D5.6

Workshop for policy makers

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1. EXECUTIVE SUMMARY

The present report describes the Workshop for Policy makers regarding reusable, reused, second-life PV Panels and Batteries which took place through a three-hour online webinar on September 29,2022.

66 external persons attended the workshop, excluding the 16 persons from the Circusol project. This led to a vivid discussion and exchange of views. The organisers got positive feedback from the panellists. They experienced this workshop as an exceptional example, due to many elements such as the huge number of questions and polls and certainly the lively discussion. Not to forget the tremendous moderation of the workshop.

Following the link below, it is possible to the complete video of the session.
www.circusol.eu/en/nieuws/105/workshop-towards-a-circular-solar-power-sector-in-europe

2. REPORT

A. The agenda of the Policy Workshop

ONLINE WORKSHOP: TOWARDS A CIRCULAR SOLAR POWER SECTOR IN EUROPE – PATHWAYS, POLICIES & STRATEGIES

1. Background

Solar power is set to play a leading role in the achievement of the 2030 EU renewable targets and the commitment to carbon neutrality by 2050. Importantly, solar photovoltaics, in combination with energy storage, also has the potential to significantly enhance European energy security, provide citizens and industry with competitive energy, and lead to the creation of thousands of jobs in manufacturing, installation, maintenance, and end-of-life management. While the expected rapid growth of the solar power sector over the coming decade will bring along various resource and waste management challenges, following a circular economy strategy can ensure that these will be handled in a proactive and future-proof manner. Furthermore, a circular economy approach will offer the European solar industry new business opportunities in the design and manufacturing of circular-ready products, as well as in the reuse, refurbishment and recycling of older solar panels.

2. Workshop aims & target audience

The workshop seeks to bring together policy makers, industry representatives, experts and other stakeholders to discuss pathways forward towards a circular and resource-efficient solar power sector in Europe. Specifically, the event aims to provide a platform for open exchange on a number of themes and questions, including the following:

- Up-to-date experience with different circular strategies for solar photovoltaic panels, specifically recycling, repair, and reuse.
- Ongoing standardization initiatives in relation to the preparation for reuse of solar photovoltaic modules.
- Options and guidelines for a potential future policy framework that could catalyze the transition towards a circular solar power sector in Europe.

In addition, the workshop will also share and discuss the CIRCUSOL experience with discarded lithium-ion batteries that initially served in electrical vehicles (EV) and that, after being refurbished, can gain a valuable second life as solar power storage devices in stationary applications.

3. Agenda:

09:00 – 09:05 Welcome and introduction

09:05 – 09:30 Presentation of the Policy recommendations by Bart Mantels

09:30 – 10:25 Panel discussion: Policy framework and guidelines for a circular solar (photovoltaic) power sector - Moderated by Björn Crul

-------- *10 min Break*

10:35 - 11:30: Panel Discussion: Policy framework and guidelines for circular stationary batteries - Moderated by Björn Crul

11:30 – 12:00 Key conclusions by Grietus Mulder (Batteries), Jan Clyncke (PV Panels) and Bart Mantels

B. Attendees

The invitation has been disseminated to 158 members of the European Parliament, which are member of the ITRE and ENVI Committees, to 15 staff members of the European Commission, to 30 representatives of the Permanent Representations of the EU-countries in Brussels, to a broad number of national Ministries of Environment and Energy and to all representatives of the Circusol consortium.

The Speakers for the panel discussion were:

For PV Panels:

BIFA UMWELTINSTITUT (DE): Mr Karsten WAMBACH

RREUSE (represented by ENVIE) (FR): Mr Guillaume BALAS and Mr Pierre TAUZIN

WEEE FORUM (BE): Mr Pascal LEROY

EU COMMISSION - DG GROWTH (BE): Mr Davide POLVERINI

For Batteries:

EUCOBAT (BE /NL): Mr Eric RUYTERS

Joint Research Centre (JRC Petten - NL): Mrs Vanessa RUIZ-RUIZ

National Physical Laboratory (NPL) (UK): Mr Gareth HINDS

VDE DKE (DE): Mr Thomas TIMKE

The Moderator of the workshop was Mr Björn Crul, B2B Communications.

The number of attendees to the Workshop excluding the Circusol staff (approx. 16 persons), were:

- At the start (9am): 59 persons
- At 9:25: 64 persons
- At 9:38: 66 persons
- At 10:35: 57 persons

C. POLL Questions

In this Policy Workshop, we have raised 6 Polls amongst the audience. Three Poll questions were related to PV Panels and three were related to Batteries.

For PV Panels, the poll questions and answers were as follows:

What turns you off from purchasing second-hand PV Panels?

Lack of reliability	: 40%
Lack of guarantee	: 35%
Being old technology	: 23%
Not interested	: 2%

What drivers would make second-hand PV Panels more appealing?

Licensed reseller of second-hand PV Panels	: 44%
Track record Identity card	: 19%
Guarantee of a minimum power output of 70%	: 35%
Having PV Panels for low and high voltage installations	: 2%

What, in your opinion, are the three greatest benefits of reuse of PV Panels?

Extends the long lifetime of PV Panels reducing the carbon footprint	: 77%
Reduces waste collection and treatment cost	: 47%
Helps those that cannot afford new PV Panels	: 49%
Creates opportunities for jobs and training	: 30%
Reduces the need for usage of raw materials	: 81%

For Batteries, the poll questions and answers were as follows:

Where do you see the largest need for Support to policymakers in the elaboration of standards?

Support in Horizon Europe needed for creating some standards	: 11%
Support needed in (pre-normative) testing effort	: 17%
Expertise in standardization working groups	: 67%
New standardization groups have to be erected	: 6%

Should second life batteries be exempted from (type)-testing?

Changing parts of batteries does not matter on safety	: 5%
Testing is too expensive, killing the second life industry	: 5%
Due to the high variation in batteries, tests lack relevance	: 16%
Second-life batteries must pass the same tests as new ones	: 74%

With which of the following statements related to the recycling of Li-ion batteries do you agree the most?

They put a high pressure to recycle immediately	: 44%
They can work due to the waste coming out from battery manufacturing plants	: 25%
The battery repurposing market is not influenced by them	: 31%

D. Questions from the audience

There were quite a number of questions from the audience, which have been put forward to the panel speakers by the moderator.

Some questions were however related to recycling whilst this Policy workshop was only intended to focus on reuse of PV Panels and Batteries.

Below you find the list of all incoming questions from the audience:

The market barriers to PSS for homeowners was discussed, and alternative untested markets were mentioned. Aren't those mentioned markets, such as agri PV and floating PV, much less inclined to take a subscription for their panels, as opposed to buying?

For Pierre Tauzin – What are the main technological challenges that you face for refurbishing PV?

Recycling of Solar PV is often considered uneconomical as it is a cost and energy intensive process. In addition, very few technology solutions exist that recycle PV panels to the extent of extraction of critical raw materials. How can more technology be developed? And then sharing of these technology solutions can happen?

The WEEE directive so far has set a mandatory collection and recycling quota. What do the experts think about a potential mandatory reuse quota for the EU to really start the reuse market?

Do we have guidelines or a standardization process for reuse of PV modules?

What is the cost to test a (300 Wp) module (I understand: visual inspection, IV, high pot, thermography, EL)?

What will Envie do with the reused modules? What is the profile of the people interested?

There's new circular solar PV already existing in other parts of the world, how could EU countries provide proper incentives to bring more circular design solar PV to the market?

I read and heard the pathway about design for circularity that there should be more R&D into recyclable and repairable solar panels, but once these panels have been designed, who is going to manufacture and sell them?

A point was raised to reuse the PV in non-EU countries – so are you trying to convey that the burden of disposing these systems and PV then passes on to the no-EU countries? How do you look at that?
Are there consortia and funds being set up for this R&D already?

The market barriers to PSS for homeowners was discussed, and alternative untested markets were.
Is selection of PV panels for reuse by inspection and segregation on solar level feasible (economically/technically)? Would design of solar panels which allow individual cells separation (having different performance because of different degrees of damage, etc.) at end of life useful?

How can we distinguish between preparation for reuse (waste stream) and the activities of a repairing shop or technical service and/or resellers of second-hand PV panels?

How to encourage/convince stakeholders to carefully decommission large photovoltaic plants to contribute to the reuse of PV?

E. Summary of the Panel discussions

1. PV PANELS

We have heard in the discussion five (5) key takeaways:

a) Technical

We have heard no objections towards the Infrared, Isolation, High Voltage and Electroluminescence testing of potential reusable PV Panels.
However, Mr. Wambach pointed out that for large PV Power plants, each PV Panel must be tested at 100%.

b) Economics

From ENVIE, we learned that they have not yet a reference for this because they only started with this activity earlier this month.
Mr Wambach said that today the costs are around 10 to 20 EUR/piece and he estimates that this might become in the future 5 EUR/piece.

c) Markets

The potential markets for second-hand and reused PV Panels are:

- Europe: might be challenging according Mr Wambach;
- Rest of the World: Low-income countries are an option but face a huge carbon footprint (shipping) and the waste management infrastructure at the End-of-life phase of the PV Panels in the destination countries where the infrastructure might not have the same level as within the European Union.

Regarding the segmentation of the markets, reused PV Panels can be applied in Agri-PV, Utility scaled PV installations, floating PV, and commercial rooftops as long as this is done under conditions which guarantee the safety and the functionality of the second-hand or reused PV Panels.

d) Policy

Regarding the question about the "right to repair", the main questions remains if a repairability index can work for an equipment, a product which generates electricity.

Regarding Ecodesign, the PV Industry is looking forward to the upcoming Ecodesign requirements and has contributed in the preparatory phase and the current consultation phase.

e) General

In general, reuse of PV Panels has technical and economical a potential.
However, regarding the markets, it is clear that today the majority of PV Panels are illegally shipped outside the European Union to countries where an environmentally sound waste management infrastructure is missing and the political environment is unstable or even not present.

Therefore, we all need a good standard or norm or Technical Specification related to the reuse of PV Panels. The activities for this have started in 2021 in the IEC Standardization Committee and the first milestone is delivering a Technical Report early 2023.

2. BATTERIES

In general, it is challenging to summarise all what is said. The discussion was quite different from the topics related to the reuse of PV Panels. Keywords behind the discussions are safety, design, measurements, performance and standards.

We heard that the shortage of Li-ion cells favor repurposing over immediate recycling. According to Eric Ruyters, 50% can already be repurposed not forgetting batteries from light weight vehicles. Vanessa Ruiz-Ruiz emphasised that success stories will convince more companies to start repurposing and that at the same time this shall reduce the pressure on the recycling industry for the next five (5) years. However, from the poll vote a fear was expressed that the recycling plants put pressure to recycle immediately. Both speakers emphasised that design for dismantling is a key issue. Important outcome for us is that there is a disagreement between the speakers regarding the market segmentation for repurposed batteries.

The ease of repurposing lies in the battery design and in working together with the original manufacturers. Moreover, this is important for the safety of batteries. The original manufacturers put a lot of know-how on safety in their product, which is unknown for repurposing companies and cannot be given away without a close relation. Therefore, the suggestion by Thomas Timke is welcomed to test the safety of the battery upfront on multiple applications. He contests that cells can be repurposed due to the lack of attaining high quality standards needed in type-testing. The participants also voted massively that safety is a key issue.

All speakers emphasised that metrology is key to assess the battery quality. Gareth Hinds noted that metrology institutes help in improving the reliability of data.

Also the diagnostics coming out of the BMS must be tested on reliability, similar as smart electricity meters are tested said Thomas Timke, what brings us to standardisation. Forty (40) standards must be developed the coming

three (3) years to support the new European Battery Regulation. This is only possible if a diversity of persons is represented in the working groups. This was the main answer in the first poll question. Therefore, Grietus Mulder, chairman of the Belgian mirror committee, encouraged during the meeting all participants to contact their national standardization committee on how each one can assist to this work.

F. Recording

When following the link below, one can still listen and watch to the more than two (2) hours video of our online Policy Workshop: www.circusol.eu/en/nieuws/105/workshop-towards-a-circular-solar-power-sector-in-europe


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