

EN Annex 1

Memorandum of Understanding for a Co-programmed European Partnership on Photovoltaics

The European Technology & Innovation Platform on Photovoltaics, represented by EPIA SolarPower Europe Aisbl, the registered offices of which are in Rond Point Schuman 3, 1040 Bruxelles, Belgium (hereinafter referred to as the “Partners other than the Union”), and the European Union, represented by the European Commission, (hereinafter jointly referred to as “the Partners”),

Considering that:

- Parts of Horizon Europe – the Framework Programme for Research and Innovation (‘Horizon Europe’) ¹ – may be implemented through Co-Programmed European Partnerships, on the basis of a Memorandum of Understanding between Partners determined to support the development and implementation of research and innovation activities of strategic importance to enable the Union to address global challenges and maintain its competitiveness in line with EU priorities, including the Sustainable Development Goals;
- The Horizon Europe Strategic Plan 2025-2027 ² has identified a candidate for a Co-Programmed European Partnership on Photovoltaics considered instrumental to deliver scientific, economic and societal impact in line with the Horizon Europe objectives;
- The proposal received from the Partners other than the Union has been positively assessed by the European Commission in that it fulfils the new ambition and the selection criteria referred to in Article 10 and Annex III of Regulation (EU) 2021/695³ (‘the Horizon Europe Regulation’);
- The implementation, monitoring and evaluation of the European Partnerships will comply with the criteria referred to in Annex III of the Horizon Europe Regulation, including an alignment with the Horizon Europe Regulation monitoring and evaluation provisions, set out in its Article 50 and Article 52, as well as Annex V on Key Impact Pathways;
- The multi-annual Strategic Research and Innovation Agenda (SRIA) agreed by the Partners will provide the basis for the development of the co-operation under this Memorandum of Understanding, and for defining the annual priorities in line with the Horizon Europe Strategic Plan 2025-2027;

¹ Regulation (EU) 2021/695 of the European Parliament and of the Council of 28 April 2021 establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination (OJ L 170, 12.5.2021, p. 1–68, ELI: <http://data.europa.eu/eli/reg/2021/695/oj>)

² <https://op.europa.eu/en/web/eu-law-and-publications/publication-detail/-/publication/6abcc8e7-e685-11ee-8b2b-01aa75ed71a1>

³ OJ L 170, 12.5.2021, p.1-68.

- Regulation (EU) 2020/852⁴ establishes the general framework for determining whether an economic activity qualifies as environmentally sustainable for the purposes of defining sustainable investments. It creates a common reference that investors, banks, industry and researchers can use when investing in projects and economic activities that have a substantial positive impact on climate and environment and no significant harm on any of them. It is the reference for green investments in the Union.
- Funding sources other than Horizon Europe (other Union programmes as well as external funding sources, including those from Member States) will be explored in order to contribute to the achievement of objectives of this Co-programmed European Partnership in line with the Horizon Europe objectives;
- The European Green Deal⁵ as well as the REPowerEU Plan⁶, published in May 2022, sets out the measures necessary to reduce Europe’s dependency on fossil fuels, as well as to accelerate the green transition and to increase the resilience of the EU energy system – all of which rely on the massive and rapid deployment of renewable energy and especially Photovoltaics with a dedicated EU Solar Energy Strategy;
- In 2020, solar PV delivered around 5% of total EU electricity generation. To meet the EU Solar Energy Strategy overall target of 320 GW of PV capacity to be achieved in the EU by 2025 (representing a doubling compared to 2020 levels of EU capacity) and almost 600 GW (750 GWdc) by 2030, the EU will need to install, on average, 45 GW (56 GWdc⁷) of PV generation capacity per year;
- To meet the REPowerEU and the EU Solar Energy Strategy objectives — and avoid replacing a dependency on Russian fossil fuels with new dependencies — the EU Solar Energy Strategy announced the launch of an industrial alliance on PV solar energy;
- The “EU Solar PV Industry Alliance”, formally endorsed on 11 October 2022, brings together industrial actors, research institutes, and other stakeholders with an interest in the solar PV sector. The alliance aims to accelerate solar PV deployment in the EU by scaling-up to 30 GW of annual solar PV manufacturing capacity in Europe by 2025, facilitating investment, de-risking sector acceleration, and supporting Europe’s decarbonisation targets;
- The Commission, Member States and industry representatives signed the European Solar Charter on 15 April 2024. It sets out immediate actions to be taken by the signatories to further support the competitiveness of the European PV manufacturing industry;

⁴ Regulation (EU) 2020/852 of the European Parliament and the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088 (OJ L 198, 22.6.2020, p. 13).

⁵ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, The European Green Deal, COM(2019) 640 final.

⁶ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, REPowerEU Plan, [COM/2022/230 final](#).

⁷ Target expressed both as GWac contributing to electricity generation on the electricity grid and GWdc for the absolute nominal capacity of PV needed to deliver the GWac target (see SolarPower Europe, European Market Outlook 2023)

- The Commission has also put forward a Green Deal Industrial Plan⁸ in 2023, which aims to enhance the competitiveness of Europe's net-zero industry and facilitate a swift transition to climate neutrality. As part of this plan, the Commission has proposed the Critical Raw Materials Act⁹ and the Net-Zero Industry Act¹⁰ according to which the Union's net-zero technologies annual capacity should aim to approach or reach an overall annual manufacturing benchmark of at least 40 % of annual deployment needs by 2030 for net-zero technologies considered as a whole;
- Pursuant to the Terms of Reference of the European Technology and Innovation Platform on Photovoltaics¹¹ and article XX of the Statutes of EPIA SolarPower Europe Aisbl, the Partners other than the Union engage in the European Partnership for Innovation in Photovoltaics (EUPI-PV) with the European Commission to promote, facilitate and carry out the research, innovation, dissemination and other activities aiming at market, regulatory and societal uptake, including workforce training, necessary to achieve the objectives specified in Section 1 below;
- This Memorandum of Understanding constitutes a non-binding document in which the Partners will undertake all efforts necessary to achieve the general and specific objectives set out in point 1 below. It is not legally binding and does not create any contractual obligations under any law or legal system. Nothing in this Memorandum of Understanding will be construed as creating any liability, rights, waiver of any rights or obligations for any Partner or as releasing any Partner from its legal obligations. Neither Partner should be held liable under this Memorandum of Understanding towards the other Partner;

Have agreed the following:

1 Establishment, general, specific and operational objectives

The Co-programmed European Partnership for Innovation in Photovoltaics (EUPI-PV), hereinafter referred to as “the Co-programmed European Partnership”, is agreed between the Partners, to be implemented in an open, transparent, efficient and flexible way.

This Memorandum of Understanding sets out a cooperative relationship for the duration of the Co-programmed European Partnership with a long-term common vision, and the Partners pledge to pursue this common vision throughout the duration of this Partnership. It will contribute to the objectives of Horizon Europe and the Horizon Europe Strategic Plan 2025-2027.

The general objectives of the Co-programmed European Partnership are defined as follows:

⁸ Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, A Green Deal Industrial Plan for the Net-Zero Age, [COM/2023/62](#).

⁹ Regulation of the European Parliament and of the Council, Establishing a Framework for Ensuring a Secure and Sustainable Supply of Critical Raw Materials, [Regulation \(EU\) 2024/1252](#).

¹⁰ Proposal for a Regulation of the European Parliament and of the Council on establishing a framework of measures for strengthening Europe's net-zero technology products manufacturing ecosystem (Net Zero Industry Act), [COM/2023/161 final](#).

¹¹ European Technology and Innovation Platform Photovoltaics (ETIP PV) Terms of Reference (ToR).

GO1 Support European industry to foster the green and digital transitions and at the same time defend its open strategic autonomy, preserve Europe’s competitiveness, maintain a high level of employment and quality jobs in Europe and strengthen its ability to innovate and produce in Europe.

GO2 Actively support European leadership in an innovative and value-creating PV industry across the entire value chain, thus tackling its vulnerabilities/dependencies/gaps and leading to job creation, through accelerating the deployment of industrial projects. A successful innovation environment is crucial to sustain the long-term competitiveness of clean energy technologies sector, and therefore a key condition to the success of the Net Zero Industry Act.

GO3 Reinforce and better coordinate the EU R&I efforts across the whole solar PV value chain through a co-created EU R&I strategy for PV that supports structuring challenges & priorities, aiming to accelerate market uptake of PV innovation, thereby contributing to the overall Horizon Europe 35% climate action expenditure target, the European Green Deal and the REPowerEU, and the delivery of the Renewable Energy Directive¹²¹³ targets, including the indicative target for 5% of new capacity from innovative renewable energy technologies.

The specific objectives are the following:

SO1 Support the development and market uptake of breakthrough PV innovations that actively contribute to reinforcing the European PV industry competitiveness, the European energy transition and Europe’s energy security by ensuring the delivery of a consistent support to R&I in the PV sector with a strategic and comprehensive approach to market uptake:

1. Next generation PV materials, cells and module technologies (e.g. crystalline Si-tech, thin-film, perovskites etc.) across the whole value chain, emphasising commercial viability of new cell technologies (including performance, reliability, stability and circularity).
2. Emerging innovative PV applications (e.g. agri-PV, building-integrated PV, floating PV) for an optimal use of renewable energy potential and available area, in synergy with other economic sectors’ needs, biodiversity.
3. Integration of PV in flexible energy generation systems to enable a renewable energy dominated grid, through digitalisation, optimisation of production and consumption of solar electricity and interconnections with the transport sector, buildings, industry, other renewable energy sources and flexibility resources such as battery energy storage.
4. Circularity by design, recycling, maintenance, and end-of-life management of PV systems.
5. Enabling technologies and tools for demonstrating and scaling up next generation PV solutions, addressing barriers to market entry, shortening the lab to market timeline, facilitating the development of the entire industrial

¹² [Directive - 2018/2001 - EN - EUR-Lex](#)

¹³ [Directive - EU - 2023/2413 - EN - Renewable Energy Directive - EUR-Lex](#)

eco-system for PV including equipment manufacturers and accelerating the injection of financing in close to market innovation for PV.

SO2 Consolidation of the European R&I framework for PV, through an increased mobilisation of industry, research and funding authorities in expanding funding and accelerating the R&I process with a focus on improving the market uptake of European research in photovoltaics.

SO3 Support the R&I pillar of the ‘EU Solar PV Industry Alliance’ and consequently facilitate the build-up of a large-scale PV manufacturing capacity in Europe.

The operational objectives are the following:

OO1 Throughout the life span of the Partnership, achieve the following functional targets:

- a) Promote the involvement of relevant stakeholders in the activities of the partnership, including by appropriate geographical representation, gender balance and increasing the membership of the private side associations;
- b) Establish close working relationships with the other partnerships listed in section 5.4;
- c) Support relevant standardisation activities for various segments of the photovoltaics value chain in close cooperation with standardisation bodies;
- d) Provide scientific input to relevant regulation and related Union policies, when requested;
- e) Ensure a wide communication and dissemination of activities and results;
- f) Contribute to the continued innovation process by facilitating the improvement of skills in the PV sector.

2 Contributions and activities by the Partners

Any Union contribution, provided through Horizon Europe to the Co-programmed European Partnership, will be used to fund research and innovation activities, implemented as indirect actions following open calls for proposals and contests for prizes. These activities will be subject to the Rules for Participation and Dissemination of the Horizon Europe Regulation.

The European Commission envisages to dedicate up to EUR 240 million to actions within the scope of the Co-programmed European Partnership.

The Partners other than the Union will provide input and advice to the European Commission in order to contribute to the identification of priorities of research and innovation activities implemented as projects supported under the Horizon Europe Programme and the definition of call topics to be included in the Horizon Europe Work Programmes **within the scope of the Co-programmed European Partnership’s activities.**

Furthermore, **the Partners other than the Union envisage¹⁴ to dedicate up to EUR 240 million** for the period 2025-2030¹⁵ in research, innovation and other activities in the area of the Co-programmed European Partnership, notably regarding bringing to the market innovative technologies and processes in photovoltaics, engaging their constituent and affiliated entities¹⁶ to make such investments. These contributions will complement the Union contribution and will at least match the Union contribution.

Contributions by the Partners other than the Union^{17 18} will take the form of:

- a. **In-kind contributions to the Actions funded by the Union**, consisting of eligible costs in accordance with the Horizon Europe rules minus the Union contribution;
- b. **In-kind contributions to Additional Activities** that are in the scope of the Strategic Research and Innovation Agenda (SRIA) and addressed in the annual Additional Activities Report, which is approved by the Partnership Board. In-kind Additional activities are those activities which contribute to achieving the objectives of the Co-programmed European Partnership, including R&I at higher Technology Readiness Level (TRL) and/or to ensure demonstration, market, regulatory and societal uptake, which are in the scope of the SRIA but are not covered by Union funding;
- c. **Financial contributions to Additional Activities**, to ensure demonstration, market, regulatory and societal uptake.

For the in-kind contributions generated in Actions with lower funding rates than the maximum funding rates under Horizon Europe, the funding rate will be defined individually per call topic in the Horizon Europe Work Programme. This will range from the standard funding rate for R&I actions, to reduced funding rates for certain R&I actions and for Innovation actions in line with Article 34 of Horizon Europe. The selection of topics with reduced funding rates will be discussed in the Partnership Board.

In addition, the Partners other than the Union intend to make **Investments in operational activities** that go beyond the work foreseen in the SRIA, that contribute to achieving the objectives of the Co-programmed European Partnership and where there is a clear link between the investment and the activities of the Co-programmed European Partnership (e.g. investments in building production facilities, in training programmes for workers, and in other activities required

¹⁴ The undertaking and contribution by the Association covers only the in-kind contributions to be provided by its constituent entities and their affiliated entities (and not any contributions to be provided by its non-constituent entities or by a non-affiliated entity).

¹⁵ The longer timeline for contributions from Partners other than the Union takes into account the fact that the contributions will materialise over a longer period.

¹⁶ Entities are affiliated when they have a link with the beneficiary, in particular a legal or capital link, which is neither limited to the action nor established for the sole purpose of its implementation, in accordance with Article 190 of Regulation (EU, Euratom) 2024/2509 of the European Parliament and of the Council of 23 September 2024 on the financial rules applicable to the general budget of the Union (recast), (OJ L, 2024/2509, 26.9.2024, ELI: <http://data.europa.eu/eli/reg/2024/2509/oj>).

¹⁷ In line with Annex III of Horizon Europe and referred as co-investment in Annex V of Horizon Europe.

¹⁸ Where applicable, funding from state resources must be compliant with State aid rules.

for producing and putting on the market the product/service resulting from the R&I performed as part of the Co-programmed European Partnership). Those Partners may consider the ‘Do No Significant Harm Principle’ pursuant to Article 17 of Regulation (EU) 2020/852 and take into account the provisions of that Regulation to improve access to sustainable finance, where relevant. These Investments in operational activities are however not included in the abovementioned contributions intended by the Partners other than the Union, but they should be taken into account as leverage.

3 Governance

The Partners should convene in the form of a Partnership Board as the main forum for dialogue and steering to reach the objectives set out in this Memorandum of Understanding. Through the Partnership Board, the representatives of the Partners should agree on all issues concerning the cooperation for the Co-programmed European Partnership. The Partners through their participating representatives are considered as ‘Members’ of the Partnership Board.

The Partners agree on the composition and size of the Partnership Board, while respecting the following principles:

- Adequate representation of the European Commission services, including through acting as co-chair when meeting in the format of the Partnership Board;
- Adequate representation of SMEs;
- Adequate gender balance;
- Adequate geographical coverage.

Participation in the Partnership Board may be on a rotating basis, except for the representatives of the European Commission.

The Partnership Board for Partners other than the Union is designated by the European Technology and Innovation Platform for Photovoltaics (ETIP PV) Steering Committee on a biannual basis, and its composition includes – for ensuring the representativity of the platform’s value chain:

- The Chairs of the ETIP PV (1 Chair and 2 Vice-Chairs, elected for two years by the ETIP PV Steering Committee);
- 2 representatives from PV associations among the permanent seats of the ETIP PV Steering Committee (rotating annually, with 1 association for industry and 1 for research);
- 2 members of the ETIP PV Steering Committee from the PV industry (1 large company & 1 SME)
- 1 member of the ETIP PV from a PV research institute

In addition, the chairperson or a dedicated representative of the Implementation Working Group to the Strategic Energy Technology Plan (SET Plan) on Photovoltaics may participate in the Partnership Board as observer.

In addition, the Partnership Board may agree to invite, or nominate as observers to its meetings representatives of other European Partnerships, civil society organisations, standardisation bodies,

certification bodies, regulators, public procurers as well as experts in the area of the Co-programmed European Partnership.

The Partnership Board will be co-chaired by the European Commission, represented by the lead service in charge of the Co-programmed European Partnership, and a co-chair from the Partners other than the Union, designated by the ETIP PV Steering Committee per ETIP PV Terms of Reference¹⁹, selected among their members nominated to the Partnership Board.

The Partnership Board may lay down its Rules of Procedure, based on a harmonised proposal provided by the European Commission, covering inter alia rules on confidentiality, transparency and avoidance of conflicts of interests.

In order to address strategic issues, the Partners may also convene at a higher level²⁰ to review the work of the Partnership Board, take stock of the progress by the Co-programmed European Partnership in achieving its objectives, adjust priorities and activities according to changing market or policy needs or based on results from monitoring and evaluation activities, and discuss further ways to enhance collaboration between European Partnerships and synergies with other Programmes. The implementation of results and proposals from such high-level meetings may be subject to approval by the Partnership Board.

The Partners may form an Advisory Committee. The ETIP PV Steering Committee serves as an Advisory Committee and will advise on the priorities to be addressed, in line with the Strategic Research and Innovation Agenda and the Horizon Europe strategic planning, and suggest, in view of the progress of the Co-programmed European Partnership, adjustments or re-orientations to the Partnership Board, where necessary.

The members of the Advisory Committee should reflect a balanced representation of experts and stakeholders from across Europe within the scope of the priorities of the Co-programmed European Partnership, including e.g. from academia, industry, SMEs, end-users, non-governmental and civil society organisations, stakeholder associations and regulatory bodies. The Advisory Committee may elect a chairperson from among its own members.

The Partnership Board convenes the meetings of the Advisory Committee.

The SET Plan Implementation Working Group on Photovoltaics, which brings together experts representing Member States of the Horizon Europe programme to define priorities of the Implementation Plan on Photovoltaics, acts as a State Representatives Group to the Partnership. The States Representatives Group should advise and actively support the achievement of objectives of the Co-programmed European Partnership to ensure complementarity with national policies, priorities and programmes. They may review information and provide opinions on the progress of the Co-programmed European Partnership towards its scientific, economic and/or societal impacts.

¹⁹ [etip_pv_term_of_reference_may24.pdf](#)

²⁰ For example, between the President of the Association and a Director-General from the European Commission.

The States Representatives Group may provide information to, and act as an interface with the Co-programmed European Partnership on the following matters:

- a) The status of activities performed under national or regional policies, priorities and research and innovation programmes which are relevant to the Co-programmed European Partnership and identification of potential areas of cooperation, including concrete actions taken or envisaged for the deployment of relevant technologies and innovative solutions at the national or regional level;
- b) Specific measures taken at national level or regional level to maximise the impacts of the results achieved, in particular dissemination events, dedicated technical workshops and communication activities;
- c) Specific measures taken at national or regional level to support the exploitation, deployment and/or scale-up of the results achieved within the Co-programmed European Partnership.

The Partners other than the Union may arrange their own governance structures, providing that those structures do not contradict this Memorandum of Understanding. They may invite a European Commission representative as observer to meetings of their governance structure on subjects related to the Co-programmed European Partnership. The European Commission services may participate as observers to meetings of technical groups set up by the Partners other than the Union that are relevant for the Co-programmed European Partnership.

4 Activities and commitments of the European Commission

The European Commission undertakes to duly take into account the input and advice from the Partners other than the Union when identifying and defining call topics for research and innovation activities in the scope of and linked to the EUPI-PV Partnership to be included in the Horizon Europe Work Programmes 2025-2027 and the Pillar II 'Global Challenges and European Industrial Competitiveness' Cluster Climate, Energy and Mobility. For this purpose, the European Commission undertakes to consult and maintain a regular dialogue with the Partners other than the Union during the preparation of the Work Programmes. The call topics will be subject to Horizon Europe comitology procedures.

The European Commission may support and contribute to the regular monitoring of the Co-programmed European Partnership, including through its participation in the Partnership Board and in other activities, in line with the Horizon Europe Regulation monitoring provisions (Article 50). The European Commission shall also carry out in a timely manner the interim and final evaluation of the Co-programmed European Partnership feeding into Horizon Europe evaluations, as specified in Article 52 of the Horizon Europe Regulation. These evaluations will inter alia be fed by a self-assessment provided by the Partners other than the Union on the achievement of objectives and how their commitments have been fulfilled and contributions made throughout the lifecycle of the Co-programmed European Partnership.

The evaluations will examine how the Co-programmed European Partnership fulfils its mission and objectives, cover all its activities and evaluate its European added value, effectiveness, efficiency, including its openness and transparency, the relevance of the activities pursued and their coherence and/or complementarity with relevant regional, national and Union policies, including synergies with other parts of Horizon Europe (such as missions, clusters or thematic/specific programmes). The evaluations will take into account the views of stakeholders, at both European and national level. The evaluations will include, where relevant, an assessment of the most effective policy intervention mode for any future action, as well as the relevance of any possible renewal of the Co-programmed European Partnership given the overall policy priorities and the research and innovation support landscape, including the coherence and positioning against other initiatives supported through the Framework Programme, in particular European Partnerships or missions.

5 Activities and commitments of the Partners other than the Union

5.1 Activities

The Partners other than the Union undertake to provide inputs and advice to the European Commission in order to achieve the objectives of the Co-programmed European Partnership. In particular, they may provide input and advice to the European Commission in order to contribute to the identification of priorities of photovoltaics related research and innovation activities and the definition of call topics to be included in the Horizon Europe Work Programmes, in view of financial support for indirect actions following calls for proposals and contests for prizes. This is without prejudice to the outcome of the Horizon Europe comitology procedures.

The Partners other than the Union also undertake to make the following In-kind Additional Activities and Investments in operational activities in support of the objectives set out in Section 1 of this Memorandum of Understanding:

- a) Scope of In-kind Additional Activities. In-kind Additional Activities may include:
 - i. Activities contributing to strategic and operational alignment, coordination and synergies with other partnerships and initiatives at EU/national/regional or international level;
 - ii. communication, networking and outreach activities, including matchmaking and brokerage services on the calls for proposals, and activities ensuring dissemination and exploitation of results of R&I activities in the scope of the SRIA of the Co-programmed European Partnership;
 - iii. through outreach, organisation of networking activities and experience sharing, activities promoting, facilitating or accelerating innovation uptake in the market, including via financing opportunities provided by European funding programmes, the European Investment Bank or venture capital funds;
 - iv. scaling-up of technologies at higher TRL and uptake of results from Partnership projects, such as implementation of pre-commercial trials,

proof of concept, improvement and updating of existing production and demonstration lines, including the up-scaling or building of new production facilities throughout the PV value chain;

- v. activities supporting the consolidation of end of life supply chains and circularity flows, including for critical materials, within the photovoltaic sector by implementation of pilot projects and the development of first of a kind products, and the contribution to standardisation activities for this segment of the value chain, as well as the definition of market conditions for wider adoption in the PV value chain;
- vi. activities supporting regulations and standards activities, especially on quality, reliability, safety and sustainability aspects;
- vii. complementary side/upstream projects not funded by the EU, including
 1. low-TRL research activities, feeding into Partnership projects;
 2. R&I Activities within the scope of the SRIA but not funded by the Partnership;
- viii. activities addressing training and skills development, including contributing to the identification of gaps and needs, and the definition of joint training programmes.

These activities are implemented by the EUPI-PV partners, coordinated by the ETIP PV Steering Committee and implemented by its members, including industry and research organisations.

b) Scope of Investments in operational activities. Investments in operational activities may include:

- i. investments in research infrastructures and test facilities;
- ii. investments in building production facilities;
- iii. investments in training programmes for workers and the development of curricula that have the potential to be scaled up;
- iv. investments in other activities required for putting on the market the product/service resulting from R&I activities performed as part of the Co-programmed European Partnership investments in cyber security, digitalisation, data analytics, data mining, data sharing, and machine learning activities.

These activities are primarily carried out by Partners other than the Union including primarily industry and private companies, but also research organisations.

The reporting of In-kind Additional Activities and Investments in operational activities will respect confidentiality requirements.

5.2 Openness and transparency

An appropriate level of openness is necessary to achieve the objectives of the Co-programmed European Partnership. Thus, the Partners other than the Union undertake to put in place measures that ensure:

- a) An open and transparent process for consulting their constituent entities and other relevant stakeholders as well as Member States and Associated Countries on the identification of the priorities of the Co-programmed European Partnership and the design of its activities, which results in an appropriate involvement of all relevant stakeholders;
- b) A governance structure that results in a high level of openness and transparency, including publishing information on the functioning of the Co-programmed European Partnership (composition of partnership structures, decisions made by the Partnership Board etc.);
- c) A growing participation in and contribution to the Co-programmed European Partnership, supported by an open policy to membership in the Association and an appropriate level of information and, if necessary, assistance to all constituent entities of the Partners other than the Union.

In particular, the Partners other than the Union undertake to ensure that the In-kind Additional Activities that they contribute are, to the extent possible, open for participation to non-members of the Co-programmed European Partnership (e.g. dissemination and exploitation activities, etc.) and based on equal treatment.

Also, the Partners other than the Union undertake to put in place appropriate measures for informing SMEs, civil society and other relevant stakeholders about the Co-programmed European Partnership and promoting their participation.

5.3 Research security

In line with the 2023 European Economic Security Strategy (JOIN/2023/20 final) and the 2024 Council Recommendation on enhancing research security (C/2024/3510), the European Commission has been working to enhance research security in its flagship research and innovation programme, Horizon Europe, to better safeguard and promote EU interests and values. In light of the above, the Commission strongly encourages European Partnerships to take the abovementioned documents and policy direction into account when evaluating the acceptance of new Constituent entities/members of their Association. Additional guidance on mitigating research security risks can also be found in the following documents: ‘Tackling R&I Foreign Interference: Staff Working Document, 2022’ and the factsheet on Research Security: Building Blocks for Risk Appraisal, 2024.²¹

²¹ European Commission, Directorate-General for Research and Innovation: Tackling R&I Foreign Interference: Staff Working Document, 2022 ([Tackling R&I foreign interference - Publications Office of the EU](#))

5.4 Dissemination and communication

The Partners undertake to communicate and disseminate their activities and results broadly and through various channels, in order to ensure that any necessary information in the area of the Co-programmed European Partnership is available to all possible stakeholders, all along its duration. The Partners undertake to engage in information, communication, publicity and dissemination and exploitation activities by applying mutatis mutandis Article 51 of Horizon Europe.

This communication and dissemination will also ensure that the EU support to the Co-programmed European Partnership is visible.

5.5 Coherence and coordination with other European Partnerships and beyond

The Partners undertake to set up and maintain a clear strategy and plan for the interfaces and joint activities of the Co-programmed European Partnership with the other relevant European Partnerships, as well as with the broader European research and innovation system and communities.

The Partners other than the Union will establish a formal and regular collaboration with the following other European Partnerships:

- a) European Partnership Clean Energy Transition
- b) European Partnership Build4People
- c) European Partnership Clean Hydrogen
- d) European Partnership Made in Europe
- e) European Partnership on Batteries
- f) Other European Partnerships whenever deemed necessary by their respective Partnership Boards.

The SRIA sets out further details, as appropriate, on coherence and collaboration with other European Partnerships, synergies with other Union programmes, Union bodies and national, international, and intergovernmental programmes and policies, and the relevant parts of Horizon Europe (including missions).

The Partners other than the Union may furthermore establish a formal and regular collaboration with other relevant research and innovation initiatives to secure an optimum level of interconnections and ensure effective synergies, inter alia to overcome potential implementation barriers at national level and to increase cost-effectiveness. Priorities for collaboration are the following other initiatives and/or missions:

- a) EU Solar PV Industry Alliance

europea.eu; Factsheet on Research Security: Building Blocks for Risk Appraisal, 2024 ([c0c0dbae-c7d7-45d8-b59b-413f54aa8983_en](https://europea.eu) (europea.eu)).

- b) SET Plan and Implementation Working Group on Photovoltaics
- c) European Innovation Council
- d) EIT InnoEnergy
- e) IPCEI in the field of PV

The Partners other than the Union will report specifically on their collaboration with other European Partnerships and initiatives in their biennial reporting.

5.6 Fulfilment of commitments

The Partners other than the Union undertake to put in place measures that ensure that the contributions agreed are provided in full, and on time.

The Partnership Board may monitor, throughout the life of the Co-programmed European Partnership, the contributions reported by the Partners.

If the *de facto* contribution reported by the Partners other than the Union is significantly lower than the committed contribution, the Partnership Board may make recommendations to the Partners other than the Union on adjustment measures.

If the action taken is not sufficient to reach the contribution originally agreed, the Partnership Board may recommend the European Commission to adjust its own contribution to match the contribution *de facto* made by the Partners other than the Union.

6 Monitoring and reporting

The activities of the Co-programmed European Partnership will be subject to continuous monitoring and periodic reporting in accordance with Article 50, Annex III and Annex V of Horizon Europe. The outcomes of monitoring and reporting will feed into the evaluations of the Co-Programmed European Partnerships as part of Horizon Europe evaluations. It will feed into the biennial monitoring of the European Partnerships in the context of the Strategic Coordinating Process.

The monitoring and reporting by the Partners will be carried out at least biennially for the duration of the Memorandum of Understanding. There will be an Additional Activities reporting and a full reporting, both to be provided together every second year.

The full reporting should cover all points listed below (a-e).:

- a) The progress of the Co-programmed European Partnership towards its objectives (based on the Key Performance Indicators (KPI)) and the expected scientific, economic and societal impacts (following the Horizon Europe Key Impact Pathways). This reporting should also contain a qualitative assessment of the KPI for the past year.

- b) Information on the functioning of the Co-programmed European Partnership, including on openness, transparency, collaboration and synergies with other European Partnerships and initiatives, etc. in line with the implementation criteria for European Partnerships.
- c) Agreed and actually provided contributions.
- d) Investments in operational activities undertaken by the Partners other than the Union, and leverage including additional public and private investment mobilised to exploit or scale-up partnership results.
- e) Structured and representative “impact case studies”²² that will be used to highlight lessons learned from specific projects/activities, their drivers and barriers to impact, and their possible follow-up with the appropriate instruments, including other forms of support outside the Co-programmed European Partnership.

The monitoring and reporting will be done on the basis of evidence provided by Partners, respecting confidentiality of information and avoiding anti-competitive behaviour. To the extent possible, Partners will provide monitoring data in close to real-time following Horizon Europe, in particular management and implementation data. To the extent possible, the indicators and methodologies used to monitor the progress of the Partnership towards its objectives and scientific, economic and societal impacts should be harmonised and aligned with the monitoring framework of Horizon Europe (Key Impact Pathways), and the monitoring criteria of European Partnerships.

With due regard to their respective competencies, institutional settings and operational frameworks, the Partners may regularly inform and consult each other on the results of the monitoring, including to assess the contributions of the In-kind Additional Activities and Investments in operational activities undertaken by the Partners other than the Union.

The monitoring and reporting should allow for an assessment over time of their results and progress towards impacts, their visibility and positioning in the international context, and potential needs for adjustment measures.

Upon request, the Partners other than the Union engage to provide the European Commission with additional necessary information for the assessment of the achievements of the Co-programmed European Partnership in the context of the overall Horizon Europe evaluation, respecting confidentiality of information, and in the context of the Strategic Coordinating Process for European Partnerships (e.g. input to the biennial monitoring of the European Partnerships).

Further, the Partners other than the Union commit to contribute to the data collection for the Biennial Monitoring Report on the performance of European Partnerships, including full membership lists of their respective association(s).

6.1 General systems

The Partners undertake to set up and implement an effective reporting and monitoring system that allows the Co-programmed European Partnership as well as the European Commission to track

²² i.e. high potential project outcomes that can be fast-tracked towards further investment and rapid development.

progress over time towards the stated objectives and impacts, as well as to provide implementation and management data.

The information provided should include, among others:

- a) Detailed information on the calls for proposals in the Horizon Europe Work Programme, the proposals received, the grants resulting from these calls, the beneficiaries and participants, the results achieved by individual projects and their overall progress towards impact, or any other information deemed necessary for developing, implementing, monitoring and evaluating Union policies or programmes. Such access to information is limited to non-commercial and non-competitive use and will comply with applicable confidentiality rules. The primary means of collecting information will be through European Commission's reporting systems for management of the Horizon Europe programme;
- b) Activities and fulfilment of contributions by the Partners other than the Union, progress towards objectives, deliverables and KPIs, visibility and positioning in the international context, the results, impacts and leverage. The primary means of collecting information will be through biennial²³ reporting by the Partners other than the Union and through European Commission's reporting systems for management of the Horizon Europe programme. Information collection will be based on a common methodology specified by the Commission services in consultation with the Partners other than the Union.

6.2 Reporting method for In-Kind Contributions to Additional Activities and Leverage

There are three categories related to contributions and activities that Partners other than the Union will be reporting on:

- a) In-kind contributions to the Actions funded by the Union²⁴. At the level of the projects, reporting will be done continuously through European Commission's reporting systems for management of the Horizon Europe programme;
- b) In-kind contributions to the additional activities. At the level of the partnership, reporting will be done biennially by the Partners other than the Union and continuously through European Commission's reporting systems for management of the Horizon Europe programme²⁵;
- c) Investments in operational activities foreseen beyond the SRIA, and leverage including other investment mobilised to exploit or scale-up partnership results. At the level of the partnership, reporting will be done biennially²⁶ by the Partners other than the Union and

²³ i.e. once every two years.

²⁴ Contributions from beneficiaries that are not members or affiliates of the private partners cannot be considered as a contribution from partners but these will be considered as part of quantitative leverage effect.

²⁵ For example, project reporting will include fields about indirect leverage that could be used for the partnership-level reporting.

²⁶ i.e. once every two years.

continuously through European Commission's reporting systems for management of the Horizon Europe programme²⁷.

The value of the in-kind contributions reported by the Partners other than the Union will be calculated on the basis of a common methodology in line with Annex V of Horizon Europe. The Partners may keep an anonymised record of these contributions from its constituent entities, which provides the basis for periodic reporting of the total value by the Partners other than the Union of in-kind contributions to the partnership's activities.

6.3 Key Performance Indicators (KPIs)

The following Key Performance Indicators are defined for the Co-programmed European Partnership and will be included in monitoring and reporting.

General objectives:

KPIs on PV technology improvements: Delivery of the following performance indicators for PV technologies resulting from projects funded within the partnership:

- a) Module efficiency and reliability improvement across technologies (25%+ efficiency for Silicon PV & 40 years lifetime, 23% for single junction perovskite with 10+ years lifetime (at a correspondingly lower cost than Silicon), at least +5% (abs) for Tandem with a lifetime equal to that of bottom junction – 40 years for Silicon based tandems).
- b) Deliver circular PV systems with recycling rates at end of life of 90%+ with a high recovery of key materials (silicon 98%, silver 98%, aluminium 95%, glass 100%, polymers 90-99%, EVA 70%, indium 95%, copper 95%...) at a quality & purity that allows for reuse in the processes of the photovoltaics value chain/without downcycling.
- c) Achieve a reliable generation for a longer lifetime of PV systems (>40 years) which must be ensured by innovative practices along the whole value-chain (from project development to O&M) including data-driven measures coming from both field experience and monitoring and leveraging on AI. Finally, all the information collected along the whole value chain need to stream into digital platforms that can act as a decision support system for the best actions to follow in case of deviations.
- d) Develop and define standards and market conditions for innovative PV applications (agriPV, floating, BIPV...) with clear techno-economic, or UN sustainability criteria data on:
 - 1) Performance and side-benefits of integrated PV solutions (e.g. 50% increase in PV utilised area in building, measurable agri-PV co-optimisation of energy and food production (+25% per hectare, 20 % biodiversity increase),
 - 2) Available solutions to key technical barriers (e.g. 50% cost decrease for floating PV mooring structures and 50% increase in operational lifetime for floating PV installations),

²⁷ For example, project reporting will include fields about indirect leverage that could be used for the partnership-level reporting.

- 3) safety/quality challenges (e.g. standards, technical & non-technical practices for BIPV fire safety, VIPV integration in WLTP and other relevant standards)
 - 4) Business models in all integrated PV applications (X demonstrators will provide data).
- e) Deliver a highly digitalised and flexible PV sector in the European electricity by reaching key milestones such as commercial availability of grid forming inverters by 2030 at less than 10% €/W_p cost increase compared to traditional inverters, demonstration of PV dominated energy grids and operational capacity of PV systems to fully participate in the provision of flexibility to the electricity grid at distribution & transmission level.
 - f) Ensure the socio-economic acceptance of the PV transition by addressing barriers to high penetration rates of various forms of PV technologies and support the emergence of innovative business models for the market uptake of PV technologies (at least 3 demonstration projects for various PV forms).

KPIs on progress towards implementation ESIA:

- Participation ESIA members & ESIA industrial projects to the Partnership funded projects;
- Integration of Partnership innovations to industrial projects implemented in the framework of ESIA;

Specific Objectives (attributable to projects funded under the partnership):

KPIs on project allocation within the partnership: Across R&I priorities for the projects falling within the CEP scope:

- Share of funding to projects on PV at TRL < 4 = 15%
- Share of funding to projects on PV at 4 < TRL < 7 = 40%
- Share of funding to projects on PV at TRL ≥ 7 = 45%
- Number of new demonstration & production lines > 5
- Production capacity for recycled materials from the PV value chain in Europe > 40% of materials needs for European PV manufacturing
- Number of demonstrator projects for integrated PV until 2030 > 7
- Number of project demonstrating PV in a flexible grid until 2030 > 5

Operational objectives:

- Production of recommendations for standards & best practices towards the implementation of General & Strategic objectives of the partnership;
- Annual publication of activity report monitoring activities of the partnership and of contributions of the partners towards the achievement of its objectives;
- Promotion of the partnership's activities and expanding PV industry & innovation stakeholders involvement as Partners other than the union;
- Liaison with relevant stakeholders to support the acceleration of the R&I to market process for PV, including other partnerships, EU institutions, financial institutions, etc.;
- Regularly updated EUPI-PV SRIA and annual activity reports.

The SRIA sets out further details, as appropriate, on the monitoring framework for the Co-programmed European Partnership.

7 Application of this Memorandum of Understanding

Any issues related to the interpretation and implementation of this Memorandum of Understanding may be decided upon in consultation by the Partners in the Partnership Board. In case of ultimate disagreement, any of the Partners may request an early end of the Memorandum of Understanding.

Adaptations to this Memorandum of Understanding may be requested by any of the Partners by registered letter.

8 Duration and Review

The starting date for the Partnership is *[insert date of signature]* and its end date is 31.12.2030. The last calls for proposals can be launched up until 31.12.2027, so the last three years of the partnership should be used to conclude the remaining activities.

Any of the Partners may communicate by a registered letter at any time the motivated intention to end this Memorandum of Understanding. In the absence of renewal, appropriate measures may be taken to ensure phasing-out of Horizon Europe funding according to the conditions and timeline agreed with the Partners ex-ante, without prejudice to possible continued transnational funding by national or other Union programmes, and without prejudice to private investment and on-going projects. This phasing-out plan may be prepared by the Partnership Board up until one year after the signature of this Memorandum of Understanding.

The periodic monitoring and reporting will inform the interim and final evaluations of Horizon Europe evaluations referred to in Article 52 of the Horizon Europe Regulation. The evaluations will be taken into consideration in the phasing out or possible renewal of the partnership.

On the basis of these reviews and the evaluations, any of the Partners may propose adaptations to this Memorandum of Understanding, or request its early end.

Done in duplicate at ... on XX.XX.202X,

FOR THE EUROPEAN COMMISSION	FOR THE [PARTNER(S) OTHER THAN THE UNION]
...	...