EEB on Drivers for Environmentally Conscious Design
in the Electronics Sector

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Introduction

I would like to thank EICTA for opportunity to come and speak today. There is an interesting collection of presentations ahead of us and I am looking forward to getting an insight into various perspectives on the issue of environmentally conscious design.

My presentation will try and give you an environmental NGOs perspective on the drivers and progress for ECD in the electronics industry.

The focus will be primarily on the drivers side of the issue – what are our views on what the drivers are, and how these drivers can be translated into actually creating environmentally relevant and significant progress.

1. **Drivers**

So what do we consider the driver (drivers) to be?

The driver for environmentally conscious design , or eco-design, as its name would imply, is preserving the integrity and stability of our natural environment and our health. It is as simple that. This can be further built on to integrate this concern with social factors – but that is another facet and another presentation.

The drivers can be pigeon-holed into, at least, three key environmental problems that our natural environment, and hence the fundamental resource base of our society, is facing:

1. Waste Production and Excessive Resource Use
2. Health and Eco-toxic impacts
3. Climate Change

<u>1. Waste Production and Excessive Resource Use</u>

The environmental drivers:

The production of EEE is one of the fastest growing domains of manufacturing industry in the Western world (ie in Europe). Tecnological innovation and market expansion accelerate the replacement process and new applications of electrical and electronic equipment. This leads to rapid growth of waste from WEEE. In 1998 6 million tonnes of WEEE were generated in EU 15 (4% of the municipal waste stream) - approx. 14 kg/capita. This volume is expected to increase 3-5% a year, to approximately 9 million tonnes in the next 2-3 years and to 12 million tonnes by 2010. [1]

If we take the 2005 estimate of approx. 9 million tonnes of WEEE just in Printed Circuit Boards (which account for about 3% of electronic scrap (ZVEI – German organisation representing electrotechnical and electronic industries - 1992)) we have , just in PC Boards, 300,000 tonnes of electronic components /year.

The hazardous contents of EEE create a high potential risk to the environment when the products become waste, since if they are not separately collected and pre-treated – ending up in municipal waste landfills or incinerators, where often sufficient measures for preventing hazardous substances from entering the

[1] Explanatory Memorandum on WEEE, EU Commission, June 2000, pg 4

environment are lacking. (Or if they exist – in the form of effluent treatment in landfill – they frequently result in toxic sludges, or in the form of dust and ash collection in municipal incinerators – they result in toxic ashes and dusts – both of which then require some form of expensive controlled and monitored deposition).

As a high proportion of WEEE and its corresponding electronic fractions and components continue to be landfilled - 90% of WEEE is landfilled, incinerated or recovered without pre-treatment, a large proportion of various pollutants found in the municipal waste come from WEEE (Nordic Council of Ministers report, 1995).

Apart from the environmental contaminant perspective of WEEE there is the sheer volume of material that is buried or incinerated – essentially removing it from the material resource pool and implying the virgin mining and extraction, transport, refining and smelting and transformation of new steel, copper, zinc, aluminium, precious metals, plastics and glass.

The EU commission estimated that at a collection rate of 4 kg per inhabitant, more than 1 million tonnes of materials could be diverted and reintroduced into the economic cycle. As concerns the avoidance of external costs caused by negative impacts on the environment from the production of virgin materials. *Inter alia*, the recycling of WEEE is estimated to contribute to energy savings in the order of 120 million Giga Joule (equivalent to about 2.8 million tonnes of oil) annually. An estimated 60% to 80% saving in energy can be obtained by using the materials recycled under the WEEE Proposal as compared to the use of virgin materials [2].

The solutions:

As a response to these concerns, the EU Institutions are currently refining a proposal for the directive on WEEE. The main functions of the directive is:

- WEEE separation and collection from unsorted municipal waste, facilitation of take-back, proper disassembly (pre-treatment) to capture hazardous components with binding 6kg/capita/year collection target by Dec 2005 (Parliament proposal)
- - Reuse and recycling (targets between 50-75%)
- - Making the producer bear the costs for these operations and make the economics of his contribution to end-of-life costs drive changes in design - encouraging design for recycling (or reuse), waste prevention and hence resource conservation

In this way the WEEE directive represents a major breakthrough, especially regarding take-back and producer responsibility (internalisation of external environmental costs) and reduction of environmental impacts. These are vitally important pieces in the jigsaw puzzle of a comprehensive product policy and we are off to a good start, but we are not stopping here - we would hope to see improvements in the future – maybe by 2010 ? - such that :

- Targets of kg/capita that represent close to 100% collection (based on statistics subsequently available) and made viable by comprehensive collection and recycling infrastructure
- Nearer to 100% re-use and recycling targets (made possible by subsequent innovation in product design for recycling), with a minimum of recovery and elimination of landfill moving towards closed loop cycling of materials
- Obligatory minimum requirements for design of EEE on specified environmental criteria – such as water use, virgin mined material use, non-renewable material use, complex/composite material use, energy efficiency etc
- Refining the ability of the price to reflect the real cost of the product to the environment and society – refining and universalising individual producer responsibility

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[2] Calculated on the basis of: P.R. White, M. Franke, P. Hindle, Integrated Solid Waste Management: A lifecycle inventory, 1995, in: European Commission, Recovery of WEEE: Economic and Environmental Impacts, 1997.

These objectives should be jointly achieved by future revisions of the WEEE directive and immediately, through a directive that sets up technical discussion on obligatory minimum environmental requirements for EEE design.

2. Health and eco-toxic impacts

The environmental drivers:

The health and eco-toxic impacts include the ecological physical and chemical disturbance from mining of raw materials and production of various chemical additives, to the emissions from manufacture to the off-gasing of additives during use to the release of substances at the end of life. Environmentally conscious design should be able to take each of these phases into account in a concrete manner. One of the most critical phases at the moment is without doubt the end-of-life phase.

The range of end-of-life hazardous substances we are facing at the moment is huge. Some examples are:

Substance	Use in EEE	Impacts
Poly Chlorinated-Biphenyls	? Small capacitors for fluorescent tubes and motors.	Bio-accumulative and genotoxic.
Lead	Batteries, soldering printed circuit boards and light bulbs, glass of cathode ray tubes	Damage human nervous system, endocrine disrupting effects, bio-accumulative, high acute and chronic effects on plants, animals and micro-organisms.
Cadmium	Printed circuit boards and other components as semi-conductor, PVC stabiliser	Bio-accumulative and toxic with possible risk of irreversible effects on human health and the environment. May cause cancer with prolonged exposure.
Inorganic Mercury	Thermostats, relays, switches, discharge lamps, printed circuit boards, medical equipment and telecommunication equipment (such as mobile phones). It is estimated that 22% of the annual world consumption of mercury is used in EEE:	Transformed into methylated mercury in sediments. Bio-accumulative and persistent and causes damage to the brain. Mercury alkyls and inorganic compounds are classified as very toxic by inhalation and dangerous for cumulative effects.
Chromium (VI)	Used as colorant in pigments (lead chromate) and as a corrosion inhibitor for metallic components.	Easily absorbed and produces various toxic effects at the cell level. Causes severe allergic reactions, asthmatic bronchitis, is genotoxic and potentially damaging for DNA
Brominated Flame retardants – Poly Brominated Diphenyl Ether (P BDE), Poly Brominated Biphenyls (PBB), Deca BDE and Octa BDE	Printed circuit boards and components such as connectors, plastic covers and cables for flamibility protection. Octa and Deca BDE in computer cases, TV and small household appliances.	Affect liver enzyme production, negatively affect thyroid hormone system and induce immunotoxicity. Induce neurotoxicty when administered at sensitive period of brain growth. Soluble in landfill leachate and potential for forming brominated dibenzodioxns or furans in certain temperature ranges of thermal processes and in the recycling of plastics (thermal stress of shredding, extrusion and smelting). Bioaccumulative and persistent - Tetra and Penta BDEs found in marine environment food chain. Indications of Penta BDE and Octa BDE accumulation in breast milk. Indications exist that

		Deca and Octa BDEs undergo debromination to Tetra and Penta BDEs [3].
Other halogenated flame retardants - Short chained chlorinated parafins	Used in rubbers, paints and coatings – in hoses, gaskets and conveyor belts	Bioaccumulate in fish and molluscs[4] , may cause long term irreversible effect in the environment (classification under EU Dangerous Substances Directive)
Organic Liquids - mixtures of substances belonging to group of phenylcyclohexanes, alkylbenzenes and cyclohexylbenzenes	Liquid Crystal Displays (more than 2000 individual chemical formulations)	Not clear. Neither the chemical structures, nor environmental/health related properties are widely known and evaluated due to commercial secrecy. "Toxicological studies on a large number of single LCs were performed according to OECD guidelines and EU regulation."… however "Only mixtures are put on the market.[5]" *Recent study by Merck, Sept 2001 on its own liquid crystals. Claims that they posses no acute toxic effects – but do they have non-acute effects, do they use cadmium, what are the effects of the mixtures marketed? We have to know more, and not just on the Merck LCs*
Beryllium	In copper alloys for contact springs	Toxic to Aquatic organisms. Beryllium metal and compounds very toxic by inhalation and classified as a cat.2. carcinogen by inhalation (classification under EU Dangerous Substances Directive).
Copper, Gold, Platinum, Silver, Antimony, Barium and Tin	Circuitry	Harmful, toxic or very toxic to aquatic organisms.
Indium, gallium and other rare earth metals	Optical sensors, super conductors	??

Recognition of hazardousness and the need for risk reductions has been has been given through a variety of iniciatives on identification and listing of chemicals to eliminate from use namely:

- listing of 30 priority chemicals as part of the OSPAR process, to be eliminated before 2020 in waste water being discharged into the North Sea (taking into account that some electrical equipment containing electronic components could have lifespans of 10-15 years, this gives us approx. 3 years left to ensure that no such EEE from which there is the risk of release of OSPAR chemicals, is produced)
- the Swedish inspired selection in the OECD of about 40 sunset chemicals'
- the Danish identification of approx. 100 so-called 'unwanted chemicals',
- the POP convention – identifying PCBs, dioxins and other POPs for elimination/ban

The solutions:

As a response to these concerns, the EU Institutions are currently refining a proposal for the directive on ROHS. The main functions of the directive is:

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[3] Sellstrom, U., Kirkgard, A., de Witt, C., Jansson, B. (1998): Photolytic debromination of decabromodiphenylether. Organohalogen Compounds, Vol. 35: 447-450 (1998).
[4] EU Risk Assesment Report on alkanes,C_{10-13}, *chloro* European Chemical Bureau, December 2000
[5] EUROMETAUX Guidance Document on the Appliance of Substances under Special Attention in Electric and Electronic Products, version 2 - November 30, 2000

- Prevention of some the direct Health and Eco-toxic impacts of EEE related with its end-of-life phase – namely through the phase-out of Hg, Cd, Pb, Cr^{6+} and PolyBrominated Diphenyl Ethers (PBDE) and Poly Brominated Biphenyls (PBB) by 2006/2007.

The phase-out of Hg, Cd, Pb, Cr^{6+} and PolyBrominated Diphenyl Ethers (PBDE) and Poly Brominated Biphenyls (PBB) by 2006/2007 proposed in the EU ROHS directive is an important start. Whilst still in the proposal stage it is already causing shifts in production and manufacture of EEE, on an international scale.

> Case of international shift towards lead-free solder - The Japan Electronics and Information Technology Industries Association (JEITA) reported survey results on the present status of the use of lead-free solder and its forthcoming trend for practical use. The report says that devices using electronic parts with lead-free solder and lead-free plating will be increasingly marketed from 2002 to 2003. Taking into account the European regulation, most makers are expected to comply with full lead-free status by 2005. Only a few makers have to wait until 2006. (Hirotaka Ito, Staff Editor, Nikkei Electronics) July 12, 2002 (TOKYO)

The continual evaluation and evolution of the hazardous substance lists is part of the solution. The other vital part is to continue the work begun in ROHS, translating these lists into time-framed commitments to identify and phase-out other hazardous substances in EEE – starting with remaining halogenated flame retardants, short chain chloro parafins (?), other hazardous heavy and rare earth metals, PVC etc

> Case of LCDs (world production of LCs in 1998 – 40 tons[6] - 40 tons may seem small quantity but depends on its potency - currently unknown) - LCD screens in very many miniature products that can slip through the net of collection (miniaturised watches in bracelets, the now famous British phenomena singing socks toys etc) – small products which likely to slip through collection net should be especially / rigorously restricted in their hazardous substance use. However instead of singling out the smaller appliances probably easier to just apply phase-out across the board.

At the end of the day it is a question of how we can most rapidly transform these environmental drivers such that they can clearly orientate the Electronics industry, both within Europe, and through the European manufacturers supply chain, to the international manufacturing scene. Providing such leadership appears to be the surest way to encourage international coherency – as we have seen with the case in lead solder.

3. Climate Change.

The environmental driver:

We all hear about the climate change issue almost daily, but just to recap. Mean sea level is expected to rise 15-95 cm by the year 2100, causing flooding of low-lying areas and other damage. Climatic zones could shift towards the poles by 150-550 km in the mid-latitude regions. Forests, deserts, rangelands and other unmanaged ecosystems would face new climatic stresses. As a result, many will decline or fragment, and individual species will become extinct. The climate change challenge the EU has undertaken under the Kyoto Protocol is an 8% cut in emissions of GHGs (CO_2, CH_4, Nitrous Oxide - N_20, Hydrofluorocarbons - HFCs, Perfluorocarbons - PFCs and Sulphur Hexafluoride - SF_6) by 2008-2012. However, this will not be the end of the story: there will be a Kyoto II, and III: Pioneers in contributing to the radical global CO2 cut, needed in the course of this century, will be the winners in global competition. They do first, what others will have to do sooner or later. Legislation has to ensure that the first mover advantage of the pioneers materialises. Next to fuel switch energy efficiency plays a key role in achieving climate change targets.

The problem of climate change as it relates to eco-design is essentially linked to energy efficiency in the use and manufacture phases, energy sourcing in the manufacture and disassembly phases and the handling

[6] EUROMETAUX Guidance Document on the Appliance of Substances under Special Attention in Electric and Electronic Products, version 2 - November 30, 2000

of refrigerant gases with global warming potential (Hydrofluorocarbons - HFCs, Perfluorocarbons - PFCs and Sulphur Hexafluoride - SF_6).

To give an idea of the potential of use phase energy efficiency measures, it is estimated in Germany, that simply by getting rid of the standby mechanism in electronic and electrical equipment it would be possible to forgo the output of one Nuclear power plant. Unfortunately I do not have the extrapolation figures that this would imply for the EU 15 – but taken in the context of a the current threat renewed investment in nuclear energy – I think it puts the importance of EEE eco-design in an interesting context.

The solutions:

The solutions here can be divided up into 4 fronts:

A) Elimination of refrigerant gases with significant GWPs
B) Moving energy sourcing for manufacture and disassembly phases to renewables
C) Increasing equipment lifespan and upgradability
D) Energy efficiency in the use phase of EEE

A) Elimination of refrigerant gases with significant GWPs

Another part of the solution is phasing out of all refrigerant gases that have a global warming potential above 15. Eg: Refrigerator EU Ecolabel criteria: The refrigerants in the refrigerating circuit and foaming agents used for the insulation of the appliance, shall have a global warming potential equal to, or lower than, 15 (rated as CO2 equivalents over a period of 100 years).

B) Moving energy sourcing for manufacture and disassembly phases to renewables

The contribution of the manufacture and disassembly phases of the EEE should move towards increased emphasis on renewable energy sources – hypothetical eg: - the energy consumption at manufacturing of the EEE can be maximum 75 % of the state of the art in industry for this type of product and at least 10 % of the energy consumption must be based on renewable resources (wood, wind, water, sun).

C) Increasing equipment lifespan and upgradability

A minimum life span and design for upgradeability should be demanded in order to 'spread' the energy demands of manufacture and end-of-life over a greater service-span eg: Personal Computer EU Ecolabel criteria: guarantee for functioning minimum 3 years and obligatory space for new RAM, hard disk, CD drive and DVD drive.

D) Energy efficiency in the use phase of EEE

The solution for moving EEE design towards use phase energy efficiency has been complicated by a rather piecemeal approach – including:

- The EU framework Directive on energy labelling, originally set up to define levels of energy efficiency in cold appliances (A-G). Currently being discussed with a view to extending it beyond its current scope of cold appliances, and establishing a procedure for the regular upgrading of the grades

- Individual regulative iniciatives on equipment such as for domestic boilers (1992), domestic fridges (1996) and fluorescent lighting (2000).

- More recently the proposal by the Transport and Energy Directorate of the Commission for a Framework Directive on energy efficiency requirements.

Hopefully the latest initiative can be used to create an umbrella and a common guiding framework for future and historical initiatives.

The situation is further complicated by the promotion of voluntary initiatives by industry (*CECED, has proposed a voluntary agreement on energy efficiency labelling covering the period to 2008 and introducing A+ and A++ ratings for the new generation of more efficient fridges, at the same time CECED is against reviewing of entire scale A-G)* and,

the preference of DG TREN for a "*co-regulation*" *(voluntary agreements under the shadow of the threat of regulation as long as they deliver the savings potential and are agreed relatively swiftly)* approach to the product group daughter directives necessary under the eneregy efficiency FWD. *Negotiations continue between the Commission and EICTA, the European Information, Communications and Consumer Electronics Technology Association, on a voluntary agreement on the energy efficiency of household consumer electronic products. Initially, this would cover televisions, DVDs and VCRs. A second draft of the proposal, including provisions for an agreement for TVs, was issued by EICTA in May.*

The question is what measures are necessary to translate the environmental drivers into the drivers for environmentally conscious design.

Are voluntary agreements sufficient?

Voluntary agreements by the very nature of the partners involved will tend towards reflecting what industry thinks is feasible given the CURRENT state of innovation – ie they will tend to reflect the next stepping stone in the technical trend. These technical trends are usually driven by what the designers and CEOs perceive as the challenge for innovation – while these may also include the environmental drivers they are rarely defined in direct relation to the dimension or the timetable of the global (eg EU 25) environmental challenge.

So we need something more. What about standards?

Standards, such as those defined by CEN, are normally based on harmonisation principles, and defined in traditional industry dominated forum with no real access and influence for the counter balance of ENGOs and National Environment Ministries. Whilst they may have serve the function of "cutting off the tail", ie eliminating the very worst performers, they typically represent environmental criteria nearer to the lowest common denominator rather than the highest possible achievable. Again they bear no relation to the dimension or the timetable of the global (eg EU 25) environmental challenge

And labelling?

Labelling – such as for energy efficiency and the EU Eco-label - is primarily driven by consumer demand (either final consumer or in the supply chain). Whilst there is some pressure evident, especially in Northern EU countries, but not so much in S and E EU, and it is probably yet enough to achieve the absolute changes necessary. It is difficult to co-ordinate concrete target achievement from the consumer side although it is definitely an important factor and labels often act as unofficial benchmarks in industry even when they are not officially adopted.

Which leaves us with the option of the political setting of absolute targets, in fora that are acessible to environmental and consumer concerns and that clearly reflect the environmental drivers and the global environmental context. ie how much does the Electronics industry as a whole have to reduce its energy consumption in the EU 25 and by how many tonnes does it have to reduce its GHG emissions by? These need to be studied, discussed and set.

There is no reason why the final solution shouldn't be a mix of all three as long as they are clearly defined and linked together, for example one of two possible scenarios could be imagined:

1. providing industry with the oportunity for voluntary action in the shadow of a CREDIBLE legislative threat (CREDIBLE = timetables and targets on specific criteria)

2. setting political targets in a legal framework and allowing industry to figure out how to implement in the timeframe given

Example in EUROMETAUXs own Guidance Document[7] where it attributes the decrease in international exposure to lead to legislation. But at same time admits that ´*the rate of recycling for lead from WEEE is mainly limited by the rate of collection of end-of-life products and not by technological barriers´*. This highlights that we are not just dealing with the technical realities but also social realities. In other words it may not be sufficient to just move the next step in design evolution in order to address environmental impacts, but it may instead be necessary to achieve entire design shifts compatible with social realities. It is unlikely that voluntary agreements will have the breadth of stakeholder input necessary to anticipate these kinds of shifts.

Eg: electronic tagging necessary to ensure high levels of collection through remote detection of WEEE in municipal waste for example.

2. Progress

In terms of progress the impression that we, as ENGOs have, without an exhaustive quantitative survey, is that the levels of environmentally conscious design are still very low. Low in terms of numbers of individual products available or in the pipeline, or number of product categories that have an eco-design member, and very low when we consider the total contribution of these eco-designed products actually have in terms of making a dent in the total environmental burden that electronic equipment, in its totality , represents – in its manufacture phase, its use phase and its end-of life phase. Ie the absolute environmental progress. . I stress the word absolute (whereby we mean progress relative to the global (national or EU wide) environmental targets).

One of the reasons it is actually still impossible to perform quantitative surveys on the progress of eco-design is the very fact that there is no generalised definition of what eco-design actually is for electronics and electrical equipment.

It is the old story – it is all very well miniaturising here (eg mobile phones or computer components) or eliminating a substance there (SONYS, Fujitsu, NECs and Panasonics pledge to adopt lead free solders in 2001-2002) if on the mass balance the total quantites of Lead, Cadmium, Chromium, Mercury, Brominated Flame retardants etc going into circulation in our society is increasing, or rather is not decreasing enough. These substances and the equipment that contains them will sooner or later reach the reuse, re-cycling or disposal phase and we will have to expend huge efforts to try and prevent them being released into the environment.

And this is just the aspect of hazardous substances – the same mass balance logic applies to aspects such as virgin material use and energy consumption. We may have electronic equipment that is using 10 times less material or consumes 10 times less energy but if the mass environmental balance still means that we, collectively are increasing our virgin material and energy consumption to build our electronics and consuming, globally, more energy to use them - due mainly to their proliferation - then the ´progress´ is not enough. To achieve this kind of progress we will need more than the isolated efforts of individual, usually the bigger manufacturers, to eco-design – although their efforts can also have knock-on effects on supply chains and moving market ´norms´ - we need a MASS SHIFT in the minimum levels that ALL Electronic equipment respects on some basic criteria. And we need to be able to identify the benchmarks that show the way to moving these levels upwards…

It is very important when we talk about progress that we do so in a framework of what we ultimately want to achieve, and not in isolation.

[7] EUROMETAUX Guidance Document on the Appliance of Substances under Special Attention in Electric and Electronic Products, version 2 - November 30, 2000

I look forward to the day in a hypothetical future, when a sector of industry, maybe the Electronics industry, proudly presents its EU25 Biannual Eco-Design Balance – which could read something along the lines of - "

- *Total mass flows of consumption of plastics, steel, aluminium, precious metals in EU 25 is down 80% compared to the year 2002,*
- *use of non eco-toxic, renewable materials now accounts for 80% of total new materials used,*
- *total through-put of the 50 hazardous substances, as listed under the Eco-design Framework is at zero,*
- *sectoral energy consumption (sum of manufacture, use and end-of-life) has reduced to 50% of 2002 levels and the company eco-profiles enable estimates that 80% of manufacture and disassembly energy demand is derived from renewable sources,*
- *recycling levels of materials is at 98%, closed loop practically achieved, average per capita WEEE production is down to 250g.*

This is a vision of progress. The environmental drivers set the criteria, and the targets. We have to set up the framework and develop the tools which will address it.

3. How?

The framework to achieve this can be set up in a focussed and problem oriented EEE Eco-Design / (Integrated) Product Policy process, which lays down essential requirements, for example:

- Minimum performance levels to be achieved in critical aspects (energy efficiency, energy sourcing, virgin materials usage, recycled and renewable materials usage)
- Orientations for the dimension of improvement needed (e.g. energy efficiency targets, recycled material targets)
- Identified priority issues for improvement (e.g. hazardous substances beyond the ROHS directive, energy efficiency, water use) on the basis of the 6th Environmental Action Programme and a screening of the most relevant environmental aspects of different groups of electronics.
- Key issues to be addressed (e.g. an obligatory switch off function – in addition to stand-by)

It also should establish other requirements, such as:

- Benchmarking with best practice and state of the art,
- Establishing grades (or classes) of performance
- Imposing the burden of proof for compliance with minimisation objectives upon producers
- Transparent decision-making (e.g. by documenting assessment of different options and justification requirement, why not the best performing option has been chosen).
- A choice on which standards are needed
- Information flow down production chain, to end consumer and to recycler/re-user

4. Convergence and coherence – possible with voluntary agreements and individual iniciatives?

We frequently hear from industry calls for coherence and convergence – especially on the International framework. We would suggest that to achieve such coherence and convergence – start with a strong, EU 25 coherent EEE Eco-Design / (Integrated) Product Policy Framework, and let the world follow.

This would also avoid the confusion that can be created by the variety of voluntary individual iniciatives that are arising from individual company's. Especially when they cause 'competition' between the various schemes an their different criteria. These only causes confusion in the supply chain and for the final consumer and does not in the end benefit the credibility of such initiatives.

5. The directive on the impact on the environment of electrical and electronic equipment (EEE)

EEB requests – the EEE directive be returned to its correct orientation – design for the environment, not market harmonisation. It should be devolved to the the adequate promotor - DG Environment. Here it can be treated as the practical forerunner of the new IPP structure focussing on Product Groups. Not wait for IPP to be defined but start work immediately with EEE as a Product Group in form of targeted action to address the three key issues outlined above. This experience will help to define how other Product Groups can be addressed and help to define a general IPP framework.