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Position of the European Solar Manufacturing Council on:

European Commission's Preparatory study for solar photovoltaic modules, inverters and systems, considering Ecodesign, Energy Label, EU Ecolabel, EU Green Public Procurement.

The European Solar Manufacturing Council

The European Solar Manufacturing Council (ESMC) is a new organisation aiming at representing the interests of the European solar PV manufacturing industry in Europe. It was announced during the 35th EU-PVSEC conference in Brussels in September 2018 and will be established in the last quarter of 2019 as a non-profit organisation under Belgian law. It assembles key actors of the photovoltaic manufacturing sector in Europe, especially most wafers, cells, modules manufacturers, equipment manufacturers and research centres. Some key names which are supporting the organisation until now are EDF Photowatt, Total Solar, Singulus, NorSun, NexWafe, Voltec, Fraunhofer ISE, INES, Cener, Ciemat and more. More information can be found on the organisation website http://europeansolar.org/. The organisation is based in Brussels and hosted temporarily by the Becquerel Institute.

The ESMC is not affiliated with existing associations but works closely with the European Technology & Innovation Platform for Photovoltaics (ETIP-PV).

Communications:

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Answer to Tasks 6 and 7 of the preparatory study

- **Introduction:** We believe that the preparatory study must represent the situation of PV development in Europe as accurately as possible and should be used as a tool to improve the environmental quality of PV products but also as a way to ensure a redevelopment of the PV manufacturing industry in Europe. So far, we are not convinced that the considered direction could lead to such improvements.

  The most recent proposals for Tasks 6 and 7 seem to be going in the wrong direction. Some of the main issues of concern are as follows:

- **CO2 footprint:** Primary energy is used as lead indicator instead of carbon emissions. The EU-policy should contribute to the European aim of reducing greenhouse gas emissions and the lead indicator should therefore be chosen to reflect that policy goal, i.e. measuring carbon or greenhouse gas emissions directly as lead indicator (possibly in addition to primary energy and at the same level). Using solely primary energy consumption as lead indicator would distort the picture significantly and favour existing actors in some niche technologies.

- **Data accuracy:** So far, the base year is chosen to be 2016 and the data being used is partly as old as 2010/11 (see details in the appendix). This is of course totally out-of-date in the fast-developing PV industry and therefore not acceptable. It would imply that most modules (>90%) today would receive the Ecolabel, which would make it almost meaningless and potentially counter-productive to innovation. The data should be as recent as possible, and we would suggest using 2018 as the base year. It is essential that the same year is used for all technologies, otherwise they are not comparable. The speed at which PV technologies are evolving now would require to revise data on a regular basis, ideally every 6 months, at least from a qualitative point of view.

- **Production location:** The JRC proposes to take into account the location of where the module/system is installed and used but not the impact of where the modules are produced. The aim of the policy should be to help to make the right product choices for a given project, which means providing the possibility to choose a product with the least environmental impact. This means that the location where it is going to be installed is given, while this policy should make it possible to choose a product which is produced in a location which minimizes the environmental footprint. This can provide a positive differentiation for European manufacturers. The carbon content of the electricity mix should be considered by default as an average for Europe, with the possibility for some countries to apply more constraining rules.

- **Upstream Jobs:** The JRC argues that the majority of jobs are located in the downstream part of the value chain, and hence policy options promoting downstream rather than upstream (manufacturing) should be prioritized. This is a wrong vision of the situation:

    - First, the main purpose of the policies under consideration here is not so much to increase the volume of PV, but to facilitate choosing the best and most environmental-friendly products. This doesn't relate to downstream installations but to the products and their production. Hence policies should push for products with a better environmental quality, which applies to both imported and locally produced products.

    - Second, if all installations would come from imports, the pressure from importers to avoid constraining environmental regulations would be quite high, with a PV market concentrated at 92% outside of the European Union (IEA-PVPS a Snapshot of Global PV Markets 2018).

- Third, the kind of jobs related to the downstream sector are in general jobs which require a rather low qualification. Installers are electricians and building sector workers while the upstream part of the value chain employs highly qualified engineers and scientists. The opposition from many policymakers in Europe to a major development of solar PV comes from the fear of loosing well-paid and highly qualified jobs in the upstream sector which can't be replaced by downstream jobs.

- **Summary**: the ESMC believes the eco-design preparatory study should reflect better the market and technology situation and should be based on the latest available data. It should also definitively focus on products and their production rather than their installation location, which makes absolutely no sense with respect to the ecological footprint. Finally, the question of the carbon footprint should be at the core of the policies, with at least an average European carbon emission standard, and the possibility for some member states to impose more constraining measures.

Appendix: Obsolete data used in the preparatory study draft report

Task 6

- 6.1.1. Identification of design options and assessment of their impacts (pdf page 4) and Annex A (pdf pages 57-73)
    - EcoReport **2014, data from earlier years, should be updated.**
- Table 6.1 (pdf page 6) and 6.2.1.2.8
    - Louwen et al. **2015, data from earlier years, should be updated.**
- 6.2.1.2 Life cycle information – Bill of Materials: Modules (pdf page 13)
    - Wyss et al. **2015**, **data from 2010/11, must be updated**
- Reference to IEA PVPS Task 12
    - Frischknecht et al., 2015 using data from **2007 and 2008,** should be updated since it is used extensively throughout all tasks, including Draft report Task 5, 5.6.1.3.7 Results of the selected LCA studies.

Task 7

- 7.3.2.4 Module manufacturing cost structure (pdf page 141-142)
    - Reference NREL **2015, data from earlier years, should be revised.**
- 7.4 Sensitivity analysis (pdf pages 143)
    - Reference PVPT **2015, data from earlier years, should be revised.**

Data used for the Silicon PV value chain

Basically, all data are outdated and must be revised. Some elements are listed below but an in-depth review of the document is needed.

- The latest version of the EcoInvent database is 3.5.

- Silicon Metallurgical Grade Production
    - Silicon Metallurgical Grade (NO) Production – LCI from 2009 with validity until 2018. Little changes since then.

- Polysilicon
    - Silicon Electronic Grade (GLO) – LCI from 2009 with validity until 2018: should be completely revised. It is impossible to use 2009 data, which are completely outdated given the context.

- Ingots
    - Silicon Single Crystal (RER) – diameter of 130 mm and length of 150 cm are considered, while up-to-date values are diameter of 200 mm and length of 400 cm
    - LCI from 2006 is completely outdated.

- Wafering (sawing)
    - Thickness of 270 µm considered while current ones go to 130 µm
    - It looks like the sawing technology considered is slurry and not diamond.

    - Wafer size 156x156mm is rapidly changing and could move to 210x210mm in the coming months and years.
    - LCI from 2005 with validity until 2018 is also invalid given the changes in wafering technology.

- Cells
    - Photovoltaic cells single Si wafer (RER) production
    - 156x156mm² is ok but other sizes exist in the industry today (125x125 for instance)
    - Thickness of 270µm is not valid anymore: down to 130µm;
    - Efficiencies have improved significantly: 18-20% is now the average value depending on the cell technology with some producing above 22%. Considering a 15.5% value is completely outdated
    - LCI from 2005 with estimated validity until 2018 is not valid anymore. Cell technology is changing rapidly. Busbars number has been increased or disappeared leading for example to reduction in Silver consumption or introduction of new materials, such as Copper or Bismuth.

- Modules
    - Photovoltaic panel, single Si Wafer (RER)
    - 60cells is not the trend anymore. 72 or 90 cells exist as well.
    - 224W is an old-dated value which should be revised upwards. 270 W for multi-crystalline silicon PV and up to 335 W for mono-PERC for instance. Other nPERT, MWT of HJT technologies can go higher.
    - LCI with estimated validity 2018 is not valid anymore and doesn't cover all emerging and existing module technologies (half cells, shingle, transparent backsheets, use of PP-PO backsheets instead of Tedlar, abandon of PA backsheets etc.), evolution towards glass-glass etc.

- Glass
    - LCI valid until 2018. Should be revised.

- Aluminium
    - LCI valid until 2018. Should be revised.