

INCEPTION IMPACT ASSESSMENT

Inception Impact Assessments aim to inform citizens and stakeholders about the Commission's plans in order to allow them to provide feedback on the intended initiative and to participate effectively in future consultation activities. Citizens and stakeholders are in particular invited to provide views on the Commission's understanding of the problem and possible solutions and to make available any relevant information that they may have, including on possible impacts of the different options.

TITLE OF THE INITIATIVE	Sustainability requirements for batteries
LEAD DG (RESPONSIBLE UNIT)	GROW C1 – Clean Technologies and Products
LIKELY TYPE OF INITIATIVE	Legislative
INDICATIVE PLANNING	Q3 - 2019
ADDITIONAL INFORMATION	http://ec.europa.eu/growth/industry/sustainability/ecodesign_en

The Inception Impact Assessment is provided for information purposes only. It does not prejudice the final decision of the Commission on whether this initiative will be pursued or on its final content. All elements of the initiative described by the Inception impact assessment, including its timing, are subject to change.

A. Context, Problem definition and Subsidiarity Check

Context [max 10 lines]

The Commission adopted in September 2017 the Renewed Industry Strategy, which underlined the strategic importance of investment in batteries for the EU to remain competitive in low-emission mobility and energy storage. In 2014, the EU had less than a 5% share of the battery cell manufacturing market¹.

In October 2017, the Commission launched the European Battery Alliance², fostering an industry-led initiative to establish an innovative, sustainable and competitive full battery value chain in the EU. On 17 May 2018, the Commission adopted a Strategic Action Plan for Batteries that sets out measures to support all aspects of the battery value chain. In particular, the Commission's objective is to ensure that batteries developed and used in Europe are safe, efficient and follow the highest environmental and social standards at the level of production, use and disposal in the context of the circular economy. In the Action Plan, the Commission announced its intention to put forward **sustainability requirements** for all batteries placed on the EU market.

Problem the initiative aims to tackle [max 20 lines]

This initiative aims to improve the sustainability, energy and environmental performance of batteries placed on the EU's internal market. The initiative responds to two key issues:

1) Increasing demand for batteries as electrification of the economy increases

The expected growth in the market for electric vehicles and energy storage systems is poised to increase the demand for batteries³ dramatically in coming years⁴. According to some forecasts⁵, the global battery market may be up to \$100billion by 2025⁶ and €250billion a year from 2025 onwards. There are environmental and social challenges linked with the production, use and disposal of batteries. The sustainability and environmental and

¹ Source: Prospects for electric vehicle batteries in a circular economy, Eleanor Drabik and Vaseleios Rizos, CEPS Research Report No 2018/05, July 2018. According to data from Avicenne in 2018 the EU accounts for some 2% of the global Li-ion battery cell production capacity. Ref: C. Pillot, Avicenne Energy, The rechargeable battery market and main trends 2017-2025, June 2018

² https://ec.europa.eu/growth/industry/policy/european-battery-alliance_en

³ As defined by Directive 2006/66/EC, the Batteries Directive.

⁴ Growth factors for different applications (relative to 2016) are reported in: Steen M., Lebedeva N., Di Persio F., Boon-Brett L., *EU Competitiveness in Advanced Li-ion Batteries for E-Mobility and Stationary Storage Applications – Opportunities and Actions*, European Commission, Petten, 2017, JRC108043

⁵ See https://ec.europa.eu/growth/industry/policy/european-battery-alliance_de

⁶ See <https://www.weforum.org/projects/global-battery-alliance>

energy performance will become increasingly important therefore as the market grows. Covering the EU demand alone will require at least 10 to 20 'gigafactories' (large-scale battery cell production facilities).

2) Dependence on raw material suppliers from unstable third countries

Battery production is energy intensive and contains a number of critical raw materials such as cobalt and natural graphite. Ideally, these should be sourced in a sustainable and responsible way, including from secondary (recycled) sources. Moreover, many global producers and suppliers of some critical battery raw materials are highly concentrated in a number of third countries including conflict zones. For instance, in the case of lithium-ion batteries, most of the extraction of minerals and raw materials takes place outside the EU. The price for one tonne of lithium has multiplied by four between 2002 and 2018, reaching more than 14.000€.

Putting in place satisfactory levels of environmental, and where possible, social standards associated to the use and production of batteries therefore seems increasingly necessary. It is additionally necessary to consider conditions for the efficient reuse and recycling of the batteries themselves or the scarce and valuable raw materials they contain.

Basis for EU intervention (legal basis and subsidiarity check) [max 10 lines]

Batteries and their components are products depend on supply chains that span national borders in the Union. While sustainability requirements for batteries could be established at national level there is a real risk that a patchwork of different national rules could create regulatory obstacles that hinder the free movement of batteries within the EU. A single set of rules would also help the market for battery production, recycling and waste treatment to function more efficiently. Consequently action at EU level appears to be necessary and would provide added value.

The Ecodesign Directive 2009/125/EC provides consistent EU-wide rules for improving the environmental performance of products, such as household appliances, information and communication technologies or those used in engineering. The Directive sets out minimum mandatory requirements of these products. This helps prevent creation of barriers to trade, improve product quality and environmental protection. The Energy Labelling Regulation 2017/1639/EU may complement those Ecodesign requirements with mandatory labelling requirements.

In 2006, the Batteries Directive 2006/66/EC introduced requirements for placing on the market, collection schemes and treatment and recycling of batteries and accumulators. While the Directive distinguishes between portable, industrial and automotive batteries and accumulators, the scope of this initiative concerns mainly industrial batteries and accumulators. These include batteries and accumulators used in electric vehicles, in renewable energy installations, a large range of professional equipment, and emergency or back-up power-supply in buildings. Arguably, these are more appropriately addressed by the eco-design framework.

The legal basis for intervention would be Article 114 (internal market) of the TFEU (Treaty on the functioning of the European Union) in case of potential Ecodesign measures and Article 194 (energy policy) of the TFEU in case of potential Energy Labelling measures or Article 175 (1) as regards environmental protection.

B. Objectives and Policy options [max 20 lines]

The main objective of this initiative is to foster the production and placing on the EU market of high performing, safe, sustainable and durable (i.e. long-lasting) battery cells and battery packs/modules, produced with the lowest environmental footprint possible in a way that is cost-effective. At the same time, this initiative aims at helping create a level playing field for economic operators.

Better performing and more durable batteries reduce the overall environmental impact of electric vehicles and energy storage solutions and can increase vehicle autonomy. Another aspect to be explored is the extension of the useful lifetime of the batteries with second life applications (e.g. a battery pack from an electric vehicle which can be re-used in stationary applications in households), as this will reduce as well the overall environmental impact of the product during its lifetime. This initiative will also explore the need for requirements for the ethical sourcing of raw materials for the production of batteries and how these might operate in the Union.

The following policy options will be considered including combinations:

- Option 1: No EU action (baseline scenario, taking into account the expected increase in demand for batteries).
- Option 2: Self-regulation by industry on the performance and sustainability of batteries.
- Option 3: Minimum energy performance requirements (for instance energy density and/or energy efficiency).
- Option 4: Minimum sustainability requirements, for instance durability requirements (such as a minimum number of charging cycles or requirements to facilitate second life applications) and recyclability requirements (such as disassembly requirements and/or a minimum recyclability index).

<ul style="list-style-type: none"> • Option 5: Criteria on ethical sourcing of raw materials for the production of batteries <p>A range of voluntary and legal instruments is available. Legal instruments include an Ecodesign implementing regulation, an Energy Labelling delegated act, or even in the forthcoming revision of the Batteries Directive. A voluntary arrangement could also be considered within the framework of the Ecodesign Directive. For setting criteria on the ethical sourcing of raw materials, it may be necessary to resort to other policy instruments.</p>
C. Preliminary Assessment of Expected Impacts [max 20 lines]
<p>Abundant literature exists on the impact of production, use and disposal of batteries in economic, social and environmental terms. The review of this information will allow a quantitative and qualitative assessment of these impacts to ensure that an eventual regulatory intervention actually works in the sense of minimising these impacts in a cost-effective manner.</p>
Likely economic impacts
<p>If minimum performance and sustainability requirements for batteries are introduced under the Ecodesign framework Directive, these will aim at achieving minimum lifecycle costs. Total lifecycle costs will be tend to be minimised, but it is possible that upfront acquisition costs of batteries may raise, and these short-term and long-term effects need to be analysed and pondered properly.</p> <p>The number of batteries reaching end of life between 2030 and 2040 is likely to multiply by a factor of five. Therefore, increasing the availability of secondary raw materials originating from battery recycling in the EU could decrease reliance on imported minerals and raw materials and help keep their value in the EU economy. A recent research paper⁷ has estimated that by 2030, 408€ million (in current prices) worth of cobalt, nickel, aluminium and lithium could be recovered from EV batteries, and 555€ million under a more ambitious scenario. These figures could triple by 2040.</p> <p>As with previous ecodesign regulations, it will be necessary to assess what the potential impact of the requirements on SMEs, trade and supply chains could be, as well as their geographical distribution. The potential influence of introducing minimum sustainability requirements on technological pathways also needs to be better understood.</p>
Likely social impacts
<p>It is expected that the introduction of minimum sustainability requirements will have an impact on working conditions in supply chains both inside and outside the EU, in particular if mandatory requirements on ethical sourcing of raw materials are included. The provision of a predictable legal framework for the production and recycling of sustainable batteries in the EU is likely to drive employment creation.</p> <p>Batteries recycling (or re-using) after 2030 will depend on future technological and organisational developments. These days, it is estimated that, per thousand tonnes of lithium-ion batteries, 15 jobs are created for their collection, dismantling and recycling. The introduction of strict requirements related to e.g. the recyclability and disassembly of batteries or their ability to be re-used or re-purposed, in conjunction with existing and future collection schemes, can therefore only have a positive effect in related job creation.</p>
Likely environmental impacts
<p>Imposing minimum environmental requirements on batteries production, use and end-of-life should result in a more efficient use of energy and resources and in a reduction of greenhouse gas emissions and of toxicity.</p> <p>Synergies and consistency with the requirements on disposal and end-of-life treatment established by the Batteries Directive will be sought, with the overall aim to reduce waste and environmental risks. For instance, the fees paid into the battery collection schemes mandated by the Batteries Directive could be modulated by recyclability requirements.</p>
Likely impacts on fundamental rights
No impacts on fundamental rights are expected.
Likely impacts on simplification and/or administrative burden
The possible impact on administrative burden will be investigated as part of the Impact Assessment using the EU

⁷ Prospects for electric vehicle batteries in a circular economy, Eleanor Drabik and Vaseleios Rizos, CEPS Research Report No 2018/05, July 2018

Standard Cost Model.
D. Evidence Base, Data collection and Better Regulation Instruments
Impact assessment
An Ecodesign preparatory study was launched at the beginning of September 2018. It will provide a lifecycle analysis of representative models of batteries and a techno-economic analysis of options for improvement. It will also include an impact assessment study to inform the Commission's decision-making process.
Evidence base and data collection [max 10 lines]
<p>As part of the Product Environmental Footprint project, rules specific for portable rechargeable batteries (so called Product Category Rules) have already been developed, following a life cycle assessment approach. All the data collected for this project will be used as a starting point for the regulatory process to set out sustainability requirements for batteries.</p> <p>(See http://ec.europa.eu/environment/eussd/smgrp/PEFCR_OEFSR_en.htm)</p> <p>The study in support of the evaluation of the Batteries Directive will also provide relevant information to discuss how sustainability requirements could be developed that are meaningful and enforceable. More information can be found at: http://www.batteryevaluation-study.eu/index.php?id=2</p> <p>More information will have to be collected on the main issues determining the environmental impact of batteries production and use, including on the responsible sourcing of minerals and sustainability in supply chains.</p>
Consultation of citizens and stakeholders [max 10 lines]
<p>A combination of targeted and open stakeholder consultation tools and activities will be undertaken. These are summarised below.</p> <ul style="list-style-type: none"> • Up to two stakeholder meetings on the findings of a preparatory study conducted by the Commission services. Stakeholder groups will include relevant industry actors, standardisation organisations, environmental and consumer organisations. • Meeting of the Ecodesign Consultation Forum⁸ in Q2 or Q3 2019. • An open public consultation will be launched in Q1 2019. This consultation will be announced on https://ec.europa.eu/info/consultations. • Ad hoc consultations are also held with selected stakeholders (e.g. on specific technical aspects) on a continuous basis. <p>All consultation activities will be announced at: http://ec.europa.eu/growth/industry/sustainability/ecodesign/product-groups_en</p>
Will an Implementation plan be established? [max 5 lines]
The outcome of the initiative is likely to be an Ecodesign and/or an Energy Labelling Regulation, directly applicable in all Member States. It is therefore unlikely that an implementation plan will be needed. In case technical, compliance or timing challenges will emerge, an implementation plan will be established.

⁸ The Ecodesign Consultation Forum is composed of 30 Member States and Associated Countries and 30 stakeholder organisations (business, environmental NGOs, consumer organisations, standardisation bodies and additional expert observers when required). The documents with draft policy proposals are circulated sufficiently in advance to the Consultation Forum Members and other ad hoc stakeholders with a legitimate interest.