ESIA European Solar PV Industry Alliance

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EUROPEAN SOLAR PV INDUSTRY ALLIANCE
RECOMMENDATIONS PAPER SERIES VIII

Fostering the Solar PV Industry: Recommendations and proposals for the implementation of the Net Zero Industry Act

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This document does not show the position of some of the ESIA members. See Annex II for more details

BACKGROUND

By 2030, as per NZIA, Europe has the ambition to process 40% of its domestic needs in net-zero technologies (NZT), including ambitions of reaching **30 GW of solar photovoltaic (PV) capacities across the full value chain** (NZIA, 11c), on its territory (NZIA, article 5.1).

This position paper of the European Solar Industry Alliance (ESIA) aims at providing the European Commission and Member States with **general recommendations and best practices** for the whole European PV industry to reach those targets.

This document will tackle:

1) **ESIA's general recommendations concerning NZIA Chapter IV's provisions.**
2) **ESIA's set of best practices concerning non-price criteria (NPC) covered by articles 25 to 28 (Chapter IV).**

This position paper does not intend to provide an exhaustive list of non-price criteria (NPC) but it rather highlights criteria the ESIA considers to be priorities when designing public procurements (art 25 NZIA), auctions (art 26 NZIA) and other forms of public intervention (art 28 NZIA). Despite the numerous propositions this paper lays out, the ESIA recommends using a limited number of non-price criteria, notably of award criteria for auctions. Most importantly, the **contributions to resilience and sustainability should remain the core of public support schemes**, **their weight should not be diluted by using too many additional criteria.**

This paper will not mention any specific weight or threshold for the recommended NPCs.

1. General Recommendations

Definition of country of origin

Many criteria refer to the **country of origin of the product**, component, or manufacturing step. Considering the high dependency of the PV sector towards companies from one single country, this definition **must encompass not only the manufacturing site but also the company's degree of direct and indirect control**, control being defined as the power to **appoint directors** (full definition below). Many countries could easily **circumvent the current definition based on the country where the manufacturing site is located** by offshoring production units in other countries which are not dominant sources of supply (yet).

For example, **China could quickly set production units in Vietnam or Thailand which have been targets of Chinese PV offshoring for years.** The ESIA therefore champions a broad definition of the country of origin referring to the group of companies involved:

"A group of companies is an economic entity formed of a set of companies which are either companies controlled by the same company, or the controlling company itself. Controlling a company means having the power to appoint the majority of its directors. *The control of company may be direct or indirect, through intermediate companies which can be asked to vote the same way on the management board, thereby obtaining a majority of rights".* [1]

This interpretation would not completely prevent Chinese capitals to invest in European manufacturing sites but would ensure those are not majority shareholders.

Otherwise, European dependencies towards China will only shift from Asia to Europe.

If companies from third countries where the principle of reciprocity applies wish to pursue investments with majority participation, they can apply for an **exemption based on a satisfactory risk analysis performed by an EU accredited body establishing that there is no strategic control of decision making by third country state bodies.**

[1] This broad definition of the country of origin will be used in French Law in 2024, in a decree to be published by the end of the year

Need for a balanced approach

A balanced approach is needed when interpreting NZIA provisions, both concerning the 40% target for European PV and the volume of auctions covered by art 26.

Firstly, the **target of 40% of European NZTs by 2030 (article 5.1 (a)) should apply to every listed Net-Zero technology, its main specific components** and thus its **main manufacturing steps**. This approach is the only way to effectively tackle supply chain dependencies and would ensure some consistency with other European regulations such as the Critical Raw Materials Act.

Article 26 specifies the volume of auctions (min 30%) covered by the resilience and sustainability criteria, without differentiating between the various renewable energy sources and technologies. The ESIA underlines the need for a **comprehensive approach encompassing each specific renewable energy source.**

Technological neutrality for PV

The ESIA supports a **technology-specific approach when it comes to the broad framework of public interventions,** especially regarding auctions to deploy renewable energies. But the Alliance would like to stress on the need for non-price criteria to remain technology neutral for PV, meaning **those criteria should not vary between different PV technologies**. In other words, **NZIA criteria must be broad enough to encompass different technological pathways and withstand technological changes throughout time**.

Regular review

The solar manufacturing industry supports **regular exchanges between the Commission and stakeholders** to ensure the effectiveness of NZIA provisions, in particular for auctions. If needed and agreed, those discussions could lead to regular reviews focusing on the volumes covered (as already laid down in articles 26 and 29) but also on the effectiveness of NPCs in consolidating the existing industry and developing new PV manufacturing projects. However, this should not unduly reduce planning visibility for the industry which needs a reliable framework to invest into new manufacturing facilities. ETIP-PV, established in the SET Plan, could be one of the relevant stakeholders in those exchanges.

*In this position paper, **eligibility criteria** refer to minimum mandatory conditions to be included in public contracts as defined in article 25, pre-qualification criteria for auctions (article 26) and criteria to be considered in the contribution to sustainability and resilience for other forms of public intervention (article 28).*

Award criteria encompass non-eligibility non-price criteria in public contracts (art. 25) and auctions (art. 26), as well as criteria to be considered when awarding the additional financial compensation (max. 5% bonus) in other forms of public intervention (art. 28).

2. Best Practices Regarding Non-Price Criteria

2.1. Contribution to Resilience

***Resilience** refers to the ability to withstand or overcome external shocks and crises. As such, by promoting European resilience, the NZIA aims to secure and build-up the European supply chain of net-zero technologies by fostering the European manufacturing of strategic NZTs and their supply chains while also diversifying the supply originating from third countries.*

Resilience is the second pillar of the NZIA. As laid down in the Act, Resilience must be considered in auctions and other forms of public intervention. Public procurement procedures shall also include resilience considerations and related obligations under specific conditions (bidders originating from a country which accounts for 50% of the Union supply or 40% if the European dependence has been increasing for more than 2 years) and envisage penalties in case of non-compliance.

The securing of the European supply must simultaneously **combine the development of the European solar PV value chain and the diversification of supplies** originating from third countries. The combination of these two dimensions is essential to achieving the ambition set by the European Union in the NZIA, namely: producing 40% of its needs in NZTs and 30 GWp of PV capacities (across the full value chain) on the continent by 2030 (article 5).

The ESIA is thus advocating the following approach:

- **Progressive exclusion of dominant sources of supply as a prequalification criterion** for products originating from a third country representing more than 50% of European supply. This definition leaves room for products originating from non-dominant sources while preventing the emergence of new dominant sources of supply in years to come.

- **European content as an award criterion.** This criterion should focus exclusively on manufacturing in Europe to foster the European industry and reach the goal of 30 GWp of domestic production capacities set in article 5 of the NZIA. This criterion should be given most of the non-price weight in auctions in order to be effective.

Combined with the existing European framework, this approach should be able to reinforce the resilience of the European PV value chain. Introduced in 2023, the **Foreign Subsidy Regulation (FSR)** already allows the Commission to penalize entities that have benefited from subsidies resulting in a market distortion. The ESIA welcomes the increased use of this mechanism in the past few months, especially in the PV sector. Europe can also rely on its **existing anti-dumping policies** and on the latest regulations concerning **due diligence** (CSDDD) and **sustainability** (CSRD).

Eligibility criterion – Progressive Exclusion of products originating from a single third country representing more than 50% of the Union supply

Auctions and other forms of public intervention should include an **obligation for the duration of the contract not to supply more than 50 % of the value of the specific NZT or of its main components originating from a dominant source of supply.**

A dominant source of supply is defined as **any third country representing more than 50% of the European supply.** As laid down in general recommendations, the definition of the country of origin should encompass not only the manufacturing site but also the company's degree of direct and indirect control.

This approach should be **implemented progressively, according to the ramp up of domestic manufacturing capacities.** In other words, **this exclusion should not be applied from the beginning and not for single component, it should be integrated into the stepped prequalification approach for a later step.** There should be an impact assessment on competitive proven alternatives, so that an exclusion of products can only been applied if there are proven alternatives. The industry needs supporting data about the availabilities to assess the consequences of such an exclusion and set the application date for such a criterion at least midterm.

Regarding public procurements (art 25): The “opt-out” clause of article 25 (penalty) makes the resilience contribution completely ineffective. Member States should make sure that contracting entities are deterred from paying the penalty - which would make the resilience contribution

criterion completely ineffective - by setting a higher penalty percentage. As stated in the general recommendations, the contribution to resilience must be closely monitored as non-GPA countries will try to bypass the regulation by processing the last manufacturing steps outside of their borders, in a GPA country or in a country for which the Union has signed a bilateral agreement. This loophole must be addressed in order for the resilience contribution to remain effective.

Award / bonus criterion – European content: number of steps of the Value Chain completed in Europe.

For auctions (art 26), the ESIA advocates an **award criterion considering the degree of European manufacturing**. In other forms of public intervention (art 28), this criterion could be used as a way to get the 5% additional financial compensation (bonus).

As laid down in the previous ESIA position paper, this resilience award criterion should cover a short list of PV module components / steps / finished products / semi-finished products / materials / raw materials:

1. Metallurgical Grade Silicon or Equivalent
2. Polysilicon or Equivalent
3. Ingot or Equivalent
4. Wafer or Equivalent
5. PV Cells
6. Solar Module
7. Solar Glass
8. Inverters

Where, '*Equivalent*' refers to key enabling technologies such as thin-film or tandem equivalent.

However, **the thresholds set as part of the award criterion should reflect the economic added value (considering both OPEX and CAPEX) and the criticality of each component**, **step or material for the strategic autonomy of the EU**. Solar glass, for example is an essential component in most PV modules but is not a critical step with regards to the resilience of the supply chain and the European strategic autonomy.

The weight of the bonus must be consistent with the manufacturing steps covered. In other words, the steps and components at the core of the value chain (in particular cells, wafers and ingots) – which generate higher real economic value and present greater criticality for the Union's strategic autonomy - should be given a higher weight.

The ESIA considers the resilience award criterion to be the most important tool for reaching NZIA targets and ensuring European strategic autonomy. **As any additional award criterion would dilute its weights, the ESIA recommends using as few award criteria as possible. Those should also represent a limited weight in the auction's award section.**

2.2. Contribution to sustainability

Sustainability *refers to the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, the NZIA sustainability contribution should encompass, in a comprehensive way, environmental, social and economic dimensions.*

The sustainability contribution is one of the pillars of the NZIA. It is one of the mandatory minimum conditions to be met in public procurement (art 25), and one of the mandatory criteria to be met - as a Prequalification criterion or award criterion, at the discretion of the Member States - in auctions (art 26). Finally, it can be used as an eligibility criterion or as a bonus in other forms of public interventions (art 28).

In line with the proposed definition, ESIA supports a **broad interpretation of sustainability** that would include a **social dimension** which can be linked to eligibility criteria related to social and employment related considerations (in public procurements, art 25)) and Responsible Business Conduct (in auctions, art 26).

2.2.1. Carbon footprint

Eligibility and award criteria – Carbon Footprint:

The ESIA considers carbon footprint criteria to be the most effective in diversifying the European supply and to have the highest steering effect in the sustainability section.

In the context of the NZIA, the ESIA supports a **carbon footprint criterion using a robust methodology that prevents any circumvention**, based on the production site's country energy mix and on EU-verified site-specific energy procurement schemes. complying with EU-like standards (as

stated below). In general, the ESIA champions a **linear approach based on the kilowatt peak (kWp) functional unit** for both the eligibility and award thresholds. This methodology would reward any little effort as well as preventing tricky "threshold effects".

In general, the ESIA emphasizes the importance of relying on **national grid emission factors**, obtained from reliable organizations such as the International Energy Agency, as one of the best methods for carbon footprint assessment to ensure the integrity of carbon footprint claims in the European solar market. Individual self-consumption certifications and green PPAs can only be considered reliable if they respect EU-like quality standards which could be verified through audits led by bodies accredited by the European Commission. The ESIA also supports the **increased use of investigations to ensure the integrity of carbon footprint claims originating from third countries.**

A **first carbon footprint threshold should be used as an eligibility criterion in order to set a push towards the NZIA target of 40% and support the green transition from manufacturing to deployment.** This first threshold could be effective in public procurements (art 25), auctions (art 26) and other forms of public intervention (art 28).

Such as the resilience eligibility criterion, this criterion should be implemented progressively and in proportion to the ramp-up of domestic manufacturing capacities and be subject to an impact assessment on proven alternatives.

In auctions and public procurements, a **second progressive landmark should be used as an award criterion to reward the most sustainable panels** in terms of carbon footprint. **In feed-in tariffs, a bonus (additional financial compensation) can be introduced to reward projects using modules with low carbon footprint on the basis of a similar threshold.**

The ESIA **considers the prequalification threshold** (eligibility criterion) to be the **most effective way to use carbon footprint** in order to exclude the worst bidders in terms of environmental impact. The award carbon threshold in auctions and feed-in tariffs would only come as an additional, complementary criterion and should be given limited weight in overall NPC schemes.

Other sustainability criteria related to the life cycle environmental impact of PV products could be used, such as an eligibility criterion assessing the **environmental impact of the production site** or eligibility criteria focusing on the **product's environmental, recyclability and life-time standards.**

However, those additional criteria **should not lead to excessive complexity**. The ESIA thus recommends using as few criteria as possible, as long as those criteria are effective in reaching the goals set by the NZIA, and especially the 40% target of European manufacturing by 2030.

2.2.2. Economic and social considerations: social or employment-related considerations and Responsible Business Conduct

As stated, the ESIA calls for a broad interpretation of sustainability that would encompass social and economic considerations.

As stated in a previous ESIA paper[2], PV modules are currently considered to be one of the product categories with the higher risk of being exposed to forced labour along some steps of its supply chain. In those unfortunate circumstances, **the PV industry - supported by the EU - must be unfailingly vigilant and demanding concerning social considerations.**

The Alliance considers the following criteria to be the most effective in this matter. They could be used as social and employment related considerations for public procurements (art 25), as well as responsible business conduct requirements for auctions (article 26).

This list of social criteria is not exhaustive, and these criteria are not intended to be all used simultaneously and in every type of public intervention. They should also be implemented progressively and in proportion to the ramp-up of domestic manufacturing capacities.

Eligibility criterion – quick implementation and application of the Forced Labour Regulation

The ESIA highlights the need for the European PV industry to proceed **with anticipated investigations targeting products allegedly made with forced labour.** The alliance also supports the **exclusion – as soon as possible - of products and components manufactured in regions where the use of state-imposed forced labour has been demonstrated**.

Forced Labour must be tackled as soon as possible, especially in the PV industry, which is one of the most exposed sectors in that regard due to its exposure to state-imposed forced labour. The ESIA therefore insists on the need for a quick implementation of the Forced Labour Regulation. The database will be available 18 months after the entry into force of the text. The ESIA therefore calls to **launch the first investigations as soon as this database is made available and to ban, as quickly**

[2] https://solaralliance.eu/wp-content/uploads/2024/03/ESIA-Forced-Labour-Paper.pdf

as possible, products for which the use of forced labour has been demonstrated. Operational databases have already been published by independent sources, such as the Sheffield Hallam University reports, and could be used immediately or when designing the Forced Labour database defined in the regulation. The Commission and competent authorities could rely on those reliable existing sources to launch the first investigations as soon as the Forced Labour Regulation is in force.

Eligibility criterion – ratification of the UN ICCPR

The ESIA champions the exclusion of products originating from countries which have not ratified the United Nations International Covenant on Civil and Political Rights (ICCPR). This convention places particular emphasis on the prevention of forced labour in countries which have ratified the text.

Eligibility criterion – Human Rights' violations:

The Alliance supports the exclusion of modules produced by entities and companies for which the **EU has imposed sanctions for human rights violations,** under the EU Global Human Rights Sanction Regime.

Eligibility criterion – compliance with the fundamental international Labour Law framework

Finally, there needs to be a strong framework ensuring that companies and countries they originate from **respect essential international Labour Law standards**. The ESIA recommends using ILO's conventions to design such a framework, and especially "fundamental instruments", being:

- Forced Labour Convention, 1930 (No. 29) and its 2014 Protocol.
- Abolition of Forced Labour Convention, 1957 (No. 105)
- Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)
- Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98)
- Labour Inspection Convention, 1947 (No. 81)

2.2.3. Other sustainability criteria

These criteria are not intended to be used simultaneously. As previously stated, it is essential for the award section to strongly focus on resilience, and more specifically on the promotion of European Content for auctions.

Award criterion – High Value Recycling

For maximum steering effect towards sustainable practices, high value recycling should be used as an award criterion based on compliance to existing CENELEC treatment standards EN50625-2-4 and TS50625-3-5. This criterion would encourage recovering beyond high-mass fraction materials such as glass and frames for greater circularity.

Or,

Award criterion – Halogen-Free Polymer Module

Given that halogens are recycling disruptors, the ESIA recommends using proof of halogen-free polymers in module as an award criterion. This criterion would promote and facilitate recycling, in line with other European regulations such as the Ecodesign for Sustainable Products Regulation.

2.3. Other specific criteria

2.3.1. Cybersecurity

Eligibility criterion for PV modules with micro-inverters and inverters – Compliance with European cybersecurity standards

Creation of a reliable European certification mechanism and of a European independent organization to ensure compliance with European cybersecurity standards.

2.3.2. Contribution to innovation

The **Net Zero Industry Act (Art. 26 Auctions to deploy RES) recognises innovation** as **one** of the **criteria defining sustainability**. It indicates that auctions should contribute, among other things, to innovation by providing **entirely new solutions or improving comparable state-of-the-art solutions**. This concept **aligns** with the definition of "innovative technology" laid down in RED III (which incidentally also sets the target of min. 5% of newly installed renewable energy capacity to come from innovative renewable energy technology by 2030). To meet these goals, it is essential to

embed and reward the use of innovative PV technologies in public auctions and tenders. Incentivising bidders to integrate next-gen PV modules into bids would not only contribute to attaining RED's targets but would also support Europe's ambition of recapturing a key role in its solar industry. Innovation could be measured in terms of going beyond state-of-the-art in terms of efficiency, durability or other technical or sustainability aspects.

The ESIA would like to stress on the need to differentiate technology innovations from innovative deployments:

- **Technology innovation** (understood according to the definition provided by RED, art. 2, paragraph 14b) and including for example:
    - Innovations regarding higher percentage of circularity, or
    - Power generation output compared to standards in the market or
    - Materials used to improve efficiency, conductivity or to reduce lifetime losses.
- **Innovative deployment** (understood according to the definition used by the 2022 EU Solar Strategy) and including:
    - Agrivoltaics
    - Floating PV solutions
    - Product integrated PV such as building integrated PV or integration into transport infrastructure (highways, railways, sound barriers, etc.)

Innovative deployment solutions could be part of dedicated auctions and public interventions schemes in order for them to compete in a fair and even-handed environment that does not only rely on deployment standards.

Regarding technology innovation, the ESIA considers a module efficiency award criterion to be the most effective tool, at least in the short term. This criterion would encourage innovation from both European and third countries manufacturers.

It is however essential that these criteria do not jeopardize the weight of the resilience award and the carbon footprint award criteria which are keys to the European manufacturing ramp-up fostered by the NZIA.

One or more of the following criteria can be considered for the innovation award:

Award criterion - Module Efficiency

The ESIA recommends using an award criterion based on a fixed value OR / AND on a comparison to average market values.

The ESIA recommends a linear approach for the module efficiency dependent bonus. This methodology would reward any little effort as well as preventing tricky "threshold effects".

Rigorous verification must be maintained to ensure the credibility of the award criterion (e.g. measurement of module efficiency in European based calibration labs).

Or,

Award criterion – Module Performance

The ESIA recommends using a criterion to award superior module performance, measured according to IEC 61853 Photovoltaic (PV) module performance testing and energy rating, which includes lifetime performance as well as the IEC 63209 series dedicated to extended-stress testing of PV modules. The award threshold can be based on a fixed value OR / AND on a comparison to average market values. Rigorous verification must be maintained to ensure the credibility of the eligible warranties.

Or,

Award criterion – Mean-Energy Payback Time (M-EPBT)

The ESIA recommends using a criterion to award faster module energy payback **times for a particular location** based on a fixed value OR / AND on a comparison to average market values. A harmonized approach to M- EPBT calculation can be found here.

ANNEX I: Overview Table

	Eligibility criteria (all forms of public intervention)	Award / Bonus criteria (art 26 and art 28)
CONTRIBUTION TO RESILIENCE		
Exclusion of dominant sources of supply	Exclusion of products originating from third countries representing more than 50% of the European supply	
European Content		Progressive award based on European content thresholds covering a short list of manufacturing steps. The different thresholds should consider the criticality and economic value of each manufacturing step.
CONTRIBUTION TO SUSTAINABILITY		
Carbon Footprint	Eligibility threshold preventing the least sustainable panels from entering the market.	Second, progressive award threshold rewarding the most sustainable panels.
Social Considerations	Early implementation of the Forced Labour Regulation Exclusion of products originating from countries which have not ratified the United Nations International Covenant on Civil and Political Rights (ICCPR). Exclusion of modules produced by entities and companies for which the EU has imposed sanctions for human rights violations, under the EU Global Human Rights Sanction Regime Strong Labour Law framework built on ILO's fundamental instruments.	
Other sustainability criteria		High Value Recycling or, Halogen-Free Polymer Module
Other specific criteria		
Cybersecurity	Creation of a reliable European certification mechanism and of a European independent organization to ensure compliance with European cybersecurity standards.	
Contribution to innovation		Module Efficiency or, Module Performance or, Mean-Energy Payback Time (M-EPBT)

ANNEX II: Members not endorsing the paper and reasons behind

SolarPower Europe, BSW and SolarEdge

"SolarPower Europe" (SPE) as an association representing over 320 stakeholders across the entire value chain, BSW ("German Solar Association") as an association representing over 1,100 stakeholders across the entire value chain and SolarEdge, both members of SPE, are to abide by the positions developed within these associations, which diverge in several areas from this paper from the European Solar Industry Alliance. The main differences are as follows:

- **Sustainability and Resilience Criteria**: SPE and BSW caution against applying sustainability and resilience criteria as prequalification criteria. Specifically, we do not align with implementing "the progressive exclusion of products originating from third countries that represent more than 50% of the European supply" from the start, nor should it apply to single components.
- **Resilience Definition**: SPE and BSW caution against defining resilience as "EU content" only instead of having a hybrid approach.
- **Component List**: SPE believes that the current component list is incomplete and that it should include mounting structures. BSW cannot fully endorse the list of optional "award criteria" in its current structure (e.g. p. 11 and p. 12-13) despite individual merit. BSW also cautions against an implementation that introduces bias between PV technologies.
- **Extending to Art. 28**: SPE does not align with the exclusive use of "EU local content" as a prequalification criterion in article 28.
- Finally, BSW does not condone the parts of the paper that exceed its scope by discussing trade policy measures and the accelerated application of EU legislation outside of the NZIA.

HELIUP

Heliup does not endorse the paper as the chosen uniform criteria do not account differences between technologies.

- Firstly, because the **carbon footprint eligibility** and award criteria depend on thresholds, study boundaries, and the functional unit, potentially disadvantaging modules with alternative design.
- Secondly, because innovation in modules should not be measured solely by efficiency or EPBT, as other innovations can significantly impact areas like installation time, raw material usage per KWp, and land use. Broader criteria would better capture valuable contributions beyond efficiency alone.

ATEG

ATEG do not support the paper as we believe that the current component list is incomplete, and that it also should contain solar PV mounting structures.

EUREC

EUREC do not support the paper. Firstly because an important « innovation criterion », which we suggested openly in the review process, has been left out of the paper. We've been told this was to avoid disturbing a finely balanced compromise between the paper's lead authors on other topics, which given the nature of our idea, we find implausible.

Secondly, the paper places **too much emphasis on resilience criteria** at the expense of what NZIA calls 'sustainability criteria'.

Glass for Europe

Glass For Europe do not support the paper as we believe that the current component list is incomplete, and that the stated "Solar glass, for example is an essential component in most PV modules but is not a critical step with regards to the resilience of the supply chain and the European strategic autonomy." is incorrect.' The sentence is also a direct contradiction with ESIA position paper from May 2024 (Fostering the Solar PV Industry: ESIA's Roadmap proposal for the NZIA).