers** have an obligation to collect or share collection of WEEE and in **11 MS** (Austria, Cyprus, Czech Republic, Estonia, Finland, France, Hungary, Latvia, Portugal, Slovakia and Sweden) **producers** are obligated to set up collection systems to collect WEEE from households. What this highlights is that MS’ views on the roles of actors’ physical involvement in setting up systems for the collection of WEEE vary significantly. Meanwhile, the allocation of physical responsibility to multiple actors indicates that most MS view a shared approach for allocating responsibility for collecting WEEE as opposed to allocating this responsibility entirely to producers.

²⁸ The Guidance Document is available at the Dutch Ministry of Housing, Spatial Planning and the Environment website located at: <http://www2.vrom.nl/docs/internationaal/Guidance.pdf>

Table 4-1: Allocation of physical responsibility for collection of WEEE from households – Member State transposition legal text outcomes²⁹

Allocation of responsibility for collection of WEEE from households (* legal text interpretation)	Physical Responsibility	Financial Responsibility
Producer only	4 , CY, FI, SE, SK	8 CY, EE, ES, FI, LV, PT, SE, SK
Municipalities only	1 : DE	1 : DE
Producer & Retailers	5 : CZ, EE, FR, HU, LV	5 : AT, BE, CZ, FR, HU
Retailers & Municipalities	10 : BE, DK, EL, IE, IT, LU, NL, PL, SI, ES	6 DK, EL, IE, IT, LU, PL
Producers, Retailers & Municipalities	2 : AT, PT	2 : NL, SI
Unclear	3 : LT, MT, UK	3 LT, MT, UK
Total	25	25

In fact only four MS (Cyprus, Finland, Slovakia and Sweden) place the legal onus entirely on producers to physically establish collection infrastructure for WEEE. However, in reality as far as can be determined, even in these four countries, municipalities will be involved (contracted by producers) in the collection of WEEE from households.

Actors financially responsible for collection of WEEE from households

In nine countries (Denmark, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Poland and Slovenia) **municipalities** have the obligation to finance the collection of WEEE from households. This point illustrates that in these countries a considerable part of the costs of managing WEEE are left to general taxpayers.³⁰ That is, these costs are not allocated to the producers and ultimately the consumers of electrical and electronic equipment. The latter is a desirable feature of EPR in terms of shifting the financial responsibility from general taxpayers to producers and the consumer.

Practical implementation also shows that even in countries where national transposition obliges producers to act, in practice, all or the majority of the costs may be covered by municipalities. Sweden is an example of this, where national law allocates financial responsibility to producers, although municipalities have decided anyway to cover the costs for collection, at least until 2010. Sweden also illustrates the risk of distorting the economic playing-field for producers who decide to establish a brand-specific or competing collective system as these producers will be unable to benefit from municipal collection, but must cover collection costs by themselves.³¹

²⁹ The full names of the countries as put in abbreviations in the table are found in the list of abbreviations on page 33.

³⁰ Collection costs are in most areas of waste management the dominant cost item. The present information on the costs for collection of WEEE is inconsistent, reflecting in many MS a situation where part of or the whole collection costs are subsidised by municipalities, which may not accurately report on the specific costs for WEEE collection. However, it seems clear that the costs are at least a significant proportion of the total costs for WEEE management.

³¹ Producers in Sweden who decide to establish an individual system are also placed in an unfavourable situation by the legislation as they are forced to accept all similar products irrespective of brand in their collection systems.

Physical and financial responsibility for WEEE other than WEEE from households

For WEEE other than WEEE from households, producers are responsible for setting up and financing those collection systems. However, producers are not restricted from entering into contracts with clients for such collection services.

4.6 Other issues

In addition to the issues mentioned above, there are some practical implementation issues that have been discussed intensively since the implementation of the WEEE Directive started. These issues include definition of producer, national registers and definition of household versus non-household waste. The following sections briefly cover these issues.

Definition of producer

The WEEE Directive Article 3(i) defines producers as anyone that (i) manufactures and sells electrical and electronic equipment under his own brand, (ii) resells under his 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, as provided for in subpoint (i), or (iii) imports or exports electrical and electronic equipment on a professional basis into a Member State. This is a typical way of defining the producer to ensure that regulators can identify an obligated party for any product put on the market.

The problem lies not in this definition as it would apply at the European level, but when it is transposed individually at national level. When each Member State defines producers in this way, the act of putting a product on the market for the first time is implied at the national level and not at the Community level.³² This has the effect of placing the legal definition of producer on the first importer into that Member State, and given typical product distribution in Europe, can create a situation in which a single product has more than one obligated producer in multiple MS.

On the other hand, if MS were to follow this approach they would be put in the precarious position of not being able to identify a legal actor in case of non-compliance. To ensure that a legal operator can be identified and targeted in case of non-compliance in the individual Member State, MS in most cases define producers in a way that captures a legal operator in its own country. While unnecessary duplication should be avoided, MS should be able to identify responsible actors in their jurisdiction. Their incapability to do so may contribute to the increase of free riders and lack of financial resources for the treatment of future orphan waste.

If a manufacturer or brand-owner had the ambition to set-up an individual system in one or several MS, there might well be many legal obstacles restricting developments in this area. As identified above, since foreign manufacturers (both EU and non-EU registered manufacturers outside the MS in question) are (in most MS) restricted from registering in these cases, they will not become the obligated party. Given this, it is unlikely that a manufacturer would encourage development of individual compliance systems or choose individual financial responsibility. This restriction may actually encourage collective approaches to collection and treatment of WEEE as any "distributor" or "reseller" identified as the obligated party would most likely join a collective scheme to satisfy legal requirements rather than set up an individual system.

³² This is now the case even though the Commission has communicated that as far as for imports and exports within the EC Community goes, the definition of producer applies only to imports from third countries, outside the EU and not the movement of goods between MS. See, for example, PRODI (2004)A/4700: Letter from Romano Prodi to Luigi Meli CECED, 26 /07/2004.

National registers

The above concern is connected to the issue of national registers, and the need to allocate financial responsibility for historical waste based on current market share on the one hand and registering producers' guarantees for future WEEE on the other. A register is also needed to establish the appropriate amount of funds to seize in the event of a producer exiting the market. This amount could be determined based on number of products put on the market that have not been returned as WEEE to collection sites.

Today most of the national registers only allow nationally-registered legal identities (with tax numbers) access to their registers. What this essentially means is that if a brand owner such as Sony wishes to be designated as the obligated producer in any given MS, then Sony must have a registered entity in that MS or otherwise the first importer would be obliged to register as the producer. Industry is arguing that it should be possible for manufacturers located in at least one of the 25 MS to register as the obligated producer in each of the other 24 Member State registries.

Although reduction of the administrative burden is in the interest of both private actors and the public, it should not jeopardise the possibility for MS to identify the responsible actors (producers) and the products brought into their territory. This serves as an essential starting point for establishing a fair and working system of guarantees.

Implications of the definition of household WEEE vs. non-household WEEE

Article 3(k) of 2002/96/EC provides a definition of WEEE from households and includes WEEE that comes from households and from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from households. As seen by the Member State transposition process, this definition is subject to a wide degree of interpretation and has implications on a number of key issues surrounding the WEEE Directive and EPR legislation in general.

The first major implication is on the calculation of market shares used to allocate producers' financial responsibility for historical WEEE from households. For example, applying a strict interpretation of this definition, would classify any product that is typically found in a household to be "WEEE from households" which would clearly include those same products, but sold on a B2B basis. Therefore, it has been argued that B2B sales are financing historical WEEE costs, and if these products do not end up in the municipal collection stream, producer schemes for WEEE from users other than households would capture and pay for these products a second time. This is especially the case when the financial mechanism to allocate historical waste by current market share is applied to 'new waste' as well.

5 Discussion

This chapter discusses the main outcomes of WEEE transposition and the potential impact on individual producer responsibility, as intended in the legal text and spirit of the WEEE Directive. The previous chapter described the variety of ways in which the main provisions of Directive 2002/96/EC have been transposed and the organisation of producer responsibility put in place. It therefore well illustrates the consequences of the considerable latitude (especially concerning the financial guarantee) that has been taken by MS to interpret the minimum requirements needed to be transposed into national legislation.

5.1 No distinction between historical and new products

Given that only 12 of 25 MS appear to have transposed Article 8 as it reads in the WEEE Directive and that it is not clear that even these states will uphold this distinction in practice, it is evident that many MS must have been concerned about potential free-riders. By not specifying individual financial responsibility for future WEEE, any orphan WEEE arising in the future will be financed by the remaining producers on the market when those costs are realised. Many MS may also believe that it is in fact possible to include individual financial responsibility for new waste even within systems based on PAYG.

However, on the central issue of the financial allocation of historical and new waste responsibilities, the WEEE Directive explicitly assigns collective financial responsibility for historical WEEE from households, and individual financial responsibilities for new WEEE. The clause regarding meeting the obligation individually or by joining a collective system **does not allow** the 'historical' financial mechanism to continue for 'future' waste, and that each producer is now required to finance their own new (or 'future') WEEE that is collected from households. In other words individual producer responsibility for future WEEE is obligatory for producers. Therefore, both new systems and the systems that were put in place by certain MS (Belgium, the Netherlands and Sweden) prior to the WEEE Directive's entry into force must allow this (whether through the existing collectively-organised compliance system, a competing one, or own-brand/limited brand systems). Admittedly, this means that for a while producers must finance both the historical WEEE and provide a financial guarantee for future WEEE in parallel.³³

However, looking at the financial model most commonly used in collectively-organised compliance systems³⁴ reveals that the pay-as-you-go (PAYG) type financial model will continue to be used not only for historical WEEE, but also for future WEEE at least in the short-term. This is in direct conflict with Article 8 of 2002/96/EC.

If the correct interpretation of allocation of financial responsibility for new WEEE is used, Directive 2002/96/EC at the very least provides concrete incentives for producers to design

³³ This is presumably one of the reasons why producers were given the option of displaying a visible fee (on new products) for the treatment of historical WEEE in the WEEE Directive for 8-10 years to compensate producers for having to finance historical waste and provide a guarantee for future WEEE simultaneously. Since producers must *collectively* pay for the costs of managing historical WEEE and *individually* for products placed on the market after 13 August 2005 when they become WEEE, Article 11(2) requires producers to mark products with a unique symbol to allow for this distinction to be made. This is an additional indicator that the Directive envisaged a transition from *historical* to *future* systems because if it was foreseen that the 'historical' system should continue, a distinction between future and historical waste would not have been necessary.

³⁴ For example, EL-Kretsen in Sweden, Recupel in Belgium, NVMP and ICT Milieu in the Netherlands, WEEE Ireland and ERP in Ireland, etc.

products for durability or longevity as they are paying for the management of their own products based on return-share (what is actually returned to collection sites). This only works if producers are only responsible for their own new WEEE from households, requiring distinction of historical from new WEEE as well as by producer when WEEE is collected. If the number of products from a particular producer returned is known, and product-specific information concerning the relative costs to manage those products is also known, costs to manage those products could be differentiated. This would create differentiated recycling costs, creating an incentive to improve product design. In brand-specific or limited brand compliance systems where producers capture and process their own products separately, the incentive would exist naturally as any design modifications made that would reduce recycling costs would be captured by that producer.

5.2 Insufficient financial guarantees

It is clear that nearly all MS have discouraged the development of individual systems for producers that want to recover their own WEEE put on the market after 13 August 2005 (or the national equivalent date), by requiring a true financial guarantee when placing these products on the market, while not placing the same demand on producers that join collective schemes.

The **financial guarantee** is considered essential for IPR to work in practice both in collectively-organised compliance schemes and own-brand or limited brand compliance systems. With financial guarantees, one option allowed according to the WEEE Directive talks about the producer's participation in '*appropriate schemes*' for the financing of the management of WEEE. A crucial issue in this context is whether this option is defined to ensure that funds will actually be accrued for the future costs of producers' new WEEE in the event of bankruptcy. To comply with the spirit of the WEEE Directive as outlined in Recital (20) and the requirements of Article 8(2) it is clear that any such guarantee must be based on financial means being allocated for the future costs at the time of the product's introduction to the market. The accrual of funds for future costs is essential to ensure that if a company leaves the market the future costs of managing that producer's WEEE do not fall on the remaining producers in the market or society in general. Simply being a member in a collectively-organised compliance scheme with limited operating reserves will not ensure that all of a bankrupt producer's WEEE will be financed in the future.

By relieving collective systems (that are using a PAYG model) of the responsibility of a true financial guarantee, for example by a proper guarantee system embedded within the collective scheme, the MS is not only in breach of the intention of the EU WEEE Directive. It may also be committing itself to a financing model based on paying for historical waste by current market share forever, unless there is a clear requirement and date for transition in the transposed legal text.³⁵

Clearly, in order to ensure a level playing-field for producers whether they choose to join a collectively-organised compliance system or establish an own-brand or limited brand compliance system, the requirements for a financial guarantee should be the same for both. If simply being a member of an appropriate scheme for financing the management of WEEE is considered a

³⁵ Moreover, if any player with significant market share were to leave the market or the collective scheme, potential system collapse is not unlikely. This has occurred in the EL-Kretsen system in Sweden, where the TV and radio sector exited EL-Kretsen. The effective market share of actors left in the system increased, making their costs also increase. At this point the affected actors could refer to the national legal text: on finding that they are legally obligated only on an old-for-new basis (as was the case in Sweden prior to the entry into force of the new law), they could leave the system so as not to have to contribute to the management of WEEE beyond their obligation. The collective PAYG systems may face similar circumstances.

financial guarantee, then for a producer that chooses to set up an own brand or limited brand compliance system will, by default, need to take out recycling insurance or create a blocked bank account as a financial guarantee. Both of these options are presumed to be significantly more costly than joining a collectively-organised compliance scheme without a true guarantee.³⁶ The requirement for a financial guarantee to be the same for all compliance options is a prerequisite if the fundamental ambitions of the WEEE Directive are to be met.

The fact that the text about financial guarantees in the Directive allows such counter-productive interpretations at Member State level, suggests the need to clarify that the term “appropriate” does indeed mean that all compliance systems must reserve funds for handling all future WEEE.

5.3 The role of treatment and recycling requirements

Treatment and recycling requirements and their implementation are important not only because poor performance can create considerable environmental impact, but also because they are a way to internalise the environmental externalities in the price the product's price and thus create economic incentives for design improvements. The EPR legislation today includes rules for depollution and standards for dismantling, as well as re-use and recycling, and recovery targets.

But it is important that standards are enforced through functioning controls. This means there must be resources for control, either with the responsible authorities or through some private certification body. Efficient control also demands elaboration of guidelines for local authorities, which points to an important role for central authorities with better resources.

The re-use and recycling requirements must also be formulated, and enforced, in a way that secures the intended results. Efficient recycling targets should be set to mean re-application of the secondary materials (recyclate) for high-grade purposes. This requires a correct definition of what real material recycling operations are and possibly also at which point waste can be considered to be ‘recycled’. The definition provided in the WEEE Directive Article 3 (e), does not provide a solution to this problem, nor does the definition of recycling within the proposed revision of the Directive on Waste (COM (2005) 667 final). However, a proposed amendment by the Recycling Coalition³⁷ representing a broad group of stakeholders covering several material streams, attempts to incorporate the issue of re-application of materials for high-grade purposes, into the definition of recycling.³⁸

The definition currently used leaves MS room for interpretation, which could lead to a difference in the way recycling targets are measured as well as in the acceptance of technologies and processes as recycling activities. This has implications for a level playing-field for recycling operations located across the EU. Huisman (2003) provides the interesting example of a recycler located in one country that is allowed to send glass to a processor with a lower level of re-

³⁶ The lack of a level playing-field that is thus created is further reinforced by the fact that accountants will handle the companies' books according to law. If any collective system, or a collective system with a very limited reserve, is accepted by the Member State as an ‘appropriate financial guarantee’, this will also be accepted by accountants. This means that the producer establishing an individual system and having to show proof of taking out insurance or having a blocked bank account, which are more costly and require more capital ‘lock-up’, will be at an economic disadvantage.

³⁷ The Recycling Coalition's reaction to the Commission proposal for a Directive on Waste (COM(2005)667 final): The need for a clear recycling definition in the Waste Directive. 27 April 2006. [Available online] <http://www.eeb.org/activities/waste/Recycling-definition-joint-statement-final-270406.pdf> . 1 June, 2006.

³⁸ The suitability of weight-based targets as an environmental indicator has been questioned by several authors, namely Huisman (2003) and Mayers et al. (2005); both claim that environmental policies should focus more on [higher] collection rates and optimised logistics than on weight-based recycling targets. There have also been varying interpretations of what constitutes actual recycling leading to variances in how recycling rates of products are calculated.

application, compared with others bound to stricter definitions in other countries. Consequently, cost structures for secondary treatment will be different for recyclers depending on how the definition is interpreted. This becomes not only an internal market issue, but also may lead to increased transportation of WEEE.

The criticism of weight-based recycling targets, is valid when it comes to concerns over disparate MS applications of what is counted towards recycling and what is not, as mentioned above. In addition, a clearer definition of recycling weight-based targets than what is provided in the WEEE Directive, will most likely be more costly to achieve with the current technologies. There should therefore be discussion of the suitability of the current levels set within the WEEE Directive.

It must be remembered that the treatment requirements (selective removal of materials and components) and the weight-based requirements set in the WEEE Directive were meant to challenge the status quo not only in the recycling industry but also on the product design front. The subsequent implications of having to meet these requirements will most definitely increase end-of-life costs of products being recycled today. But this would also send a signal to producers to develop product designs that would in turn address these issues not only from a cost perspective on the production side, but in a total life cycle perspective including end-of-life.

5.4 Collection

It appears that in most MS municipalities will be physically involved in the collection of WEEE from households. But the degree to which producers compensate them varies significantly. This highlights the issue of shifting the financial burden from municipalities to consumers and producers and the important signals such an internalisation of costs will give. It also poses 'level playing-field' issues between the MS where collection is state-subsidised and where it is not. Importantly, it also deters individual producer systems from developing because such systems are often not given access to subsidised collection facilities

This is further complicated by the fact that in circumstances where municipalities are required to set up collection facilities, they are most often unwilling to separate WEEE beyond the ten categories (most MS merged categories) outlined in the Directive. Regardless of how this mixed brand WEEE is allocated to the various competing collectively-organised systems (either by a pre-determined geographical allocation of collection sites to pick up from, or on a rotating basis) a further common sorting stage is needed to distinguish the brands of the competing collectively-organised systems. Alternatively, data sharing with regard to the number of non-member products that are processed would be necessary to implement IPR.

The fact that it is possible to implement individual producer responsibility within collectively-organised systems (see Appendix I.C) supports the view that IPR does not necessarily lead to duplicated infrastructure. In fact, it may be easier to implement IPR within collective systems in MS where a single collectively-organised system is operating compared with a MS where there are competing collective compliance systems. This is because so far the development of these competing systems is such that they are not brand-specific, that is, they handle a specific proportion of mixed brands of mostly historical WEEE collected at collection sites and retailers. Therefore, in order to be able to implement IPR for new WEEE (in this scenario), there will need to be data-sharing between the competing collectives' schemes regarding the products of non-members that have been handled in each competing system.

5.5 Other factors

The transposition process has also revealed the lack of standardisation of certain administrative features of the producer registers among MS. This has led to a marked variation between Member State systems on issues like definition of categories of EEE products and different reporting formats (i.e. by weight of the product, by size, unit, etc.) This leads to an extra administrative burden being placed on manufacturers and/or importers, and calls into question one of the main arguments for developing an EC Directive in the first place. For example, the preamble, paragraph (8) reads “the objective of improving the management of WEEE cannot be achieved by MS acting individually. In particular, different national applications of the producer responsibility principle may lead to substantial disparities in the financial burden on economic actors.” However, the reduction of the administrative burden for producers should not jeopardise their identification in the respective MS, a prerequisite for effective individual responsibility.

5.6 Member States distorting the economic playing-fields

For the moment it appears that if individual responsibility is to become a reality for WEEE in Europe, many Member States (MS) will need to be directly challenged on the way in which their national laws have been designed and/or are being implemented in practice.

It is particularly important that EPR legislation allows producers that want to develop own-brand or limited brand systems for collection and recycling to be able to do so without any (unintentional) discrimination. Ironically, although many of the arguments for individual producer responsibility were raised in developing the WEEE Directive legal text, the way in which many MS have transposed the Directive will discourage any producer from developing such a system with respect to household WEEE. This seems to be the result of two main factors:

- First, in most MS a true financial guarantee will only be necessary for producers that comply individually by setting up their own-brand or limited brand systems while not putting the same requirement on producers that join collective schemes with a significant market share. **The economic impact of not having to provide a true financial guarantee will favour collective approaches that do not require appropriate guarantees.** The implications of not having to provide a true financial guarantee mean that ‘short-period’ or ‘shared or reciprocal’ types of financial solutions will offer a cheaper way out for legal compliance.
- Second, since many MS have allocated the physical and often financial responsibility to municipalities for setting up collection centres, and running the collection, **this acts as a subsidy for collectively organised systems.** This is because access to WEEE is often only available to main compliance schemes, unless a strong national clearinghouse function is established that allocates responsibilities accordingly. This would never suit an individual own-brand complier as only mixed brands would be available at municipal collection sites, in a distributed system.

Additionally, some MS have also required that any individual own-brand complier accept brands from any producer in the product group(s), which the individual system is designed for, again discouraging this approach.

The role of municipalities to set up and finance the collection of WEEE is in our view a particular problem, as described above. One could ask why, since MS had the freedom to assign financial responsibility to producers for this activity, why did most of them not do so?

Interestingly, Sweden did assign responsibility for collection to producers in the legal text, even though it appears that municipalities will continue a no-cost operating agreement until 2010 with the collective organisation.³⁹ Part of the answer may come from municipalities' traditional role in collecting waste from householders, but wanting to maintain control and the right to steer the financial resources are also likely to be part of the explanation.

Other insights from this report are the varying views over the feasibility of individual producer responsibility of the main actors involved in EPR legislation in Europe. The definition of individual responsibility and the need for a financial guarantee as outlined in the WEEE Directive for products put on the market after 13 August 2005, limits producers' responsibility to their own products. From the producer perspective this is clear, and it is very unlikely that any producer would ever willingly pay for orphan or free riders' new WEEE. However, the de facto subsidies of free collection and/or avoidance of having to secure a financial guarantee for future waste, as well as other details in the implementation of the WEEE Directive, have led to a situation when assuming liabilities for orphan and free riders' WEEE becomes an attractive alternative for most producers.

³⁹ Annual Report 2005-2006. EL-Kretsen. Available at <http://www.el-kretsen.se/>

6 Conclusions

6.1 Possibilities for implementing individual responsibility

The debate over individual vs. collective responsibility with respect to their ability to provide incentives to producers to design their products for improved end-of-life processing, although easy to conceptualise, has led to confusion among many actors involved in the debate on implementing EPR. It seems there is a common misunderstanding that individual producer responsibility will always imply that a single producer develops a separate infrastructure for collection and treatment of their own WEEE. This is clearly not the case and there is evidence that individual financial and individual physical responsibility (hence, individual producer responsibility) can and does occur in collective systems operating today and in brand-specific or limited brand producer compliance systems.

The distinction of products does not require the physically separate processing of products. Existing practice suggests that the distinction of products can be made in various stages of the downstream operation (see Appendix I.C). The timing in current practice includes: (1) the point when the end-user discards the products; (2) at intermediary collection points and (3) at recovery facilities. The manner of distinction – actors involved in the distinction, the roles of producers, and the like – also varies. Factors that affect selecting the form of individual implementation include the end-value of the products, feasibility and ambition of the producers to establish their own downstream infrastructure, types of end-users, existence of other producers that share the same level of ambition regarding end-of-life management of their products and the like.

Individual own-brand or limited brand implementation should always be made possible and a level playing-field should be provided by the legislation. Producers should be provided with opportunities to explore alternative solutions on when and how they wish to distinguish their products from the rest. In the light of the global destination of products, it is desirable that products carry with them the information necessary to distinguish their properties, through, among other things, marking on components.

6.2 Insights from the WEEE transposition process

What can be seen from the WEEE transposition process is that most MS have clearly not designed their national laws to account for individual financial responsibility for new WEEE, as intended in the legal text and spirit of the WEEE Directive. This outcome may not be that surprising given the leeway employed by MS to interpret Article 8 in the WEEE Directive. Even though the central issue of separating the financial allocation of responsibilities for historical and new waste is explicit for WEEE from households, only 12 of the 25 MS have transposed the Directive to adequately allow for this distinction to be made. A further eight member countries only make reference to historical WEEE and the need for collective financing based on current market share. Two make no distinction at all, and the remainder (three) explicitly assign collective financial responsibility for both historical and new WEEE. This is a clear detraction from the minimum legal requirements in the Directive. Even in the 12 countries that have made this distinction, whether or not compliance schemes will uphold this requirement also still remains to be seen.

Why have the majority of MS not transposed Article (8) regarding the financing of WEEE from households, as intended in the legal text of the WEEE Directive? Part of the explanation could be the perception by MS that separating historical WEEE from new WEEE, especially where

more than one compliance scheme is in operation in the country, is not financially or practically feasible and would most likely mean more administrative responsibilities for authorities. This 'administrative fatigue' by regulators is clearly an issue that must be addressed to overcome these barriers.

It is also clear that nearly all MS have discouraged the development of individual own-brand or limited brand systems for producers that want to recover their own WEEE put on the market after 13 August 2005 (or the national equivalent date), by requiring a true financial guarantee when placing these products on the market, while not placing the same demand on producers that join collective schemes.

MS have also assigned varying degrees of financial and physical responsibility for collection to municipalities. Although in practice it appears that most MS municipalities will be physically involved in the collection of WEEE from households, the degree to which they are compensated by producers varies significantly. This not only poses 'level playing-field' issues between the MS where collection is state-subsidised, but also deters individual producer systems from developing. This is because own-brand or limited brand compliance systems are often not given access to subsidised collection facilities. This also highlights the issue of shifting the financial burden from municipalities to consumers and producers, where this has only partially happened in many MS. The above observations have a direct impact on the signals that EPR programmes send to producers on incentives to better design their products for reduced end-of-life costs.

For the moment it appears that if individual responsibility is to become a reality for WEEE in Europe, many MS will need to be directly challenged on how their national laws have been constructed, namely with respect to the lack of uniform application of the financial guarantee for new WEEE and the lack of distinction between new and historical WEEE financing obligations. A clarification of our understanding of the WEEE Directive's requirement for financial guarantee is critical to create a level playing-field between collectively-organised and own-brand or limited brand compliance systems.

It is crucial that the right signals and incentives are sent to producers that design their products for improved end-of-life recovery. Identification of individual products is key for this to happen, and enabling technology such as RFID tags is becoming a reality that could facilitate this in a cost-efficient manner.

6.3 Levelling the economic playing-field will promote IPR

To revitalise the process of implementing the WEEE Directive and to influence design change in the way the Directive intended, several measures are needed, as will be outlined below. Since the focus here is on levelling the economic playing-field between collectively-organised compliance systems and own-brand or limited brand compliance systems, it is important to clarify why this is so crucial. Given that the playing-field today is tilted in favour of collectively-organised compliance schemes it is argued that there are significantly reduced incentives to producers to design products that have reduced environmental impacts and costs at their end-of-life. This is because in most circumstances collectively-organised compliance schemes do not have a financial mechanism that is in line with individual producer responsibility, more often employing collective responsibility for both new and historical WEEE. In our view, the following measures are needed to correct this shortcoming:

- 1) A true financial guarantee for the future costs of 'new' products is crucial for creating a level playing-field so that individual own-brand or limited brand compliance schemes can compete. This demands clarification that the provision of joining an appropriate scheme for financing

WEEE as a means to secure a financial guarantee must not mean that collectively-organised systems are allowed to operate with only limited funding resources for the treatment and recycling of future WEEE. All systems must create a sufficient guarantee for future costs. If short-term and/or collective PAYG accruals are illegal, corporate accountants will then refuse to sign off accounts and all producers would be automatically forced to shift to proper guarantee systems. This would level the economic playing-field for all compliance approaches.

2) To internalise the full costs and thus give the right signals to consumers, the implementation must secure that all costs for managing WEEE are covered by producers. In particular, this means that collection costs should also be covered. The present situation when collection costs are covered or partially covered by municipalities in many MS sends the wrong consumption signals through subsidised end-of-life costs.⁴⁰ The situation also hinders a level playing-field for producers that may be interested in exploring individual producer responsibility through setting up own-brand or limited brand compliance systems, as they may not be given access to the subsidised collection infrastructure.

3) The economic signals from treatment and recycling products will be part of the drivers for eco-design. It is consequently essential that these costs reflect the appropriate level of environmental protection through full, high-quality recycling (that is not downcycling or pollutant dispersion through shredding and export). Although full, high-grade recycling may mean an increase in current costs of end-of-life treatment in the short-run, innovative responses by the recycling industry and product designers combined with new markets for certain materials will lead to superior environmental practices and cost reductions in the long-run. This results in improvements not only in the treatment of WEEE, but decreases the negative impacts of products that are not collected or which are exported for re-use and future end-of-life management in conditions that may be considerably inferior to EU standards. It is also crucial that the requirement to remove hazardous substances prior to shredding is maintained, as this is another important driver for eco-design.

⁴⁰ The absence of internalisation of all end-of-life costs would result in lower product prices than would have otherwise been the case when these costs are included in the price of a product

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Abbreviations

AUT	Austria
BE	Belgium
B2B	Business-to-Business
B2C	Business-to-Consumer
CZ	Czech Republic
CY	Cyprus
DE	Germany
DK	Denmark
EE	Estonia
EEE	Electrical and Electronic Equipment
EL	Greece
ELV	End-of-Life Vehicle
EPR	Extended Producer Responsibility
ES	Spain
FI	Finland
FR	France
HU	Hungary
IE	Ireland
IPR	Individual Producer Responsibility
IT	Italy
LV	Latvia
LT	Lithuania
LU	Luxembourg
MT	Malta
MS	Member State (of the European Union)
NL	Netherlands
PAYG	Pay As You Go (see Section 3.3)
PL	Poland
PT	Portugal
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom
WEEE	Waste Electrical and Electronic Equipment

Appendix I: Producer Compliance Approaches to EPR legislation in Europe

In this appendix, typical approaches that producers have taken to organise themselves to fulfil their legal responsibilities for the take-back of end-of-life products are highlighted. Although not specifically addressed below, it is often the form of the legal text during transposition by Member States (MS) that dictates the way in which producers tend to organise their responsibilities. Regarding implementation, in many MS, it is left to producers to decide on the most appropriate system design, while elsewhere specific roles for collection, transportation, recycling etc. are divided among actors.

The first two sections of the Annex discuss the typical responses in the electrical and electronic equipment sector to comply with the obligation to take-back and properly treat end-of-life equipment, both from households and other sources. Various existing practices of implementing elements of individual producer responsibility are presented in the third section.

I.A Collectively Organised Compliance Systems for WEEE recycling and recovery

In all countries in Europe with pioneering EPR legislation for WEEE, including the Netherlands, Switzerland, Sweden, Belgium and Norway, industry collaborated to develop national collectively-organised programmes to meet their legal obligations. Interestingly, since the transposition of the WEEE Directive, in three additional MS, single or non-competing collective organisations will be established, bringing the total to around six in the EU.

Often in these countries the relevant authorities (most often the Environmental Protection Agency) encouraged the collective approach, as many of the administrative requirements are perceived to be managed by the producer responsibility organisation (PRO).

Typical arguments for establishing national collective take-back systems include the increased economies of scale, equitability both for importers and local manufacturers, and the fact that the most commonly-used financial mechanism covers orphan products and free riders.

Arguments against such systems typically include, their non-competitive structure, lack of a built-in mechanism to reward company efforts for eco-design, cross-subsidisation between product groups, lack of transparency, and the tendency to build significant funding reserves.

WEEE Forum – Association of Collective WEEE take-back systems in Europe

Believing that the collective approach to compliance offers the most comprehensive solution for all parties responsible for the design and management of WEEE, the Association of Collective Organisations, or the WEEE Forum, was established to promote these perceived benefits. The founding members were, for the most part, the organisations operating collective compliance schemes in the countries that pioneered WEEE legislation.⁴¹

The total number of members has grown to over 30, and represents collective organisations that both compete in individual countries and those that are the single collective organisation in a

⁴¹ Schemes included: EL-Kretsen, Sweden, ICT Milieu and NVMP in the Netherlands, Recupel in Belgium, S.E.N.S and SWICO in Switzerland and EI Retur in Norway.

Member State. This provides an interesting perspective to the often-perceived polarised views between the original members of the WEEE forum and the ERP (discussed in the next section) on the issue of monopolies vs. competition. Especially significant are statements found on the WEEE Forum website about creating incentives for design change for their members. It states that "Within the collective take-back structure, certain manufacturers should be allowed to benefit from their initiatives to design more easily-recycled products and to create internal recycling infrastructures by taking individual responsibility for the collection and recycling of their products. Manufacturers that chose to establish their own collection and recycling systems should be free to do so, and they should be compensated for their actions by the collective take-back system in the same manner as other collectors and recyclers. If their collection and recycling processes are more efficient, the marketplaces will reward them. In several collective schemes member companies can apply for a repayment of fees for any products that they collect and process through individual efforts to take back products."⁴²

In terms of feedback from recyclers to designers in order to improve design for end-of-life management the following statement was made: "The increased flow of information from recyclers to manufacturers through participation in the collective take-back system will enhance the knowledge and sophistication of product designers."

On the issue of implementing individual financial responsibility, the WEEE Forum makes the equally profound conclusion that IPR is a feasible strategy for the future of collective organisations. "As amounts of historic waste steadily decline, and when all consumer waste put on the market has financial guarantees, it will be reasonable for producers to make calculations on the actual return share of their branded products. As the actual return share may be less than present market share, due to longevity or market saturation of the products, it would be more equitable to divide costs via return share. This may be done reasonably first through statistical sampling, then through the use of Radio Frequency Identification technologies to recognize specific, manufacturer product models."⁴³ In view of these statements it is difficult to understand why the ERP and the WEEE Forum are so divided on issues of compliance scheme structure.

European Recycling Platform (ERP)⁴⁴

Founding members of the ERP – Sony, Electrolux, Braun/Gillette & HP – have been the strongest proponents of Individual Producer Responsibility (IPR), along with the European Parliament and European environmental NGOs. Therefore, it was not surprising that when the initiative was first announced there was much speculation on how it would develop. This may partly be explained by the wide interpretation of IPR and the common assumption that IPR equates to the development of individual collection and recycling infrastructure. There may have also been some confusion on the part of ERP for strongly suggesting the connection to design for environment incentives and IPR. This is because in order for any efforts to reduce recycling costs to be realised, separate treatment of the ERP brands would need to occur. A closer look at the way in which ERP is, or will be, organised in the European countries, suggests that separate processing between brands will not occur – at least in the short-term.

ERP was founded in 2002 as a response to the WEEE Directive. Specific aims of ERP are threefold; (1) to meet the specific requirements of electrical and electronic producers, (2) to promote cost-efficient and (3) innovative recycling strategies, while actively embracing the

⁴² Available online: http://www.weee-forum.org/guidance_key.htm

⁴³ Available on-line: http://www.weee-forum.org/guidance_more.htm

⁴⁴ ERP Platform: Available online: <http://www.erp-recycling.org/>

concept of individual producer responsibility as set out in the EU Directive, and to open up opportunities for pan-European recycling services and cross-border competition in the waste management service market. With these aims, it is clear that ERP members want to avoid national non-competing collective organisations, similar to those in the Netherlands, Sweden, Switzerland and Norway, from monopolising the compliance options for their members. The alternative that ERP is advocating is more like a competing collective organisation model, rather than embracing individual producer responsibility, as described below.

WEEE from households

Although, ERP members can negotiate with the general contractors for B2B take-back services, ERP is mainly focussing on WEEE that is collected from households. For this model (competing collective compliance schemes) to work, a number of pre-conditions in the legislation of each Member State are necessary. First, a national clearing-house or administrative function is needed to be able to collect sensitive manufacturer data on the number of products put on the market and the total collected from households (this is required regardless). Another, critical function of the clearing-house as ERP sees it is to coordinate/allocate the collection of WEEE from municipalities to producers and their contractors. Since municipalities in most circumstances will be involved in the collection of WEEE from households, and producers responsible for transportation, treatment and recycling onwards, dividing up access of the WEEE to be collected can become a competitive issue when there are collective schemes, competing for densely-populated areas and trying to avoid rural areas with low volumes and long transportation distances.

There are two general models used to allocate WEEE to be collected from municipal collection sites and retailers to the various compliance schemes. In both systems, producers have been assigned a percentage of the total WEEE collected (historical and new) by a national clearing-house, which is based on their current market share for historical WEEE and either current market share or return share for new WEEE. The compliance scheme would be responsible for the sum of all its members' obligations. Under the regional model, in which the allocation of collection to the respective compliance schemes is pre-determined based on a fair division of national collection sites and based on population density and rural representation, compliance schemes would collect only from their allocated sites. This was the case in Ireland, in which ERP and WEEE Ireland have an equal share of collection points allocated to each scheme. The second approach can be characterised by the German model of allocation, based on a mathematical formula that considers the above criteria for fair allocation and assigns producers responsibilities on a rotating basis. Obviously, there is no need for such a function or process when one single collective compliance take-back scheme is in place, as all WEEE deposited at collection sites would be collected and processed by the single organisation or their contracted third parties.

In terms of operation, ERP members will not be physically involved in collection or treatment of WEEE, and have outsourced all activities to two general contractors, Geodis (covering France, the UK, Ireland, Portugal, and Spain) and CCR (covering Germany, Italy, Austria and Poland). Also of interest is that membership in ERP is not restricted to the four founding members, but has grown to over 30 members in both Austria and Ireland. It is clear that ERP does not plan to become the dominant compliance scheme in any of the countries where it is operating. What is not so clear is how it will evolve into a system based on individual producer responsibility.

Although ERP claims that in future the scheme will handle only branded products, it is important to recognise that in the short-term (2-10) years it is highly unlikely that any such situation would occur. The historical waste obligation provides part of the answer, but another important factor is the role of the municipalities in collecting WEEE from households. Where municipalities are

legally obligated to collect, as in Germany for example, they have been concerned about the space needed to separate products into various categories, let alone by separate containers for different compliance schemes. This explains part of the difficulty of getting own-brand products back, when the collection sites have been allocated to more than one compliance scheme. For example, if there are two compliance schemes operating in a country, then roughly half of the branded products of one compliance scheme would end up in the other. The situation is even more complicated when more than two schemes are operating. Although radio frequency identification (RFID) tags have been proposed as a solution to cost-effectively identify products by brand, this would only address part of the issue. If recorded at municipal collection sites, there would be accurate records of what was returned by brand, but there would be no opportunity to treat specifically by brand with multiple compliance schemes. However, if this was done at the next stage, at a series of regional aggregation sites, it is feasible that if producers wanted to get access to their brands, they could. This would require that all compliance schemes agreed and financed this approach, meaning some sort of national collective solution.

Other Collective Compliance Schemes or Independent service providers

Numerous collective schemes have been proposed or developed in many of the MS that have encouraged the development of more than one collective compliance scheme. Many of the schemes that would fall into this category are members of the WEEE Forum, if they are not-for-profit organisations.

EcologyNet Europe⁴⁵, a subsidiary of Panasonic, is a private company offering a compliance service to EEE companies in Germany. It plans to expand to offer a pan-European service. It is believed that the number of collective system providers and recycling and logistic service providers for WEEE is increasing dramatically in Europe as a result of the WEEE Directive. For example, according to EAR, the German registry and clearing-house function provider in Germany, alone to date there are eight registered systems and up to 800 recycling and logistic service providers.

I.B Individual Manufacturer Initiatives

There are a number of ICT and large home appliance manufacturers that sell products both in the consumer and business-to-business markets that have developed individual systems to recover their own branded products as well as competitors' products (on old-for-new or in trade-in and upgrade offers). Although more common from commercial customers, there are increasing examples where manufacturers are promoting take-back of their own products, or competitors, in the consumer market as well.

Business-to-business (B2B)

Probably the best-known example of B2B individual take-back is **Xerox Corporation's** business leasing model and the subsequent closed-loop supply chain model it has developed. Since 1991 Xerox has built up a comprehensive design for environment programme that explicitly considers the logistic activities necessary for its product take-back and asset recovery programme. With respect to its take-back activities, Xerox-Europe estimates that for all of the products it sells or leases (photocopiers, printers and supplies) the return rate is over 65% (Guide, 2001). Many, if not all, of products returned are either repaired or remanufactured at least once, and may subsequently either supply spare parts for repair services or be fed into manufacturing new products. The ultimate fate of these products or components includes material and thermal

⁴⁵ Available at: http://www.ecologynet-europe.com/eco_web/index_flash.html

recycling and some disposal. Although Xerox pioneered this business model, today close to 80% of all photocopiers are marketed through the leasing model.

Owing to their sales relationships with business customers and the costs involved with disposing of unwanted equipment for commercial clients (prior to WEEE Directive), certain producers are offering product take-back services at the time of new sales. On a number of global ICT equipment producer websites, product take-back and trade-in services are offered which seem to be aimed at easing the process of acquiring new equipment and minimising cost and/or maximising revenues for equipment with residual value. Examples include IBM, Dell Computer and Hewlett Packard.

These offers are often bundled with other value-added services such as data removal and asset recovery as well as installation services of new equipment. From a customer perspective, it appears that these manufacturers are managing these services themselves, including the refurbishment and resale of used goods. It is unclear if these functions are delivered by the producer directly or as an outsourced function, however the service is in many cases offered under the producer's brand name. This is the case for HP and IBM, both of which have invested in or partnered with electronics recycling companies in the U.S. and Europe. Other producers cooperate with brokers and other service providers to manage the resale of products. Whether these manufacturers plan to fulfil their take-back obligations using these programmes alone, is unclear, and if these systems are coordinated on a national, pan-European or global perspective.

WEEE from private consumers

Although limited, there are a number of producers that have encouraged the take-back of their products from households through various channels. Dell Computer, for example, extends its web-based take-back programme to private customers as well as B2B. Dell EMEA⁴⁶, offers free take-back of computer systems of any brand when purchasing a new Dell system. Additionally, customers with Dell products are also eligible for free take-back without purchasing new Dell products. Dell Computer does not envisage this service to be their main approach to compliance with Member State legislation, and will develop their approach to compliance on a state-by-state basis (Cox-Kearns 2006).

Additionally, certain producers have organised collection events, with or without retailer involvement, to promote responsible end-of-life management. Whether or not producers apply for credit towards their obligations of historical waste is uncertain. In the case of Dell and HP, both of which have organised events in Ireland and Germany respectively, only HP plans to report this to the national clearing-house/registry.

I.C Evidence of implementation of individual responsibility

Although individual producer responsibility is often perceived as being harder to implement, whether within collective systems or for brand-specific or limited brand producer systems, practical implementation of EPR programmes around the world has successfully embedded various elements of individual responsibility. In this section, the various patterns identified are presented, categorised based on 1) when and how the discarded products are distinguished from the rest and 2) how the producers involve themselves in the downstream operation.

⁴⁶ Europe, Middle East and Africa

Distinction when collecting from end-users

Table 0-1 summaries cases where the brands of the products are already distinguished when products are collected from/handed in by consumers.

Table 0-1: Examples of individual responsibility (1): brand name distinction at end-users

Products (countries)	The manner of collection and distinction	Arrangement with recovery facilities	Manner of payment by consumers
Copying machines (JP)	Taken back by the producer or a service company	Recovered in the company's own facility	Cost internalisation
Computers used in offices (NL, CH, JP), large professional EEE (SE)	Taken back by the producer/contracted party	Producers make direct contracts with recyclers. In the case of CH, recyclers must have license from the PRO	Internalised in the price of new products (NL, SE), flat visible advance disposal fees (CH), end-user pays (JP)
ICT equipment (SE, NO)	Taken back from offices by an intermediary company Establishment of separate collection points for households by an intermediary company	An intermediary company takes care of recovery at the request of the producers	Cost internalisation
Computers from households (JP)	Sent back to the producer via postal service	Recovered in the company's own facility	Historical products: end-user pays, new products: individual visible advance disposal fee
Cars (SE, sold after 1998)	End-users bring the cars to dismantlers contracted by the respective producers	Producers make direct contracts with recyclers. An insurance company have contracts with recyclers for some importers	Internalised in the price of new products
Large home appliances (JP)	Collection by retailers. End-users purchase recycling tickets issued by the respective brands	Recovered in the company's own facility, or producers make direct contract with other producers and recyclers	End-user pays
Batteries for business users (NL)	Collected from end-users at specific dealers	The Producer makes direct contracts with a recycler	Cost internalisation For large quantity, end-user pays

* CH = Switzerland, JP = Japan, NL = the Netherlands, NO = Norway, SE = Sweden

This is the case when the users of many of the products are businesses, but measures also exist to collect products of specific brands from households. Some of the products (large professional EEE, copying machines) have high end-values while others do not. The manner in which products of specific brands are collected varies, with different degrees of involvement by end-users. In general, products are picked up from business-users while the involvement of end-users increases in the case of WEEE from households. The manner of payment by consumers varies, including cost internalisation, flat visible advance disposal fees, individual visible advance disposal fees and end-user pays. Likewise, individual manufacturers have varying degrees of involvement in the organisation of the collection and recovery operation. Some domestic manufacturers establish their own recovery plants, while others have contracts with recyclers. As well as the arrangement with the recovery facilities, collection from end-users is organised either by the producers themselves, or out-sourced to a third party. However, what is common is that all the producers have control over the management of their products.

Distinction at intermediary collection points

The products can also be sorted by brand once they are collected from consumers and aggregated at intermediary collection points. Intermediary collection points include retailers, regional aggregation stations, municipal collection points, collection facilities of actors contracted by producers, and the like. Examples are summarised in Table 0-2.

Despite the rather negative perception of some of the interviewees who run collective systems, sorting at intermediary collection points has been operated in various ways. One solution is the

establishment of separate collection points by a group of companies who wish to have a separate system, as found in the case of ICT equipment manufacturers in Sweden and Norway and manufacturers of large home appliances in Japan. This enables companies to enjoy economies of scale with regard to transport and management of collection points, while giving them greater potential to control their own products. Meanwhile, special arrangements can be made with retailers. As found in the case where the brands of discarded products are distinguished when collected from end-users, the degree of involvement of individual producers in organising the collection and recovery operation varies. Often the operation is outsourced to third parties. However, producers have control over the fate of their products. The manner of payment by consumers differs from one case to another.

Table 0-2: Examples of individual physical and financial responsibility (2): brand name distinction at intermediary collection points

Products (countries)	The manner of distinction	Arrangement with recovery facilities	Manner of payment by consumers
Coffee machines (CH)	Separated from the rest of WEEE by retailers, arranged by the PRO	Recovered in the company's own facility	Flat visible advance disposal fees
ICT equipment (SE, NO)	Sorting at the separate collection points by an intermediary company upon request	An intermediary company takes care of recovery at the request of the producers	Cost internalisation
Large home appliances (JP)	Retailers, municipalities and designated legal entities bring the discarded products into two regional aggregation stations depending on the brands	Recovered in the company's own facility or producers make direct contract with other producers and recyclers	End-user pays

* CH = Switzerland, JP = Japan, NO = Norway, SE = Sweden

Distinction at recovery facilities

Table 0-3 summarises cases where the brand names of discarded products collected and transported together to recovery facilities are distinguished at the plants.

In the examples, the physical management of products is performed collectively, at least under the current operation, all discarded products go through the same recovery process. However, the brand names – and in the case of Japanese manufacturers the models of the products as well – are distinguished before the recovery operation. The involvement of producers in collection and recovery activities decreases, especially in the case of the ICT producers in the Netherlands and Switzerland. However, they have a mechanism for identifying and recording the products that reach the recovery plants.

In the systems presented, the degree of design for end-of-life has not been reflected in the amount paid by the producers, but they illustrate the possibility of distinguishing between the brands and models of products at recycling facilities.

Table 0-3: Examples of individual physical and financial responsibility (3): brand name distinction at recovery facilities

Products (countries)	The manner of distinction	Arrangement with recovery facilities	Manner of payment by consumers
ICT equipment (NL until the end of 2002)	The brand names and the weight of the respective products were recorded	PRO makes the overall arrangement. The recycling facility sent an invoice to the respective producers in accordance with the total amount of discarded products recycled	Cost internalisation
Large home appliances (JP)	The manifest attached to each product distinguishes the brand name and the model of the respective products	Recovered in the company's own facility or producers make direct contract with other producers and recyclers	End-user pays
ICT equipment (CH)	Periodic samplings take place to find out the average amount of products taken back manufactured by the respective brands	PRO makes the overall arrangement. Producers pay in proportion to the amount of their products to the PRO	Visible flat advance disposal fee

- CH = Switzerland, JP = Japan, NL = the Netherlands

Appendix II: Member State Allocation of Collection Responsibilities for WEEE from Households

Country	Responsibility for setting up collection points			Responsibility for financing collection points			Government Tax/Charge	WEEE Transposed	National Registry	Clearing House Function
	Producers	Retailers	Municipalities	Producers	Retailers	Municipalities				
Austria	• ¹	• ²	•	• ³	•			•	• ⁴	•
Belgium		•	•	• ⁵	• ⁶			•		
Cyprus	•			•				•	•	
Czech Rep.	•	•		• ⁷	•			•	• ⁸	
Denmark		•	•		•	•		•	• ⁹	•
Estonia	•	•		•				•	•	
Finland	•			•				•	•	
France	•	•		• ¹⁰	•			•	•	• ¹¹
Germany		• ¹²	•	• ¹³		•		•	•	•
Greece		•	•		•	•		•	•	
Hungary	•	•		• ¹⁴	•		• ¹⁵	•	•	
Ireland		•	•		• ¹⁶	•		•	• ¹⁷	•
Italy		•	•		•	•		• ¹⁸	•	•
Latvia	•	•		•			• ¹⁹	• ²⁰	•	
Lithuania	•	•	•	•	•			• ²¹	•	•
Luxembourg		•	•	• ²²	• ²³	•		•	•	
Malta							•			
Netherlands		•	•	• ²⁴	•	•		•	•	
Poland		•	•		•	•	• ²⁵	•	•	
Portugal	•	•	•	•				•	•	
Slovakia	•	• ²⁶	•	• ²⁷	• ²⁸		• ²⁹	•	•	•
Slovenia		•	•	• ³⁰		•	• ³¹	•	•	•
Spain		•	•	•				•	•	•
Sweden	•			•				•	• ³²	
UK		•	•		•	•			•	

Adapted from Mayers (2005)

Information sources:

Perchards (2005)

Mayers (2005)

Authors own interpretations of national legislation

Appendix III: Member State Allocation of Financial Responsibility for Collection (from collection sites onwards), Treatment, Recycling and Recovery of WEEE from Households

	Method for allocating financial responsibility				Financial Guarantee			Compliance schemes	
	Historical WEEE (based on market share)	New WEEE (individual by own product)	Product Fee	Mandatory visible fee	As WEEE Directive	Only for Individual compliance ³³	Member in Collective system exemption	Producer Collective System	Competing Collective & Individual
Austria	•	• ³⁴				•	• ³⁵		•
Belgium	•					•		•	
Cyprus	•	•			•			•	
Czech Rep.	•	•				•			•
Denmark	•					•	• ³⁶		• ³⁷
Estonia	•			• ³⁸		•			•
Finland	•					•			•
France	•			•		•			•
Germany	•	•				•			•
Greece	•					•		•	
Hungary	•		• ³⁹			•			•
Ireland	•	•		• ⁴⁰		•			• ⁴¹
Italy	• ⁴²				•				•
Latvia			• ⁴³					•	
Lithuania	•					•			•
Luxembourg	•	•				•		•	
Malta	•		•			•			
Netherlands	•	•				•	•	•	
Poland	•	•	• ⁴⁴	• ⁴⁵		•			• ⁴⁶
Portugal	•	•				•			• ⁴⁷
Slovakia	•	•	• ⁴⁸			•			• ⁴⁹
Slovenia	•		• ⁵⁰			•		•	• ⁵¹
Spain	•	•		• ⁵²		•			•
Sweden	•	•				•		•	• ⁵³
UK	•								•

Adapted from Mayers (2005)

Information sources:

Perchards (2005)

Mayers (2005)

Authors own interpretations of national legislation

Notes from Annex II

- ¹ Austria: Producers are required to set up at least one collection centre in the 99 political districts for retailers, consumers, and local authorities
- ² Austria: Retailers with a sales area of more than 150 m² obligated 1:1
- ³ Austria: Municipalities can invoice clearinghouse for setting up infrastructure, followed by an annual lump sum to municipalities
- ⁴ Austria: The clearinghouse will allocate producers share of new waste, unless an individual or collective complier has contracts for separate collection with all of the municipal collection centres. However, it also points that any individual must have contracts with all collection sites.
- ⁵ Belgium: Producers, importers and distributors wishing to use existing container parks and recycling centres, must cover the costs of collecting and sorting WEEE
- ⁶ See above
- ⁷ Czech R.: If municipalities separately collect, producers must provide containers
- ⁸ Czech R.: Only need to register if not part of a compliance scheme
- ⁹ Denmark: Only need to register if not part of a compliance scheme
- ¹⁰ France: Not required legally, but optional and encouraged by national EPA
- ¹¹ France: Proposed but not yet set up
- ¹² Germany: Retailers are allowed to take back 1:1 but not obligated
- ¹³ Germany: Producers are required to provide collection containers
- ¹⁴ Hungary: Not required legally, and producers are to reimburse local authorities if they provide separate collection of WEEE from households
- ¹⁵ Hungary: Producers are exempt from the product fee, based on the extent to which they comply with the WEEE decree
- ¹⁶ Ireland: Explicitly states that retailers must pay for the storage and transfer of WEEE to a municipal site
- ¹⁷ Italy: see above
- ¹⁸ Italy: Decree is to be complemented by forthcoming orders on Central Register, financing and the guarantee
- ¹⁹ Latvia: Producers who have approved individual systems or are members of a collective system are exempt from the tax
- ²⁰ Latvia: Not in full as of Dec,2005. Key provisions still missing
- ²¹ Lithuania: Not in full as of January 2006, key provision still missing
- ²² Luxembourg: Seems that Ecotrel does compensate municipalities for their involvement
- ²³ Luxembourg: If retailers lack storage space they are obliged to inform customers of municipal sites, therefore not all have to operate these services
- ²⁴ Netherlands: Producers bear the cost of sorting the collected WEEE by brand or by type of equipment
- ²⁵ Poland: Product fee is levied based on the ratio of required recovery vs. achieved recovery rates after 2008
- ²⁶ Slovakia: Retailers must accept 1:1 only if they are also producer (first importer)
- ²⁷ Slovakia: Producers must provide containers for collection (7 categories) plus compensate municipalities
- ²⁸ Slovakia: See 27, only if they are first importers
- ²⁹ Slovakia: Product fee is levied based on the ratio of required recovery vs. achieved recovery rates after 2008
- ³⁰ Slovenia: Producers must provide municipalities and large retailers with collection containers
- ³¹ Slovenia: Environmental product charges most likely linked to required recovery vs. achieved recovery
- ³² Sweden: Forthcoming explanatory note on financial guarantee and national register

Notes from Annex III

- ³³ Individual system: single producer system

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- ³⁴ Austria: The clearinghouse will allocate producers share of new waste, unless an individual or collective complier has contracts for separate collection with all of the municipal collection centres. However, it also points that any individual must have contracts with all collection sites.
- ³⁵ Austria: No financial guarantee needed for collective system. In Austria's system – if 5% EEE by weight of the category covered is represented, then any system can be considered a collective system (if other requirements are also met)
- ³⁶ Denmark: No financial guarantee needed for collective systems. Collective if 10 members or have at least 30% of market share in a product group
- ³⁷ Denmark: Stena technoword and HP are building a compliance scheme
- ³⁸ Estonia: If the sector decides to show a visible fee, then must be shown at point of purchase.
- ³⁹ Hungary: Producers are exempt from the product fee, based on the extent to which they comply with the WEEE decree
- ⁴⁰ Ireland: If producers charge EMC to retailers, retailers must show this to consumer. Boots charged for not showing fee to customers – see In Ends Daily , Friday 27 January 2006, Issue 2026
- ⁴¹ WEEE Ireland & ERP
- ⁴² Italy: waiting for EU standard marking before own brand individual
- ⁴³ Latvia: Producers who have approved individual systems or are members of a collective system are exempt from the tax
- ⁴⁴ Poland: Product fee is levied based on the ratio of required recovery vs. achieved recovery rates after 2008
- ⁴⁵ Poland: Optional for producers, but retailers must display if producers choose to have visible fee
- ⁴⁶ Poland: Collective & ERP
- ⁴⁷ Portugal: Collective & ERP
- ⁴⁸ Slovakia: Product fee is levied based on the ratio of required recovery vs. achieved recovery rates after 2008
- ⁴⁹ Slovakia: Some individual compliance options through waste management companies
- ⁵⁰ Slovenia: Environmental product charges most likely linked to required recovery vs. achieved recovery
- ⁵¹ Slovakia: Individual compliance schemes through waste management firms
- ⁵² Poland: Optional for producers, but retailers must display if producers choose to have visible fee
- ⁵³ Sweden: Dell and Toshiba are founding members of Euroenvironment



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