The issues at stake

4. Member States shall take the necessary measures to ensure that the financial contributions paid by the producer of the product to comply with its extended producer responsibility obligations:

(b) in the case of collective fulfilment of extended producer responsibility obligations, are modulated, where possible, for individual products or groups of similar products, notably by taking into account their durability, repairability, re-usability and recyclability and the presence of hazardous substances, thereby taking a life-cycle approach and aligned with the requirements set by relevant Union law, and where available, based on harmonised criteria in order to ensure a smooth functioning of the internal market; and

(c) do not exceed the costs that are necessary to provide waste management services in a cost-efficient way. Such costs shall be established in a transparent way between the actors concerned.

Wish list

Constraints

Durability
Repairability
Re-usability
Recyclability
Presence of hazardous substances

…where possible…

Modelling the impact of life extension on waste generation

Assessing the impact of lower recycling costs

Administrative burden of implementation and monitoring
Eco Modulation in other countries

France (2006~)
- Éco-Participation (contribution)
- Bonus and Malus for EEE: different criteria for each appliances

Ontario, Canada (2021~)
- 3 criteria on the products in legislation (IT/CE/Lamps)
- Products meeting the criteria are subject to “discount” of POM weight (lower payments/responsibility)
- Criteria based on recycled content, extra warranty (5% discount each extra year), info/tools on repair/spare parts (10% discount)

Taiwan (1994~)
- Green-Mark & 4-in-1 Recycling Program
- Reduced recycling fee for Green-Marked home appliance & IT products
- Recycling funds that subsidize, promote, monitor, and reward waste management

Italy (2016~)
- Voluntary approach
- Criteria based on use of recyclable/biodegradable materials, reduction variety of materials, increase recyclability, reduction HZ substances, optimization disassembly
- Up to 20% discount on POM (valid for 1 year only)

South Korea (2003~)
- Obligation target of E-waste recycling: 7.04kg/person
- Malus of additional recycling fee (+15 to 30%)
Example France: Refrigerators & Freezers

- **Hazardous substance**
  - Presence of refrigerant with GWP > 15

- **Information**
  - Failure to provide technical documentation for electrically authorised repairers

- **Repairability**
  - Unavailability of essential spare parts for equipment use

20% fee increase for any criteria satisfied
Steps to define potential products for eco-modulation

1. Narrow down initial list of products (POM)
2. Ranking based on multiple criteria
3. Analysis of life extension
4. Potential products for eco-modulation
Criteria for ranking products for eco-modulation

Highest rated products considering a point-based scale

1. Market presence: POM (Creating impact)
2. Share PRO turnover (Driving Industry)
3. Incidence of costs gap in price (Influencing consumer choices)
4. Economic incentive space (EU as single market)
Initial list of 15 products: market penetration (POM)

<table>
<thead>
<tr>
<th>UNU Key</th>
<th>Product</th>
<th>POM (%) 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>0111</td>
<td>Air Conditioners</td>
<td>3.3%</td>
</tr>
<tr>
<td>0109</td>
<td>Freezers</td>
<td>3.6%</td>
</tr>
<tr>
<td>0108</td>
<td>Fridges</td>
<td>16.2%</td>
</tr>
<tr>
<td>0303</td>
<td>Laptops</td>
<td>1.6%</td>
</tr>
<tr>
<td>0309</td>
<td>Flat Display Panel Monitors</td>
<td>1.9%</td>
</tr>
<tr>
<td>0408</td>
<td>Flat Display Panel TVs</td>
<td>5.0%</td>
</tr>
<tr>
<td>0105</td>
<td>Dryers</td>
<td>3.5%</td>
</tr>
<tr>
<td>0102</td>
<td>Dish washers</td>
<td>5.6%</td>
</tr>
<tr>
<td>0104</td>
<td>Washing Machines</td>
<td>21.1%</td>
</tr>
<tr>
<td>0404</td>
<td>Video and projectors</td>
<td>2.5%</td>
</tr>
<tr>
<td>0204</td>
<td>Vacuum Cleaners</td>
<td>4.2%</td>
</tr>
<tr>
<td>0114</td>
<td>Microwaves</td>
<td>5.7%</td>
</tr>
<tr>
<td>0306</td>
<td>Mobile Phones</td>
<td>0.3%</td>
</tr>
<tr>
<td>0302</td>
<td>Desktop PCs</td>
<td>2.0%</td>
</tr>
<tr>
<td>0304</td>
<td>Printers</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

- 81% of POM (2018)
- 73% of the WG (2018)
- 845 M€ of treatment costs (61% of total)
Potential impacts on consumer behavior

- 10 schemes considered across Europe
- A high share of PRO turnover represents that there is an incentive to do eco-modulation.
- The higher the impact of compliance fee on product price, the higher the potential impact of eco-modulation on consumer behaviour (*further analysis of price elasticity is required).
- Ideally, the products with higher potential for eco-modulation would be located on the top right side.
- Considering a threshold of 2%, for example, only fridges and freezers would be good candidates. If there is an additional threshold of at least 50% of share on PRO turnover, only fridges would be modulated.
Potential impacts on industry behavior

- 10 schemes considered across Europe
- The higher the impact of net treatment costs on product price, the higher the potential impact of eco-modulation on industry behaviour.
- Ideally, the products with higher potential for eco-modulation would be located on the top right side.
- Considering a threshold of 1%, for example, only fridges and freezers would be good candidates. If there is an additional threshold of at least 50% of share on PRO turnover, only fridges would be modulated.
Analysis per product to determine PRO averages

Air Conditioners (household installed and portable)

PROs average

Impact of net treatment costs on product price

Desktop PCs (excl. monitors, accessories)
Costs related to treatment

Costs related to disposal of non-hazardous fractions from treatment operations

Costs related to proof of legal compliance and service level, and implementation of standards

Costs related to de-pollution

Costs related to disposal of hazardous fractions from de-pollution activities

Most favourable scenario for green products: - 50%

Most favourable scenario for green products: 0 €/t

No reasons to believe green products will trigger savings in those cost categories

Are Greener Products leading to treatment cost reduction?
Are Greener Products leading to treatment cost reduction?

It was calculated the reduction in recycling costs considering the average costs from EERA and a scenario of green products’ costs.

The higher the variation in costs, the biggest the space to fee modulation.

Fridges, freezers and air conditioners have the biggest space.

Some appliances have “structural cost” hard/not possible to reduce (e.g. PUR in TEE, CFC/HCFC still in return streams,…)

Cost for sorting out “green” products to exploit the actual benefits might be much higher compared to benefits (e.g. no-one is sorting out CFC/HCFC fridges to treat differently from HC).

*Green products recycling costs calculated considering cost reduction in depollution (50%) and hazardous waste disposal (100%)
Impact of treatment cost variation paid by PROs on product price

It was calculated the potential variation in recycling costs considering the scenarios of 30% decrease in costs (green products) and 30% increase. Base value is the average reported by schemes.

The higher the variation, the biggest the space for fee modulation. Fridges, freezers, air conditioners and washing machines have the biggest space.

The percentages indicate the incidence of the total variation (maximum cost – minimum cost) on the average product price.

- Fridge
- Freezer
- Air Conditioners
- Laptops
- PDP Monitors
- PD TV
- Microwaves
- Vacuum Cleaners
- Video
- Desktop
- Printers
- Mobile Phones
- Dishwashers
- Washing Machines
- Dryers
Economic incentive space (100% of compliance fee)

- Is the total amount relevant to business?
- Is the value of eco-modulation comparable to product margins?
- Can the eco-modulation be applied when negotiating with distribution channels?
Is there political and operational room to implement Eco Modulation?

**Harmonization is KEY**
Producers will only implement if harmonized across EU

**Limited scope is KEY**
- Focus only on recyclability & phase out of hazardous substances (e.g. PVC)
- Incentivize recycled content
- Decoupled from real EOL cost savings.

**Simplicity is KEY**
- Only one criteria per product, possibly the same across categories
- Clearly auditable

**Additionality**
The value of the modulation will not be the main trigger, but an additional benefit
**Impact on treatment costs: summary**

<table>
<thead>
<tr>
<th>Cost reduction</th>
<th>Compliance Fee</th>
<th>Expectation</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is no much room to reduce technical treatment costs through greener products.</td>
<td>The variance observed on compliance fee across EU is mainly linked to the return rate of products (and partially to differences in recycling costs).</td>
<td>PROs are expecting costs to increase to meet ambitious collection target and thus an increase of the fees.</td>
<td>When considering the potential of cost reduction, the corresponding modulation will not be enough to influence consumer’s choices.</td>
</tr>
</tbody>
</table>
Impact of life extension: case of washing machines

Life extension: e.g. repairability, availability of spare parts, etc.

Assumptions
- Lifetime of green products = 50% longer (e.g. washing machine 19 vs 12 years)
- Share of green products on the market = 20%
- Sales 2018 onwards = constant
- Stock = constant (longer lifespan with same POM would lead to increase of stock = POM reduced as effect of green products)
Changes in WG over time: Washing Machines

- 8% WG in 2030 BUT mainly linked to - 10.5% POM (to keep stock constant)

LESS WG = LESS operational cost BUT also LESS POM and SAME fees to be paid by producer

Refrigerator
- 6.9 % WG in 2030
BUT mainly linked to -11.5% POM (to keep stock constant)

TV
- 8.7 % WG in 2030
BUT mainly linked to -13.5% POM (to keep stock constant)
Impact of life extension (e.g. repairability, availability of spare parts, etc...)

When it comes to repair, #DontDespair

| 205 M units placed on the market in 2018 |
| €1,9 bn industry turnover for repair & service |
| 91% of the requests actually repaired |
| 29,000 business partners in repair and after-sale services |

<table>
<thead>
<tr>
<th>Costs</th>
<th>Small appliances</th>
<th>Large appliances</th>
<th>Cooling &amp; Freezing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare parts</td>
<td>44%</td>
<td>39%</td>
<td>29%</td>
</tr>
<tr>
<td>Labour</td>
<td>33%</td>
<td>44%</td>
<td>30%</td>
</tr>
<tr>
<td>Transport</td>
<td>15%</td>
<td>16%</td>
<td>16%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
<td>1%</td>
<td>25%</td>
</tr>
</tbody>
</table>

According to data collected from APPLIA’s membership, 91% of the requests to manufacturers for a repair of a product resulted in an actual repair in 2018. Breaking down the cost for repair activities, for large appliances for instance, the biggest chunk is the labour cost, representing 44%; 39% of the average price for a repair is the cost of the spare parts; 16% goes to transport and 1% are listed as other costs.
Impact on life extension: summary

Consumers
There are no data to support/assess how much consumers will be willing to keep a product in use via repair/maintenance (or because of increased durability) and support the waste reduction concept.

Lower WG
Reduction in waste generated is mainly linked to lower sales.

Repair costs
One of the main cost item in (safe & proper) repair activities is labour.

Increase Stock
Increase of Stock Keeping Units (SKU) might also have a cost which goes beyond the effects of eco-modulation.
**Summary and way forward**

1. **Eco-Modulation**
   
   Discussion is highly political and there are no evidences/facts to prove the effectiveness of measures (eco-design & consumer choices re-orientation).

2. **WFD**
   
   WFD was amended before the publication of EU Green Deal and particularly the SPI.

3. **SPI**
   
   Being a more holistic measures, SPI is probably a better vehicle to discuss and include some of the Eco-modulation principles or aims.

4. **PROs**
   
   A re-discussion of PRO roles might also happen in parallel to understand what role they can play.
Thank you

Federico Magalini
Federico.Magalini@sofiesgroup.com