MINUTES OF THE FIRST STAKEHOLDER MEETING

Project: *Development of standardization methods for eco-design and energy labelling of photovoltaic products*

Date: 09/04/2024-Meeting starts at 10:00 am.

Place: Online

To: Participants

Minute taker: CENER

Participants:
Francesca Harris, European Commission, CINEA
Maria Getsiou, European Commission (DG RTD)
DG GROW, European Commission (DG GROW)

Project Team:
CENER: Jaione Bengoechea, Jaime Moracho and Ana Gracia (Minutes, Q&A organization, session control)

TÜV: Giorgio Bardizza

PTB: Stefan Riechelmann, Stefan Winter, Bettina Friedel

Agenda:

This first stakeholder meeting for the project was conducted virtually, and the meeting's minutes and presentation slides can now be accessed on the project's website https://ecodesign-pv-testing.eu/. Number of attendees is around 70. After the meeting the list of participants is downloaded from Teams. List of the participants' organizations is shown in Annex 1.

1 WELCOME & PROJECT OVERVIEW (CENER)
2 POLICY BACKGROUND (DG GROW)
3 Q&A
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Minutes:

1. Welcome and Project overview (by CENER, 10')

CENER welcomes the attendees, defines the ground rules of the meeting, and presents the project.

The meeting is being recorded to better analyse the questions and comments received during the meeting. Only CENER can access the recording, which will be deleted once the minutes of the meeting are prepared and approved.

2. Policy background (by DG GROW, 15')

DG GROW introduced the policy framework to this project, such as the Ecodesign Directive and the Energy Labelling Regulation, and the relevant measures for PV products (modules and inverters). In 2017 the EC launched a feasibility study for the application of those policy tools to PV products. The final draft documents of the Ecodesign and Energy Labelling measures for PV products (modules and inverters) will be published in the following weeks in the EC website. Links were shown in the presentation. The interservice consultation inside the EC is currently ongoing. Once the draft documents are published there will be one month available for consultation and for providing comments. Both potential regulations are expected to be completed this year. DG GROW reminds the attendees that this meeting is not for discussing policy aspects. Presentation of the on-going work focusing only on the PV modules: Ecodesign requirements which have been submitted to several consultation activities performed so far (with Member States, manufacturers, NGOs, etc).

In the past year there have been specific meetings to discuss technical aspects regarding the definition of the carbon footprint during the manufacturing phase of PV modules, which is a novelty in policy terms. The carbon footprint will be normalized by the energy yield, which is estimated considering the degradation rate of the PV modules performance. Since, at present there is not a standardised testing method to define the long-term degradation of PV modules, a transitional method was prepared. In this transitional method, the degradation rate was defined either as default values or estimated by the manufacturers based on long-term monitored data, with some minimum requirements. The transitional methods will be applied from the moment the regulation is completed until the harmonised standards are available. Presentation of the transitional methods included in the draft regulation, which are subject to further changes. They regard the definition of the long-term degradation rate of PV modules and a methodology to estimate the energy yield of bifacial devices.

The energy label for PV modules is based on an Energy Efficiency Index defined as the estimated energy yield (EY) during the first year of installation normalized per module area (kWh/m^2). The EY is estimated according to the EN IEC 61853 standard series. However, this does not include bifacial devices, which are gaining importance and market share. Therefore, a transitional method was proposed considering a power output gain compared to monofacial devices, which depends on the bifaciality factor and fixed output gain of 13.5% as assumed generated from the rear side.

The output of this study will be in synergy with the standardisation work and will contribute to the standardisation request (EC asks EU standardisation bodies the preparation of new standards). In this regard, the policy work will be completed presumably within this year. But considering the duration of this project, the output won't be included in the regulation being prepared at present which could be completed during Q3 of 2024. Some standardisation work is already happening at IEC level regarding the bifacial model.

DG GROW mentioned another CINEA's project focused on the definition of a recyclability index for PV modules and inverters. Again, the transitional methods will apply until we won't have harmonized standards, prepared by the European Standardization Regulations.

3. Q&A Introduction (CENER, 10').

- Question: BS from SPF Santé Publique. What is the timeline for the carbon footprint that was in previous drafts? Regulatory Committee Vote during Q3 of 2024?

  – Answer: DG GROW says that the aim is to organize the Regulatory Committee Vote during Q3 of 2024. Details cannot be shared yet, but DG GROW explains that the details of the requirements are being discussed. For example, regarding the carbon footprint the nature of this requirement is being discussed, whether it is going to be an information requirement or a quantitative (maximum threshold of the carbon footprint during manufacturing phase) requirement.

- Question: BS from SPF Santé Publique. For the carbon footprint and maybe other requirements, will there be the necessity of third-party verification for the various requirements? Will member States need time to prepare the testing facilities, LCA experts, recycling certificates for verification and notification bodies?

  – Answer: DG GROW answered that although not being this the precise forum for this, DG GROW answers that as defined in the draft proposal we foresee for the carbon footprint the need of third-party verification by accredited bodies. The documents, certification needed are under discussion. When the draft regulation is published there will be an informative stakeholder meeting and if needed a technical meeting with Market Surveillance Authorities. Back-up solutions will be available in case certified bodies are not available on time. DG GROW asks to wait for the draft document to discuss on the details.

- Question: TS from EXXERGY and IECRE, the IEC Conformity Assessment System for Renewable Energies, asks for clarification about legislation being available before the standardisation process. How this process could include the results of the current work and the feedback from this project.

  – Answer: DG GROW clarified that once the draft regulations will be published in the EC's official journal including the transitional methods (for example, for bifacial modules, applying a multiplicative factor estimated by the bifaciality of the module multiplied by a fixed gain of 13.5%), it may take a few months for the EC to launch the standardisation request to the standardisation bodies. These may consider the transitional methods to

develop more complex methods to be included in a standard. This standard will be then offered to the EC for consideration as harmonised standards. A standard becomes harmonised standard when it is published on the official journal of the EU. Then the transitional method won't be valid anymore as the methodology will be replaced by the harmonised standard.

- Question: TS from EXXERGY and IECRE. Which standardisation body will be involved in the topics of this project? Probably CENELEC is the most suitable of the three, because they are mostly focused on electronic and electric components (CEN, CENELEC, ETSI).

  – Answer: DG GROW replied that the three organisations will be contacted, but it may be CENELEC. Normally it is agreed between the three bodies which one will prepare the standard requested.

- Question: TS from EXXERGY and IECRE. Will this new standard be more oriented towards a conformity assessment (how to assess) rather than a new standard? There are over 200 standards in the PV field.

  – Answer: DG GROW explained how normally one standard can be the one harmonised, which can have links to other standards, for example, to perform certain tests, or it may be self-containing, with all the required information defined in itself.

4. Energy Yield of Bifacial PV modules (by CENER and PTB, 20')

This subproject aims at the calculation and testing of the energy yield of bifacial PV devices. WP2 is related to testing plan design and execution while WP3 aims at the preparation of standardized methods. Energy Yield of monofacial devides is calculated by EN IEC 61853. CENER explained the difference between energy yield and energy rating. The literature review was provided together with the European projects.

PTB presented the methodology and testing plan. At least 5 different bifacial PV modules will be tested. He presented the requirements needed to be fulfilled by these PV modules. The preselected modules were introduced as well. The energy rating input parameters of the 5 different bifacial devices will be measured, according to the modified procedures of EN IEC 61853 Standard series. Higher than usual resolution and ranges will be measured. The details of the proposed testing plan were provided, such as GT matrix, spectral response, angle of incidence and temperature coefficients. Regarding the energy yield methodology, it will need to simulate different mounting conditions, validate simulations with real measurements and analyse various different effects. Regarding the extended energy yield calculations to cover bifacial devices the methodology will be as similar as possible to the monofacial one EN IEC 61853-3. PTB remarked that it is important that the developed methodology can be implemented by Market Surveillance Authorities.

CENER reminded the attendees that we are open to collaboration with manufacturers in order to work with PV modules already in the market and, especially, those not yet in the market but expected to be in the EU market within the next five years. However, all results obtained in this project will be public but anonymised.

5. Q&A Energy yield of bifacial modules (coordinated by CENER, 10')

- No questions but comments in the chat from CINEA with suggestions of manufacturers of PV technologies relevant for this project.

6. Long-term PV performance degradation rate (by CENER and TÜV, 15')

The overview and literature review were provided by CENER. WP2, is related to the testing plan design and execution and WP3 aims at the preparation of standardized methods. The relevant standard and transitional methods in ecodesign measures for PV modules are presented. Besides, the IEC standardisation initiatives, the EU projects and the scientific publications will be reviewed.

Methodology and testing plan by TÜV. At least 7 different devices from different manufacturers, with at least 10 units per device model, will be tested, representative of products available currently in the EU PV market, or expect to be within the next five years. The preselected modules were presented, being this not the definitive list of modules. The inspiration sources for the testing plan were introduced. The ageing tests will be adjusted to climatological differences of the EU reference climates. The basic methodology for the calculation of the long-term degradation rate was described. Again, it was stressed that it is important that the developed methodology can be implemented by Market Surveillance Authorities.

7. Q&A Degradation rate (coordinated by CENER, 15')

- Question: HN from Fraunhofer ISE highlights how quickly technologies, BOM change and how efficiency increases.

  – Answer: CENER replied that even if this is true, in this project we will focus on the most representative technologies at the moment, and the technologies expected to be in the market within the next 5 years.

  – Answer: DG GROW commented that re-testing could be considered in order to test more modules than those selected initially.

- Question: RR from SolarPower Europe and PB from The Swedish Energy Agency had the same question. How the new method compares with the method included in the transitional method which requires five years of monitored data in two locations per reference climate and considering two different mounting configurations.

  – Answer: TÜV agreed that this is a very relevant point, indicating that the objective is that the full testing sequence of the methodology to define the long-term degradation would only take a few months. Less than six months. The importance of the duration of the testing sequence is also highlighted by DG GROW. The methodology should be performed in some months.

- Question: TS from EXXERGY and IECRE. How can the overall regulatory system respond to market dynamics?

  – Answer: DG GROW mentioned these aspects are being discussed internally and will be defined when the draft regulation is published. However, at present he cannot comment further.

- Question: ED from JRC. How the results from accelerated stress tests be related to actual long-term field degradation rates of the modules.

  – Answer: TÜV acknowledged the importance of this question and the feedback from stakeholders to deal with this extrapolation.

  – Answer: CENER mentioned that considering the duration of the project (3 years) we could validate with outdoor measurements performed in different climatic conditions the degradation rate of the modules in their first years. At present, most manufacturers already define two different degradation rates, one for the first year or two, and a second value applicable to the rest of the PV module's lifetime.

- Answer: BS from the Austrian Energy Agency asks about the size of the testing sample being proposed as one PV module per PV technology.

  – Question: TÜV repeated the requirements of the call for tender of considering at least seven different PV devices from different manufacturers (with at least ten units per device), and how we may analyse more than one device per technology.

  – CENER reminded that the objective of this project is the development of a methodology to define the degradation rate, not the definition of a degradation rate value for every technology. At present the transitional method has two alternatives, one considers the use of default values, 0.7%/year for silicon-based modules and 1%/year for thin film modules.

8. Next steps (CENER, 5')

- Written comments and feedback are welcome until May 9th 2024. Comments can be sent to info@ecodesign-pv-testing.eu.
- A questionnaire with questions related to the methodology, testing plan, PV technologies and other relevant aspects to this project will be available soon to know more about the stakeholders' views and opinion.

9. Q&A final session (CENER, 10')

- Question: RR from SolarPower Europe. What is the deadline for replying to the questionnaire? May 9th?

  – Answer: CENER said that once the questionnaire is published, there will be one month to reply.

- Question: IB from LONGI wants to know if the presentation will be shared.

  – Answer: CENER answered that the slides and the minutes will be published on the website after the meeting.

- Question: SSS from Enertis Applus asks about the possibility of transforming the lab sequence into an outdoor exposure; similarly as flash testing being related to I/V tracers on field, relate O&M to laboratory testing.

  – Answer: TÜV answers that it hasn't been taken into consideration until now. CENER invites SSS to send his suggestions and comments to info@ecodesign-pv-testing.eu.

- Question: AC from Maxeon Solar Technologies would like to know how to get in contact with the project team to collaborate with PV modules.

  – Answer: CENER thanked her and invited her to contact us at info@ecodesign-pv-testing.eu. TÜV and CENER, repeat that the results will be public and anonymized. Any manufacturer willing to provide modules will need to comply with these requirements.

10. Closure (CENER, 2')

- Meeting finishes at 11:42.

Annex 1: List of attendee organizations:

Austrian Energy Agency

Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)

Malta Competition and Consumer Affairs Authority

Danish Energy Agency

Ministry of Economy and Innovation of Lithuania

The Netherlands Enterprise Agency

Finnish Safety and Chemicals Agency

RISE Research Institutes of Sweden

Swedish Energy Agency

Sustainable Energy Authority of Ireland

Agence de la transition écologique (ADEME)

German Environment Agency (UBA)

French Ministry of Energy

Federal Institute for Materials Research and Testing (BAM)

SPF Santé Publique

Ministerio para la Transición Ecológica y el Reto Demográfico (MITECO)

Swiss Federal Office of Energy SFOE

The Netherlands Enterprise Agency

Swiss Center for Electronics and Microtechnology (CSEM)

Fraunhofer ISE

European Solar Manufacturing Council

SolarPower Europe

Embet

Enertis Applus

EXXERGY GmbH

Holosolis

Kalyon Energy

Scuola universitaria professionale della Svizzera italiana (SUPSI)

SESKO

SMA Solar Technology AG

Teknologisk Institut

REC Group

Wacker Chemie AG

PV-plan

Total Energies

Mizuho Research & Technologies

SEAI

Trina Solar

First Solar

LONGi Solar

Meyer Burger

Heliatek

Enphase Energy

Maxeon

Pontech International Sarl

Dow Silicones