



New EU-directives force companies to improve environmental product responsibility

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Abstract:

European legislation for WEEE, RoHS, and EuP started as an initiative of the Commission. It took several years to reach a state of published directives. Many companies now are seen in a state of ongoing implementation, especially due to different national transpositions of EU laws. The new sustainable and environmentally sounding European legislation development like WEEE, RoHS, EuP and so on require increased efforts performed by companies to gain a sustainable company's internal development of structure, processes and products. As a result better and environmental friendlier and sustainable products are developed. To reach that goal it is necessary that organizations like networks of producers, service providers and consultants establish a range of common positions and knowledge exchange.

This all should result in a coherent trans-national transposition into applicable rules, fulfilling the requirements of society and market with respect to a global technological development progress. Companies choosing a way of foresight monitoring of legislation, technological and environmental sustainable development will contribute with improved appliances.

Main part:

Directives affecting the electrical and electronic, automotive and secondary material industry:

In the last years a considerable increasing in the amount of appliances from the mentioned industries was noticeable. As these appliances contain certain hazardous substances, negative influences on the environment are the logical consequences. The European Union started to regulate the area of operation of the different stakeholders to improve the efficiency, ban dangerous hazardous substances and thus improve the environmental impact. An overview of the most important regulations that are affecting the electrical and electronic, automotive and secondary material industry are listed below:

IPP - Green Paper on Integrated Product Policy COM(2001)68

Each product causes environmental damage in some way due to its manufacturing, use or disposal. Integrated Product Policy (IPP) seeks to minimise this by looking at all phases of a products' life-cycle and taking action where it is most effective.

The life-cycle of a product has a lot of different stages – starting at the extraction of natural resources, through its design, manufacture, assembly, marketing, distribution, sale and use to its eventual end-of-life. At the same time it also involves many different actors such as



designers, manufacturers, marketing people, retailers and consumers. IPP attempts to stimulate each part of these individual phases to improve their environmental performance. As the product variety and the number of actors is so complex there can not be one simple policy measure for everything. Instead there is a whole pool of tools - both voluntary and mandatory - that can be used to achieve this objective. These include measures such as economic instruments, substance bans, voluntary agreements, environmental labelling and product design guidelines. On 7 February 2001, the European Commission adopted a **Green Paper on IPP** with the objective of launching a debate on the role and possible measures that can be taken on a European Union level.[1]

ELV – Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of life vehicles

About 9 million tons of end of life vehicles are generated in the Community each year that should be treated correctly. In 1997, the European Commission adopted a Proposal for a Directive which aims at making vehicle dismantling and recycling more environmentally friendly, sets clear quantified targets for reuse, recycling and recovery of vehicles and their components and pushes producers to design new vehicles also with a view to their recyclability.

This legislation was officially adopted in September 2000 and was published in Official Journal L269 on 21st October 2000.[2]

WEEE - directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment and RoHS - directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

The WEEE and RoHS directive are designed to manage the fast increasing waste stream of electrical and electronic equipment (EEE) and complements European Union measures on landfill and incineration of waste. Increased recycling and reuse of electrical and electronic equipment shall limit the total quantity of waste going to final disposal. Producers have the obligation to organise and finance the take back and recycle of waste of electrical and electronic equipment (WEEE) and achieve specified collection and treatment quotas, which provides an incentive to design electrical and electronic equipment in an environmentally more efficient way and takes waste management aspects fully into account. Consumers are able to return their equipment free of charge at the established collection points of the producers. In order to reduce the environmental impact of WEEE the RoHS directive requires the substitution of various heavy metals (lead, mercury, cadmium, and hexavalent chromium) and brominated flame retardants (polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE)) in new electrical and electronic equipment put on the market from 1 July 2006.[3]

EuP - Directive 2005/32/EC of the European Parliament and of the Council of 6 July 2005 establishing a framework for the setting of ecodesign requirements for energy-using products and amending Council Directive 92/42/EEC and Directives 96/57/EC and 2000/55/EC of the European Parliament and of the Council

The directive for energy using products, such as electrical and electronic devices or heating equipment, provides coherent EU-wide rules for eco-design and ensure that differences among national regulations do not become obstacles to trade within the European Union. The Directive does not introduce directly binding obligations for specific products, but does define conditions and criteria for setting, through subsequent implementing measures, requirements regarding environmentally relevant product characteristics (such as energy consumption) and allows them to be improved quickly and efficiently. Products that fulfil the obligations will benefit both businesses and consumers, by facilitating free movement of goods across the European Union and by improving product quality and environmental protection. The Directive constitutes a breakthrough in EU product policy and introduces many innovative elements together with concrete application of the principles of the "better regulation" package.

By encouraging manufacturers to design products with the environmental impacts in mind throughout their entire life cycle, the Commission implements the Integrated Product Policy (IPP) and accelerates the move towards improving the environmental performance of energy-



using products. After adoption of the Directive by the Council and the European Parliament, the Commission will be able to enact implementing measures on specific products and environmental aspects (such as energy consumption, waste generation, water consumption, extension of lifetime) after impact assessment and broad consultation of interested parties. There are not obligations for all energy-using products, but only for those meeting criteria such as important environmental impact and volume of trade in the internal market and clear potential for improvement, for example where market forces fail to make progress in the absence of a legal requirement.[4]

Batteries - Council Directive 91/157/EEC of 18 March 1991 on batteries and accumulators containing certain dangerous substances

The legislation of the European Union on batteries introduces measures for the upgrading and controlled disposal of spent batteries and accumulators. Member States of the European Union must prohibit the production and purchase of batteries and accumulators containing a certain percentage of mercury and are required to draw up programmes primarily aimed at reducing the heavy metal content of batteries and accumulators. Under these programmes, Member States must also promote the separate collection of batteries.

It is intended to revise Directive 91/157/EEC on batteries and accumulators regulating several new aspects, e.g. marking of the batteries and accumulators. To prepare the amendment a consultation of interested stakeholders was launched.

On 2 May 2006, the European Parliament and the Council reached agreement on the final text for a new Battery Directive. It is expected that the final text will be adopted and published in August 2006.[5]

REACH – COM(03) 644 Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Council Directive 67/548/EEC in order to adapt it to Regulation (EC) of the European Parliament and of the Council concerning the registration, evaluation, authorisation and restriction of chemicals

On 29 October 2003 the Commission proposed a new EU regulatory framework for the Registration, Evaluation and Authorisation of Chemicals (REACH, COM(03) 644).

The aim is to improve the protection of human health and the environment through the better and earlier identification of the properties of chemical substances. At the same time, innovative capability and competitiveness of the EU chemicals industry should be enhanced. The benefits of the REACH system will come gradually, as more and more substances are phased into REACH.

The REACH proposal gives greater responsibility to industry to manage the risks from chemicals and to provide safety information on the substances. Manufacturers and importers will be required to gather information on the properties of their substances, which will help manage them safely, and to register the information in a central database. A Chemicals Agency will act as the central point in the REACH system: it will run the databases necessary to operate the system, co-ordinate the in-depth evaluation of suspicious chemicals and run a public database in which consumers and professionals can find information concerning hazardous materials.

Following 2 years of negotiation the Council reached a Common Position on 27 June 2006 that achieved a marked improvement in health and environment to the benefit of Europe's citizens and that is supported by the Commission.

Final adoption of the proposal is expected by the end of 2006.[6]

National implementation of the directives

As the EU directives are not self-executing, they need to be implemented by each Member State into national legislation. As EU directives only form a framework for the results that have to be achieved, the national authorities of the Member States are free to choose the form and method of implementation.

The consequence is that 25 slightly different regulations result and it is often hard to find out what these differences are.

A comparative example will illustrate the problems arising from the different implementations of the WEEE directive in the member states:



WEEE implementation in EU-25

Especially for international companies it is very hard to get familiar with the country-specific regulations and to comply with the law. Some examples of topics that are affected by the differences in implementation are listed below:

Legislation:

The chosen forms to implement the WEEE directive into national law vary from Administrative Acts, Ordinances, Royal- Ministerial- or Governmental Decrees to By-laws. Some countries, like Austria and Germany, implemented the WEEE directive together with the RoHS directive in one legislation, Poland and some other Member States decreed two separate regulations – one for WEEE and one for RoHS.

Time schedules:

One of the biggest problems is the fact that in all countries there are different deadlines and intervals for the different obligations.

- **Registration:** Due to the WEEE directive the obligation to register started on 13 August 2005. Most Members already have installed national Registers, where producers and importers of EEE have to register but even one year later there are still some states where the national register is missing. Examples are Italy, Sweden or the United Kingdom where in some cases even the suitable legislation does not exist yet. But also in the countries with an already existing register, the deadlines were different – in Slovenia 26 September 2005, in Luxembourg 31 March 2006, in Greece 31 December 2005 or in Estonia 20 February 2006. According to the registration it has to be mentioned that also concerning the **registration fees** there are big differences. In some countries like Austria or Hungary, the registration is free of charge, in other countries like Germany, Poland or Portugal, fees are charged. Some of them are a one off fee, other EU states charge a yearly registration fee.
- **Take back:** Due to the WEEE directive the obligation for producers and importers of EEE to take back WEEE started on 13 August 2005. Cyprus, the Czech Republic, Estonia, Finland and some other Members met this deadline, but there were also some that had a delay – Germany 1 March 2006, Italy not defined yet or Luxembourg 1 January 2006, only to mention some of them.
- **Reporting:** To be able to control the effectiveness and success of the WEEE directive, all Member States have to report to the European Union information concerning collection and treatment of WEEE. To gather the information for this report, producers and importers have to send to a national central point all the data about the number of sold, collected and treated appliances. But the deadline, interval and form differ from country to country. Some states require an yearly, some a quarterly and some a monthly reporting. Some require the data expressed in weight and some in number of pieces.

Language:

The variety of different languages within the EU causes another problem. Most information is available only in the national language and most forms and reports have to be filled in the particular language. This complicates the EU-wide business activities.

Collective take back systems:

In most countries collective take back systems have been established but there are different types. One of these types is that only one collective take back system is established in one country, where Luxembourg would be an example of this monopolistic solution. Other countries like Denmark and Finland have more than two collective schemes that organise, collect and treat the waste of electronic equipment for their members.

Marking with the crossed out wheeled bin:

According to the WEEE directive producers and importers of electronic equipment have to mark their appliances with the symbol of the crossed out wheeled bin that is shown in the Annex of



the directive. Some states vary the obligation to mark the products in that way that e.g. in Germany only b2c-appliances that are sold to private consumers have to be marked. In most of the other states all EEE has to be market – for private and for professional use.

Penalties:

Even the penalties that producers and importers of EEE have to pay for non compliance with the law vary within the EU. They go from about €90,- for non fulfillment of the take back obligation of WEEE in Hungary to a maximum of €15 million or 10 years imprisonment in Ireland.

Company internal transposition of legal and technical regulations:

It depends on corporate size and structure if and how the legal requirements of the directives and their national implementations are implemented within the corporate internal regulations and into product and market communication. Related to corporate size we can assume following dependencies:

Enterprise Type	Size [Employees]	Relevant knowledge base	Planning type	Transposition type	Information type
Large	>250	Internal	Strategic	Lobbying	Pro-active provider
Medium	<250	Partly internal	Market driven	Informative	Active provider
Small	<50	Mostly external	Mostly business driven	Informative	Active listener
Micro	<10	External	Business driven	Late adopters	Passive listener

Table 1: dependency of transposition types vs. company size

Implementation details of national legislation especially concerning environmental aspects are mandatory to any size of companies but available budgets and market position in the supply channel influence how companies act on environmental product responsibility.

What we recognise from the above table about the active positions of large enterprises and a more passive role of SMEs can be verified by correlation between assumptions about internal legal compliance management efforts and company’s involvement in development of technical regulations by participation in international standardization bodies for environmental items in the electro and electronic sector.

Two sample working groups of IEC TC 111, a technical committee of the International Electrotechnical Commission handling with “Environmental standardization for electrical and electronic products and systems”, show a comparison between company size and the number of participating experts per company size category.

Standardization body	Title	Number of participants vs. representing companies size				Others (e.g.Org, Labs)
		Large	Medium	Small	Micro	
IEC TC111 WG1	Material declaration for electrical and electronic equipment	19	-	-	-	6
IEC TC111 WG3	Test methods of hazardous substances	23	-	-	-	12

Table 2: company size of the members of the standardization bodies (IEC TC111)

So we see that international standardisation is mainly driven and influenced be large enterprises. The lack of presence of a wide range of SMEs in international standardization is a



result of allocation of personnel capacity and only little information about ongoing standardization projects and activities.

A solution to this non-satisfying situation, not only for European SMEs, could be reached by increased networking activities amongst interested experts. This increases the level of knowledge and decreases the potential in misinterpretation of legal and technical transposition of the EU directives

A third view on geographic distribution of members and observers to the standardization bodies can give a figure of how economic spheres participate in standardization development.

Country	Standardization body and Title		
	IEC TC111 WG1	IEC TC111 WG2	IEC TC111 WG3
	Material declaration for electrical and electronic equipment	Environmental Conscious Design for Electrical and Electronic Products and Systems	Test methods of hazardous substances
AT	1	-	1
BE	-	2	1
CA	2	1	1
CN	-	5	4
DE	2	2	4
ES	1	1	1
FI	2	1	1
FR	2	1	5
GB	1	3	2
IL	-	1	1
IT	1	2	2
JP	2	10	4
KR	2	3	2
NL	2	1	3
SE	1	1	1
TH	-	2	3
US	5	6	9

Table 3: geographic distribution of members and observers to the standardization bodies

Distribution according to economic area is as follows:

Country	Standardization body and Title		
	IEC TC111 WG1	IEC TC111 WG2	IEC TC111 WG3
	Material declaration for electrical and electronic equipment	Environmental Conscious Design for Electrical and Electronic Products and Systems	Test methods of hazardous substances
Asia	4 (17%)	21 (50%)	14 (31%)
Europe	13 (54%)	14 (33%)	21 (47%)
America	7 (29%)	7 (17%)	10 (22%)
Sum	24 (100%)	42 (100%)	45 (100%)

Table 4: Distribution according to economic area

Regarding the actual transition phase of RoHS legislation there is of course the highest interest in "Test methods of hazardous substances" followed by "Environmental Conscious Design". "Material declaration" is an item that was set up in the last months so therefore it has the actual lowest number of participants



European experts represent 43% of all experts in the monitored working groups of IEC TC111, Asia represents 35% and America represents 22%.

Why are foresight and other activities mandatory for success in environmental product responsibility?

Foresight monitoring has to be performed for several years in advance.

There is some new (also environmental related) legislation under preparation by the EU having direct influence on products, production and producer industry.

Preventive monitoring of the development of EU-directives and international standardization is essential for companies to be informed about possible influence on the legal and technical framework for company and products. Here more activities could be performed by the Commission, but also by national transposing authorities and by other organisation like e.g. business development agencies.

Influence is possible to the legislation developed by EU DGs via interest groups, accredited lobbyists or consultants.

Influence on the transposition of a common legal framework is also possible via e.g. national councils of economics to the EU-bodies.

For the technical implementation of legal requirements by standardization activities are similar rules applicable and recommended.

There is a needs in any case for a company specific implementation of the legal and technical framework. [16]

It is a top management task to have that all in mind until the relevant business processes have not yet been developed and are not integrated into the company's process landscape.

There are two time different timeslots and related tasks in compliance management:

- foresight legal and technical compliance management (3-5 years in advance)
- strategic legal and technical compliance management(5-10 years in advance)

This all should result in a coherent national transposition following applicable rules, fulfilling the requirements of society and market with respect to a global technological development progress mentioning potential threats for the environment.

Conclusion:

Companies choosing a way of foresight legal and technical compliance management, participating in communities like standardization bodies and other development supporting associations will be better prepared against probably predictable threats to the company's market position and its business in general than others. Efforts and costs that are spent for such activities should be reimbursed in a short period.

European companies show a high interest in the new items in the working group of "Material declaration" within IEC TC111 while Asian companies focuses more general on "Environmental Conscious Design". American companies spread their participation over all three monitored working groups of IEC TC111.

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Author's biography:

- **Ernst Luckner** graduated from the University of Applied Science, Technikum-Wien in Vienna, Austria, in 2003. Topic of the Diploma Thesis: Reuse of electric and electronic Equipment, Subassemblies and Components. He started his technical education in 1974 at the Higher Technical School of Electronics in Moedling, Austria. In 1980 he joined then the Austrian Federal Bureau of Standards and Metrology in Vienna, implementing automation and IT in metrology methods. In 1990 he joined the Austrian Research Centres, Arsenal in Vienna, where he has been responsible for the management of environmental and quality related tests for electric and electronic equipment. In 2002 he changed to KERP Centre of Excellence for Electronics and Environment. During the last years he has been involved in development and implementation of transposition models for the European Directives WEEE and RoHS for SMEs as a senior researcher and consultant. He is now CEO of KERP Consulting Ltd. a spin off subsidiary of KERP Centre of Excellence for Electronics and Environment. Ernst Luckner is member in different transposition bodies for WEEE, RoHS and other EU directives and delegated as a national expert to several working groups within IEC TC111 and other standardization boards.
- **Astrid Gilge** graduated from the Vienna University of Economics and Business Administration in 2006. Topic of the Diploma Thesis: Implementation of the WEEE directive in Austria. Since November 2005 she is working at KERP Consulting Ltd. a spin off subsidiary of KERP Centre of Excellence for Electronics and Environment where she is dealing with the monitoring of the national implementation of the WEEE and RoHS and other EU directives within the whole European Union.