Council of the European Union

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ENER 371
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COVER NOTE

From:	Secretary-General of the European Commission, signed by Ms Martine DEPREZ, Director
date of receipt:	16 June 2023
To:	Ms Thérèse BLANCHET, Secretary-General of the Council of the European Union
No. Cion doc.:	SWD(2023) 101 final part 6/7
Subject:	COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT REPORT Accompanying the documents Commission Regulation laying down ecodesign requirements for smartphones, mobile phones other than smartphones, cordless phones and slate tablets pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) 2023/826 and Commission Delegated Regulation supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to the energy labelling of smartphones and slate tablets

Delegations will find attached document SWD(2023) 101 final part 6/7.

Encl.: SWD(2023) 101 final part 6/7

EUROPEAN
COMMISSION

Brussels, 16.6.2023
SWD(2023) 101 final

PART 6/7

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT REPORT

Accompanying the documents

Commission Regulation

laying down ecodesign requirements for smartphones, mobile phones other than smartphones, cordless phones and slate tablets pursuant to Directive 2009/125/EC of the European Parliament and of the Council and amending Commission Regulation (EU) 2023/826

and

Commission Delegated Regulation

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to the energy labelling of smartphones and slate tablets

{C(2023) 1672 final} - {C(2023) 3538 final} - {SEC(2023) 164 final} -
{SWD(2023) 102 final}

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Annex 10: Impacts of the policy options

SOCIAL IMPACTS

With products with longer lifetime, one could expect an increase of jobs in the second-hand sector (repair, refurbishment, remanufacturing). This will require the workforce to learn new skills. The skills needed are related to different fields (digital, electrical, electronic and mechanical), as the repair and refurbishment of mobile phones (and tablets) entails the need of specific knowledge for (at least):

• Identifying different types of mobile phones, and, further, the parts of a mobile cell phone;

• Recognising potential hazards in the repair of mobile phones;

• Using the correct hardware and software tools to repair mobile phones;

• Assemblying and disassemblying a mobile phone;

• Identifying mobile phone faults and solve them.

Based on consultations with repairers' organisation, it emerged that, while the assembly and disassembly operations at component level (e.g.: battery) are considered routinary workwhich can be learnt in a relatively simple way, the repair operations entailing the need of using hardware/software tools and identifying the fault modes are the most complicated ones.

There are several organisations from the Social and Solidarity Economy (SSE) sector active in repair and refurbishing sectors and this will bring positive social impact, as these organisations often recruit people from vulnerable social groups.

Consumers may face an increase in purchase price, but it is likely to be compensated by a lower life-cycle cost because of increased durability resulting in longer lifetime of products and improved efficiency. However, the increase in acquisition price, up to 5% and not more than 5 EUR, would be limited, so even lower income groups of society with limited purchasing power would not face major difficulties in purchasing these products.

I. Employment

The estimated figures are direct jobs, i.e., jobs in the value-added chain. Indirect employment effects may be a factor 3 to 5 higher, but no consensus agreed factor is available (European Commission, 2019)[1].

Smartphones, feature phones and cordless phones

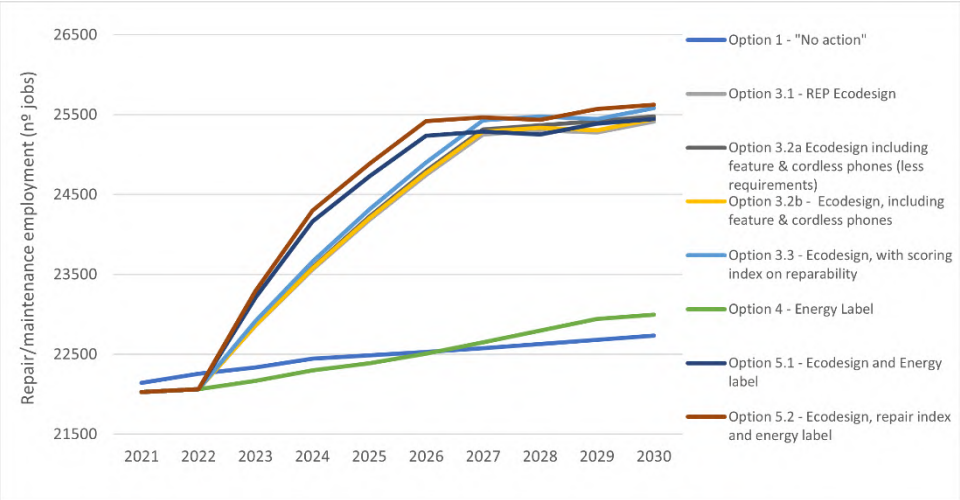
The biggest effects on EU **employment** are related to the numbers involved in the **repair and maintenance** sector. With **Method A** (Figure 46), it can be estimated that under no action and if 10% of old smartphones (information for France shows that refurbished smartphones accounted for 10% of the overall sales volumes in the country in 2017; Dekonink, 2018)[2] and 2% of old feature phones were to be refurbished, about 22,700 jobs

[1]European Commission, 2019. Ecodesign Impacts Accounting, Overview Report 2018

[2] Dekonink, B. (2018), "Smartphones reconditionnés : un marché en pleine accélération'', Les Echos

would be required for this process in 2030. The increase in the level of employment is small under *Option 4* (23,000 jobs). It raises up to 25,400 jobs in sub-o*ptions 3.1, 3.2a, 3.2b,* and *5.1*, and up to 25,600 under sub-o*ptions 3.3* and *5.2*.

Figure 46: Smartphones, feature and cordless phones. Annual employment in the EU repair and maintenance sector, 2021-2030 (Method A)



European Commission (2018)[3] estimates that 67% of the repairs in the Information and Communication Technologies sector are done by **professionals** and 33% are undertaken by **other types of repairs** (repair cafés, self-repair, etc.). Assuming that self-repair, repair cafés, etc. do not require formal jobs, only professionals (67% of the total estimated) are of interest: 17,200 jobs under *sub-option 5.2* (method A) is the highest value (see Annex 4 for further details on the number of jobs by market player).

Sensitivity analysis

Under a more ambitious refurbishment scenario assuming a **20% rate for smartphones and 4% for feature phones** from 2022 - 2030, 46,000 to 51,000 jobs would be achieved in this sector. A 20% refurbishment rate is supported by a behavioural experiment which found that 20% of consumers tend to buy a second-hand smartphone (Cerulli-Harms et al., 2018)[4]. Applying an even more ambitious **rate of 30% for smartphones and of 6% for feature phones**, the number of jobs increases significantly: 68,000 - 77,000 jobs would be required to refurbish the devices, depending on the policy option. Assuming that these devices are refurbished in Europe, this indicates that there may be employment opportunities in the EU refurbishment sector. This assumption rests on the following considerations. There are several advantages to refurbishing devices in Europe as compared to outside. First and foremost, having a refurbishment service company nearby means that consumers have better access to the devices and can physically compare them. In general, this provides more

(https://tinyurl.com/y6hj2oab).

[3] Socio-economic analysis of the repair sector in the EU. Study to support ecodesign measures to improve reparability of products. Final Report and Annex: Member State Reports

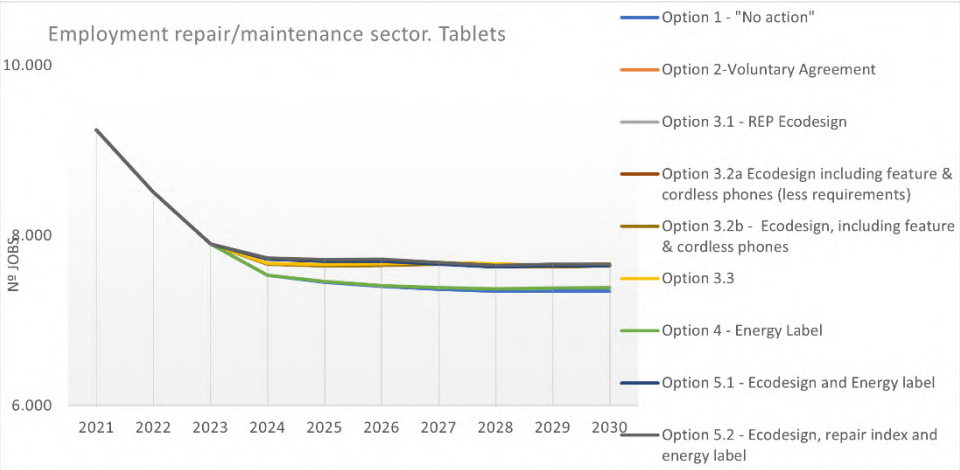
[4] Cerulli-Harms, A. et al. (2018), "Behavioural Study on Consumers' Engagement in the Circular Economy - Final report" (https://tinyurl.com/y98plym5).

confidence during the purchasing process. Secondly, from a logistics standpoint, turnaround time is minimised by proximity, and so too are shipping costs. Based on this, it is assumed that refurbishment taking place in the EU is both a consumer preference and an overall time and cost saving measure benefiting the value chain. Similar assumptions are made in recent papers[5, 6] analysing the environmental impacts of repairing refurbishing, and/or recycling smartphones; in both cases it is assumed that collection, recycling, refurbishing and remanufacturing all take place in the EU.

Assuming that only professional repair involves employment, the maximum number of jobs when 20% of old smartphones (4% of old feature phones) were to be refurbished is 34,300 (under *sub-option 5.2*). Approximately 51,500 EU-wide jobs would be required with *sub-option 5.2* when a 30% refurbish rate is assumed for smartphones (6% for feature phones).

For *tablets*, as with phones, the biggest effects on employment are related to the numbers involved in the **repair and maintenance** sector (Figure 47). With **Method A**: under "no action" and in a scenario where 10% of old devices were to be refurbished, about 7,350 jobs would be required for this process by 2030. This implies a current negative trend in labour sector. This reduction on the level of employment is smaller with other options, e.g., 7,600 jobs under sub-o*ptions 3.1, 3.2a* and *5.1*, and 7,700 jobs under *sub-option 3.3 and 5.2*. *Option 4* barely improves the "no-action" number of jobs, this is 7390. Considering that only professional repair requires jobs, the maximum level of employment would be 5,140. (See Annex 4 for details).

Figure 47: Tablets. Annual employment in the EU repair and maintenance sector, 2021-2030 (Method A)



Sensitivity analysis

Under a **20%** refurbishment rate from 2022 - 2030, the negative trend will switch achieving 15,300 jobs under sub-o*ptions 3.1, 3.2a* and *5.1*, and 25.331 under *sub-options 3.3* and *5.2*. With *Option 4* (Energy Label), the number of jobs would be 14,800. Applying a more

[5] https://link.springer.com/content/pdf/10.1007/s11367-021-01869-2.pdf
[6] https://www.fairphone.com/wp-content/uploads/2016/11/Fairphone_2_LCA_Final_20161122.pdf

ambitious rate of 30%, 22,160 (O*ption 4*) to 22,900 (sub-o*ption 3.1* and *5.1*) would be required, being 23.000 for reparability index sub-options and *sub-option 3.2a*. Assuming that only professional repair involves new employment, the maximum number of new jobs when 20% of old devices were to be refurbished is 10,270 (with *sub-options 3.2a, 3.3* and *5.2)*. Approximately 15,400 professional jobs (*sub-options 3.2a, 3.3* and *5.2*) would be required when a **30%** refurbish rate is assumed.

II. Affordability

From the perspective of individual consumers, the policy options only lead to a slightly higher price, and finally a higher per product cost over the lifetime of the device (energy consumption during a longer period of time and more expenses on repairs). However, due to extended lifetimes the costs per year of use are lower than with the status quo.

Moreover, the issue of affordability due to slightly increased prices for new devices is less of an issue if the reuse market grows in response to the potential Ecodesign requirements on new devices. An increasing number of devices available for reuse will imply lower prices on the reuse market.

Consumer expenditure

Consumer expenditure consists of acquisition costs, maintenance/ repair costs and running costs.

Smartphones, feature phones and cordless phones

For the aggregate composed by *smartphones, feature phones and cordless phones* the total consumer expenditure in 2020 in the EU is calculated at EUR 77,200 million (Figure 48). This level of expenditure decreases under all considered options: 23% (*sub-options 3.1, 3.2a, 3.2b* and *5.1*), 3% (*Option 4*) and 24% (*sub-options 3.3* and *5.2)*.

This reduction is due to longer product lifetimes and, to a minor degree, savings in electricity costs. Whereas total purchasing costs go down, the repair costs share increases (Figure 49). For all policy options the scenario analysis shows a clear trend towards increasing costs for repairs.

Figure 48. Smartphones, feature and cordless phones- Total annual consumer expenditure 2010-2030 in the EU

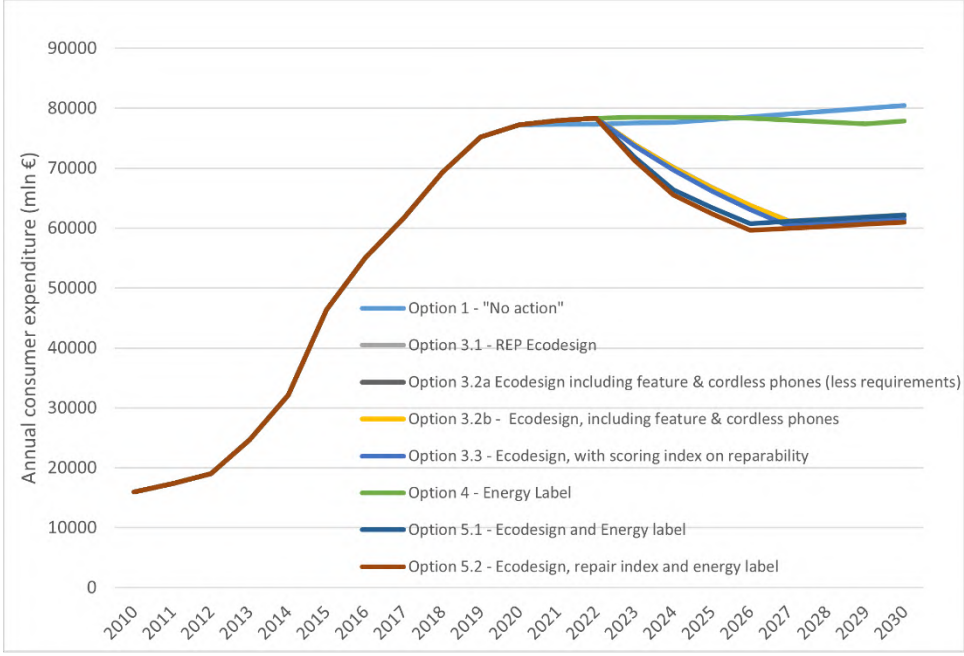
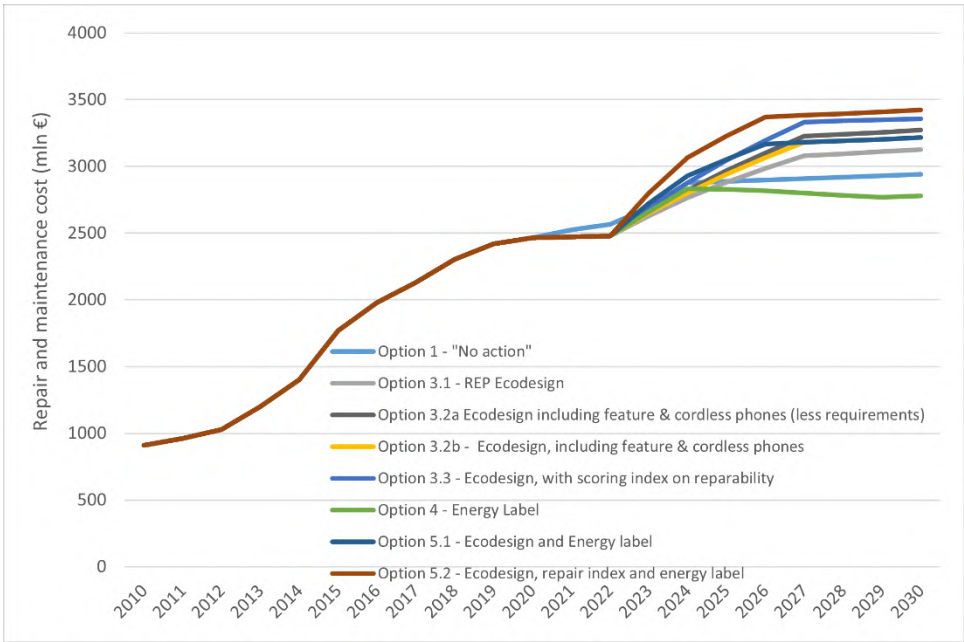


Figure 49: Smartphones, feature and cordless phones – Repair and maintenance costs 2010-2030



Tablets

Although expenditures for repairs almost double (see **Figure** 50) as found in European Commission (2021), lifetime extension brings down overall costs for the consumer on average for the policy scenarios involving Ecodesign requirements (Figure 51**)**.

Option 4 will imply a minor reduction of total annual consumer expenditure compared to "no action", this is 9%. As commented, the remaining options including Ecodesign requirements would provide more benefits to consumers in terms of expenditure and compared to the baseline scenario: a reduction of 13% under sub-o*ptions 3.1, 3.2a, 3.3, 5.1, and 5.2.*

Figure 50: Tablets – Repair and maintenance costs

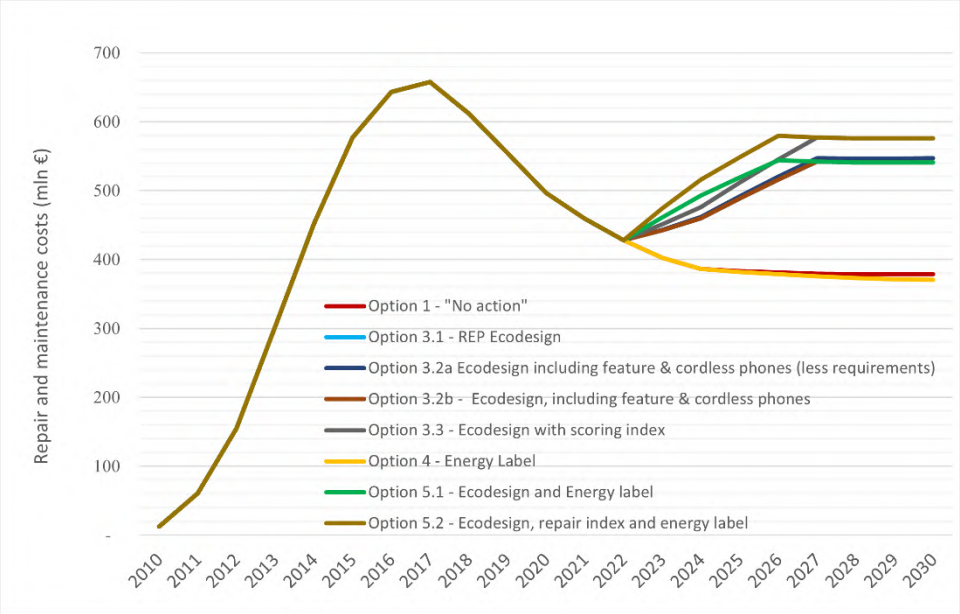


Figure 51: Tablets – Total annual consumer expenditure 2010-2030

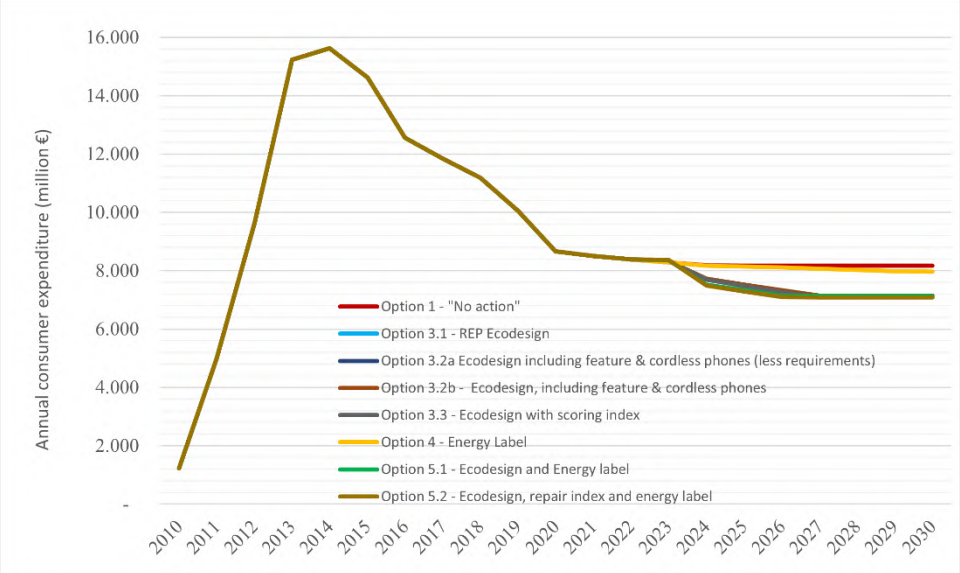


Table 45: Compliance costs

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
Option 3.1	Direct costs	++ Establishing production and supply chain changes to fulfil minimum requirements (including testing facilities and training) Durability testing equipment in their product design departments Capital expenditures needed for adaptation of manufacturing processes, logistics and supply chains	+ + Personnel to design new, compliant products Personnel with Ecodesign competencies Including life-cycle assessment competencies where relevant. Higher personnel activity dedicated to support of professional transitions from activities reduced by these requirements towards those favoured by them (specifically: maintenance, repair/upgrade, refurbishing, remanufacturing) Higher activity in after-	+ + Setting up the enforcement process (including training) (MS) Government expenditures for conformity review (circularity aspects, premature obsolescence) Establishing minimum requirement (EC)	++ Monitoring compliance with the requirements (MS)

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
			sales, maintenance, repair, refurbishing, re-manufacturing activities Personnel cost to carry testing and verification		
	Indirect costs	++ Higher up-front cost of products due inter alia to more accurate assembly, better qualified manufacturing work force, more thorough design, reversible assembly methods (possibly compensated by longer service times)	+ + Increased cost of products due to higher costs of minimum requirement obligations		+
Option 3.2a	Direct costs	++ Establishing production and supply chain changes to fulfil minimum requirements (including testing facilities and training) Durability testing equipment in	++ Personnel to design new, compliant products Personnel with Ecodesign competencies Including life-cycle assessment competencies	++ Setting up the enforcement process (including training) (MS) Government expenditures for conformity review (circularity aspects,	++ Monitoring compliance with the requirements (MS)

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
		their product design departments Capital expenditures needed for adaptation of manufacturing processes, logistics and supply chains	where relevant. Higher personnel activity dedicated to support of professional transitions from activities reduced by these requirements towards those favoured by them (specifically: maintenance, repair/upgrade, refurbishing, remanufacturing) Higher activity in after-sales, maintenance, repair, refurbishing, re-manufacturing activities Personnel cost to carry testing and verification	premature obsolescence) Establishing minimum requirement (EC)	
	Indirect costs	++ Higher up-front cost of products due inter alia to more accurate assembly, better qualified	++ Increased cost of products due to higher costs of minimum		+

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
		manufacturing work force, more thorough design, reversible assembly methods (possibly compensated by longer service times)	requirement obligations		
Option 3.2b	Direct costs	++ Establishing production and supply chain changes to fulfil minimum requirements (including testing facilities and training) Durability testing equipment in their product design departments Capital expenditures needed for adaptation of manufacturing processes, logistics and supply chains	++ Personnel to design new, compliant products Personnel with Ecodesign competencies Including life-cycle assessment competencies where relevant. Higher personnel activity dedicated to support of professional transitions from activities reduced by these requirements towards those favoured by them (specifically: maintenance, repair/upgrade, refurbishing,	++ Setting up the enforcement process (including training) (MS) Government expenditures for conformity review (circularity aspects, premature obsolescence) Establishing minimum requirement (EC)	++ Monitoring compliance with the requirements (MS)

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
			remanufacturing) Higher activity in after-sales, maintenance, repair, refurbishing, re-manufacturing activities Personnel cost to carry testing and verification		
	Indirect costs	++ Higher up-front cost of products due inter alia to more accurate assembly, better qualified manufacturing work force, more thorough design, reversible assembly methods (possibly compensated by longer service times)	++ Increased cost of products due to higher costs of minimum requirement obligations		+
Option 3.3	Direct costs	+++ Establishing production and supply chain changes to fulfil minimum requirements (including testing facilities and	+++ Personnel to design new, compliant products Personnel with Ecodesign competencies	+++ Setting up the enforcement process (including training) (MS) Government expenditures	+ ++ Monitoring compliance with the requirements (MS)

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
		training) Durability testing equipment in their product design departments Capital expenditures needed for adaptation of manufacturing processes, logistics and supply chains	Including life-cycle assessment competencies where relevant. Higher personnel activity dedicated to support of professional transitions from activities reduced by these requirements towards those favoured by them (specifically: maintenance, repair/upgrade, refurbishing, remanufacturing) Higher activity in after-sales, maintenance, repair, refurbishing, re-manufacturing activities Personnel cost to carry testing and verification	for conformity review (circularity aspects, premature obsolescence) Establishing minimum requirement (EC)	
	Indirect costs	+++ Higher up-front cost of products	+++ Increased cost of		+

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
		due inter alia to more accurate assembly, better qualified manufacturing work force, more thorough design, reversible assembly methods (possibly compensated by longer service times)	products due to higher costs of minimum requirement obligations		
Option 4	Direct costs	+ Establishing production and supply chain changes to fulfil minimum requirements (including testing facilities and training) Durability testing equipment in their product design departments Capital expenditures needed for adaptation of manufacturing processes, logistics and supply chains	+ Personnel to design new, compliant products Personnel with Ecodesign competencies Including life-cycle assessment competencies where relevant. Higher personnel activity dedicated to support of professional transitions from activities reduced by these requirements towards those favoured by them (specifically: maintenance,	+ Setting up the enforcement process (including training) (MS) Government expenditures for conformity review (circularity aspects, premature obsolescence) Establishing minimum requirement (EC)	+ Monitoring compliance with the requirements (MS)

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
			repair/upgrade, refurbishing, remanufacturing) Higher activity in after-sales, maintenance, repair, refurbishing, re-manufacturing activities Personnel cost to carry testing and verification		
	Indirect costs	+ Higher up-front cost of products due inter alia to more accurate assembly, better qualified manufacturing work force, more thorough design, reversible assembly methods (possibly compensated by longer service times)	+ Increased cost of products due to higher costs of minimum requirement obligations		+
Option 5.1	<u>Direct costs</u>	+++ Establishing production and supply chain changes to fulfil minimum requirements	+++ Personnel to design new, compliant products	+++ Setting up the enforcement process (including training)	+ ++ Monitoring compliance with the requirements (MS)

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
		(including testing facilities and training) Durability testing equipment in their product design departments Capital expenditures needed for adaptation of manufacturing processes, logistics and supply chains	Personnel with Ecodesign competencies Including life-cycle assessment competencies where relevant. Higher personnel activity dedicated to support of professional transitions from activities reduced by these requirements towards those favoured by them (specifically: maintenance, repair/upgrade, refurbishing, remanufacturing) Higher activity in after-sales, maintenance, repair, refurbishing, re-manufacturing activities Personnel cost to carry testing and verification	(MS) Government expenditures for conformity review (circularity aspects, premature obsolescence) Establishing minimum requirement (EC)	

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
	Indirect costs	+++ Higher up-front cost of products due inter alia to more accurate assembly, better qualified manufacturing work force, more thorough design, reversible assembly methods (possibly compensated by longer service times)	+++ Increased cost of products due to higher costs of minimum requirement obligations		+
Option 5.2	Direct costs	+++ Establishing production and supply chain changes to fulfil minimum requirements (including testing facilities and training) Durability testing equipment in their product design departments Capital expenditures needed for adaptation of manufacturing processes, logistics and supply chains	+++ Personnel to design new, compliant products Personnel with Ecodesign competencies Including life-cycle assessment competencies where relevant. Higher personnel activity dedicated to support of professional transitions from activities reduced by these requirements	+++ Setting up the enforcement process (including training) (MS) Government expenditures for conformity review (circularity aspects, premature obsolescence) Establishing minimum requirement (EC)	+ ++ Monitoring compliance with the requirements (MS)

Compliance costs					
		Businesses		Administrations	
		One-off	Recurrent	One-off	Recurrent
			towards those favoured by them (specifically: maintenance, repair/upgrade, refurbishing, remanufacturing) Higher activity in after-sales, maintenance, repair, refurbishing, re-manufacturing activities Personnel cost to carry testing and verification		
	Indirect costs	+++ Higher up-front cost of products due inter alia to more accurate assembly, better qualified manufacturing work force, more thorough design, reversible assembly methods (possibly compensated by longer service times)	+++ Increased cost of products due to higher costs of minimum requirement obligations		+

Economic impacts, yearly figures for 2030

Smartphones, feature phones, cordless phones and tablets

Table 46: Economic impacts - Smartphones, feature phones, cordless phones and tablets

Economic impacts. Smartphones, feature phones, cordless phones and Tablets, 2030																
Description	*Amount/qualitative*								*Comparison with "no action"*							*Comments*
	Option 1	*Option 3.1*	*Option 3.2a*	*Option 3.2b*	*Option 3.3*	*Option 4*	*Option 5.1*	*Option 5.2*	*Option 3.1*	*Option 3.2a*	*Option 3.2b*	*Option 3.3*	*Option 4*	*Option 5.1*	*Option 5.2*	
Direct impacts																
Sales (Mn units)	181	144	141	142	140	177	142	139	-20%	-22%	-22%	-23%	-2%	-22%	-23%	Business
Business revenue (Mn€)	84145	64778	64390	64642	63691	81737	64631	63146	-23%	-23%	-23%	-24%	-3%	-23%	-25%	Business
Compliance costs	Here includes cost of implementing new design requirements, printing labels, training staff, laboratory tests and other administrative costs. These mainly affect non-EU countries where production is developped. In the EU, Ecodesign supposes a moderate impact for OEMs that will be higher with Energy label and Repair score effect. Retailers could be affected because of adapting their stock at the point of sales and /or online platforms.								++	++	++	+++	+	+++	+++	Business
Stranded investment	Main effects could arise in third countries, although these depend on manufacturers capacity to react to market changes.								+	+	+	+	+	+	+	Business
Competitiveness and Trade	Measures will help in establishing a level playing field. Further, several sectors could emerge and others will benefit: spare part and toolkit providers, reuse/refurbishment/re-commer,etc.								++	++	++	++	++	++	++	Business
Indirect impacts																
Intelectual Property Rights	Technologies considered are available to all major manufacturers. However, Eco-design and reparability index could affect intellectual property rights of manufacturers. On the other hand, repairers and consumers will benefit. The overall effect will be positive.								++	++	++	++	+	++	++	Society
R&D	Eco-design options would require investment on performance features. Energy label and Reparability index will require information requirements, but incentivates innovations to achieve a good score. This effect will be promoted through the supply chain of market players. A voluntary agreement will have a minor impact.								++	++	++	+++	++	++	+++	Business

The symbol (+) is a way of representing the level of impact of each option for qualitative aspects and compared to Option 1, where: + = very small/small impact

++ = moderate impact

+++ = high/very high impact

Colours mean the type of impact, positive (green) or negative (red).

Smartphones, feature phones and cordless phones

Table 47: Economic impacts - Smartphones, feature phones and cordless phones

Economic impacts. Smartphones, feature phones and cordless phones, 2030																
Description	*Amount/qualitative*								*Comparison with "no action"*							*Comments*
	Option 1	*Option 3.1*	*Option 3.2a*	*Option 3.2b*	*Option 3.3*	*Option 4*	*Option 5.1*	*Option 5.2*	*Option 3.1*	*Option 3.2a*	*Option 3.2b*	*Option 3.3*	*Option 4*	*Option 5.1*	*Option 5.2*	
Direct impacts																
Sales (Mn. units)	159	125	122	123	121	155	123	120	-21%	-23%	-23%	-24%	-2%	-23%	-24%	Business
Business revenue (million €)	76568	58346	57970	58210	57350	74304	58202	56808	-24%	-24%	-24%	-25%	-3%	-24%	-26%	Business
Purchase price (€, mid-range smartphone)	500	504	505	504	504	500	504	504	1%	1%	1%	1%	0%	1%	1%	Consumer
Purchase price (€, feature phones)	80	80	83	83	83	80	83	83	0%	3%	3%	3%	0%	3%	3%	Consumer
Purchase price (€, cordless phones)	50	50	52	53	53	50	53	53	0%	3%	6%	6%	0%	6%	6%	Consumer
Compliance costs	Here includes cost of implementing new design requirements, printing labels, training staff, laboratory tests and other administrative costs. These mainly affect non-EU countries where production is developped. In the EU, Ecodesign supposes a moderate impact for OEMs that will be higher with Energy label and Repair score effect. Retailers could be affected because of adapting their stock at the point of sales and /or online platforms.								++	++	++	+++	+	+++	+++	Business
Stranded investment	Main effects could arise in third countries, although these depend on manufacturers capacity to react to market changes.								+	+	+	+	+	+	+	Business
Competitiveness and Trade	Measures will help in establishing a level playing field. Further, several sectors could emerge and others will benefit: spare part and toolkit providers, reuse/refurbishment/re-commer,etc.								++	++	++	++	++	++	++	Business
Indirect impacts																
Intelectual Property Rights	Technologies considered are available to all major manufacturers. However, Eco-design and reparability index could affect intellectual property rights of manufacturers. On the other hand, repairers and consumers will benefit. The overall effect will be positive.								++	++	++	++	+	++	++	Society
R&D	Eco-design options would require investment on performance features. Energy label and Reparability index will require information requirements, but incentivates innovations to achieve a good score. This effect will be promoted through the supply chain of market players. A voluntary agreement will have a minor impact.								++	++	++	+++	++	++	+++	Business

Tablets

Table 48: Economic impacts - Tablets

Economic impacts. Tablets, 2030																
Description	*Amount/qualitative*								*Comparison with "no action"*							*Comments*
	Option 1	*Option 3.1*	*Option 3.2a*	*Option 3.2b*	*Option 3.3*	*Option 4*	*Option 5.1*	*Option 5.2*	*Option 3.1*	*Option 3.2a*	*Option 3.2b*	*Option 3.3*	*Option 4*	*Option 5.1*	*Option 5.2*	
Direct impacts																
Sales (Mln units)	23	19	19	19	19	22	19	19	-16%	-16%	-16%	-17%	-2%	-16%	-17%	Business
Business revenue (Mln €)	7576	6432	6420	6432	6341	7433	6429	6338	-15%	-15%	-15%	-16%	-2%	-15%	-16%	Business
Purchase price (€)	330	334	334	334	334	331	334	334	1%	1%	1%	1%	0%	1%	1%	Consumer
Compliance costs	Here includes cost of implementing new design requirements, printing labels, training staff, laboratory tests and other administrative costs. These mainly affect non-EU countries where production is developped. In the EU, Ecodesign supposes a moderate impact for OEMs that will be higher with Energy label and Repair score effect. Retailers could be affected because of adapting their stock at the point of sales and /or online platforms.								++	++	++	+++	+	+++	+++	Business
Stranded investment	Main effects could arise in third countries, although these depend on manufacturers capacity to react to market changes.								+	+	+	+	+	+	+	Business
Competitiveness and Trade	Measures will help in establishing a level playing field. Further, several sectors could emerge and others will benefit: spare part and tookit providers, reuse/refurbishment/re-commer,etc.								++	++	++	++	++	++	++	Business
Indirect impacts																
Intelectual Property Rights	Technologies considered are available to all major manufacturers. However, Eco-design and reparability index could affect intellectual property rights of manufacturers. On the other hand, repairers and consumers will benefit. The overall effect will be positive.								++	++	++	++	+	++	++	Society
R&D	Eco-design options would require investment on performance features. Energy label and Reparability index will require information requirements, but incentivates innovations to achieve a good score. This effect will be promoted through the supply chain of market players. A voluntary agreement will have a minor impact.								++	++	++	+++	++	++	+++	Business

Environmental impacts, yearly figures for 2030

Smartphones, feature phones, cordless phones and tablets

Environmental impacts. Smartphones, feature phones and cordless phones and Tablets, 2030																
Description	Amount/qualitative								Comparison with "no action"							Comments
	Option 1	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	
Direct impacts																
Energy consumption (PJ)	139	95	96	92	91	126	91	90	-32%	-31%	-34%	-35%	-9%	-34%	-35%	Consumer
Greenhouse Gas Emissions (Mn. t CO2 eq.)	9	5	6	5	5	8	5	5	-37%	-30%	-39%	-40%	-6%	-40%	-41%	Society
Acidification (kt SO2 eq.)	85	63	63	62	62	81	62	61	-26%	-26%	-27%	-27%	-5%	-27%	-29%	Society
Total material consumption (t)	116906	80835	81579	77788	< 77788	115307	76571	< 76571	-31%	-30%	-33%	<-33%	-1%	-35%	<-35%	Society
of which total critical materials (t)	2448	1923	1911	1917	< 1917	2391	1917	< 1917	-21%	-22%	-22%	<-22%	-2%	-22%	<-22%	Society
External annual damages (Mn. €)	3419	2441	2573	2403	2377	3266	2379	2341	-29%	-25%	-30%	-30%	-4%	-30%	-32%	Society

Smartphones, feature phones and cordless phones

Environmental impacts. Smartphones, feature phones and cordless phones, 2030																
Description	Amount/qualitative								Comparison with "no action"							Comments
	Option 1	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	
Direct impacts																
Total Energy (PJ)	113	76	77	74	73	103	73	71	-33%	-32%	-35%	-36%	-9%	-35%	-37%	Consumer
Greenhouse Gas emissions (Mn. t CO2 eq.)	7	4	5	4	4	7	4	4	-38%	-31%	-40%	-41%	-5%	-41%	-42%	Society
Acidification (kt SO2 eq)	72	53	53	52	52	69	52	51	-27%	-27%	-28%	-28%	-4%	-28%	-30%	Society
Total material consumption (t)	86482	58659	59288	55613	< 55613	85551	54677	< 54677	-32%	-31%	-36%	<-36%	-1%	-37%	<-37%	Society
of which total critical materials (t)	1625	1234	1222	1227	< 1227	1587	1227	< 1227	-24%	-25%	-24%	<-24%	-2%	-24%	<-24%	Society
External annual damages (Mn. €)	2834	2000	2101	1963	1940	2714	1943	1909	-29%	-26%	-31%	-32%	-4%	-31%	-33%	Society

Tablets

Environmental impacts. Tablets, 2030																
Description	Amount/qualitative								Comparison with "no action"							Comments
	Option 1	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	
Direct impacts																
Energy consumption (PJ)	26	19	19	19	18	23	19	18	-29%	-27%	-29%	-29%	-12%	-29%	-30%	Consumer
Greenhouse Gas Emissions (Mn. t CO2 eq.)	2	1	1	1	1	1	1	1	-34%	-25%	-34%	-35%	-9%	-35%	-36%	Society
Acidification (kt SO2 eq.)	13	10	10	10	10	12	10	10	-21%	-20%	-21%	-22%	-6%	-21%	-22%	Society
Total material consumption (t)	30423	22176	22292	22176	< 22176	29757	21894	< 21894	-27%	-27%	-27%	<-27%	-2%	-28%	<-28%	Society
of which total critical materials (t)	822	689	688	689	< 689	805	689	< 689	-16%	-16%	-16%	<-16%	-2%	-16%	<-16%	Society
External annual damages (Mn. €)	585	441	472	441	436	552	436	432	-25%	-19%	-25%	-25%	-6%	-25%	-26%	Society

Social impacts, yearly figures for 2030

Smartphones, feature phones, cordless phones and tablets

Social impacts. Smartphones, feature phones, cordless phones and tablets, 2030																
Description	Amount/qualitative								Comparison with "no action"							Comments
	Option 1	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	
Direct impacts																
Employment repair and maintenance	30081	33059	33125	33090	33249	30383	33090	33292	10%	10%	10%	11%	1%	10%	11%	Society
Total annual consumer expenditure (Mn. €)	88643	69386	69149	69325	68552	85843	69314	68070	-22%	-22%	-22%	-23%	-3%	-22%	-23%	Consumer
Repair costs only (Mn. €)	3321	3666	3819	3757	3935	3150	3757	3999	10%	15%	13%	18%	-5%	13%	20%	Consumer
Indirect impacts																
Health, safety and Functionality	All options reduce the number of toxic materials employed, resulting in benefits to consumers but mainly for workers of recycling plants								++	++	++	++	+	++	++	Society

Smartphones, feature phones and cordless phones

Social impacts. Smartphones, feature phones and cordless phones, 2030																
Description	Amount/qualitative								Comparison with "no action"							Comments
	Option 1	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	
Direct impacts																
Employment repair and maintenance	22734	25415	25478	25446	25583	22996	25446	25626	12%	12%	12%	13%	1%	12%	13%	Society
Total annual consumer expenditure (Mn. €)	80475	62246	62016	62185	61468	77874	62177	60990	-23%	-23%	-23%	-24%	-3%	-23%	-24%	Consumer
Repair costs only (Mn. €)	2942	3125	3272	3216	3359	2779	3216	3423	6%	11%	9%	14%	-6%	9%	16%	Consumer
Indirect impacts																
Health, safety and Functionality	All options reduce the number of toxic materials employed, resulting in benefits to consumers but mainly for workers of recycling plants								++	++	++	++	+	++	++	Society

Tablets

Social impacts. Tablets, 2030															
Description	Amount/qualitative								Comparison with "no action"						Comments
	Option 1	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	
Direct impacts																
Employment repair and maintenance (N° jobs)	7347	7644	7646	7644	7666	7387	7644	7666	4%	4%	4%	4%	1%	4%	4%	Society
Total annual expenditure (Mln €)	8169	7140	7133	7140	7083	7433	6429	7080	-13%	-13%	-13%	-13%	-9%	-21%	-13%	Consumer
Repair costs (Mln €)	379	541	547	541	576	371	541	576	43%	44%	43%	52%	-2%	43%	52%	Consumer
Indirect impacts																
Health, safety and Functionality	All options reduce the number of toxic materials employed, resulting in benefits to consumers but mainly for workers of recycling plants								++	++	++	++	+	++	++	Society

Summary of impacts- Smartphones, feature phones and cordless phones

The following table summarises the effect of the 8 policy options on smartphones, feature phones and cordless phones. Savings across the various environmental indicators and the overall effect in social and economic are greatest for all policy options involving Ecodesign Requirements. Whereas in general, an Energy Label as stand-alone measure would have a lower effect, its combination with Ecodesign is considerable. In addition, to incorporate a reparability scoring on the top of devices increases the expected effects over all fields.

Table 49: Summary table of impacts (smartphones, feature phones and cordless phones)- Yearly figures for 2030

Smartphones + feature phones + cordless phones	Option 1 "No action"	Option 3.1 Eco-design	Option 3.2a Eco-design with feature & cordless (less requirements)	Option 3.2b Eco-design with feature & cordless	Option 3.3 Eco-design with REP index.	Option 4 Energy Label	Option 5.1 Eco-design and Energy label	Option 5.2- Ecodesign, repair index and Energy label	Option 3.1 Eco-design	Option 3.2a Eco-design with feature & cordless (less requirements)	Option 3.2b Eco-design with feature & cordless	Option 3.3 Eco-design with REP index.	Option 4 Energy Label	Option 5.1 Eco-design and Energy label	Option 5.2- Ecodesign, repair index and Energy label
	Absolute values								Comparison with "no action"						
Economic indicators															
Sales (Mn. units)	159	125	122	123	121	155	123	120	-21%	-23%	-23%	-24%	-2%	-23%	-24%
Business revenue (million €)	76568	58346	57970	58210	57350	74304	58202	56808	-24%	-24%	-24%	-25%	-3%	-24%	-26%
Environmental indicators															
Total Energy (PJ)	113	76	77	74	73	103	73	71	-33%	-32%	-35%	-36%	-9%	-35%	-37%
Greenhouse Gas emissions (Mn. t CO2 eq.)	7	4	5	4	4	7	4	4	-38%	-31%	-40%	-41%	-5%	-41%	-42%
Acidification (kt SO2 eq)	72	53	53	52	52	69	52	51	-27%	-27%	-28%	-28%	-4%	-28%	-30%
Total material consumption (t)	86483	58659	59288	55613	<55613	85551	54677	<54677	-32%	-31%	-36%	<-36%	-1%	-37%	<-37%
External annual damages (Mn. €)	2834	2000	2101	1963	1940	2714	1943	1909	-29%	-26%	-31%	-32%	-4%	-31%	-33%
Social indicators															
Employment repair and maintenance	22734	25415	25478	25446	25583	22996	25446	25626	12%	12%	12%	13%	1%	12%	13%
Total annual consumer expenditure (Mn. €)	80475	62246	62016	62185	61468	77874	62177	60990	-23%	-23%	-23%	-24%	-3%	-23%	-24%
Repair costs only (Mn. €)	2942	3125	3272	3216	3359	2779	3216	3423	6%	11%	9%	14%	-6%	9%	16%

Summary of impacts- Tablets

The effect of the various policy options on tablets is summarised in the following table. The policy option of Ecodesign including feature phones and cordless phones (*sub-option 3.2b*) does not apply to this product segment. Similar conclusions can be highlighted as for smartphones, being options including Ecodesign requirements (especially with a repair index) those with greater impacts.

Table 50: Summary table of impacts (tablets) - Yearly figures for 2030

Tablets	Option 1 "No action"	Option 3.1 Eco-design	Option 3.2a Eco-design with feature & cordless (less requirements)	Option 3.2b Eco-design with feature & cordless	Option 3.3 Eco-design with REP index.	Option 4 Energy Label	Option 5.1 Eco-design and Energy label	Option 5.2- Ecodesign, repair index and Energy label	Option 3.1 Eco-design	Option 3.2a Eco-design with feature & cordless (less requirements)	Option 3.2b Eco-design with feature & cordless	Option 3.3 Eco-design with REP index.	Option 4 Energy Label	Option 5.1 Eco-design and Energy label	Option 5.2- Ecodesign, repair index and Energy label
	Absolute values								Comparison with "no action"						
Economic indicators															
Sales (Mn. units)	159	125	122	19	19	22	19	19	-21%	-23%	-88%	-88%	-86%	-88%	-88%
Business revenue (million €)	7576	6432	6420	6432	6341	7433	6429	6338	-15%	-15%	-15%	-16%	-2%	-15%	-16%
Environmental indicators															
Total Energy (PJ)	26	19	19	19	18	23	19	18	-29%	-27%	-29%	-29%	-12%	-29%	-30%
Greenhouse Gas emissions (Mn. t CO2 eq.)	2	1	1	1	1	1	1	1	-34%	-25%	-34%	-35%	-9%	-35%	-36%
Acidification (kt SO2 eq.)	13	10	10	10	10	12	10	10	-21%	-20%	-21%	-22%	-6%	-21%	-22%
Total material consumption (t)	30423	22176	22292	22176	<22176	29757	21894	<21894	-27%	-27%	-27%	<-27%	-2%	-28%	<-28%
External annual damages (Mn. €)	585	441	472	441	436	552	436	432	-25%	-19%	-25%	-25%	-6%	-25%	-26%
Social indicators															
Employment repair and maintenance	7347	7644	7646	7644	7666	7387	7644	7666	4%	4%	4%	4%	1%	4%	4%
Total annual consumer expenditure (Mn. €)	8169	7140	7133	7140	7083	7969	7136	7080	-13%	-13%	-13%	-13%	-2%	-13%	-13%
Repair costs only (Mn. €)	379	541	547	541	576	371	541	576	43%	44%	43%	52%	-2%	43%	52%

Sensitivity analysis - All options and all devices included (yearly figures for 2030)

	SENSITIVITY ANALYSIS														
Smartphones + feature phones + cordless phones + tablets	**New baseline:** 12.5% Eco-Rating penetration	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2	Option 3.1	Option 3.2a	Option 3.2b	Option 3.3	Option 4	Option 5.1	Option 5.2
	Absolute values								Comparison with baseline						
Economic indicators															
Sales (Mn. units)	178	144	141	142	140	177	142	139	-19%	-21%	-20%	-21%	0%	-20%	-22%
Business revenue (million €)	82265	64778	64390	64642	63691	81737	64631	63146	-21%	-22%	-21%	-23%	-1%	-21%	-23%
Environmental indicators															
Total Energy (PJ)	135	95	96	92	91	126	91	90	-30%	-28%	-32%	-32%	-6%	-32%	-33%
Greenhouse Gas emissions (Mn. t CO2 eq.)	8	5	6	5	5	8	5	5	-34%	-27%	-36%	-37%	-2%	-38%	-39%
Acidification (kt SO2 eq)	83	63	63	62	62	81	62	61	-24%	-24%	-25%	-25%	-2%	-25%	-27%
Total material consumption (t)	113152	80835	81579	77788	< 77788	115307	76571	< 76571	-29%	-28%	-31%	< -31%	2%	-32%	< -32%
External annual damages (Mn. €)	3317	2441	2573	2403	2377	3266	2379	2341	-26%	-22%	-28%	-28%	-2%	-28%	-29%
Social indicators															
Employment repair and maintenance	30352	33059	33125	33090	33249	30383	33090	33292	9%	9%	9%	10%	0%	9%	10%
Total annual consumer expenditure (Mn. €)	87011	69386	69149	69325	68552	85306	68606	68070	-20%	-21%	-20%	-21%	-2%	-21%	-22%
Repair costs only (Mn. €)	3443	3666	3819	3757	3935	3150	3757	3999	6%	11%	9%	14%	-9%	9%	16%