

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 share any relevant information that they may have, including on possible impacts of the different options.

TITLE OF THE INITIATIVE	Environmental impact of machine tools and welding equipment
LEAD DG – RESPONSIBLE UNIT	DG GROW – Unit C1
LIKELY TYPE OF INITIATIVE	To be determined
INDICATIVE PLANNING	<i>Adoption: Q4 2018</i>
ADDITIONAL INFORMATION	http://ec.europa.eu/growth/industry/sustainability/ecodesign/product-groups_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

The Ecodesign Directive 2009/125/EC establishes a framework for setting eco-design requirements for energy-related products. In its Article 1(1) the Ecodesign Directive defines its primary aim: “ensuring the free movement of products within the internal market”. Article 1(2) adds that “it contributes to sustainable development by increasing energy efficiency and the level of protection of the environment”. Since its initial adoption in 2005, the Ecodesign Directive has significantly contributed to the achievement of the 20/20/20 targets. The Ecodesign Directive works in close coordination with the Energy Labelling Directive, this synergy allowing a maximisation of their impacts in terms of market transformation, through a combined “push” and “pull” effect. Minimum permitted environmental performance levels remove the least performing products from the market and energy labelling encourages industry to manufacture - and sell, via increased consumer awareness - better performing products.

By 2020 the Ecodesign Directive implementing measures will have delivered estimated energy savings of some 162 Mtoe (ca. 1900 TWh) per year in primary energy, roughly equivalent to Italy's current annual primary energy consumption, and accounting for almost half of the EU's 2020 energy savings target. These policies also deliver ca. €55 billion per year extra revenue for industry, the wholesale sector and the retail sector, translating into 800 000 direct additional jobs¹.

In the Ecodesign Working Plans 2009-2011² and 2016-2019³, the machine tools and welding equipment product group was identified as one of the priority groups for which the Commission should consider eco-design requirements if appropriate. Eco-design measures can vary from maximum energy and water consumption thresholds to minimum durability hours of components. . Ecodesign measures of this product group would deliver about 0.5% of the overall energy savings of the 25 implementing regulations currently in place⁴.

Standardisation at the international level is already ongoing both for machine tools and welding equipment, regarding energy and consumable use, as well as air emission measurement methods. It will help to establish clear rules for how to measure energy and resource use performance of the appliances, and build confidence on product declarations from manufacturers.

This initiative is not part of the Regulatory Fitness and Performance Programme (REFIT) agenda.

¹ These estimates were obtained for the EU-28 in 2020. Please refer to the report "Ecodesign impact accounting" for more details (<https://eca.europa.eu/energy/sites/ener/files/documents/Ecodesign%20Impacts%20Accounting%20%20-%20final%2020151217.pdf>).

² COM (2008) 660

³ COM (2016) 773 final

⁴ https://ec.europa.eu/energy/sites/ener/files/documents/list_of_ecodesign_measures.pdf

Problem the initiative aims to tackle

Machine tool and welding equipment products are a heterogeneous group of professional "business-to-business" products, which can be divided into nine product categories (4 metalworking types, 4 woodworking types, and the welding category). All of these machine tools and welding equipment types are used in a variety of professional sectors, e.g. aerospace, construction, automotive, ship-building, fine-scale components manufacture for watchmaking, medical appliances. Manufacturers of metalworking machine tools also produce components for other machine tools.

Light duty machinery (so-called "hobby" or business-to-consumer products) are excluded from the scope of the proposed measures, due to the small contribution to the total EU use of energy and resources of these product groups.

Since the market for machine tools is relatively large, a large number of stakeholders, in particular end-users are affected by the problems stated above. Overall, for the metalworking machine tools sub-group, there are (2010 EU-27 stock figures) ca. 3.5 million metalworking machine tools in operation, ca. 5.8 million woodworking machine tools, and 1.5 million industrial duty welding/ soldering/ brazing units of equipment. Estimated sales of metalworking machine tools are ca. 90 000 units p.a., for woodworking machine tools ca. 235 000 units p.a., and for welding equipment, ca. 180 000 units p.a. As well as the EU end sales market, EU manufacturers' exports to third countries comprise over 50% of sales (in individual manufacturer's cases, sometime as high as 90%), overall.

Total annual sales within the EU of all machine tools are valued at ca. 9.3 billion Euros (2017), with additional revenues of some 8 billion Euros derived from sales of component tools and spare parts. Welding devices sales are valued at ca. 2 billion Euros (2017), with additional much larger revenue from consumables (electrodes, fluxes and industrial gases) and services estimated at 19 billion Euros (2017). The products are replaced at intervals of between 10-20 years; the replacement philosophy is more dependent on users wishing to replace slightly outdated machinery by latest technologies in order to maintain a competitive edge for their customers, rather than product senescence or malfunction. This replacement rate may accelerate in the future, owing to the increasing functionality that can be offered via the ever-deepening interaction of IT, electronics and mechanical engineering in the more complex computer numerically controlled (CNC) products.

For end-users of machine tools and welding equipment, one source of market failure is presently that there is a lack of reliable, standardised information on energy efficiency (and related environmental) performance of machine tool products and welding equipment. Thus, even for well-informed businesses it is not readily possible to calculate the energy operational costs over the lifetime of the machines. This prevents business customers from transparently and independently evaluating - via universally-accepted energy measurement standards - different machine tool and welding products, and integrates this information in their purchase decisions. For both metal-working machine tools and welding equipment this source of market failure is partly being actively addressed by putting into place international standardisation energy measurement protocols for both product groups, which should enable potential ecodesign measures to be operationalised.

A second market failure for end-users (inter alia, the automotive, maritime, aerospace and medical/ surgical sectors) is that financial considerations may hinder end-user demand for optimal long-term energy-efficient design: (i) lack of available capital machine purchasing; (ii) a desire to limit the size of a company's debt burden; (iii) uncertainty over long-term future sales of products made by the machine tool, etc. These considerations may prevent firms from taking into account long-term savings which would accrue from a more efficient design.

The above sources of market failure combined mean that innovation is not sufficiently encouraged, and neither is investment in proven, but still relatively new, technologies. Thus, the large number of end-user sectors of machine tools and welding equipment in the EU may ultimately become less competitive on a global scale.

The preparatory study⁵ for machine tools (including eight equipment categories) and welding equipment highlighted that **these business-to-business products could be more energy efficient in their overall operation, and also use fewer resources**. With no action, it is estimated that the annual **final energy** required for the total nine equipment categories within the overall product grouping could grow from ca.60 TWh (150 TWh primary energy) per year in 2013 up to ca.70 TWh (175 TWh primary energy) per year in 2030. On average, over 95% of this energy is required by the machine tools and welding equipment in the "use" phase of the products (the remainder mostly comprising the "embedded energy" contained in the raw materials used). If Ecodesign actions are undertaken, final energy demand electricity savings of ca.3.4 TWh p.a. have been estimated by 2030 (ca. 2.7 TWh p.a. for metal-working machine tools [estimates from a draft proposed industry Self-Regulation Instrument (SRI)], and ca. 0.7 TWh p.a. for stationary welding equipment [estimates via a draft proposal for an ecodesign regulation]).

⁵ <http://www.ecomachinetools.eu/typo/reports.html>

Basis for EU intervention (legal basis and subsidiarity check)

The legal basis for this initiative is Article 114 (internal market) of the Treaty on the functioning of the European Union (TFEU), with regard to potential Ecodesign measures, and Article 194 (energy policy) of the TFEU, if potential energy labelling measures were hypothetically contemplated.

The environmental performance of machine tools and welding equipment could be theoretically regulated at national level in the absence of harmonised requirements at EU level. However, this could create regulatory obstacles to the free movement of these goods within the Internal Market. Consequently action at EU level appears to be necessary and provides added value over national actions.

B. Objectives and policy options

Main policy objectives

The main aim of the potential measures to be proposed is to raise the resource and energy efficiency of the appliances during use, and also to reduce the idle state ("standby") power consumption.

To ensure free circulation of the products covered by the present initiative in the internal market, this measure aims to contribute to energy efficiency, CO₂ emission abatement and security of energy supply as well as to assure a high level of environmental and consumer protection, which is in line with the Circular Economy aims.

More specific objectives are to:

- Induce new energy and financial savings for users of machine tools and welding equipment;
- Reduce air emissions and the consumption of raw materials during the use of the machines;
- Raise awareness of purchasers and users of machine tool products and welding equipment on their energy efficiency and environmental performance as a complement to the current almost exclusive consideration of performance parameters;
- Gradually remove from the EU market the worst performing machine tool products and welding equipment;
- Encourage manufacturers to sell machine tool products and welding equipment with higher added value and more multi-purpose functionality, via investment in innovation and new technologies. This is expected to enhance competitiveness of the involved manufacturing industry.

The policy options will be assessed against the above mentioned objectives as well as "negative" specific objectives, as required by Article 15 of the Ecodesign Directive, such as the absence of any negative impact on the functionality, affordability and safety of the products and on the competitiveness of the relevant industries.

Options Mapping

For each of the nine sub-product categories within the "machine tools and welding equipment" group, the following policy options will be considered and assessed (quantitatively and qualitatively):

1. No action (baseline scenario)
2. Self-regulatory initiative [SRI]: the option is being currently considered by the metal-working machine tool sector possibly also with cooperation of the woodworking machine tool sector. SRI would be, co-ordinated by the relevant EU trade association, CECIMO. This sector, and any other sector which may present to the European Commission a workable and sufficiently ambitious SRI approach (see Ecodesign Directive Annex VIII), would be exempted from any potential mandatory ecodesign requirements, except where the SRI did not cover energy and resource efficiency aspects.
3. Mandatory generic or specific⁶ ecodesign requirements based on Annexes I and II of the Ecodesign Directive 2009/125/EC, depending on the relevance for each product under consideration, for instance energy use, raw material use, welding gas use, or air and waste emissions during operation.
4. Labelling (in particular under the Energy Labelling Directive 2010/30/EU), both in combination with Ecodesign requirements or as standalone option.
5. Other optional incentives (e.g. green public procurement, financial incentives at national level).

⁶ Annex I []: *Generic ecodesign requirements aim at improving the environmental performance of products, focusing on significant environmental aspects thereof without setting limit values.* Annex II []: *Specific ecodesign requirements aim at improving a selected environmental aspect of the product.*

<p>For each of the sub-product groups under consideration, the Impact Assessment will examine which improvement potential could be achieved compared to the baseline scenario (e.g. impacts in terms of “market cut-off”, i.e. percentage of products eliminated from the internal market after entry into force of Minimum Energy Performance Requirements). The improvement potential will be assessed on the basis of not only available technologies, but also expected technological developments.</p> <p>The Impact Assessment will assess all relevant impacts by 2030, compared to the baseline scenario.</p>
<p>Baseline scenario – no EU policy change</p>
<p>The "no action" option will be based on the preparatory study and will represent the baseline. According to the study, the annual final energy use for machine tools and welding equipment could grow from ca.60 TWh (150 TWh primary energy) per year in 2013 up to ca.70 TWh (175 TWh primary energy) per year in 2030. If ecodesign actions are undertaken, final energy demand electricity savings of ca.3.4 TWh p.a. could be estimated by 2030. Self-Regulation Initiative (SRI) as proposed by the machine tools' industry explicitly refers to iterative energy and related environmental aspects. Consumption comparative checks between previous machine tool models and contemporary designs, and the welding equipment draft proposals under discussion trigger market transformation of the technologies used. Without these measures, it is doubtful whether the market on its own would achieve these additional efficiencies.</p>
<p>Options of improving implementation and enforcement of existing legislation or doing less/simplifying existing legislation</p>
<p>There is no EU-wide legislation addressing the energy and environmental efficiency of machine tools or welding equipment currently in place.</p>
<p>Alternative policy instruments</p>
<p>Self-regulation is being evaluated, especially for machine tools. No self-regulation has been proposed by manufacturers of welding equipment, to date.</p> <p>Moreover, establishing standard measurement methods for the assessment of the performance of machine tools and welding equipment, is among the main objectives of this initiative, and is already being developed separately for both machine tools and welding equipment at the International Organisation for Standardisation (ISO) level.</p>
<p>Alternative/differentiated scope</p>
<p>In order to ensure a level playing field, it is not seen as appropriate to have exclusions from the scope of the potential measures based on company sizes. Nevertheless, as already done in other business-to-business product groups, where necessary, specific actions targeting SMEs could be envisaged, such as preparing supporting guidelines.</p>
<p>Options that take account of new technological developments</p>
<p>Given the fact that the initiative concerns machine tools and welding equipment, both of which have established interfaces with IT modelling, the issue of new technological developments will be taken in due consideration in the impact assessment.</p>
<p>Preliminary proportionality check</p>
<p>In accordance with the principle of proportionality, we expect the potential measures (envisaged in the policy options) not to go beyond what is necessary to achieve the objectives.</p>
<p style="text-align: center;">C. Preliminary assessment of expected impacts</p>
<p>Likely economic impacts</p>
<p>The most affected stakeholders are the machine tool and welding equipment manufacturing industry, including its supply chain, and the end users of the equipment. The increase in energy efficiency requires manufacturers and suppliers to make investments, incurring higher production costs. These costs will subsequently be recuperated through higher sales prices. This will generate extra business revenue across all sectors as compared to the baseline scenario.</p> <p>For consumers, the savings on energy and raw material bills will outweigh the price increase of the equipment, leading to overall reduced life-cycle costs in comparison to the BAU scenario. After the amortisation period, the regulation is expected to lead to better international competitiveness and export sales by offering overseas consumers more efficient products.</p> <p>An additional factor is the enhanced functionality of most contemporary designs, where one product is now used where in the past three pieces of equipment were necessary, e.g. new machines with rotating milling axes. This partly mitigates the potential initial negative reaction by users to the additional purchase price increase.</p>

Likely social impacts
No major impacts are expected. However, the impact assessment will assess in detail if there are specific social impacts linked to this initiative, in particular on employment.
Likely environmental impacts
Electricity consumption in the use phase constitutes the main environmental impact of the lifecycle of machine and welding tools. In addition to the anticipated savings in terms of energy in the use phase, consumption of ancillary materials (welding wire, lubricants, refrigerants, welding gas), and potential air emissions (especially relevant for welding) are other important environmental aspects considered in this proposal. Moreover, the proposal addresses other material efficiency concerns, including reparability and critical raw material recovery, supporting the objective of transition towards a Circular Economy.
Likely impacts on simplification and/or administrative burden
If judged significant, the impact on administrative burden will be assessed in the Impact Assessment using the EU Standard Cost Model.
Likely impacts on SMEs
In the sector of machine tools and welding equipment, the market structure of both manufacturers and users is comprised of many SMEs. Hence, if new legislation were to be proposed, specific actions could be envisaged to ensure that SMEs are not hindered from participating in or entering the market. From this point of view, aspects related to administrative burden, the burden of testing activities and timing of the entry into application of any potential measure will be taken into due consideration.
Likely impacts on competitiveness and innovation
The policy options will be assessed against the criteria contained in Article 15 of the Ecodesign Directive, e.g., absence of any negative competitiveness impacts on the industry sectors involved. The positive impacts on manufacturers and buyers/ end-users of machine tools and welding equipment may include the following: For manufacturers: <ul style="list-style-type: none"> • Guarantee of a level playing field of one set of requirements for products across all 28 EU Member States • The acceleration of investments in well-known efficiency technologies due to new requirements, leading to better international positioning and competitiveness of the manufacturers that are active in the EU market. For buyers/ end-users: <ul style="list-style-type: none"> • Lower overall life cycle costs due to using the products of increased and verifiable energy efficiency • More multi-purpose products, with the advantage that more will be achievable without the need to purchase additional equipment once the new improved-design models have been bought.
Likely impacts on public administrations
If it is decided to adopt Implementing Regulations (Ecodesign) or Delegated Regulations (Energy Labelling), no transposition issue is expected.
Likely impacts on third countries, international trade or investment
For welding equipment, an EU regulation backed by Ecodesign CE marking would boost the uptake of best practice and electrical efficiency for all welding equipment within the regulation's scope. This will help to ensure that manufacturers of welding equipment operating in the EU market develop the "reference standard in terms of performance and innovation" of these products' which would be recognized internationally. This effect will reverberate across the supply chain of components to the machine and welding tools. The measures will also mean that the high performance and efficiency levels must also be met by any imports of equipment from third countries to the EU, benefitting EU-based industrial end-users. EU manufacturers currently lead many machine tool market sectors and sub-sectors internationally. The EU manufacturing sector is already export-led (ca.90% of metal-working machine tools are exported to third countries from machine tool-producing Member States), and this will be further reinforced by the proposed ecodesign measures, either on an SRI basis, or via an ecodesign regulation. This is because, following the observations of other energy-using product groups similarly regulated in the past, energy and resource efficiency will become competitive-edge sale argument supporting more traditional performance arguments, for end-user clients in both the EU and international third countries markets. Machine tools imported to the EU will have to demonstrate the same higher performance, enabling EU machine tool end-user clients to benefit from the improved efficiency.

D. Evidence base, Data Collection and Better Regulation Instruments

Impact Assessment
<p>The technical study for this Impact Assessment started in December 2012 and finished in March 2015. A revision and refinement of the IA is under progress for completion in Q1 2018, in particular for the welding equipment subgroup.</p>
Data collection
<p>The preparatory study for machine tools and related machinery was launched in November 2009 and published in August 2012 at: http://www.ecomachinetools.eu/typo/reports.html.</p> <p>The complementary Impact Assessment study was finalized in March 2015. The Impact Assessment is being drafted by the Commission services to investigate whether and which ecodesign requirements for machine tools and related machinery might be appropriate, and to examine impacts of a possible industry proposal for a Self-Regulatory Initiative.</p> <p>Informal consultation of key stakeholders (EU industry associations, environmental NGOs, Member States' representatives) is being conducted on a continuous basis⁷. It was also carried out in the framework of Impact Assessment study. The purpose was to fill data gaps from the preparatory study.</p>
Consultation approach
<p>A mix of targeted and open stakeholder consultation activities are used, as described below.</p> <ul style="list-style-type: none">• In the framework of the IA preparatory study (Nov 2009 – August 2012), three stakeholder meetings were organised. The main participants included relevant industry actors, standardisation organisations and environmental organisations.• As part of the follow-up Impact Assessment study (Dec 2012 – March 2015), a meeting of the Ecodesign Consultation Forum was organized on 6 May 2014. The Ecodesign Consultation Forum is composed of 30 Member States and 30 stakeholder organisations (business, environmental NGOs, consumer organisations, standardisation bodies and additional expert observers, when required). An additional meeting of the Consultation Forum was held on 25 October 2017 to discuss the implementing measure drafts.• Ad hoc consultations with stakeholders (e.g. on specific technical aspects) are held on a continuous basis• A public consultation of 12 weeks will be launched early 2018. The questionnaire will be accessible via the following website: https://ec.europa.eu/info/consultations_en• A consultation webpage covering all consultation activities for the policy initiative under preparation will be prepared at the following web address of DG GROW: http://eca.europa.eu/growth/industry/sustainability/ecodesign/. Among others a summary of the responses to the open public consultation and an analysis of all consultation activities will be presented here.
Will an Implementation plan be established?
<p>An implementation plan will be established if technical compliance or timing challenges emerge.</p>

⁷Stakeholders have used the information exchange platform CIRCABC <https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp>, where minutes of the meetings and stakeholder input has been uploaded