

Recommendation on EPR based WEEE recycling system implementation

The guidance below is based on experience in selected EU member states how to establish an effective EPR WEEE organization

1. Objectives of WEEE legislation

Objectives in respect of WEEE management:

- 1) Regulate the recovery and proper treatment of WEEE
- 2) Prohibit or minimize emissions of hazardous substances during and following treatment of WEEE
- 3) Reduce and minimize the use of hazardous substances in the production of EEE
- 4) Secure adequate financing of recovery and treatment through the EPR principle
- 5) Encourage producer initiative to reduce the use of hazardous substances in the design and production of future EE products and improve recyclability.
- 6) Meet socio-economic development objectives of the country

2. Challenges for WEEE legislation

WEEE legislation must be harmonized with the overall waste legislation. WEEE legislation should protect human health and environment as well as encourage development of qualified waste management and recycling infrastructure.

Management of the valuable recyclables in household waste (like valuable WEEE, metals, etc.) is into a large extent in the hands of informal sector and it must be considered how to integrate this into legal frame.

Due to the fact that WEEE treatment includes operations with hazardous substances, it must be ensured that only the qualified business operators are authorized to deal with such operations.

Proper management requires also informed and motivated consumers, who are knowledgeable about the health and environmental risks of WEEE and pro-actively separate WEEE from general household waste.

3. Legal chapters of WEEE legislation

The cornerstone elements of a successful WEEE legislation.

- 1) Principles of regulation
- 2) Definitions
- 3) Targets
- 4) Responsibility of producers and importers
- 5) Responsibility of municipalities

- 6) Responsibility of Producers Responsibility Organizations (PRO)
- 7) Authorization of PRO
- 8) Reporting and auditing responsibilities
- 9) Data reporting
- 10) Regulations concerning sales and treatment WEEE containing hazardous substances
- 11) Sanctions

4. Principles of regulation

The proposed concept functions as guidance to establish a proper recovery and recycling of WEEE. It follows the principle of Extended Producer Responsibility to finance and manage recovery and treatment of WEEE by the producers and importers of such equipment (obligors) as well as influence product development for easier recyclability and the omission of hazardous components in the products as much as possible. Collection of WEEE should be done mainly by the municipalities, defined drop off station or dealers at no cost for the consumer; the incurred costs should be carried by the obliged industry.

Participation of obliged industry must be assured; free riding kept at a minimum. There should be no distortion of the markets between producers, importers. Vertical integration in the waste operator market should be avoided to support maximum free competition.

Obligors may delegate the fulfilling of their obligations to a PRO authorized for this undertaking by appropriate authority (like Ministry of Environment in EU countries). Authorization procedure should ensure proper functioning and financial ability of such a system to perform these tasks.

Export of WEEE should only be permitted to countries where treatment of equipment is implemented following accepted international standards and technologies.

5. Definitions

Recovery and treatment differ considerably between the different products within WEEE. Therefore it is recommended to define major categories of EEE to enable control and progress monitoring. A deep differentiation on one side allows better insight and regulatory opportunities, but will also cause considerable administrative efforts and high workloads on the obliged companies.

When regulating WEEE it seems practical also to include lamps and batteries since these products have similar recovery and recycling issues and require similar regulations for proper handling.

Therefore we propose the following main categories to be set by the regulation, each containing the respective subcategories

- 1) Large electrical equipment (e.g. washing machines etc.)
- 2) Small electrical equipment (e.g. shavers, toothbrushes)
- 3) Coolers and Freezing appliances
- 4) TV and monitors, communication equipment
- 5) Batteries
- 6) Lamps

For reasons of compatibility and simplification we propose to take over the definitions of the EU Directive 2002/96/EC and 2012/19/EU.

6. Targets

Setting the optimum recovery and recycling targets is required in order to ensure system implementation. It must be taken into account the current state of the development of recovery and recycling infrastructure in the country. Nevertheless, targets are important as guidelines and milestones to measure progress; as well as a trigger point for a more stringent regulation should the planned one be unable to reach the set goals.

Target in the EU is 4 kg/inhabitant/per year of collected and recycled WEEE and was recently increased. From 2016, the minimum collection rate is 45 % calculated on the basis of the total weight of WEEE collected in accordance with Articles 5 and 6 in a given year in the Member State concerned, expressed as a percentage of the average weight of EEE placed on the market in the three preceding years in that Member State. Member States shall ensure that the volume of WEEE collected evolves gradually during the period from 2016 to 2019, unless the collection rate has already been achieved. From 2019 the minimum collection rate will increase to 65%.

Since the data of existing state of recovery and recycling of WEEE in the country would usually be not complete, it would be appropriate not to set a specific target in the first years of regulation, but include the target setting options with the statement that a recovery and recycling target will be set following a review process in 2 years.

7. Responsibilities of producers and financing obligation

Producers and importers of EEE have to be obliged to take back WEEE of those categories they put on the market, and ensure it is recycled properly at no cost for the consumer. They also have the responsibility to report the sold volumes per category to the state authorities.

Should they not be able or willing to do this, they may transfer these responsibilities to a government authorized Producers Responsibility Organization (PRO), through a signed contract and appropriate payments set by the PRO according to the category and volume of equipment put on the market. It must be clearly stated, what costs the producers and importers are liable to cover. As minimum, this should be collection, transport to dismantling, dismantling and treatment.

8. Responsibilities of municipalities

Municipalities will have to take back WEEE at no cost from the consumer and must store them properly until they are taken over by obliged producers or the PRO. The costs for these activities have to be agreed on with the PRO and will be refunded to the municipalities by the PRO.

9. Responsibilities of PRO

The PRO must be a registered business company or legally formed association. PRO owners must be producers and importers only, to avoid vertical integration in the waste management market and conflict of interests.

PRO must apply and obtain authorization from the Ministry of Environment before it is legally able to take over WEEE related obligations from the producers and importers. The law must establish quality and quantity criteria PRO must meet in order to receive authorization (license).

The PRO must sign contracts with obliged industry to take over their obligations and provide compliance against payments of fees for the volume and category of products put on the market by each company. These fees must be calculated based on the anticipated costs of collection and recycling per each category on a yearly basis and must reflect true costs without any cross subsidies.

PRO must offer the same conditions and prices to all customers and accept all companies obliged by the law as customer.

PRO must close contract with municipalities and transport companies for collection and transport of WEEE, as well as with dismantling companies and recyclers, who qualify to treat WEEE within the existing legal standards.

PRO must take over all collected materials from municipalities and other collection points and ensure proper recycling. It must control quality of recovery and treatment through regular controls.

The PRO must reach a target of recovery of at least 5% of total volumes placed on the market in year 2 as proof of functionality; if not, the Authorities may revoke the authorization.

The PRO must undertake to inform and educate the consumers about the environmental benefit of WEEE collection and the best way for them to dispose of WEEE.

Free riders have to be discouraged and correct participators protected, therefore PRO or its nominated third-party contractor must regularly perform audits of their customers to ensure correct volume reporting and payment. The right to do this should be included in the customer compliance contracts. Failure to report correct volumes should be fined with at least 100% of the default volume to ensure sufficient impact.

The PRO should develop its risk and audit program and implement customer audits accordingly.

To enable control of the system by the Authorities the PRO must report data on contracted customers and EEE weights and collected and recycled WEEE weights to the authorities:

- 1) The volumes per EEE category submitted by its customers to enable audits and controls of producers and importers.
- 2) The volumes of recovered and recycled WEEE per category to evaluate targets achievements.

10. Authorization of a PRO

PRO must submit a request for authorization to the Authorities. It may not offer compliance to obliged industry without such authorization. The authorization should be given for at least 5 years to give sufficient investment security for PRO.

The main requirements to obtain authorization should be:

- 1) An overall scheme of PRO planned activities and operations
- 2) A sufficient number of contracts with obligors to prove sufficient economic potential (10% of total markets at the point of application for authorization, 30 % after one year of operation)
- 3) Contracts with municipalities to ensure collection capabilities (with at least 10 municipalities covering at least 20 % of the population)
- 4) An operational and financial plan showing estimation of EEE volumes to be contracted and forecast of incomes, estimated costs of collection, transport and treatment operations for the first 3 years.
- 5) A sufficient number of contracts with qualified recycling companies capable to properly treat and recycle the collected materials
- 6) Administration and management plan availability
- 7) Consumer education plan availability

11. Reporting and auditing responsibilities

Both producers and importers, and PRO must report the volumes of equipment put on the market by categories and of the recovered and recycled material.

For the functioning of the system it is of vital importance to ensure participation and correct compliance. For this and based on these data submitted and other available data, the responsible Government authorities must regularly perform audits of the obliged industry companies. Audits should start in year 2 following the law implementation. Public servants with a fiscal background or external experts can perform audits. Experience shows that audit costs will be overcompensated by income of fines for non-compliance.

We also recommend that the Authorities also audit the dismantling, treatment and recycling companies on a regular basis.

To complete the data structure the PRO should also report the results of its own audits to authorities.

12. Information management

Due to the WEEE legislation, 2 streams of data is received by the authorities: information on weight of EEE released to the market from producers and importers and WEEE weight collected and recycled from PROs and producers and importers. In order to control the conformity to regulations, this data must be processed and authorities should set-up a registry. Data submission by relevant stakeholders of WEEE recycling process (producers, PROs, dismantling companies, recyclers) is mandatory by the law.

13. Regulations concerning sales of EEE

Producers of EEE are responsible for ensuring that their products meet the requirements of the legislation concerning banned substances. Furthermore, the act of placing a product on the market is a declaration by the producer that the product complies with the regulation. It is of course important, therefore, that producers can demonstrate the compliance of any product that they place on the market by obtaining and maintaining sufficient technical documentation.

14. Sanctions

Participation of all obligors is essential for the success of such a regulation.

An appropriate authority (Environmental Inspectorate, Municipal Environmental Authority, similar) or a third party organizations (Clearing House of PROs if applicable) must have a legal mandate to control producers and importers (obligors).

Law must establish sanctions and penalties in case of non-conformity. Some or all of the following was proven to be functioning in past experiences:

- Non conformity of obligors: fine to be paid to the authorities at least 10 times the fee which would have been due at correct behaviour, or 3% of revenue from EEE of the audited year
- Non-conformity of PRO: set period of repair, repeated failure will revoke the authorization.
- Non-conformity to WEEE treatment and workplace safety rules: from administrative fine to criminal prosecution.

15. StEP¹ Guiding Principles to Develop E-waste Management Systems and Legislation”

Summary of recommendations:

- Establish a clear legal framework for e-waste collection and recycling
- Introduce extended producer responsibility to ensure producers finance the collection and recycling of e-waste.
- Enforce legislation for all stakeholders and strengthen monitoring and compliance mechanisms across the country to ensure a level playing field.
- Create favourable investment conditions for experienced recyclers to bring the required technical expertise to the country.
- Create a licensing system or encourage certification via international standards for collection and recycling.
- If an informal collection system exists, use it to collect e-waste, and ensure e-waste is sent to licensed recyclers through incentives.
- When no local end-processing facilities exist for an e-waste fraction, ensure good and easy access to international licensed treatment facilities.

¹ StEP – Solving the E-waste problem is an international initiative comprised of manufacturers, recyclers, academics, governments and other organizations committed to solving the world’s e-waste problem

- Ensure that costs to run the system are transparent and stimulate competition in the collection and recycling system to drive cost effectiveness.
- Ensure that all stakeholders involved in e-waste collection and recycling are aware of the potential impacts on the environment and human health as well as possible approaches to the environmentally sound treatment of e-waste.
- Create awareness on the environmental benefits of recycling among consumers.

16. Strategic considerations

When addressing the issue of e-waste management, a series of key-factors should be taken into account by the legislator. Decisions taken in this respect directly impact the way producers would be in charge for the management of WEEE derived from their EEE PoM (*put on the market*). The attached table 1 contains a list of main questions and options.

Table 1 contains the main options should be considered to approach the matter of developing an e-waste management system. These options are conventionally presented in the form of antithetical dichotomy. Legislators should then note further intermediate options are available.

Table 1 – Main options for legislator to conceive an e-waste management system

Question	Main Options	Brief Description	
Opportunity for actors to take part in the e-waste system	Mandatory handover vs all actors	According to the principle of <i>mandatory handover</i> , WEEE management is carried out by law exclusively by producers. Here producers are considered fully and exclusively responsible for the management of WEEE.	<p>Pros:</p> <p>Limited risk of unfair competition amongst e-waste actors</p> <p>It's easier to monitoring the achievement of targets</p> <p>Cons:</p> <p>Less inclusiveness of the e-waste sector for market operators</p>
		According to the <i>all actors</i> approach, WEEE management can be carried out by law both by producers and by other actors like waste operators, which are not necessarily representative of producers.	<p>Pros:</p> <p>E-waste sector more open to market actors</p> <p>Cons:</p> <p>Major risk of unfair competition amongst e-waste actors;</p> <p>E-waste sector more complex to monitor</p>

Legal status of the compliance scheme	Non-for-profit vs service companies	<p>In some cases, like in France and in Italy, compliance schemes are provided by law as non-for-profit organizations.</p> <p>Here it's up to producers to set a system on a collective basis, which is aimed to ensure the proper management of WEEE derived from their PoM.</p>	<p>Pros:</p> <p>Producers are primary players in the e-waste system (legally, financially, logistically, ..) which is more consistent to the application of EPR</p> <p>Cons:</p> <p>There is a risk of less efficiency of the system if just one compliance scheme is in place</p>
		<p>Compliance schemes can be established in the form of compliance service companies. Here producers subscribe an agreement with an entity, which is in charge of WEEE management.</p>	<p>Pros:</p> <p>Producers can delegate part of the e-waste management to further market actors</p> <p>Cons:</p> <p>Being strongly profit-oriented can mean having a minor focus on environmental protection matters</p>
Options for producers to put into force the EPR principle	Individuals system vs collective systems	<p>Producers can ensure WEEE management via the development of an individual system. In this case they record their PoM via an individual declaration and they should be available to demonstrate they set a system able to intercept their own EEE on the total PoM.</p> <p>According to the volumes and categories of EEE PoM they are in charge of managing consistent amount and typologies of WEEE.</p>	<p>Pros:</p> <p>Producers are directly and fully responsible for their own appliances.</p> <p>Cons:</p> <p>An individual system faces the challenge of intercepting uniquely brand-related appliances.</p>
		<p>Producers can ensure WEEE management by putting in place a collective system. In this case they record their PoM via the compliance scheme and are then requested to manage a</p>	<p>Pros:</p> <p>Producers share collectively their legal, financial and logistical responsibility in the e-waste system;</p> <p>Historical WEEE is also</p>

		proportional amount of WEEE according to the registry.	collectively managed. Cons: Less opportunities to implement a circular economy system due to major dispersion of flows/responsibilities
Number of actors into play	Many PROs vs single organization	The establishment of Producer Responsibility Organizations (PROs) within a country can bring about an overall scenario where this is many and very different in their market share, like in Italy. In this case, the institution of a coordinating organization, called clearing house, is crucial to coordinate the work of all this actors, to set standard rules and to monitor on the overall sector. Here, responsibilities and rights of the system are fairly distributed by the clearinghouse to the PROs and the overall territory is ensured with the provision of the service.	Pros: Producers can opt for different PROs depending on their market share, EEE categories PoM, etc.; Cons: A strong variability in the profile of PROs need a strong coordination
		Producers can also associate within a unique organization, which is the only entity in charge of managing WEEE in the country.	Pros: There is no need of top-down coordination to ensure good relations amongst the PROs Cons: Risk of negative monopoly effects
Strong coordination vs market-driven approach	Clearing house vs market-driven	Compliance schemes can work under the coordination of a coordinating organization, within the so-called ' clearing house ' system. Here the SC assign the work to be done by the collective schemes via an algorithm which takes into consideration each producer's PoM, categories of EEE,	Pros: E-waste management is theoretically and operatively considered as a public utility and the related service is ensured on the overall national territory Cons: Clearinghouse costs are added,

		geography of the collection sites, features of the municipalities (e.g. demographics), etc.	control of efficiency of Clearing house required.
		Compliance schemes and e-waste operators can also work under a purely market-driven logic . In this case they go to collect and treat e-waste where this is the most profitable for them.	<p>Pros:</p> <p>E-waste actors do follow profit logic.</p> <p>Cons:</p> <p>No e-waste management where this is no profit.</p>
Level of bureaucratization of the sector	Strong formal prerequisite vs no prerequisite	The establishment of an e-waste management system can be driven by strong formal prerequisites . Here operators of the chain are requested by law to meet a range of high-level and high technology level standards to be legally entitled to carry out e-waste management.	<p>Pros:</p> <p>The e-waste system is highly performing in terms of quality of the service, internal monitoring, technology used, availability of facilities, etc.</p> <p>Cons:</p> <p>Strong bureaucratization of the e-waste system and the relationships amongst concerned stakeholders, additional costs</p>
		An e-waste management system can also be submitted to less binding requirements and monitoring activities, like external audits.	<p>Pros:</p> <p>E-waste operators can more easily and less costly access the system and take part in it</p> <p>Cons:</p> <p>Risk of a less standardized and certified system.</p>