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EUROPEAN SOLAR MANUFACTURING COUNCIL

2025-02-20

ESMC feedback on:

European Commission proposal, implementing regulation: Specifying the pre-qualification and award criteria for auctions for the deployment of energy from renewable sources (NZIA article 26)

General remarks

The NZIA implementing act has the potential to be a vital tool in supporting both existing and new European solar PV manufacturing capacity by increasing the demand for European-made clean products. The EU target of 30 GW of solar PV manufacturing capacity across the full value chain to 2030 is a solid step towards revitalizing the European solar PV ecosystem, as well as achieving the manufacturing benchmark of at least 40 % net-zero technology capacity of the annual deployment need. **Regarding the latter, we emphasize that the 40% target applies not only to net-zero technologies as a whole but also to their respective components**, as stated in the explanatory memorandum to NZIA:
"The overall headline benchmark takes into account the need for scaling up manufacturing capacity not only for end-products but also for specific components. For some of these, such as (wafers, ingots or solar cells in the case of solar PV or anodes and cathodes for batteries, reaching the 40% headline benchmark represents a realistic but highly ambitious objective)." (COM (2023)161, *1.1 Chapter 1 – Subject matter, scope and definitions*).

However, reaching this target will require coordinated political and financial action at all levels – the EU, Member States and industry stakeholders, including off-takers.

This act specifies the criteria for renewable energy auctions with the purpose of strengthening European manufacturing capacity. ESMC highly welcomes this objective and acknowledges the EU Commission´s intent to encourage the Members States to adopt stringent criteria, which could predominantly be met by EEA-based companies, thereby serving as a proxy for "Made in EEA". However, ESMC is concerned that the proposed criteria may not function effectively in practice and could contain loopholes. We will elaborate on these risks in the following sections.

Additionally, several articles are detailed and complex in their wording, potentially making it difficult for Member States authorities to interpret and apply them properly. This could hinder the timely roll-out at the national level, even though swift adoption of these regulations will be essential for the success of the Net Zero Industry Act. In many Member States, the level of preparedness currently appears inadequate to meet these requirements. We therefore recommend clarifying the text wherever possible or using footnotes or recitals to improve its usability for Member State authorities.

With our proposed amendments – such as the inclusion of a "Made in Europe" clause, a robust carbon footprint assessment methodology, and stronger sustainability requirements covering the entire manufacturing process – these auction criteria could become a powerful tool to advance European net-zero manufacturing. We also see our

proposals as aligned with the upcoming *Clean Industrial Deal*, which is expected to require both local content and sustainability criteria in public procurement.

Please, find our comments and amendments below.

Christoph Podewils, Secretary General, ESMC

Jens Holm, Policy Director, ESMC

Article 4 Responsible business conduct (prequalification criteria)

Comment:

The article is formulated too general and would benefit from more specific references to key legislations, such as the *Corporate Sustainability Due Diligence Directive (Directive (EU) 2024/1760)* and the *Forced Labour Regulation (Regulation (EU) 2024/3015)*, both of which are binding from their respective date of entry into force. Ensuring compliance with these regulations is essential, as forced labour – a problem prevalent in certain third countries involved in net-zero manufacturing – must be entirely excluded from the European net-zero supply chain. We believe it is crucial that compliance is mandated by legislation rather than, for example, business-led initiatives. Strengthening the connection to these legislative frameworks will help ensure that sustainability and human rights protections are integrated throughout the manufacturing and procurement processes.

ESMC proposes:

-Add a clause demanding that bidders shall guarantee that products are not made with forced labour.

-Add clear references to key legislation as mentioned above.

Article 5 Cybersecurity and data security (prequalification criteria)

Comment:

This article highlights a critical issue: the risk of third countries controlling data, software, and hardware in solar PV installations. This is particularly pressing given that Chinese companies have the capability to exert remote control over inverters, alter firmware via remote updates, and potentially cause blackouts. Under China's National Intelligence Law, companies must comply with government directives, meaning Chinese inverter manufacturers could be compelled to initiate shutdowns or frequency changes that jeopardize the stability of the EU electricity grid.

This risk is further compounded by the rapid market capture of Chinese inverter manufacturers, which now control over 80% of Europe's solar market, displacing a capable European industry that could meet full demand under appropriate market conditions.

To mitigate these risks, we recommend that access rights to data and systems be restricted to entities within the EEA area. However, it is not just about data location and protection—it is also about controlling who can access it. Access should be limited to companies and

organizations that have been rigorously classified and approved as trustworthy. This will require a holistic risk assessment of companies, similar to the framework used for evaluating equipment suppliers in the 5G technology sector. By adopting these measures, the EU can enhance the resilience and security of its solar PV infrastructure while supporting the growth of its domestic industry.

ESMC proposes:
Article 5.1 (b):
To amend the text: "... ensure that data used for or generated in their business activities related to the auction are stored in and not transferred outside the European Economic Area. **Access to this data must be restricted to entities classified as trustworthy. A designated European authority – or authorities in EEA member states that can guarantee an equivalent level of security – shall conduct comprehensive risk assessments of companies and maintain a whitelist of entities deemed trustworthy."**

Article 5.1 (d)
Explanatory note: In terms of energy security, it is understandable that operational control over installations should be maintained as locally as possible, suggestively within the EEA. However, safeguarding operational control alone is insufficient. It is equally critical to define who is authorized to modify the behaviour of installations in other ways. For instance, software or firmware updates on the system components can alter the behaviour and enable remote control – an aspect often overlooked as part of operational management.

To address this risk, we recommend that the provision of firmware and software – whether as an original or an update - on systems or system components originates exclusively from trustworthy companies. This should be enforced through a rigorous risk assessment process, similar to the framework used for evaluating equipment suppliers in the 5G technology sector. This enhanced oversight would help protect the integrity and stability of the EU's energy infrastructure.

ESMC proposes:
Article 5.1 (d)
To amend the text as**:** "…ensure that an operator established in the European Economic Area maintains operational control of the installation. **It must also be ensured that the provision of firmware and software – whether as an original or as an update - for the systems and system components are restricted to entities classified as trustworthy. A designated European authority – or authorities in EEA member states that can guarantee an equivalent level of security – shall conduct comprehensive ris assessments of companies and maintain a whitelist of entities deemed trustworthy.**"

Article 7 Resilience contribution

Comment:
This key article addresses the resilience criteria, but is formulated in a complicated and ambiguous manner. A more effective solution would be to replace it with a clear *"Made in*

Europe" preference clause. Such a "Made in Europe" clause could preferably be defined as made in the EEA countries. This would align with the reasoning of the NZIA and the upcoming Clean Industrial Deal, which – according to a leaked document – will contain requirements for local content and sustainability criteria for public procurement and other support schemes and as incentives for private purchases.

The provision prohibiting PV modules and inverters from being manufactured in dominate third countries – which for the PV value chain is China – is a welcome addition. However, there is a significant risk of circumvention through bifurcation – where Chinese manufacturers will relocate production or establish subsidiaries in nearby countries. Under the current proposal, a solar module assembled in Vietnam by a Chinese subsidiary, using for example glass from Malaysia and cells from the parent company in China, could technically meet the resilience criteria.

To address this loophole, the definition of third-country companies must include entities directly or indirectly controlled by companies based in restricted third countries. This measure would help prevent Chinese companies setting up subsidiaries just to circumvent the resilience provisions in the NZIA.

If a *"Made in Europe*" clause is not feasible, we propose strengthening the article to align with the NZIA ambition of building net-zero production capacity in Europe (e.g. recital 8 (ii) in this implementing act). Specifically, the criteria should be tightened over time as European net-zero manufacturing capacity expands thanks to e.g. the "net-zero strategic projects" regulation. We propose that the allowance for the "four main specific components" originating from dominant third countries is to be reduced to *three* by 2027 and to *two* by 2028. The phased approach would ensure resilience goals are met while supporting the growth of European manufacturing capacity.

ESMC proposes:
Add a "Made in Europe" clause as a prequalification or award criteria as described above.

In case, a "Made in Europe" clause is not feasible, ESMC proposes:

Add to Article 7.1 (a) "… originating in that third country **and shall initially not contain** more than four main specific components listed in Implementing Regulation […] originating in that third country. **The number of those specific components shall be reduced to three in 2027 and to two in 2028."**

Add: As a consequence of above, define third country dependency as above; i.e. "**… produced by entities controlled directly or indirectly by companies based in that third country**".

Article 7.1 – subparagraph:
We would recommend to provide a clarification on the subparagraph starting with:
"Where the Commission, at the time of the publication of the relevant auction, has determined in accordance with Article 29(2) of Regulation (EU) 2024/1735 that, in addition to the

conditions mentioned in the first subparagraph, more than 85% of the supply within the Union…" **or to exclude PV as it certainly is not affected currently**.

Article 7.2
The scope of this article is not clear as it basically puts the same condition in place as Article 7.1. Clarification/correction would be very welcome.

Article 8 Environmental sustainability – carbon footprint

Comment:
We are concerned about the use of the proposed Product Environmental Footprint Category Rules (PEFCR) methodology for calculating the carbon footprint of the PV modules. The PEFCR calculates on a kilowatt-hour (kWh) basis, which allows for potential manipulation due to uncertainties related to lifetime assumptions, degradation rates, and green energy certificates. To minimize the risk for greenwashing, the carbon footprint should be calculated on a kilowatt-peak (kWp) cradle-to-gate basis using tabulated values.

This carbon footprint calculation method has been successfully applied in the French national government specification (ECS, Evaluation Carbone Simplifiée) for solar and wind power facility tenders for more than a decade, and similar methods also have been introduced in Norway, USA and South Korea. This also forms the basis for the carbon footprint criteria in the globally recognized Electronic Product Environmental Assessment Tool (EPEAT) ecolabel for solar. Furthermore, the Article 8 mandates all member states to use PEFCR, which would require discontinuing well-established and effective CO_2 calculation systems, such as the French model. This would be highly counterproductive.

As first option we recommend using a methodology calculating the carbon footprint on a kilowatt-peak (kWp) cradle-to-gate basis with tabulated values as already implemented in France and other countries. If this is not feasible, at the very least, member states should be allowed to continue using existing, well-functioning methods, making PEFCR one option among other methodologies. For more information about the solar PV manufacturer's proposals on how to best calculate carbon footprint (and not using PEFCR) we refer to the European Solar PV Industry Alliance (ESIA): *Recommendation Paper Series VII*.[1]

ESMC proposes:
Replace the PEFCR with a method where emissions are calculated on a kilowatt-peak cradle to cradle basis with tabulated values as described above.

If not feasible, we propose to amend Article 8 as below:

Article 8

Environmental sustainability – carbon footprint
1. When assessing the auction's sustainability contribution referred to in Article 26(1), point

[1] https://solaralliance.eu/wp-content/uploads/2024/09/ESIA-Recommendation-Paper-Series-VII.pdf

(b), of Regulation (EU) 2024/1735 by means of a carbon footprint criterion, the relevant authorities shall include a pre-qualification or award criterion or a combination of both and indicate the net-zero technologies (among the ones listed in Article 1(2)) whose carbon footprint has to be assessed and, for each net-zero technology, the applicable carbon footprint assessment methodology.

2. Bidders shall be required to calculate the carbon footprint using life cycle assessment methods provided for in Union law that specifically addresses the net-zero technologies at stake, where available. **Alternatively, national states can request to use their own LCA methodology using national or European electricity mix to calculate the carbon footprint (such as tabulated values given in the French ECS).**

3. If Union legislation does not provide for a carbon footprint assessment method relevant to the specific net-zero technology, bidders shall be required to calculate the carbon footprint using the latest Product Environmental Footprint Category Rules developed in collaboration with the Commission in accordance with Recommendation (EU) 2021/2279. **Alternatively, national states can request to use their own LCA methodology using national or European electricity mix to calculate the carbon footprint (such as tabulated values given in the French ECS).**

4. If no Product Environmental Footprint Category Rules are available, bidders shall be required to calculate the carbon footprint using the latest version of the Product Environmental Footprint method, in accordance with Recommendation (EU) 2021/2279. **Alternatively, national states can request to use their own LCA methodology using national or European electricity mix to calculate the carbon footprint (such as tabulated values given in the French ECS).**

5. If there is no Environmental Footprint-compliant data, bidders shall be allowed to apply adaptations to the Product Environmental Footprint method by making reference to other data sets, provided that the following conditions are met:

(a) those data sets are compliant with the International Reference Life Cycle Data system format referred to in Section 4 of Annex 1 to Recommendation (EU) 2021/2279, regardless of the methods used to obtain the life cycle impact assessment results or emission factors;

(b) the nomenclature of the elementary flows is consistently aligned with the Environmental Footprint reference package used in the rest of the model.

If the Product Environmental Footprint method cannot be applied and alternative data sets to Environmental Footprint-compliant data cannot be used, the relevant authorities shall require bidders to use the relevant latest version of standard ISO 14067:2018 as appropriate.

The relevant authorities shall define and publish functional units, system boundaries and assumptions used to calculate the carbon footprint and oblige the bidders to report their calculations in a transparent manner. If not specified in the methodology used, national authorities shall define and disclose modelling and data quality requirements for primary data, secondary data and databases used. The relevant authorities shall require the use of consistent and representative data.

6. For carbon footprint methodologies not covered by paragraph 2 of this article, the carbon footprint assessment shall at least cover greenhouse gas emissions due to the following life cycle phases of the relevant net-zero technologies:

(i) extracting, producing, processing and transporting resources;

(ii) manufacturing processes;

(iii) **National or European** electricity/energy **mix** used for those processes;

(iv) transport of the components and final product;

(v) installation, operation and maintenance;

(vi) decommissioning and end of life.

7. For carbon footprint methodologies not covered by paragraph 2, bidders shall be allowed to demonstrate their actual emissions for the purpose of calculating the carbon footprint of their project participating in the auction, instead of using a default value.

Article 9 Environmental sustainability – circular economy

This is an important article with the potential to strengthen solar PV supply chains and create a competitive advantage for European manufacturers. As evidenced in recent research covering the EU PV value chain (https://doi.org/10.1016/j.jclepro.2025.144682 ; https://doi.org/10.1016/j.jclepro.2024.141376) it is essential to include most of the materials contents of the PV module. The recycling & reuse organisations face fundamental issues due to the products that last over 10 years having no traceability of materials, especially as they arrive from non-EU countries. It distorts collection, sorting, pre-treatment, recycling & purification of the materials processes. **Therefore, we believe that an information criteria of the product material information should be set up** It would be of particular importance when it comes to substance of very high concern, **e.g compounds of antimony and flourine**. As for antimony we refer to work carried out by ESIA[2].

Additionally, we strongly support clear alignment with ongoing European efforts to establish a **sustainability index**, ensuring streamlined criteria for the recycling of PV modules and inverters (https://www.pv-recyclability-index.eu/).

ESMC proposes to amend the article with a new bullet point sub-article as below:
"1. When assessing the auction's sustainability contribution referred to in Article 26(1), point (b), of Regulation (EU) 2024/1735 by means of circular economy criteria, as pre-qualification criteria or award criteria or a combination of both, the relevant authorities shall take into account the contribution of the projects participating in the auction to one or more of the following parameters, provided they constitute a substantial part of the environmental impact of the product:
- Recyclability of products, referring to one or more relevant product parameters as set out in point d) of Annex I to Regulation (EU) 2024/1781;

[2] https://solaralliance.eu/wp-content/uploads/2023/10/Recommendation-on-Addressing-uncertain-antimony-content-in-solar-glass-for-recycling.pdf

- ease of repair and maintenance or ease of upgrading, reuse, remanufacturing and refurbishment of products, referring to one or more relevant product parameters as set out in points b), c) and e) of Annex I to Regulation (EU) 2024/1781;
- use or content of recycled materials in products, including critical raw materials.

Information criteria of the product material, with the following minimal requirements:

- **Have at least 98% of materials by weight disclosed.**
- **All materials in components to be disclosed that are present by at least 0.1% of the weight in the ratio of the component weight.**
- **All of the critical raw materials should be disclosed.**
- **All of the substances of very high concern (SVHC) materials should be included.**
- **The information of disclosed materials should be verified by a third party.**
- **The product materials data should be stored in the EEA country's databases.**
- **For PV technologies, any compounds of antimony and fluorine should be disclosed.**

We also suggest that reference to the upcoming sustainability index is included, and how this act will align with the index, where appropriate.

Article 10 Environmental sustainability – biodiversity impact

Comment:
Important article with the potential to provide a competitive advantage for European manufacturers, as the impact on biodiversity is less adverse in European manufacturing. However, to fully realize this potential, the article must explicitly encompass the manufacturing stage (as has been done in Article 8.6 (i and ii). Below is our proposed addition, underlined.

ESMC proposes:
Article 10.1 to add:
1. When assessing the auction's sustainability contribution referred to in Article 26(1), point (b), of Regulation (EU) 2024/1735 by means of criteria related to the biodiversity impact of the operation of the net-zero technologies, the relevant authorities shall include pre-qualification criteria or award criteria or a combination of both to assess the project's contribution to improving the biodiversity impact of net-zero technologies during their **manufacturing**, installation, operation and decommissioning phases as laid down in paragraphs 2 and 3.

2. Where the relevant authorities include the biodiversity impact of net-zero technologies as a pre-qualification criterion, the criterion shall include the following elements:

a) the presence of a system to monitor the positive and negative biodiversity impacts of the **manufacturing**, installation during the installation, operation and decommissioning phase."

Article 11 Environmental sustainability - Energy efficiency

Comment:

The text refers to the Energy labelling regulation (2017/1369), which in the latest proposal published by the European Commission focuses on energy yield (kWh/m²/a), rather than reducing energy consumption-related emissions. Since PV energy use and emissions occur during manufacturing rather than the use phase, an effective energy efficiency measurement should be based on energy consumption and embodied carbon from the manufacturing stage. If only energy yield from installing/deployment is considered, the system would unfairly favour products from carbon-intensive regions such as China, placing European PV manufacturers at a disadvantage. Moreover, these assessments will differ across Europe due to differences of annual sunlight hours and irradiation intensity, creating disharmonized market conditions for solar modules.

We strongly recommend modifying the proposal to include energy yield from all manufacturing stages or, alternatively, requiring disclose of primary energy use data from the manufacturing stage.

ESMC proposes:
Article 11 1 (b) to add as a new paragraph:
1(b) For PV systems the energy efficiency should be calculated on energy use and embodied carbon from the manufacturing stage favouring manufacturing processes with low energy use and small or no emissions. Products or components made in fossil fuelled powered facilities should be regarded as extremely non-energy efficient with high amount of embodied carbon.

Article 12 Environmental sustainability – efficient water use and solutions avoiding water pollution

Comment:
This is an important article with the potential to provide a competitive advantage for European manufacturers, as the overall water impact in European manufacturing is significantly lower compared to countries such as China. However, this article - like the other sustainability articles (except Article 8) - focuses solely on the operational stage of projects, neglecting the manufacturing phase. Since the greatest water impact, particularly in PV systems, originates from the manufacturing process, we strongly recommend that the effects of water use and water pollution from manufacturing is also be taken into account. This would contribute to improved water quality while reinforcing the competitive advantage of European manufacturers.

ESMC proposes the following addition:

1. "When assessing the auction's sustainability contribution referred to in Article 26(1), point (b), of Regulation (EU) 2024/1735 by means of water-related criteria, the relevant authorities shall include pre-qualification criteria or award criteria or a combination of both to assess the project operation's **and manufacturing** contribution to preserving and, where applicable, improving the status of water bodies.
2. Where the relevant authorities include the water-related impact of net-zero technologies as a pre-qualification criterion, the criterion shall include the following elements:

a) the presence of a system to monitor the positive and negative impacts on water of the installation **and a system that inform about the impacts on water of the installation during the manufacturing phase**…"

Article 13 Environmental sustainability – pollution

Comment:
This is an important article with the potential to provide a competitive advantage for European manufacturers, as pollution from European manufacturing is significantly lower compared to countries such as China. However, the proposal focuses only on the installation and operational stages of a project, neglecting the manufacturing phase. Since the greatest pollution impact in PV systems originates from the manufacturing process, this phase must also be considered. Additionally, the article relies on screening criteria linked to the "Do No Significant Harm" principle (as explained in recital 26 and footnote 19), which applies to all stages of the supply chain, including manufacturing.

ESMC proposes:
Amend Article 13 as suggested below:
"Article 13
Environmental sustainability – pollution
When assessing the auction's sustainability contribution referred to in Article 26(1), point (b), of Regulation (EU) 2024/1735 by means of pollution-related criteria, the relevant authorities shall include pre-qualification criteria or award criteria or a combination of both to assess the project's contribution to reducing pollution other than from greenhouse gases during **manufacturing**, installation and operation. Relevant methodologies, thresholds and compliance mechanisms shall be defined in accordance with and based on Union law, if available, and taking into account as applicable the criteria laid down in Appendix C to Delegated Regulation (EU) 2023/2486."

Comment:
Solar PV technologies play a crucial role in driving innovation for the green industrial transition, offering significant synergies with other net-zero technologies. For this reason, we believe it is important to highlight this point, either within this article or in a recital addressing solar PV and innovation.

Article 14 Sustainability contribution - innovation

ESMC proposes:
In order to foster innovation and strengthen industry-academia partnerships we would like to add the text as below where appropriate:
Additional points shall be awarded to companies that invest in research and development while actively collaborating with research organizations, universities, or other entities within the EEA.

We also would like to add the text below where appropriate in Article 14 or in corresponding recital:
A special focus should be given to innovation in PV technologies, because PV technologies are giving positive contributions to the EEA on nearly all articles of this Implementing Act. These PV technologies include innovative PV-cell and PV-module technology for utility scale and dual-use applications, manufactured in the EEA and to be deployed throughout the EEA. The innovative PV technologies are well aligned with all criteria mentioned in this Article.

Article 16 Assessment of the auctions' pre-qualification or award criteria and compliance aspects

Comment:
This is an important article on verifying compliance with the criteria. Since Corporate Sustainability Due Diligence Directive (Directive (EU) 2024/1760) and Forced Labour Regulation (Regulation (EU) 2024/3015) require transparency and control over supply chains, we recommend explicit reference to, and alignment with, those two. Third-party assessment should also be a requirement for compliance with the implementing act.

ESMC proposes amendment as below:
"3. With the exception of bidders that qualify as micro, small and medium-sized enterprises, as defined in Article 3(1), (2) and (3) of Directive 2013/34/EU of the European Parliament and of the Council, and as renewable energy communities as defined in Article 2(16) of Directive (EU) 2018/2001, compliance with the criteria referred to in Article 4 shall be assessed by requiring bidders to present with their bid relevant supporting statements **issued by independent third parties (third party verification)**. Bidders subject to sustainability reporting under Directive 2013/34/EU (33) may refer to such reports."

Add a new sub-article as below:
Compliance with the criteria referred to in Article 4 shall be assessed by requiring bidders to present compliance with Regulation (EU) 2024/1760 and Regulation (EU) 2024/3015 (from date entry into force).

Amend subparagraph 5 as below:
"Compliance with the criteria referred to in Article 7 shall be assessed by requiring bidders to provide customs documentation in accordance with Regulation (EU) No 952/2013 of the European Parliament and of the Council, where available, as well as other relevant documents demonstrating the origin of the net zero technology or its main specific main components, including invoices or any other means. **The origin of the net zero emission technology or its specific main components should be understood as the country of manufacture or assembly of the component covering all parts of the corporate sphere, from the parent company to subsidiaries.**