Photovoltaic modules, inverters and systems

Position following the Consultation Forum for Ecodesign and Energy Labelling requirements

Brussels, July 2022

Summary

- ECOS, EEB and the Coolproducts campaign welcome the draft Ecodesign regulation presented by the Commission as it has the potential to significantly **reduce the environmental impact** of the production of PV modules.
- **We especially support the proposal for a carbon footprint threshold**, that is set to become more ambitious over time. This is an important precedent for a product regulated by Ecodesign.
- The current proposal relies heavily on information requirements. While this is a positive step for the Commission to take, **we believe mandatory thresholds would be more effective**.
- We believe that the **EU Ecolabel** seems a better fit to encourage the uptake of more efficient PV modules and systems than **Energy Labelling.**

Introduction

Following the Consultation Forum on June 27th, 2022, to discuss proposals for Ecodesign and Energy Labelling requirements for PV modules, systems and inverters, ECOS, EEB and the Coolproducts campaign welcome the drafts presented by the European Commission. For the first time the Commission proposed a carbon footprint threshold as Ecodesign requirement and as such sets a precedent going forward. To have an impact and reduce the carbon footprint of PV modules as soon as possible in the context of the projected – and necessary increase in solar energy deployment, we urge the Commission to finalise and adopt these proposals as soon possible, in order not to forego more urgently needed energy savings.

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Ecodesign requirements: key to make solar energy even cleaner

- We welcome the repairability requirements for inverters that will prolong the lifetime of inverters.
- We are supportive of the proposal to introduce c**onformity-assessment procedures involving a third party** carrying out quality control of the manufacturing process. This is key to ensure the modules comply with requirements such as the carbon footprint threshold. The assessment should go beyond requiring modules to reach EN IEC 61215 conformity.
- **We support the introduction of carbon footprint thresholds.** This proposal is an important precedent since no ecodesign regulation currently sets limits to the products' carbon footprint. We strongly support this requirement that has the potential to reduce the carbon intensity of the modules and further improve the environmental credentials of solar energy.
    - **We do regret that not all lifecycle phases have been taken into account.** While it is true that the assembly of the system, use and disposal, dismantling and recycling of the photovoltaic modules are not as carbon intense as the manufacturing phase, we believe it is important to assess and address the climate impact of all lifecycle phases.

Ecodesign requirements: room for improvement

- **We regret that the proposal eventually does not include a minimum threshold for module energy yield**, which could ensure modules sold generate larger amounts of energy.
- This threshold could be communicated in combination with a **metric related to the energy pay-back time** of the PV module indicating the period required to generate the same amount of energy that was used to produce the module. The metric would reflect one of the main environmental impacts of photovoltaics, namely energy consumption, and could counter the common belief that photovoltaic systems are "polluting", which is still widespread in the media today.
- We encourage **the introduction of a stringent set of quality and durability tests** for PV modules that go beyond what is currently available on the market and for the ability of the PV modules to withstand UV exposure to be added to the list of functional requirements, since UV radiation may cause lower power generation over time.
- Since lifetime performance degradation is the cornerstone of life cycle assessments of photovoltaics, it is key that this indicator is accurately assessed and validated, using an accelerated ageing testing procedure. **As soon as a standard method to stimulate long-term exposure is defined a minimum threshold should be set**. We suggest reviewing the default values every 5 years as the quality of modules will increase.
- Some components of a PV module could become scares as PV production is growing, while some have a strong impact on climate change, such as solar silicon of the wafers or aluminium of the frame. Therefore, it's essential to set **information requirements on recycled content**. This can be used in public support schemes promoting equipment with high rates of recycled materials and will reduce the overall environmental impact of PV production. The review clause should look into the possibility to set thresholds for recycling rates for specific elements, such as aluminium, silicon, silver, tellurium and copper.
- It is key that every **raw material listed in Annex II are declared and localised**, regardless of the amount contained in the final product. Substances of which only a small amount is used should be declared as well, such as the selenium and antimony content because of their toxicity. Due to the usefulness for recyclers, the aluminium content should also be declared.
- The final objective of dismantlability is to improve the recovery rate of the different components. To date, the WEEE recovery target for photovoltaics is based on the weight. As glass and aluminium

represent about 90% of the total weight of a PV module, the target is reached without recovering the metals. **Complementary requirements - in both the Ecodesign regulation and WEEE Directive - on individual materials can increase the recovery rates of metals** such as silicon, silver, tellurium, indium, gallium, cadmium and copper.

- The continuously decreasing cost of PV modules makes them so affordable that replacing them before the end of their lifetime to produce more energy is now a viable economic option. If this becomes commonplace it will have a negative impact on the environmental benefits of solar energy. To counter this development, we suggest requiring **PV models that replace older models before the end of the supplier warranty to have a significantly lower environmental impact**. To facilitate the creation of a second-hand market the **'state of health'** of PV modules that are replaced should be assessed and disclosed by means of a standard test method for repaired PV modules, mirroring EN IEC 61215.
  Concretely, Ecodesign requirements could ensure new generation of modules are **compatible with existing ones**, for instance through standardisation, and e**nsure checks on whether modules can be reused are more easily carried out**.
- The proposal only requires spare parts to be available for inverters, omitting spare part availability for the actual solar panels. In line with the expected lifetime of PV modules, spare parts such as the bypass diode, cabling, DC connectors and the junction box should be **available for at least 30 years** after placing the last module on the market, in line with the expected lifetime of PV modules.
- Repair and maintenance information should be **available for at least 15 years** after placing the last unit on the market, in line with the proposed spare part availability.
- Grid services, such as reactive power management or frequency support, are essential to enhance PV market penetration and to ensure that the grid can receive all solar energy - also the energy from rural areas with high production and low demand. Therefore, inverters should be enabled to perform the following grid services:
  - the ability to **remain connected to the grid** for a defined period of time during frequency deviations.
  - the ability to **adjust the active power** in case of under- or over-frequency.
  - the ability of the **communication interface to stop, reduce or adjust the power** when receiving an instruction from the grid.
  - the ability to **absorb of inject reactive power**.

  Furthermore, inverters must comply with the IEC 61850 standard related to Communication networks and systems for power utility automation to have the ability **to receive commands from the distribution network operator**.

Energy labelling: caution advised

It is important to inform consumers on the relative energy and environmental performance of PV modules. However, when adopting an Energy Label for an energy producing product a special effort must be made to avoid confusing consumers and all actions should be put in place to avoid reinforcing the widespread idea that solar panels consume more energy than they produce.

Furthermore, it is our understanding that the difference in performance across climatic zones is mainly due to differences in weather conditions. Since this is not something the manufacturer can change, the usefulness of having three different classes on the label may be limited, and more detailed, zone/specific information could be retrieved via a QR code.

It is key to integrate essential environmental impact categories such as the module's carbon footprint onto the label.

We furthermore suggest that the text on scope exemption for the label is adjusted to clarify if hybrid PV-Solar thermal modules (PVT) are included in the scope or not. Should they be included, we would like to stress the importance to have the different components of the label structured in a way that no unfair burden is placed on such products, in order not to hampering innovation.

In conclusion, we advise the Commission to carefully assess the impact of an Energy Label on consumer uptake. As a minimum, the label should be simplified to have only one energy class, instead of three different ones per climatic zone, while retaining the module energy efficiency index value for each climate zone.

Should no consensus on an Energy Label for PV modules be found, we suggest the Commission look further into the option of an Ecolabel for PV modules.

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