REPORT

ICT: A TOP HORIZONTAL PRIORITY IN SUSTAINABLE PRODUCT POLICY

coolproducts for a cool planet

EEB European Environmental Bureau

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EXECUTIVE SUMMARY

This study calls attention to the need for ICT (Information and Communications Technology) products to be prioritised in ESPR (Ecodesign for Sustainable Products Regulation) and Ecodesign by demonstrating significant material impacts in a number of broad product groupings that have yet to be properly addressed. ***The Commission is at risk of missing the opportunity to unlock sizeable savings by allowing unaddressed products in this area to fall between the boundaries of traditional Ecodesign regulations and ongoing discussions around priority areas for ESPR implementation.*** We detail exactly how horizontal measures going beyond the basic concepts of durability and reparability could be defined and provide an order of magnitude of the potential savings that could be achieved.

This study identifies four key product groupings for potential horizontal material efficiency measures, with savings, as shown below:

Table 1. Summary of potential savings of horizontal material efficiency measures

	Savings per year (Mt CO2 eq)	Cumulative mitigated impacts (Mt CO2 eq)
Networks & network equipment	2,366	30,410
Automated transaction & service machines	1,074	13,961
Portable lifestyle and smart/networked speakers	746	4,780
Smart security & sensor systems	108	1,075
Total	**4,293**	**50,226**

The total cumulative savings of horizontal material efficiency measures for ICT products of 50 million tonnes of CO2 eq, is comparable to taking 28 million cars off the roads. Such savings must not be overlooked. ***As a matter of priority we urge the Commission to include horizontal material efficiency measures for business to business (B2B) and consumer ICT products on the ESPR or Ecodesign working plans***. At the very least, an initiative could focus on a wide range of networks and network equipment, but there is also considerable potential in the diverse automated transaction & service machine (ATSM) product area. Further, the nature of horizontal regulation means that it may require little effort to also include other unaddressed products such as smart speakers and security sensors and cameras, augmenting the savings accessed by a single measure.

This study shows that horizontal measures are possible and would unlock important savings. A wide range of requirements that could be implemented for different groupings of products are detailed – for example, requirements on operating system (OS) update and firmware support duration, reliable data erasure, availability of repair information and information on minimum expected lifetime could be applied across a wide range of products. For products with batteries, requirements on endurance, use information, status reporting and ease of replacement are actionable. Likewise, for displays ease of replacement is an important requirement, and for both information on maximum replacement costs is important. Further, information requirements on due diligence related to human rights, environment and occupational health and safety of specified materials and batteries could also reduce the environmental impacts of a wide range of products.

We trust that in the light of this knowledge the European Commission will follow up on the previous ICT Task Force study[1] to initiate the regulatory analysis necessary to put such measures in place, starting with a preparatory study into horizontal material efficiency measures for the identified product groups.

The aim of the report is not to prescribe specific measures, but rather to highlight the importance of including this product group in the future Ecodesign working plan.

[1] Alfieri, F., & Spiliotopoulos, C. (2022). ICT Task Force Study Final Draft, Task 12 Final Policy Recommendations. JRC. https://susproc.jrc.ec.europa.eu/product-bureau/sites/default/files/2022-11/Task%2012_policy_recommendations_ICT_final_draft_311022_cl.pdf

INTRODUCTION

POLICY CONTEXT

The EU has set itself the ambition of increasing resource efficiency, reducing waste, and transitioning to a low-carbon economy. Further, the European Commission's Circular Economy Action Plan of 2020[2] included right-to-repair in the electronics and ICT sector as a priority. Yet developments in the two key policy streams relevant to these products may miss the opportunity to access the full potential savings in this area:

The EU-wide minimum requirements of the Ecodesign directive already address a range of products including ICT, consumer electronics and household appliances, mainly via product-specific (vertical) regulations. Such policies are a critical tool to achieving EU objectives as they could improve the environmental performance of products over their entire life cycle, from raw material extraction and production to end-of-life disposal.

The Draft Ecodesign for Sustainable Products Regulation (ESPR) was proposed in early 2022 as an update to the existing Ecodesign Directive. The ESPR, if adopted, would expand the scope of the current Ecodesign Directive to a wider range of products, including non-energy-related products, such as textiles, furniture, and cosmetics. The proposal includes the ability to define horizontal measures applicable to wide groups of products that share sufficient technical similarities. EC supporting documents relating to the ESPR working plan outline two streams of work planning activity:

I. to prioritise requirements for energy-related products based on the progress made in implementing the Ecodesign and Energy Labelling Working Plan 2022-2024,

II. to carry out a preliminary study to investigate the potential for new product groups (not currently covered under Ecodesign measures) and horizontal measures (applying to a wide range of products, rather than a specific product) to be addressed under the ESPR.

However, ***certain consumer electronics and ICT products falling under the conventional scope of Ecodesign have not been taken forwards in the Ecodesign working plan, and were not incorporated into the ESPR study on new product priorities. As a result there is a risk that these products fall through the gaps between these two separate investigation streams, and will therefore be left unregulated for the foreseeable future.***

[2] European Commission. (2020). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A new Circular Economy Action Plan for a cleaner and more competitive Europe. https://eur-lex.europa.eu/resource.html?uri=cellar:9903b325-6388-11ea-b735-01aa75ed71a1.0017.02/DOC_1&format=PDF

STUDY AIMS

The EEB as part of the Coolproducts campaign commissioned this study to build upon the JRC ICT Task Force study that explored the potential for a wider range of ICT products to be addressed under Ecodesign and other tools. It aims to make more concrete proposals for ***what horizontal material efficiency measures covering ICT and electronic products could look like under the new Ecodesign framework and to provide an indication of the related potential environmental savings.*** Product groups are defined and ranked (according to the ease of applying horizontal requirements to these products, the volume of EU stock / sales and their production environmental impacts). Then horizontal measures are proposed that should be prioritised under the ESPR framework.

Whilst the focus is on new horizontal measures, where appropriate, suggestions are also made on how existing requirements in product-specific Ecodesign regulations could be refined for a more comprehensive coverage of the product groups. Beyond this study, horizontal measures could also include some requirements that are specific to product groups where these cannot be easily set horizontally – for example requirements on disassembly relating to very specific spare parts. Some precedents for this have already been set in Ecodesign approaches for professional refrigeration and heating products. However, assessment of such requirements is not within the scope of this current study.

BOX 1. WHY HORIZONTAL MEASURES?

Horizontal measures are those that apply to a wide range of products, rather than vertical measures that address a specific product group. The advantages of horizontal measures are:

Well-suited to material efficiency measures:

Whilst it can be challenging for energy efficiency requirements to be specified at a horizontal level due to levels varying by product, many material efficiency requirements can be applied in the same way across product groups without needing to be adapted to a specific product.

Cost effective way for the legislator to close gaps in product coverage:

Horizontal measures have the potential to unleash savings in product groups that may not be deemed significant enough (due for example to high environmental impact / low sales volumes or lower environmental impact / high sales volumes) to tackle via product-by-product policy implementations. Addressing multiple requirements across different products via a single policy instrument, enables these savings to be accessed whilst reducing the administrative burden.

More time efficient:

A proliferation of vertical regulations can create regulatory bottlenecks, impacting the timely revision of requirements. The EC has experienced significant delays in the design and implementation of product specific Ecodesign measures in the past. Horizontal regulation could increase the swiftness of regulatory intervention across a wide range of products.

Bigger impact:

By applying to a wide range of products, horizontal measures generate greater improvement potential and environmental benefits per policy measure, making it easier for them to gain political support.

More adaptive for innovation:

Because requirements are not product or part-specific, there is a lower risk of them becoming outdated as innovative technologies are introduced. They are especially useful in the ICT sector which is characterised by rapid innovation and continual introduction of new product types and functionalities that can be challenging to tackle through vertical product-specific regulations alone.

Coherence:

Such approaches can foster consistency across different sectors and products, ensuring a level playing field and avoiding unintended consequences, such as shifting environmental impacts from one product to another. They establish a safety net of minimum requirements thereby resolving many common durability issues across product groups.

Encourages Ecodesign of new products via common approaches:

Sets a precedent for overarching material efficiency requirements that encourages Ecodesign of emerging products via common approaches even if these are not currently covered by requirements due to the threat that they could be easily included in future scope revisions. This can create a more fertile environment for manufacturing practices to improve and greener innovation to be fostered.

Easier to address B2B and custom products:

by their nature, horizontal requirements are less part-specific, enabling widely varying form factors such as those often found in B2B products to be addressed.

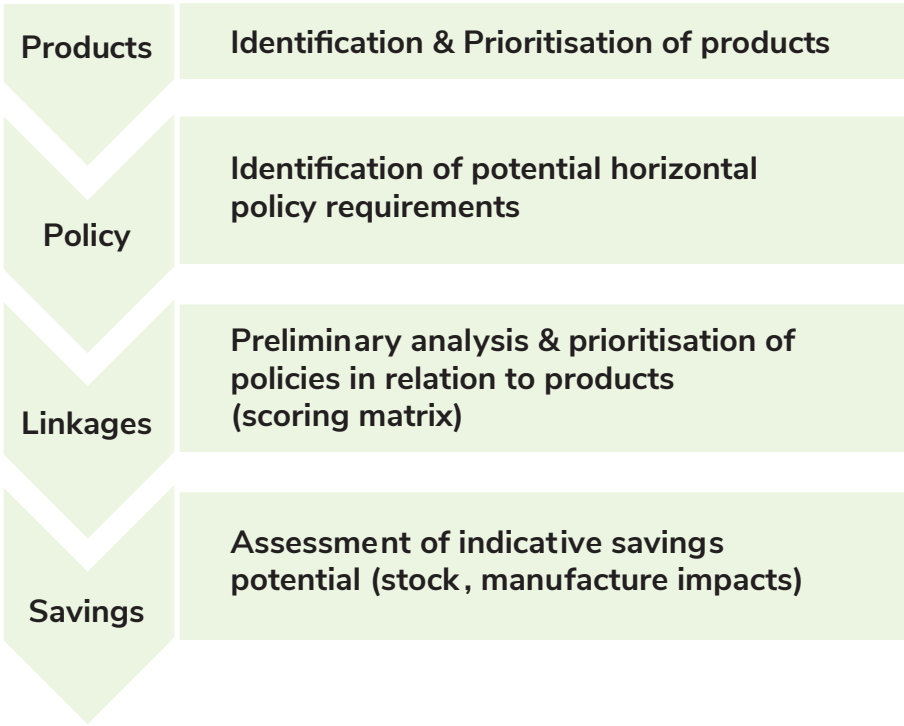
Despite these advantages, it is important to anticipate and address the challenges of horizontal measures. For example, there may be uncertainties around scope, so smart approaches to adequately define horizontal scope are necessary (not too precise but not too general). As a result of the complexities of the requirements impacting such a diverse range of products implementation may be more demanding. It is also important to avoid setting requirements at the lowest level of ambition and instead identify solutions to ensure requirements can be sufficiently stringent whilst still applying to a wide range of products.

METHODOLOGY

STRUCTURE

This study took a rigorous methodological approach to identify the most relevant product groupings and related policy measures that could be included in a horizontal mechanism for CE/ICT products. In a similar approach to the ESPR work programme study[3] , the investigation followed the following procedure:

Figure 1: Methodology



[3] Faraca, G., Spiliotopoulos, C., Ranea Palma, A., Pérez-Camacho, M.N., Alfieri, F., Bernad Beltran, D., Lag Brotons, A., Delre, A., Pérez Arriba, Z., Arcipowska, A., La Placa, M.G., & Wolf, O. (JRC B.5 - Circular economy and Sustainable Industry). Sanye Mengual, E., Amadei, A., Maury, T., Ardente, F., & Mathieux, F. (JRC D.3 - Land resources and Supply Chain Assessment). (2023). Ecodesign for Sustainable Products Regulation - preliminary study on new product priorities (Technical Report [draft]).

PRODUCT & POLICY SCOPE

The scope of this study was ICT and consumer electronics in both the consumer and business to business domains. The assessment covered the products addressed in the JRC task force study on ICT products, also taking into account those covered under the Radio Equipment Directive (RED (EU) 2022/2380) and potential requirements related to consumables, software, spare parts and accessories. For a full list please see Annex A. The focus of this study was on environmental aspects mainly relating to material efficiency such as durability and reparability that could be addressed via established policy approaches such as Ecodesign, eco/energy labelling, the Radio Equipment Directive, or new approaches under ESPR. See Annex B for a full list of the policies assessed. Whilst some horizontal measures[4] such as default power management settings exist, such approaches were out of scope of this work. Likewise, material content (including recycled content) and recycling requirements were outside the focus of this analysis due to considerations for example around quantifying end-of-life savings.

[4] A precedent for horizontal requirements on energy efficiency has already been set by the standby regulation (EU) No 801/2013. Extended energy efficiency approaches in the horizontal realm could for example include the regulation of default power management settings (corresponding to the least consuming operational mode with all green features enabled), as well as enforcing a mandatory warning to inform the user about the negative energy impact of changing default settings.

IDENTIFICATION & PRIORITISATION OF PRODUCTS

A ranking of horizontal product groupings was determined according to how suitable they would be to be regulated horizontally and the potential savings that could be achieved. An initial product list (Annex A) was compiled, based on existing JRC studies such as the ICT Task Force Study. This included some products that had at least partially been addressed under Ecodesign regulations, but also many products that had not yet been addressed, especially in the B2B area. Many of these products had high stock and sales presence in Europe, such as network equipment (routers and switches), smart and networked speakers, security cameras and public WLAN hotspots. Others had high resource intensity such as ticketing kiosks, point of sale terminals and ATMs.

BOX 2. CHALLENGES OF ADDRESSING B2B PRODUCTS

For some ICT products such as servers and kiosks the market is predominantly business-to-business. Other products such as laptops have a strong presence in both the consumer and commercial sectors. There are several challenges associated with addressing B2B products via Ecodesign regulations, including:

Complexity:

B2B products are often more complex than consumer products, making it more difficult to define appropriate Ecodesign requirements that account for the entire product lifecycle.

Heterogeneity:

B2B products may be custom specified and vary widely in terms of their design, materials, and intended use, making it challenging to gather data and develop Ecodesign requirements that are suitable for all products.

Lack of market transparency:

Unlike consumer products, B2B products are often not sold directly to end-users, which can make it difficult to gather data on their environmental impact and to identify opportunities for improvement.

Limited stakeholder engagement:

It may be difficult to engage stakeholders especially where small and medium-sized enterprises (SMEs) are involved that could lack the resources to engage with the legislative drafting process.

Supply chain diversity:

The importance of material efficiency regulation may vary within product groups. The same products may be supplied either on a simple purchase basis, accompanied by a service agreement or purely as a service. Where provided as a service or with a service agreement, products may already be designed for ease of professional repair, refurbishing and longevity. In contrast, when provided as a product these aspects may be more neglected.

Such challenges are likely to have discouraged this sector from being properly addressed via vertical Ecodesign measures. The Ecodesign working plan preparatory study[5] highlighted that there are substantial untapped opportunities to address the repair and reuse of business-to-business products that have been overlooked in preparatory studies to date. ***Horizontal measures present the ideal approach to enable these extensive savings to be accessed.***

Addressing B2B products in this way could be advantageous, for example for some ICT products B2B represents the most important market and so could yield significant savings.

[5] Viegand Maagøe A/S, Oeko-Institut e.V., & Van Holsteijn en Kemna BV. (2021, April). Preparatory study for the Ecodesign and Energy Labelling Working Plan 2020-2024: Assistance to the European Commission, TASK 3 PRELIMINARY ANALYSIS OF PRODUCT GROUPS AND HORIZONTAL INITIATIVES [Final report]. European Commission, DG GROW.

IDENTIFICATION OF POTENTIAL HORIZONTAL POLICY REQUIREMENTS

Initial list

A detailed list of potential horizontal policy requirements was developed from previous Ecodesign preparatory studies that addressed material efficiency considerations, such as the server and data storage and smartphone and tablets preparatory studies. This was added to with additional ideas for innovative material efficiency policies. Please see annex B for a full list of the policies assessed.

For each potential requirement a weighting score was calculated[6] based on the following criteria:

1. Existing precedent e.g. already applied under Ecodesign to some products and could be expanded to others

2. Product non-specificity e.g. the policy can be applied generally across a range of products without the need for analysis to define a list of priority parts for each product

3. Crossover with existing horizontal regulations (negative scored)

4. Downsides / potential rebound effects (negative scored) e.g. a reduction in one lifecycle phase having the potential to increase impacts in another lifecycle phase.

5. Potential to influence/inform consumer purchase choice. When a new purchase is planned the consumer may for example procure a different option because of the policy

6. Potential to influence/inform repair decision and/or product longevity. When a product breaks the policy can influence the action they take e.g. choosing repair instead of discarding the product.

7. Potential to influence in-use impact e.g. energy or consumable use in product or system

8. Reduction in embedded manufacture / logistical impacts

9. Reduction in end-of-life impacts

[6] cores were 10, 5 or 0 to represent high, medium or low for each criterion, with criteria 3 and 4 being negatively scored as these implied barriers to implementation.

The policy measures spanned the following main areas:

Reliability / durability: including information on expected lifetime for consumer goods, drop / shock / scratch resistance for portable / handheld products, and battery endurance for battery containing products.

OS / software / firmware: including extended OS/firmware support, the possibility to install open-source operating systems, the reversibility of updates to consumer goods, cloud service availability & freedom

Reparability: including provision of repair information for non-security-related products, spare part availability, prevention of part pairing, and non-destructive battery / display removal and replacement (where relevant to product).

Readiness for second use, remanufacture and refurbishing: including product take back, factory reset, data erasure, ability to identify and separate parts, and quality labelling for remanufactured and refurbished products.

Social and due diligence: including a product/part passport, label / score on "ethical electronics", minimum requirements for sustainable sourcing)

Note: The above areas represent logical groupings of requirements as established through technical studies to support material efficiency policy and related standardisation activities. Some design principles core to material efficiency are not explicitly listed here as they are addressed via a range of different requirements occurring under the different headings. For example, product modularity is addressed through requirements relating to ease of disassembly, and upgradability is addressed under readiness for second use (e.g. memory extension card option), reparability (e.g. ability to remove and replace components) and OS / software (e.g. capacity of the device allows installation of next OS versions and future functionalities)

Although they could also be included in horizontal measures, material content (including recycled content) and recycling requirements were outside the focus of this analysis due to diverse considerations for example around material supply availability, content verification, quantification of end-of-life savings, and product-specific technical challenges. Some measures around information on Critical Raw Materials (CRM) and limits on toxic materials (e.g. halogenated and organophosphorous flame retardants) could already be possible at a horizontal level, and standardisation work is currently underway that will facilitate addressing more complex aspects in future, such as the activities of IEC TC111 WG19 on the declaration of recycled content.

PRELIMINARY ANALYSIS & PRIORITISATION OF POLICIES IN RELATION TO PRODUCTS

The technoeconomic feasibility of each potential requirement in relation to each product type was assessed via a heat map matrix. This enabled a visual representation of the data using colours to highlight patterns and relationships. The output highlighted where the highest potential lay for horizontal requirements: Details on this analysis are included in Annex C.

ASSESSMENT OF INDICATIVE SAVINGS POTENTIAL

The modelling approach taken is preliminary and very approximate to provide order of magnitude figures in the absence of more detailed studies into the broad product groups:

Rationale: Cumulative savings are based off the assumption that all prioritised products see their lifetimes extended by a number of years after their current lifetime has elapsed (between 2 to 10 years, varying by product group), avoiding the need for a new product to be produced, and therefore mitigating the annualised manufacturing impacts for that product for each of the years lifetime is extended. A per year savings figure is also provided that simply compares the manufacturing impacts divided over the lifetimes for current and extended life products.

Metrics: Savings potential is only measured in terms of CO2 equivalent emissions, although other environmental benefits will also be generated for example related to resource depletion and water use. Not all of the CO2 savings will occur within the EU as a significant proportion of electronic products are manufactured in Asia and savings therefore cannot be counted directly against EU climate targets.

Lifetime extension assumptions: Assumptions are conservative, and within the potential useful lifetime range of current products. Ambitious Ecodesign policies could achieve an even greater useful lifetime extension. For example, for data centre (DC) routers and switches, an increase from 7.5 to 17.5 years has been estimated, but according to refurbishers lifetime could even be extended to 20 years.[7] The minimum lifetime extension assumed is an increase of around a third of current lifetime for kiosks (from 8.75 to 12.00 years). The maximum lifetime extension assumed is the more-than-doubling of lifetime for data centre routers and switches.

Stock / growth assumptions: The savings are based off a total replacement of EU stock after a full product lifetime has elapsed from the point of policies coming into force. Stock rather than sales was used for simplicity as extending lifetimes will reduce sales, making the interpretation of contrasts between different lifetimes more difficult. Two savings figures are calculated as explained in the rationale section, multiplied across all products in EU stock. Stock levels used are approximate for as close to 2023 as it was possible to estimate. To ensure calculations are not overly ambitious, and because savings would be accessed in different years for different products, future stock growth has not been accounted for, even although for many products this is very likely.

Coverage: Only a subset of products was covered from the prioritised product groupings that were likely to have significant potential savings and for which baseline data was available or assumptions could be more easily made regarding stock and manufacturing environmental impacts.

[7] Free ICT Europe Foundation. (2020, September). Network Equipment: Crucial in Connectivity & the ICT Circular Economy" in response to the call for including Network products in the Ecodesign Regulation.

RESULTS & DISCUSSION

POLICY MEASURE PRIORITISATION

The highest scoring product requirements that could be implemented on the shortest timeframe were:

Battery and display reparability and durability: For example, battery cycle stability, information on correct use and maximum replacement costs, intelligent charging, status reporting, removability, applicable only to a subset of products that had these components.

Ingress: Water and dust resistance would be mainly applicable to consumer products, especially portable ones.

Digital storage sufficiency: Pre-installed digital file management would aid in identification and deletion of duplicate files and is mainly relevant to consumer products with digital file storage either in product or in the cloud. Improved file management reduces the pressure on the memory resources within products so they can be used for longer prior to upgrade or replacement. It can also reduce the environmental impacts of cloud storage.

Availability of diagnostic support interfaces: This would aid in reparability. Although it may already be relatively common in some business-to-business products, a horizontal legal requirement could exclude the least reparable products from the market.

Repair information availability: Supplying maintenance and repair information to the widest range of stakeholders possible facilitates increasing the likelihood of repair, although this may not be so relevant for security-related products.

Availability of OS update/ firmware support: For example, for at least 7 years after the placement of the last unit of the model on the market, plus information to users on the impact of updates and their reversibility.

Transferrable (with ownership change) product license available until end of life: For some products (for example enterprise network equipment) licenses are essential for the hardware to operate – if they expire the product will no longer operate. Yet these tend to have limited duration from the point of purchase, include firmware updates, and can cost thousands of euros. License renewals can be refused by OEMs when they decide to stop supporting them, or when a previous owner has not deauthorised their device, or when a new customer has purchased a second-hand product outside the OEM channel. This results in functioning products becoming prematurely obsolete.

Password/factory reset availability & easy/reliable data erasure: This can facilitate product reuse when a product has been discarded without prior user reset and can encourage users to pass their products on for reuse or recycling in the knowledge that they can be easily reset, and all data safely erased e.g. through encryption. Ease of data deletion via GUI is particularly relevant for consumer products, where the easier data can be deleted the more likely it is that the product will be put into second use with a new owner

CRM: The potential for horizontal requirements addressing CRM was mentioned in the Ecodesign and Energy Labelling Working Plan 2022-2024.[8] Horizontal limitations on the content of CRM and minerals from conflict-affected and high-risk areas and information to assist their extraction at end of life can be built upon the precedent already established in some vertical product legislation.

Prevention of part pairing & acceptance of third-party parts & consumables: Part pairing is an unacceptable practice that gives OEMs full control over spare part provision, potential repair operations and product obsolescence (see box). It is therefore a priority to address through horizontal policy requirements.

Due diligence & ethical electronics: Specific materials and battery types could be determined to be referenced for due diligence throughout the supply chain related to human rights, environment and occupational health and safety, for example in the form of:

- **Product or part passport / information requirements,**
- **Consumer label / score on "ethical electronics"**, building on existing initiatives such as OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.[9]
- **Minimum requirements on sustainable sourcing practices.**

Information on minimum/expected lifetime: This could empower consumer choice, incentivising manufacturers to design durable products and potentially transforming the market. A horizontal information requirement could allow for initial flexibility in how lifetime expectations were arrived at, whilst incentivising standardisation organisations to quickly develop more harmonised testing methods to arrive at approximate lifetime indications

Forward looking requirements that could encourage product longevity included EU-wide quality labelling schemes for refurbished and remanufactured products, requirements to allow the installation of open-source operating systems to foster the widest possible product reuse opportunities, and requirements around the availability and optional decoupling of devices from cloud services. Other areas that held promise but that may be slightly less horizontal (due to requiring some specific parts or test methods to be specified) were drop / shock / scratch resistance, durability and reparability scores, and requirements around spare part availability, delivery time and ease of disassembly.

[8] Communication from the Commission Ecodesign and Energy Labelling Working Plan 2022-2024 2022/C 182/01. Eur-Lex. (2022). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022XC0504%2801%29&qid=1651649049970

[9] OECD. (2023). OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. oecd.org https://www.oecd.org/corporate/mne/mining.html

Further issues to consider outside the scope of the current project.

BOX 3. DIGITAL SUFFICIENCY, DIGITAL SOBRIETY & DIGITAL INTOXICATION

These concepts are increasingly relevant in the context of Ecodesign regulations. The status quo could be described as a state of digital intoxication where there is excessive, inefficient, or addictive consumption of devices and digital content. For example, according to a report by the United Nations University, the world generated 53.6 million metric tons of e-waste in 2019, and this number is expected to increase to 74.7 million metric tons by 2030[10]. In parallel, the EU energy consumption of data centres is expected to rise 28% from 76.8 TWh in 2018 to 98,52 TWh by 2030.[11]

Horizontal policies driven by concepts such as digital sufficiency and digital sobriety (which propose mindful use of data and technology, doing more with less) could slow down the growth of such environmental impacts. For example, measures assessed in this study relating to ease of parts replacement and quality labels could facilitate more widespread refurbishing of products, consumers could be provided with information on the environmental impact of their data usage and video streaming settings, and pre-installed digital file management tools could help users identify and delete duplicate files, ensuring longevity of physical memory in their devices and reducing the energy impacts of cloud storage.

BOX 4. PART PAIRING

An unsustainable practice gaining popularity is to design products so that they can only be repaired or upgraded using parts supplied (and sometimes fitted) by the OEM or their authorised providers. This is often achieved via software locks that ensure that non-OEM replaced parts do not work properly. Such an approach enables OEMs to maintain control over spare part sales and repair and maintenance operations, which can be lucrative sources of revenue. Manufacturer justifications include that OEM controlled repair ensures safety and security and protects their brand – however, it has been found that the majority of manufacturer explanations for such repair restrictions, are not supported by evidence.[12] Further, safety and security can be ensured via other product design innovations instead of repair-preventative measures.

Part pairing is not an acceptable practice. It endangers the independent repair ecosystem, limiting employment and restricting consumer choice by making it more difficult for consumers to self-repair or upgrade their products or to have them repaired by third-parties. Repairs can take longer if more local independent repairers cannot carry them out (OEMs often send products away for repair), which can force consumers into buying new products. OEMs can more easily plan the obsolescence of their products because repair can become unaffordable leading to products being discarded and replaced rather than repaired.

Efforts have been made in draft Ecodesign legislation (for example for smartphones and tablets) to prevent
OEMs from employing design practices that result in repair, upgrade or maintenance operations being dependent upon specific parts that are only supplied and/or replaced by the manufacturer or their authorised providers. However, a sufficiently stringent wording has not yet been defined. To truly enable the right to repair this practice must be prohibited by any legislative or procedural means possible. Horizontal measures represent an opportunity to do this through a refined legislative approach that applies as widely as possible.

[10] United Nations University (UNU), International Telecommunication Union (ITU), & International Solid Waste Association (ISWA). (2020). Global E-waste Monitor 2020: Quantities, flows and the circular economy potential. https://www.itu.int/en/ITU-D/Environment/Documents/Events/2020/GEM%202020/Full_Report.pdf

[11] Montevecchi, F., Stickler, T., Hintemann, R., & Hinterholzer, S. (2020). Energy-efficient Cloud Computing Technologies and Policies for an Eco-friendly Cloud Market. Final Study Report. Vienna. https://digital-strategy.ec.europa.eu/en/library/energy-efficient-cloud-computing-technologies-and-policies-eco-friendly-cloud-market

[12] Federal Trade Commission. (2021). Nixing the Fix: An FTC Report to Congress on Repair Restrictions. Retrieved from https://www.ftc.gov/system/files/documents/reports/nixing-fix-ftc-report-congress-repair-restrictions/nixing_the_fix_report_final_5521_630pm-508_002.pdf

BOX 5. DUE DILIGENCE & ETHICAL ELECTRONICS

Due diligence is the process of taking reasonable steps to identify and mitigate risks related to human rights, occupational health and environmental impacts in the supply chain, and ethical electronics incorporate social and environmental responsibility in their product design. These are important considerations when defining horizontal Ecodesign measures as they address wider social and environmental issues related to the production of electronic products than have been typically addressed in Ecodesign regulations to date.

A policy precedent for addressing these aspects has already been established through the regulation intended to replace the battery directive[13], which includes the creation of a 'Battery Passport' and due diligence around raw materials in the supply chain including the assessment of social and environmental risk categories such as air, water, soil, biodiversity, human health, occupational health and safety, labour rights, including child labour, human rights, and community life. By including measures relating to due diligence and ethical electronics within horizontal Ecodesign measures, policymakers can proactively minimise the negative environmental and social impacts associated with electronics production, and promote a more sustainable and equitable electronics industry. The Ecodesign for Sustainable Product Regulation proposal unfortunately excludes social sustainability from its scope, although negotiations are ongoing.

BOX 6. UNRESTRICTED OS/SOFTWARE INSTALLATIONS

Most manufacturers impose restrictions on the software and firmware that can be used on their products by preventing users from installing third-party software or voiding warranties. Prohibiting such restrictions could lead to environmental savings in the following ways:

Lifespan extension and reduced e-waste:

Products could be used beyond their OEM-supported lifespan by installing alternative OS/software that can run on older hardware. This can open up vast new applications for older devices to be repurposed where they would otherwise have become completely unusable ('bricked').

Reduced energy consumption:

Users could potentially have more control over device settings and run lightweight software that reduces background processes and demands less energy.

Parts harvesting and part pairing:

Part pairing (Box 4) involves OEMs restricting the acceptance of replacement parts into their products, and can present a significant barrier to repair. The ability to install alternate OS/software on products would provide an option to ensure the acceptance of replacement parts in such circumstances. It could also encourage parts harvesting for reuse.

Such approaches could also encourage creativity and innovation in open source / maker communities.

[13] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020, COM/2020/798 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52020PC0798

GAPS IN COVERAGE OF PRODUCTS ALREADY UNDER ECODESIGN

An assessment of products in groupings already covered under Ecodesign was first necessary to consider how horizontal measures might interact with existing policy, and how existing policies would need to be improved if these products were not to be addressed in a horizontal way. It was assumed that material efficiency considerations would be addressed in revisions to existing regulations if these were not currently present, or improved to align with horizontal approaches if material efficiency measures were already addressed. An alternative would be for horizontal measures on material efficiency to be applied to these product groups too from the outset, although this could be complex where requirements overlapped.

Ecodesign regulations are currently being developed for some ICT/CE products, such as game consoles and imaging equipment (and print cartridges) or in the final stages of the legislative process such as in the case of UPS and smartphones and tablets. However, there are some products that could have been within the scope of existing work, yet have not been fully evaluated or measures have not been taken forward. For example:

Data centre cooling equipment: Whilst enterprise servers and data centre storage have been addressed via Ecodesign preparatory studies, the wider data centre and other system products like cooling and network equipment have not. Data centre cooling systems can comprise up to 40% of overall DC energy consumption (which as mentioned earlier could reach 98,52 TWh by 2030), with some DCs running redundant power and cooling systems to ensure higher levels of reliability[14]. The European Commission intends to regulate data centres under the energy efficiency directive via a reporting scheme which allows metrics and minimum energy performance standards to be developed at a future date. It is crucial that the Commission follow through and legislate on these products as soon as possible to mitigate against these significant environmental impacts.

Home and professional audio: Products such as loudspeakers, radios, audio players/recorders, audio amplifiers, audio receivers /tuners, and soundbars could have been assessed under the Lot 3 sound and imaging preparatory study and impact assessment[15] but were defined as out of scope. Further, subsequent to this study, smart and networked speakers began to emerge on the European market and Bluetooth speakers expanded in popularity. Therefore, this group has been inadequately assessed for Ecodesign potential and at least some of the products in it could be candidates for horizontal measures.

[14] Bertoldi, P., Avgerinou, M., & Castellazzi, L. (2017). Trends in data centre energy consumption under the European Code of Conduct for Data Centre Energy Efficiency (EUR 28874 EN). Luxembourg: Publications Office of the European Union. doi:10.2760/358256 https://publications.jrc.ec.europa.eu/repository/handle/JRC108354

[15] Cox, V., McAlister, C., Wood, J., Jehle, C., Harrison, R., Vernon, J., Salado, R., Rock, A., & Kacker, A. (2013). Impact Assessment Study for Sustainable Product Measures Lot 3 – Sound and Imaging Equipment

In addition, it is important to close gaps in current Ecodesign regulations that have limited product coverage due to exemptions and scope limitations. This is particularly the case in relation to higher specification and business-to-business products. To optimize the environmental benefits and provide a greater drive towards the circular economy in the business-to-business sector, it is essential that the following gaps are filled:

Electronic displays (Regulation EU 2019/2021): This regulation could be expanded to address medical displays, projectors, interactive whiteboards and video conference systems.

Servers & data storage (Regulation EU 2020/1955): This regulation could be widened to include High Performance Computing, which will become more prolific as AI expands, as well as smaller products such as home network assisted storage (NAS) and external hard drives.

Common charger (Revision to EPS Regulation 2019/1782 & RED 2014/53: This could go further to also address external power supplies used with network products and kiosks.

Imaging equipment: Preparatory work is underway for the first Ecodesign regulation for this product group, but intentions should be set in the review clause to include 3D printers in scope.

HORIZONTAL GROUPINGS & RANKINGS FOR NEW PRODUCTS

Emerging from the analysis were four key groupings of heterogeneous form-factor products with common elements that could be addressed through horizontal regulations[16]:

Networks and network equipment: including routers and switches, for data centres, B2B and consumer markets, mobile network infrastructure and public WLAN hotspots.

Automated transaction & service machines (ATSMs): including kiosks, ticket machines, POS (including card readers), toll-related ICT and ATMs

Portable lifestyle products & smart speakers: including smart and network connected speakers, e-readers, Bluetooth headphones & speakers, videogame consoles, peripherals, wearable tech and personal care devices.

Smart security and sensor systems: including industrial sensors and CCTV, alarm and building automation and control products such as cameras, control panels, sensors, actuators, and alarm speakers.

BOX 7. SOFTWARE INFLUENCE

The potential for horizontal requirements addressing software was mentioned in the Ecodesign and Energy Labelling Working Plan 2022-2024.[17] Software products, including operating systems, applications, and related cloud services can have a substantial influence on both product and cloud energy consumption and product longevity. Their availability, backward compatibility and correct functioning can be critical to extending the lifetime of hardware products. Whilst software was initially considered as a potential product, a horizontal measure on software would look very different to the other measures being considered, so software as a product was not explored in depth. There is, however, potential for a regulation to be developed on software that includes the development of requirements on software-related energy efficiency, energy consumption, and digital sufficiency e.g. rationalising the use of cloud storage. Within this report, considerations around software are restricted to potential horizontal requirements on software/update support availability.

[16] Note: network equipment, base stations (mobile antenna) and smart / network speakers were assessed in the Ecodesign and Energy Labelling Work Plan of 2020 - 2024

[17] Communication from the Commission Ecodesign and Energy Labelling Working Plan 2022-2024 2022/C 182/01. Eur-Lex. (2022). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022XC0504%2801%29&qid=1651649049970

These products were ranked based upon their volume in Europe, the ease of applying horizontal requirements to the group, and the material impacts per typical product, as shown below:

Table 2: Product group ranking

	Ease of applying horizontal requirements	EU stock / sales	Production environmental impact	Ranking
Networks & network equipment	*high*	*very high*	*medium-low*	*1*
Automated transaction & service machines (ATSMs)	*medium*	*medium-low*	*very high*	*2*
Portable lifestyle products	*high*	*high*	*low*	*3*
Smart security and sensor systems	*medium*	*medium*	*medium-low*	*4*

COMPOSITION OF HORIZONTAL MEASURES

The following sections provide the rationale for material efficiency measures and the tables provide a list of potential requirements to illustrate how horizontal policies could be developed for the wide product groupings identified. The potential list of policies emerging from the analysis is more expansive, but these sections simply list the easiest to apply, highest saving and most horizontally relevant policies.

Networks and network equipment

Network equipment is often discarded before it is obsolete – for example due to fixed hardware update cycles or license expiration. Whilst it can be refurbished for use by other companies with less demanding specifications, there can be significant barriers to such initiatives. OEMs often offer refurbished options, although they may only support these for a limited time, and support prices may increase over time to incentivise customers to shift to new products. Two thirds of companies reported that they would have retained at least 25% of their equipment if the OEMs had continued to offer support for it. Third party maintainer companies also work to extend the lifetime of equipment through[18] repair and refurbishing, and software and hardware maintenance services. However, they can encounter the following issues:

- Restricted or delayed access to OEM controlled elements needed for the maintenance of hardware such as firmware, microcode, spare parts and documentation.
- Difficulties accessing diagnostic tools.
- License reinstatement fee penalties or renewal refusal imposed by OEMs.

Mobile network antenna are also included in this group. As lifetimes can be relatively long, older antenna may be moved around the network where performance is less critical. As well as repairability, the availability of software / firmware update support can be important to ensure antenna continue to operate.

[18] Free ICT Europe Foundation. (2020, September). Network Equipment: Crucial in Connectivity & the ICT Circular Economy" in response to the call for including Network products in the Ecodesign Regulation.

The key potential horizontal policy requirements for networks and network equipment are listed below:

POLICY EXAMPLES / SUGGESTIONS

Networks and network equipment potential horizontal policy requirements

- *Availability of OS update / firmware support*
- *Password and/or factory reset availability / process*
- *Availability of diagnostic support interfaces*
- *Repair and maintenance information availability and/or reparability score / label*
- *Transferrable product license available until end of life*
- *Information on minimum / expected lifetime and/or durability score*
- *Quality labelling for refurbished, remanufactured and second-hand markets.*
- *Product or part passport, information requirements, consumer label or score on "ethical electronics" and due diligence throughout the supply chain of specified materials and batteries, related to human rights, environment and occupational health and safety*
- *Minimum requirements for sustainable sourcing practices related to the above aspects.*
- *Limitations on CRM content in the product, access to product data relevant for recycling, and provision of additional information for recyclers e.g. on location of valuable materials in the product*
- *Prevention of part pairing/serialisation and acceptance of third-party parts and consumables*
- *Use of fasteners that are reusable, replaceable, and allow for non-destructive disassembly, especially in casing.*

Automated transaction & service machines (ATSMs)

ATMs, point of sale (POS) terminals and kiosks can range widely in their environmental footprint, from automatic teller machines that weigh hundreds of kilos and incorporate substantial quantities of metals in the frame and casing, to lightweight information kiosks that may be little more than a touchscreen tablet and e-payment terminals similar to smartphones. Material efficiency options will be dependent on the dynamics of the supply chain – for example, service models may facilitate circularity through greater opportunities for product return, parts harvesting and use of harvested parts in refurbished machines. Typical issues that can occur include:

- Impact damage: POS scanners and card readers may suffer damage as a result of being dropped.
- Connectivity issues: Although these are usually caused by network issues they can also be caused by software or hardware failures.
- Cash drawer/dispenser failure: These may fail to open due to a paper jam or problems communicating with the rest of the system.
- Printer failure: Especially likely to occur where lower quality print paper is used, or paper is poorly loaded.
- Card reader wear-out: With intensive use this may require cleaning, repair, or replacement.
- Keypad failure: For example, a button sticking or not responding.
- Software issues: These may occur due to poor installation or integration of updates.
- Vandalism: Because these devices are public-facing, there may be damages due to intentional harm, for example broken screens or clogged card readers.

[18] Free ICT Europe Foundation. (2020, September). Network Equipment: Crucial in Connectivity & the ICT Circular Economy" in response to the call for including Network products in the Ecodesign Regulation.

The key potential horizontal policy requirements for ATSMs are listed below:

POLICY EXAMPLES / SUGGESTIONS

ATSM potential horizontal policy requirements

- *Display removability and replacement*
- *Reliable data erasure through encryption combined with factory reset*
- *Availability of OS update/ firmware support*
- *Provision of information on maximum costs for display replacement*
- *Where relevant, battery endurance, information provision and status reporting, management software, non-destructive disassembly, and provision of information on maximum costs for battery replacement*
- *Information on minimum / expected lifetime and/or durability score*
- *Provision of repair and maintenance information and diagnostic support*
- *Self-reporting of energy use to users*
- *Product or part passport, information requirements, consumer label or score on "ethical electronics" and due diligence throughout the supply chain of specified materials and batteries, related to human rights, environment and occupational health and safety*
- *Quality labelling and certification for refurbished and remanufactured markets*
- *Scratch-resistance (e.g. display, casing)*
- *Limitations on CRM content in the product, access to product data relevant for recycling, and provision of additional information for recyclers e.g. on location of valuable materials in the product*

Portable lifestyle products and smart speakers

This group includes a range of battery-powered products, some of which are relatively small and may be difficult to repair due to miniaturisation and waterproofing, such as Bluetooth headphones and smartwatches. Another issue with portable devices can be exposure to impacts and falls. Further, these small devices are often marketed on the basis of their technical features, and as new technologies come to the market consumers may choose to replace products before the end of their useful life.

Smart and networked speakers in both the domestic and tertiary sectors (cafes, offices etc) are also included in this group. Software update availability can be critical to the lifetime of these products.

Common failures include:

- **Water damage**, especially with products that may be worn in wet conditions or left in a pocket and accidentally washed with clothes.
- **Impact damage** such as screen breakage and dislodging of components.
- **Battery degradation.** Over the course of a certain number of charge cycles, the battery will lose capacity and performance until it eventually needs replaced, which may or may not be possible depending on how well the device is designed for repair.
- **Charging port failure** due to dust and grit or wear and tear from frequent use.
- **Software obsolescence**. This may be due to the operating system or firmware no longer being supported by the manufacturer resulting in apps and other functionality ceasing to function. It could also be due to software conflicts whereby multiple updates fail to properly integrate resulting in system crash, freezing, reduced performance, and other unexpected behaviours.
- **Subscription termination**. Products such as smart speakers and portable media devices may be viewed as obsolete by the consumer where basic functions are deemed unsatisfactory after terminating subscriptions to linked services.
- **Motor failure** can occur in personal care products such as shavers and electric toothbrushes.
- **Perceived performance reduction**. Consumers may replace devices unnecessarily due to reduced performance caused by poor maintenance – for example uneven shaving with an electric shaver due to not replacing the blades.
- **Capacity limitations**. As media files become higher resolution, and consumers amass greater media libraries, the memory and/or processor speed on devices can become insufficient and consumers may feel they need to upgrade their devices for more space and improved operation.

The key potential horizontal policy requirements portable lifestyle products and smart speakers are listed below:

POLICY EXAMPLES / SUGGESTIONS

Portable lifestyle product potential horizontal policy requirements

- *Battery endurance, information provision and status reporting, management software, non-destructive disassembly, use of standardised batteries, and provision of information on maximum costs for battery replacement*
- *Display removability/replacement and provision of information on maximum costs for replacement*
- *Water and dust resistance*
- *Drop / shock and scratch resistance*
- *Information on minimum /expected lifetime and/or durability score*
- *Collection of products / put in place take back schemes*
- *Product or part passport, information requirements, consumer label or score on "ethical electronics" and due diligence throughout the supply chain of specified materials and batteries, related to human rights, environment and occupational health and safety*
- *Pre-installed digital file management for sufficiency, ease of data transfer to new devices and reliable data erasure through encryption combined with factory reset (where digital files are stored), and password reset capability*
- *Availability of supporting cloud services and ability to decouple the product from these if required.*
- *Repair and maintenance information availability and/or reparability score and information to users on the impact of updates and their reversibility*
- *Recyclability information (including. scores) to consumers / clarity of recyclability claims*
- *Availability of OS update/ firmware support (where relevant)*
- *Limitations on CRM content in the product, access to product data relevant for recycling, and provision of additional information for recyclers e.g. on location of valuable materials in the product*
- *Quality labelling and certification for refurbished, remanufactured and second-hand markets.*
- *Prevention of part pairing/serialisation and acceptance of third-party parts and consumables*
- *Use of fasteners that are reusable, replaceable, and allow for non-destructive disassembly, especially in casing.*

Smart security and sensor systems

This group includes security systems components such as cameras, sensors and control units, and sensors for building automation and industrial applications. Durability is an important design consideration as these products can often be used in outdoors or in harsh environments, they may need to be able to withstand exposure to moisture, extreme temperatures, UV radiation etc. Security and calibration may be important for such products and systems, so repair may be dependent on the supplier, especially where products are designed to be tamper proof, contain proprietary components or fastenings, or require repairs to be carried out in clean-room environments. As a result of this closed repair environment, spare parts may be difficult to source independently and there may not be openly available repair information. The more demanding nature of repair for these products may provide an economic bias towards replacement rather than repair.

Common issues for sensor and security systems can be:

- **Part pairing:** Parts may be designed so that they cannot be replaced without supplier authorisation, justified as ensuring their authenticity and security. However, this can create a barrier for repair and reuse of parts.
- **Data deletion:** Data security and privacy are important considerations in such systems but there may also be concerns about the efficacy of data deletion that cause devices to be destroyed after use instead of data being erased to enable reuse. Ensuring users have confidence in data deletion opens up the opportunity for products to be refurbished and/or reused.
- **Firmware and software updates:** For security systems and sensors the timely installation of the most up to date firmware and software may be essential for effective operation and integration with newer products. If a supplier stops supporting a product or system, this could result in it instantly becoming obsolete. Therefore extended availability of updates is important to ensure hardware can continue to be used to the end of its functional life..
- **Battery degradation.** Batteries may be present in some of these products to ensure backup operation in the event of power outage or to enable monitoring in area where there is no mains connection. Over time these may lose capacity and performance until they eventually need replaced, which may result in replacement of the whole product if it is not designed for repair.
- **Perceived loss of accuracy:** Accuracy of sensors may be impaired if appropriate maintenance is not carried out, resulting in premature replacement of the device.

POLICY EXAMPLES / SUGGESTIONS

Smart security and sensor system potential horizontal policy requirements

- *Availability of OS update / firmware support*
- *Reliable data erasure through encryption combined with factory reset (where digital files are stored), and password reset capability*
- *Repair and maintenance information availability and/or reparability score and information to users on the impact of updates and their reversibility*
- *Water, scratch and dust resistance*
- *Information on minimum / expected lifetime and/or durability score*
- *Provision of maintenance information*
- *Self-reporting of energy use to users*
- *Availability of supporting cloud services and ability to decouple the product from these if required.*
- *Closed loop return options or take back schemes*
- *Limitations on CRM content in the product, access to product data relevant for recycling, and provision of additional information for recyclers e.g. on location of valuable materials in the product*
- *Provision of additional information for recyclers e.g on location of valuable materials in product*
- *Quality labelling and certification for refurbished, remanufactured and second-hand markets.*
- *Product or part passport, information requirements, consumer label or score on "ethical electronics" and due diligence throughout the supply chain of specified materials and batteries, related to human rights, environment and occupational health and safety*
- *Use of fasteners that are reusable, replaceable, and allow for non-destructive disassembly, especially in casing.*

SAVINGS POTENTIAL

It was not possible to model potential savings for all the products in the identified product groupings. However, savings were calculated for a subset of products in these groupings as detailed below:

Networks and network equipment: Calculations include data centre, office and home routers and switches, mobile network infrastructure and public WLAN hotspots.

Automated transaction & service machines (ATSMs): Calculations include kiosks like ticket machines, self-service and cashier operated POS, and ATMs.

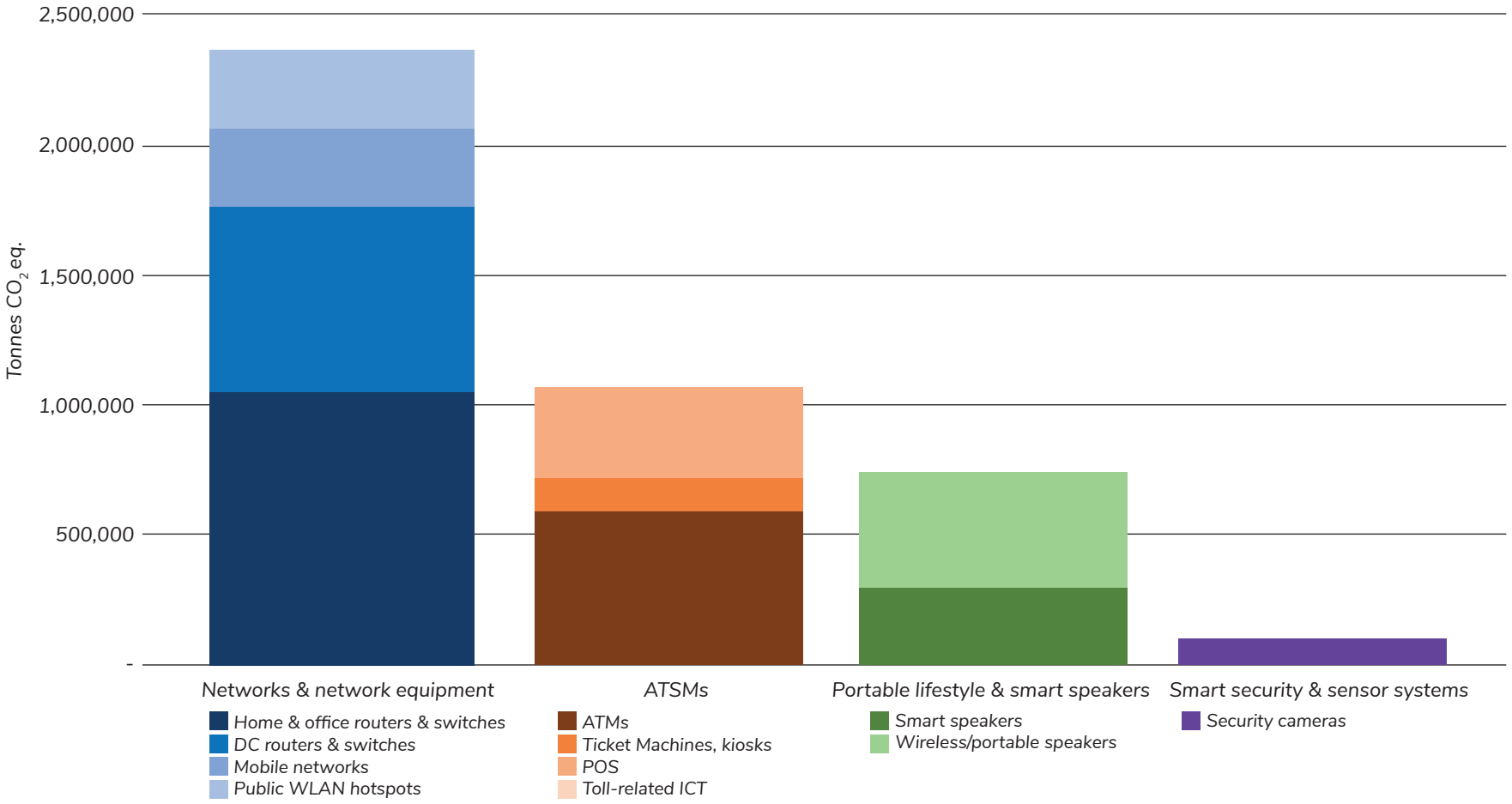
Portable lifestyle products & smart speakers: Only Bluetooth speakers and smart/networked speakers have been modelled. Actual savings would be larger as savings related to e-readers, Bluetooth headphones, portable videogame consoles, peripherals, wearable tech and personal care devices should also be assessed.

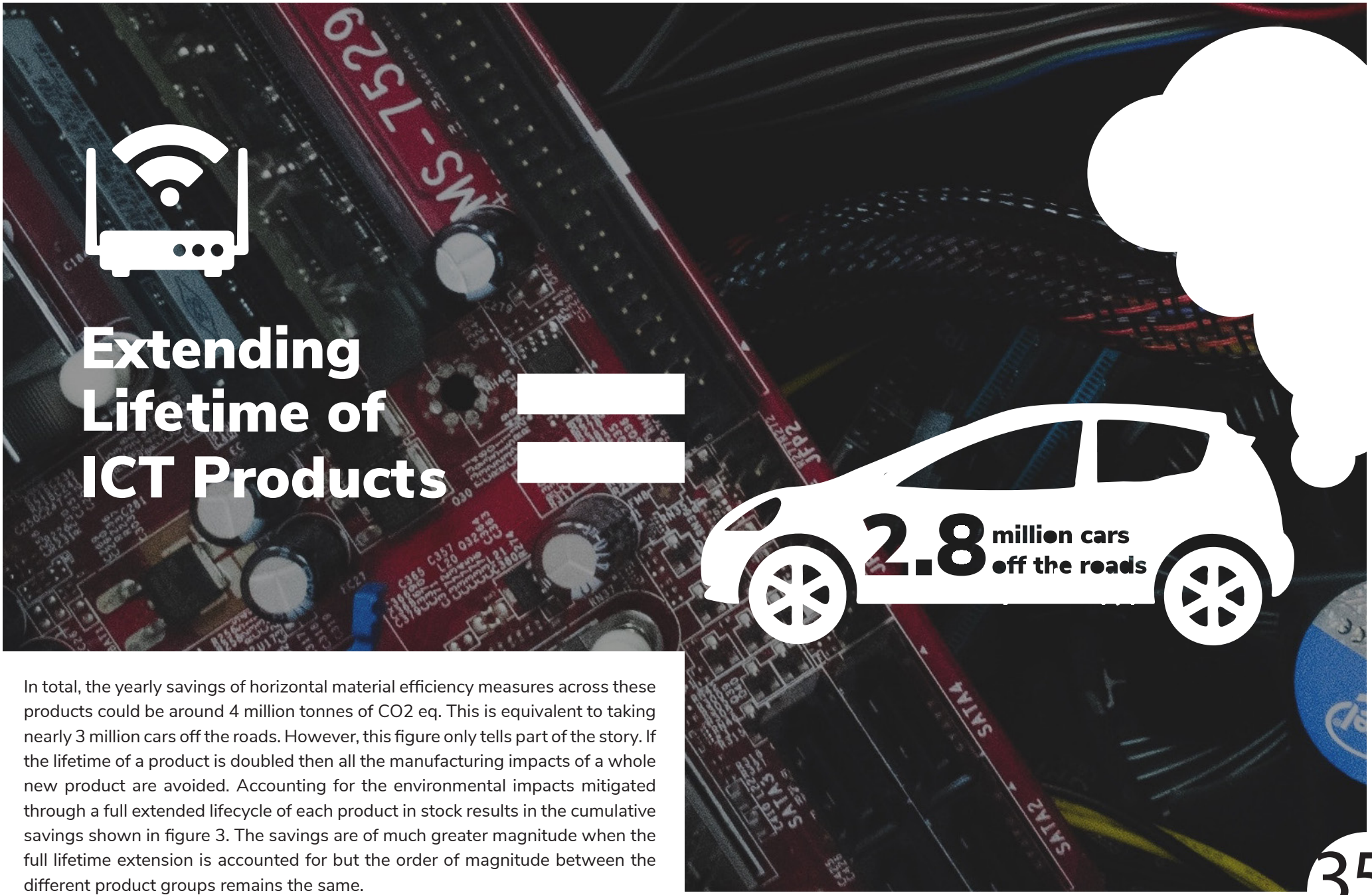
Smart security and sensor systems: Only domestic and commercial security cameras (including CCTV) have been modelled, so actual savings would be larger as savings related to control panels, sensors, alarms, building automation and control, and industrial sensors should also be taken into account.

The charts below provide a summary of the approximate potential CO2eq savings for horizontal measures addressing the identified groups of products. Figure 2 shows the savings on a per year basis, comparing the yearly manufacturing impacts of current versus optimal lifetime products in the case of complete replacement of stock with longer life products. It shows that the most savings are accessed through measures addressing networks and network equipment, particularly in data centres ("enterprise equipment"). This reinforces the salience of reparability and durability measures for these products that was observed in the preparatory study for the Ecodesign and Energy Labelling Working Plan 2020-2024[19]. ATSMs also have a very notable potential, followed by portable lifestyle and smart speakers and then security and sensor systems.

[19] Viegand Maagøe A/S, Oeko-Institut e.V., & Van Holsteijn en Kemna BV. (April 2021). Preparatory study for the Ecodesign and Energy Labelling Working Plan 2020-2024: Assistance to the European Commission, Task 3 preliminary analysis of product groups and horizontal initiatives (Final).

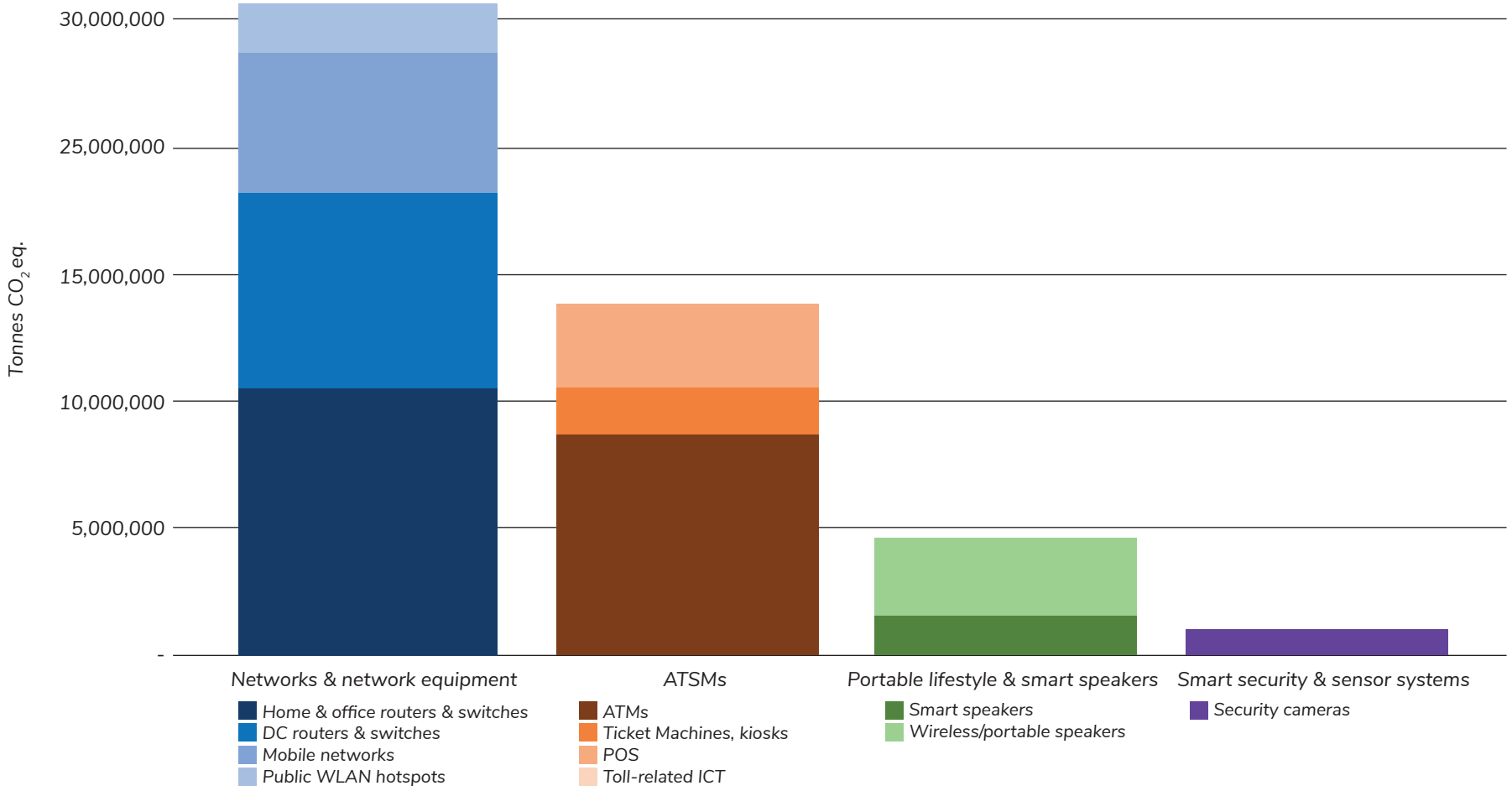
Figure 2: Yearly potential savings of horizontal material efficiency measures

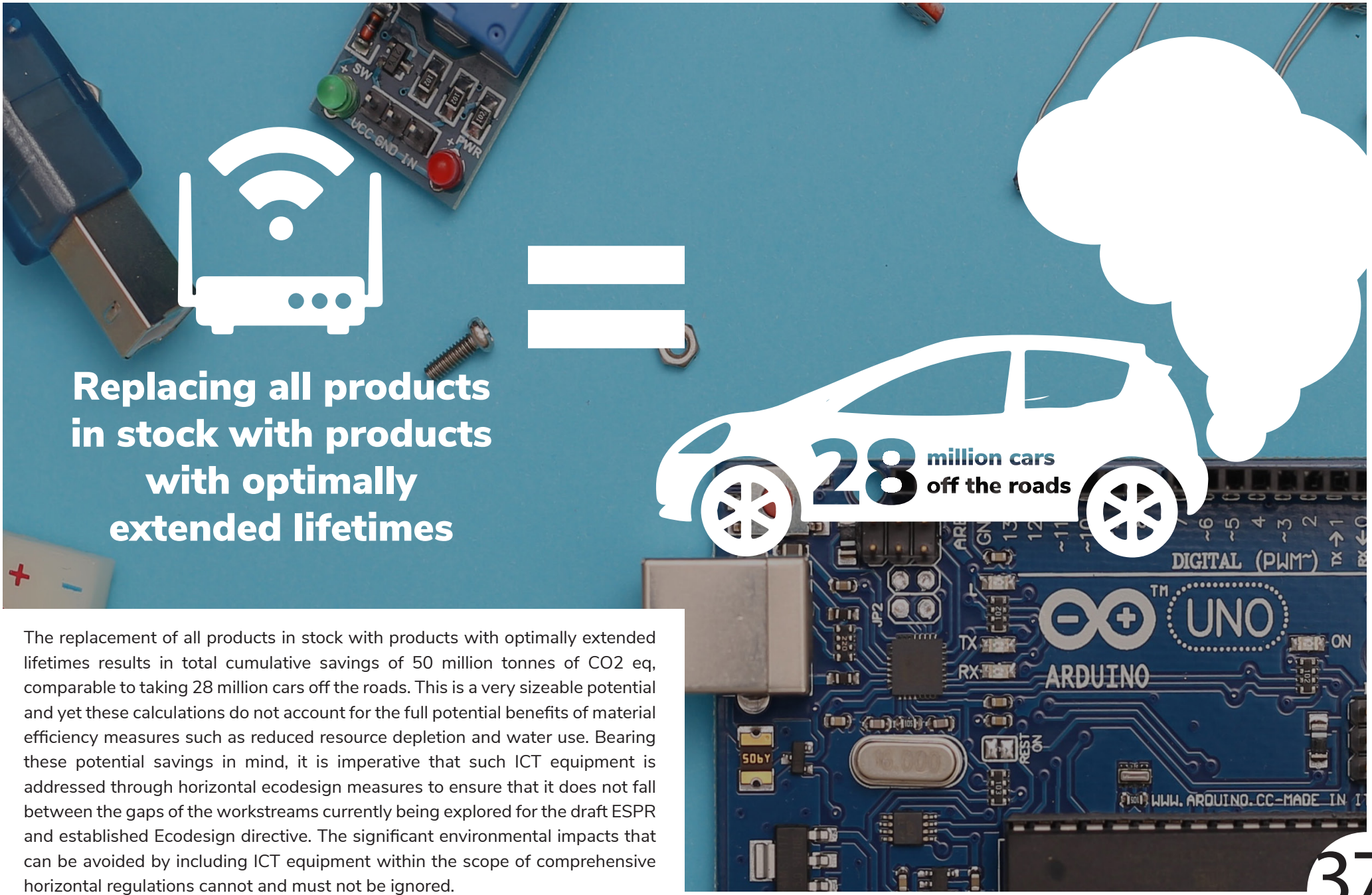




In total, the yearly savings of horizontal material efficiency measures across these products could be around 4 million tonnes of CO2 eq. This is equivalent to taking nearly 3 million cars off the roads. However, this figure only tells part of the story. If the lifetime of a product is doubled then all the manufacturing impacts of a whole new product are avoided. Accounting for the environmental impacts mitigated through a full extended lifecycle of each product in stock results in the cumulative savings shown in figure 3. The savings are of much greater magnitude when the full lifetime extension is accounted for but the order of magnitude between the different product groups remains the same.

Figure 3: Total cumulative impacts mitigated due to one whole extended lifetime for all products in stock





The replacement of all products in stock with products with optimally extended lifetimes results in total cumulative savings of 50 million tonnes of CO2 eq, comparable to taking 28 million cars off the roads. This is a very sizeable potential and yet these calculations do not account for the full potential benefits of material efficiency measures such as reduced resource depletion and water use. Bearing these potential savings in mind, it is imperative that such ICT equipment is addressed through horizontal ecodesign measures to ensure that it does not fall between the gaps of the workstreams currently being explored for the draft ESPR and established Ecodesign directive. The significant environmental impacts that can be avoided by including ICT equipment within the scope of comprehensive horizontal regulations cannot and must not be ignored.

POLICY RECOMMENDATIONS AND FUTURE WORK

Whilst it is important that gaps in current Ecodesign regulations are closed, beyond this as a matter of priority we urge the Commission to include horizontal material efficiency measures for B2B and consumer CE/ICT products on the ESPR or Ecodesign working plans. At the very least an initiative could focus on a wide range of networks and network equipment, but there is also considerable potential in the diverse ATSM product area. Further, the nature of horizontal regulation means that it may require little effort to also include other unaddressed products such as smart speakers and security sensors and cameras, augmenting the savings accessed by a single measure.

A preparatory study on horizontal measures in the ICT/CE area with particular focus on the four identified product groupings is necessary to establish a solid evidence base from which to develop policy measures. This could further quantify the wider environmental benefits, for example related to resource depletion. A more detailed analysis could also refine the structure of the proposed groupings by determining where groups might be aggregated or divided.

LIMITATIONS

This work has the following limitations:

- Modelling of savings linked to stock replacement is preliminary and simplistic, and only focuses on CO2 when savings will be achieved more widely in other impact areas too.
- Detailed insights are lacking on supply chains in B2B products and how material impacts and the ability to address them could be impacted by different supply chain dynamics.
- Vertical policies for products currently unaddressed by Ecodesign material efficiency measures but theoretically in scope are not considered.
- In-use material impacts like consumables could not be taken into account.
- The diversity of ICT products in both business to consumer (B2C) and B2B sector and how this will develop in the future – such as the potentially growing number of Internet of Things (IoT) devices in many applications – could not be anticipated and accounted for.

CONCLUSIONS

FINAL REMARKS AND NEXT STEPS

The total cumulative savings of horizontal material efficiency measures for ICT products of 50 million tonnes of CO2 eq, comparable to taking 28 million cars off the roads, is substantial, yet it appears that the unaddressed products identified in this study may fall between the boundaries of traditional Ecodesign regulations and ongoing discussions around priority areas for ESPR implementation. This study has shown that horizontal measures are possible and broken down how requirements might be implemented for different groupings of products. We trust that in the light of this knowledge the European Commission will follow up on the ICT Task Force work to initiate the regulatory analysis necessary to put such measures in place, starting with a preparatory study into horizontal material efficiency measures for the identified product groups.

ANNEXES

SEE ANNEXES HERE