

EUROPEAN COMMISSION

HORIZON 2020 PROGRAMME

TOPIC H2020-LC-SC3-2019-RES-IA-CSA

Increase the competitiveness of the EU PV manufacturing industry

GA No. 857793

High-performance low-cost modules with excellent environmental profiles for a competitive EU PV manufacturing industry



HighLite- Deliverable report

D2.4- Intermediate Report on dissemination activities

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857793. The information and views set out in this publication does not necessarily reflect the official opinion of the European Commission. Neither the European Union institutions and bodies nor any person acting on their behalf, may be held responsible for the use which may be made of the information contained therein.

About HighLite

The HighLite project aims to substantially improve the competitiveness of the EU PV manufacturing industry by developing knowledge-based manufacturing solutions for high-performance low-cost modules with excellent environmental profiles (low CO₂ footprint, enhanced durability, improved recyclability). In HighLite, a unique consortium of experienced industrial actors and leading institutes will work collectively to develop, optimize, and bring to high technology readiness levels (TRL 6-7) innovative solutions at both cell and module levels.

HighLite consortium members



Document information

Deliverable No.	HighLite D2.4
Related WP	WP2
Deliverable Title	Intermediate Report on dissemination activities
Deliverable Date	30 – September - 2021
Deliverable Type¹	Report
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Document history

Date	Revision	Prepared by	Approved by	Description
15/09/2021	1	Loic Tous		First version
28/09/2021	2	Loic Tous		Proposed
11/10/2021	3		Veroni Ballet	Accepted

Dissemination level²

PU	Public	X
CO	Confidential, only for members of the consortium (including the Commission Services)	

¹ Deliverable Type

Please indicate the type of the deliverable using one of the following codes:

R Document, report

DEM Demonstrator, pilot, prototype

DEC Websites, patent fillings, videos, etc.

OTHER

ETHICS Ethics requirement

ORDP Open Research Data Pilot

DATA data sets, microdata, etc.

² Dissemination level

Please indicate the dissemination level using one of the following codes:

PU Public

CO Confidential, only for members of the consortium (including the Commission Services)

EU-RES Classified Information: RESTREINT UE (Commission Decision 2005/444/EC)

EU-CON Classified Information: CONFIDENTIEL UE (Commission Decision 2005/444/EC)

EU-SEC Classified Information: SECRET UE (Commission Decision 2005/444/EC)

Publishable summary

D2.4 – “Intermediate Report on dissemination activities”, is a deliverable related to task T2.2 – “Dissemination and communication” of the HighLite project (grant agreement No 857793). The main objective of this task is to identify target audiences/stakeholders, make them aware of the project and its results, and hence maximize the general impact of the project. The target audience/stakeholders and various dissemination channels/tools to be used were introduced in D2.7 – “Communication Plan” which was released in December 2019 shortly after the start of the HighLite project (1st October 2019). This was followed in October 2020 by D2.2 – “Dissemination Plan” which provided a more detailed overview of the dissemination channels/tools in use by the HighLite project partners.

In this document, we give a brief overview of the dissemination activities that have been performed by the project partners in the past 24 months. This includes publications in articles/proceedings/journals, participation to conferences/workshops, electronic newsletters, press releases, and involvement in networking events. To disseminate the results of the project to the broad public and to get into a dialogue with the academic and industrial actors in the field, an open workshop was organized on June 28-30, 2021, to present the “First Results of EU funded Horizon2020 PV Projects HighLite, HIPERION, GoPV, and SuperPV” and discuss “What’s Hot in European Solar R&D”. A second open workshop will be organized at M36 (September 2022) to disseminate the final results of the HighLite project.

Several related deliverables will be published at the end of the HighLite project including D2.5 “Final Report on dissemination activities”, D2.6 “Final Report on dissemination activities”, and D2.8 “Communication Report”.

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1. Introduction

D2.4 - “Intermediate Report on dissemination activities” is part of WP2 (Dissemination, exploitation and communication activities) and more specifically of T2.2 - “Dissemination and communication”. As described in the Grant Agreement, the main objective of this task is to identify all stakeholders and make them aware of the project. A Communication Plan (D2.7) was rapidly released (in December 2019) to identify target audiences/stakeholders and briefly list the planned dissemination channels/tools. This was followed in October 2020 by D2.2 – “Dissemination Plan” which provided a more detailed overview of the dissemination channels/tools in use by the HighLite project partners.

As described in the Grant Agreement and in the D2.2 deliverable report, these dissemination channels/tools include:

- Posts on the project website and in social media
- Electronic newsletters
- Flyers
- Press releases
- Participation to conferences, workshops, exhibitions, seminars, and networking events
- Publications in conference proceedings, journals, and specialized magazines

In the next sections, we provide an intermediate report (at month 24 out of 36) on the various dissemination activities performed by the HighLite project partners.

Table 1: Overview of deliverable D2.4.

Deliverable Number	Short deliverable name	Lead beneficiary	Type	Dissemination level	Due date
D2.4	Intermediate Report on dissemination activities	IMEC	R	PU	M24

2. Intermediate report on dissemination activities

2.1. Posts on the project website

As project coordinator and lead participant for WP2, IMEC has been setting up the HighLite project website (www.highlite-h2020.eu) with the following sections: Project, Results, Partners, News/Events and Publications (see Fig. 1). The Project and Partners sections contain static information that is not changed during the project, unless changes are required following an amendment to the Grant Agreement, that is accepted by the EU commission. The Results, News/Events, and Publications contain information that is updated regularly by IMEC depending on when the information becomes available. All the deliverable reports (or at least the publishable summary in case of confidential deliverables) are uploaded in the Results section as soon as they become available. Latest news (interviews with project participants, press releases, etc.) and events (upcoming conference/workshop, webinar, etc.) are the subject of short posts that are published in the News/Events section. Finally, publications in conference proceedings, journals, and specialized magazines are listed in the Publications section with the full details available (Authors, Journal, Publisher, Publication date, DOI) to ensure open access.

Overall, the project website is a key tool to disseminate the project results. It's also useful to increase the audience of the electronic newsletter (via the subscribe button on the homepage) and redirect visitors towards the project accounts on social media (LinkedIn and Twitter) and vice-and-versa.

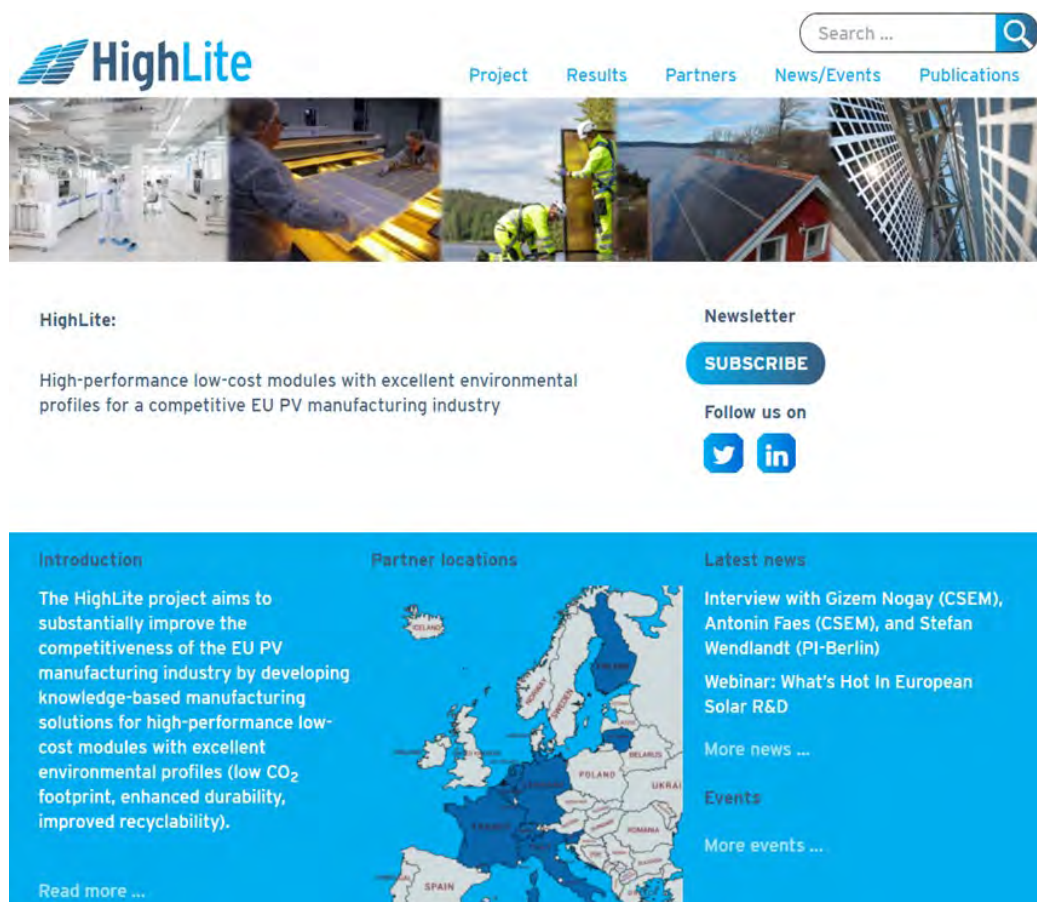


Figure 1: Snapshot of the HighLite project website homepage.

2.2. Posts on social media

Social media platforms such as LinkedIn and Twitter can be effective tools to increase the participation and awareness among the HighLite project target audience/stakeholders (Members of the EU PV manufacturing industry, international PV companies buying EU-made technology, R&D and academic PV communities, decision makers of the Member States and the European Commission, general public). Therefore, HighLite project accounts have been created on both social media platforms with the members of the IMEC project management team (Loic Tous, Veroni Ballet, Ivan Gordon) as administrators. So far, the HighLite project has gathered over 100 followers on LinkedIn and over 15 followers on Twitter. Posts are made on a regular basis by IMEC on both platforms which are then re-posted multiple times on LinkedIn to increase visibility (see Fig. 2 and Fig. 3).

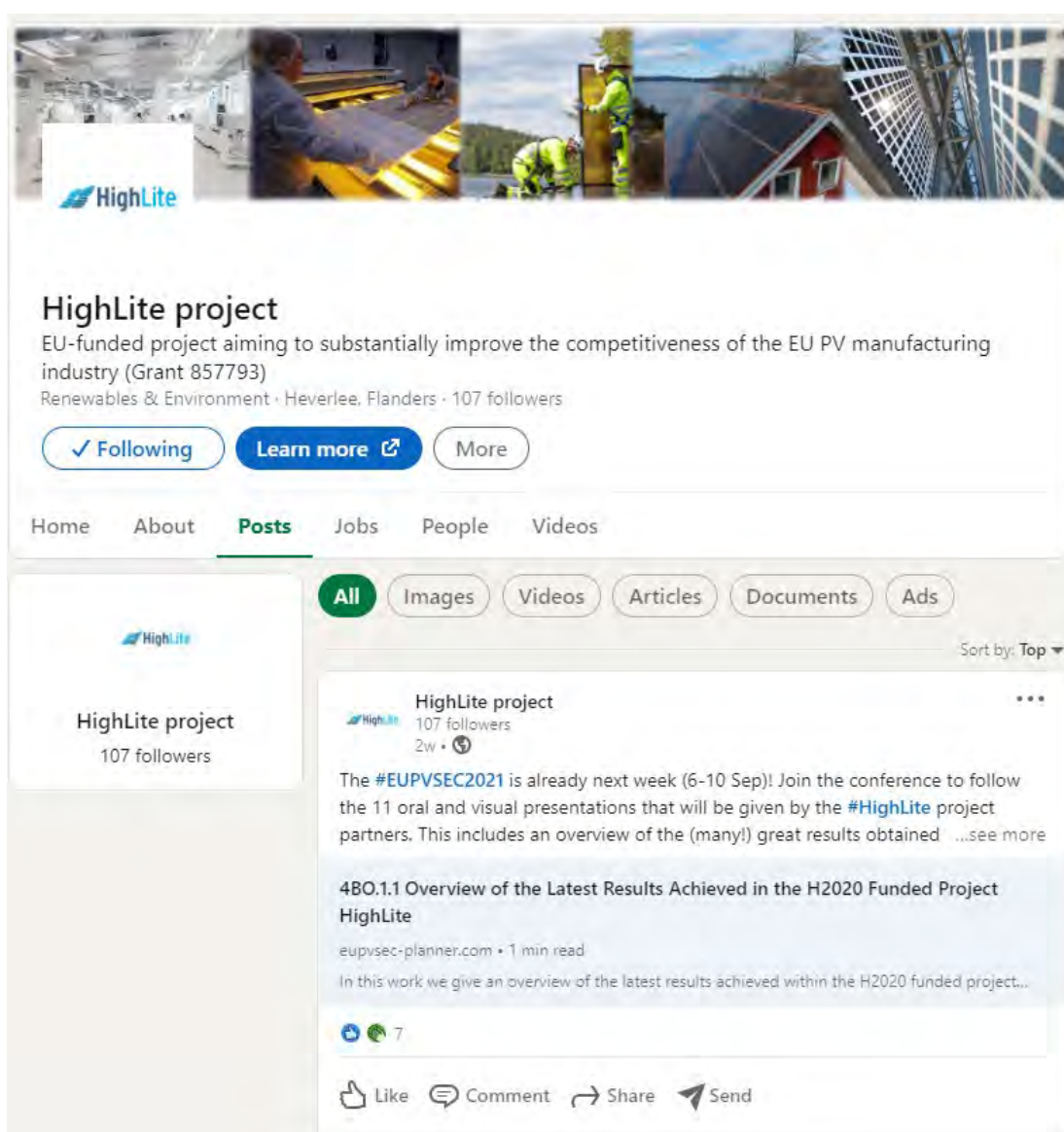


Figure 2: Snapshot of the HighLite project account on LinkedIn with 100+ followers.

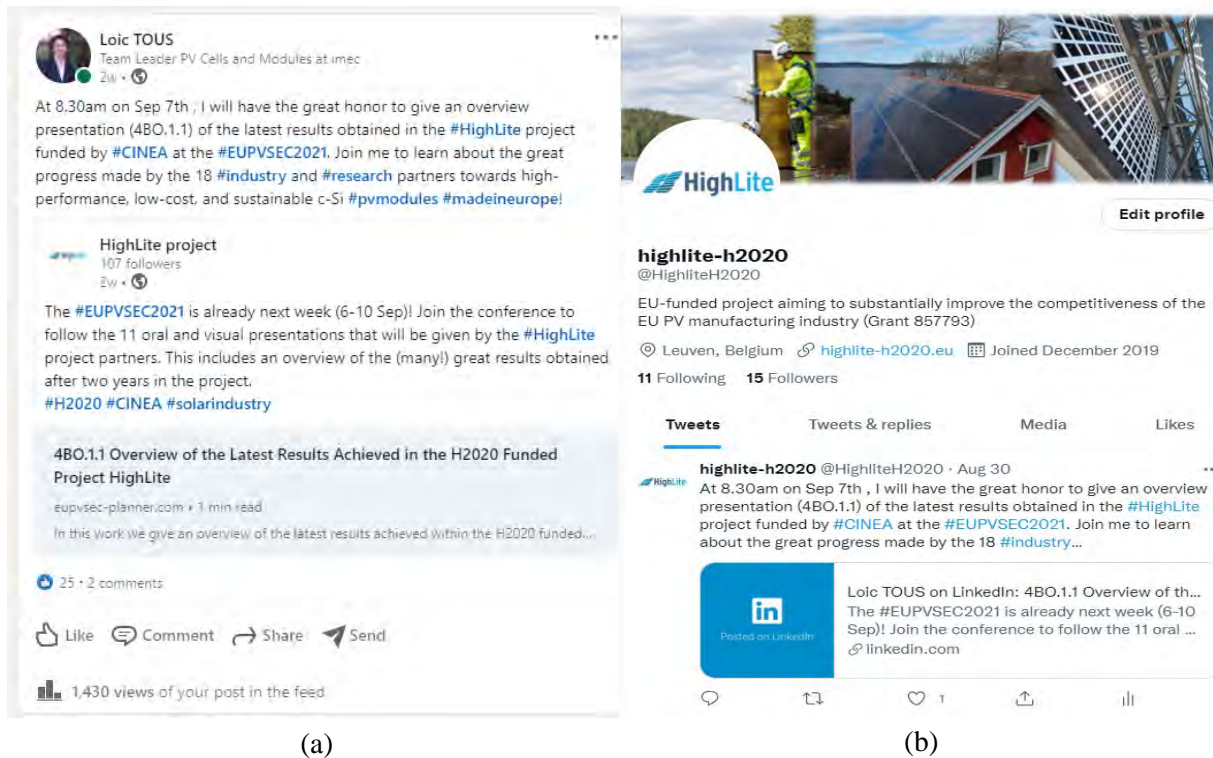
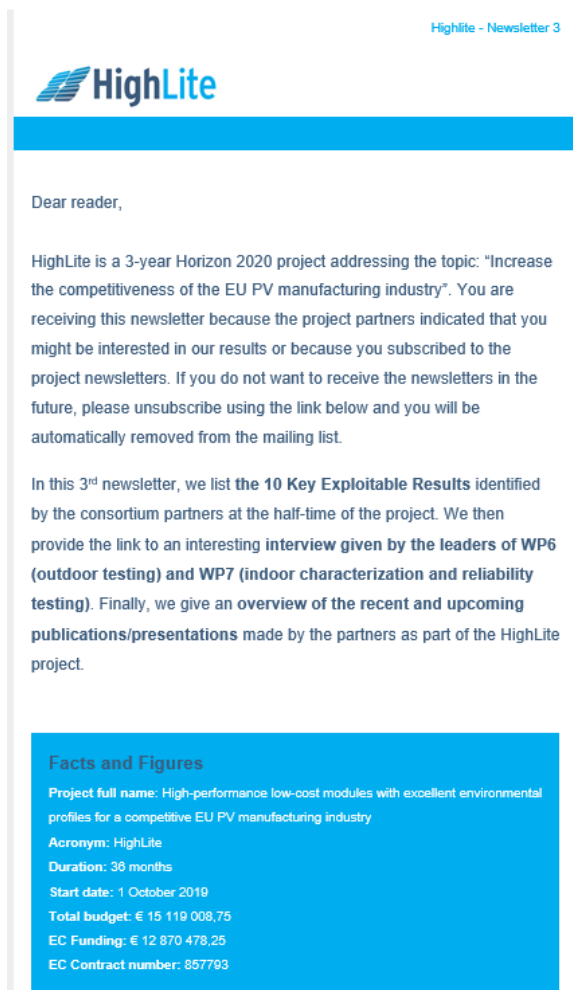


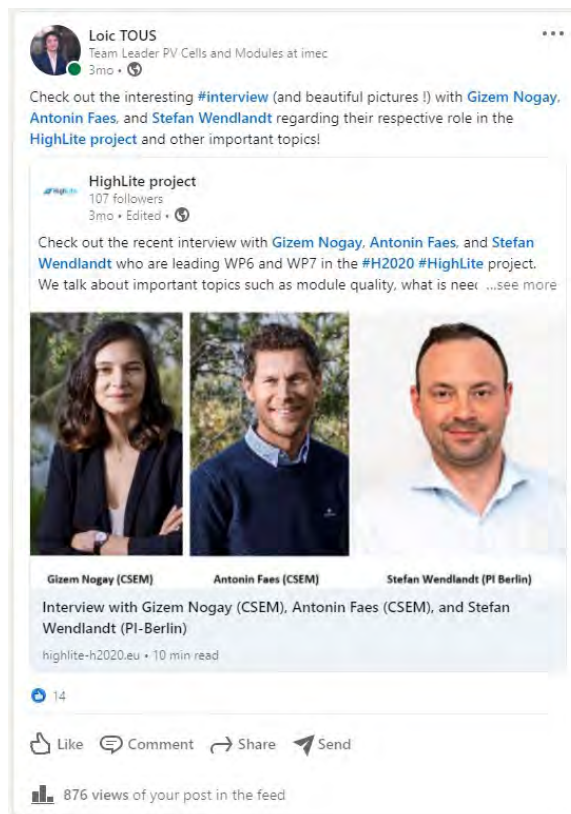
Figure 3: (a) Example showing how re-posting an article from the HighLight project LinkedIn account can generate 1400+ views. (b) Snapshot of the HighLight project account on Twitter with 15+ followers.

2.3. Electronic newsletters

As explained in D2.2 – “Dissemination Plan”, a new electronic newsletter is created every 6 months by the Executive Board using inputs and support from all HighLight project partners. This newsletter is distributed through the online platform Mailchimp to the community of stakeholders and all people that subscribed to it via the HighLight project website (see Fig. 1). Apart from a short editorial, facts and figures about the project, and information about the latest News/Events, each electronic newsletter contains a short Q&A session with key project members (WP leaders, etc.). This Q&A session is used as platform to explain how the HighLight project objectives and results can help significantly improve the competitiveness of the EU PV manufacturing industry. Each Q&A session is re-posted on the HighLight project website and social media accounts to increase visibility and impact (see Fig. 4).



(a)



(b)

Figure 4: (a) Snapshot of the HighLite Newsletter 3 published in July 2021. (b) Snapshot of the Q&A session with WP6 and WP7 leaders (from the HighLite Newsletter 3) re-posted on LinkedIn to increase visibility.

2.4. Project flyer

A project flyer containing the information about the HighLite project concept, approach, and main objectives has been created at the start of the project (see Fig. 5). The initial idea was to use as a handout at physical events such as conferences, workshops, exhibitions, and other networking events. However, due to the lasting impact of the Covid19 pandemic, most in-person events have been cancelled or replaced by virtual events. Because of this, only an electronic version of the project flyer has been shared with the project partners so far. It is also available for download on the HighLite project website. IMEC plans to print several thousand copies of this flyer (or another updated version after approval of all project partners) and distribute them among the project partners in the coming months as physical events are being resumed.



Figure 5: Project flyer created at the beginning of the HighLight project.

2.5. Press releases

Press releases are an excellent tool to draw attention to the project or to communicate about significant achievements. As explained in D2.2 – “Dissemination Plan”, press releases may be issued either by the Executive Board or by any of the project participants, but need to be approved by all project participants, as stipulated in the HighLight Consortium Agreement. In general, press releases are distributed the press contacts of the HighLight project partners, published on the HighLight project website and promoted via social media. Below is a non-exhaustive list of press releases so far:

- <https://www.imec-int.com/en/articles/european-research-institutes-and-industry-partners-join-forces-to-develop-high-performance-solar-panels-with-improved-environmental-profiles>
- <https://www.energyville.be/en/research/highlite-high-performance-low-cost-modules-excellent-environmental-profiles-competitive-eu>
- <https://valoe.com/news/f/the-eus-horizon-2020-highlite-project-was-launched-in-march>
- <https://www.cea.fr/cea-tech/liten/english/Pages/Medias/News/PV-High-Efficiency/Heterojunction-modules-with-shingle-interconnection-ready-for-industrialization.aspx>

In addition, several of the project partners have a dedicated section on their company website to communicate about R&D projects such as the H2020 funded HighLight project. For example:

- <https://www.appliedmaterials.com/euprojects>
- <https://isfh.de/en/forschung/photovoltaik/projekte/highlite/>
- <https://valoe.com/r%26d>
- https://www.voltec-solar.com/en/Actus/HighLight_a_strong_European_collaboration-00017

2.6. Participation to conferences, workshops, exhibitions, seminars, and networking events

Participating to conferences, workshops, exhibitions, seminars and networking events is an excellent way for HighLight project partners to communicate about the project results and exchange with the different target audiences (PV specialists, material and equipment suppliers, potential customers and end-users, general public, policymakers, etc.). Due to the Covid19 pandemic, multiple events scheduled

in 2020 and 2021 were either cancelled or replaced by online events. Despite this, the HighLite project partners were able to communicate about the results achieved in the HighLite project at multiple conferences, workshops, webinars, and exhibitions as can be seen from the overview in Table 2-1.

Of note, we can mention the H2020 1st Coordinators' Workshop on PV Manufacturing that was organized by ENEA on 1st December 2020 with project presentations from H2020 AMPERE, GO-PV, SUPER PV, HIPERION, HighLite, and BIPVBOOST. This was followed by a policy panel discussion with several members of ENEA and EU DG and by a discussion on potential synergies/overlap & opportunities. Both discussions resulted in positive outcomes for the HighLite project partners. One example is the subsequent organization of open access Webinar to present the "First Results of EU funded Horizon2020 PV Projects HighLite, HIPERION, GoPV, and SuperPV" and discuss "What's Hot in European Solar R&D" that was held from June 28th to June 30th, 2021 with the external support of the company TaiyangNews.

Table 2-1: Overview of the different events in 2020 and 2021 with contributions from HighLite project partners.

Event name	Event type	Dates	Venue	Comments
PV Cell tech 2020	Conference	Oct 27-29, 2020	Online	2 orals by IMEC and CEA-INES. 400+ attendees based on PV tech report
SiliconPV 2020	Conference	June 1-5, 2020	Event cancelled due to covid19	Best papers published in SOLMAT
IEEE PVSC 2020	Conference	June 14-19, 2020	Online	Several HighLite partners attended the virtual event
EUPVSEC 2020	Conference	Sep 07-11, 2020	Online	6 visuals and 7 orals by HighLite project partners
H2020 1 st Coordinators Workshop on PV Manufacturing	Workshop	Dec 1, 2020	Online	Event organized by ENEA with several H2020 projects present including HighLite
MIW 2020	Conference	Oct 5-6, 2020	Online	Several HighLite partners attended the virtual event
NREL PV reliability 2021	Conference	Feb 22-26, 2021	Online	1 oral presentation by PI Berlin
SiliconPV / nPV 2021	Conference	April 19-22, 2021	Online	4 orals presentations by HighLite project partners
PV-Symposium 2021	Conference	May 18-20, 2021	Online	1 oral presentation by PI Berlin
SOPHIA PV-Module reliability	Workshop	June 9-10, 2021	Online	2 orals presentations by IMEC and EFPL
IEEE PVSC 2021	Conference	June 20-25, 2021	Online	2 orals presentations by CEA-INES and UL
Taiyang News Conference	Webinar	June 28-30, 2021	Online	5 orals presentations by HighLite project partners
EUPVSEC 2021	Conference	Sep 6-11, 2021	Online	5 visuals and 6 orals by HighLite project partners
Intersolar EU 2021	Exhibition	Oct 6-8, 2021	Munich, Germany	Several HighLite project partners present with booth (F-ISE, CEA-INES, 3D-M, etc.) or attended event
Intersolar EU 2021	Conference	Oct 6-7, 2021	Munich, Germany	Presentations by IMEC, CEA-INES, TNO

2.7. 1st Open Workshop about “What’s Hot in EU Solar R&D”

As promised in the Grant Agreement, a 1st Open Workshop was organized in 2021 to communicate about the HighLite project results. Given the difficulties to organize an in-person event, the HighLite project partners took the decision to organize this 1st Open Workshop as an online webinar with free registration. To maximize impact and reach a wider audience, this 1st Open Workshop was organized with the support of the external company Taiyang News and featured contributions from EU funded Horizon2020 PV Projects HighLite, HIPERION, GoPV, and SuperPV (see Figure 6).

Webinars & Conferences

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What's Hot In European Solar R&D

Overview on First Results of EU funded Horizon2020 PV Projects HighLite, HIPERION, GoPV, and SuperPV

11:39 PM (Beijing Time) - 04. June 2021



Figure 6: Announcement for the 1st Open Workshop with contributions from H2020 funded projects HighLite, HIPERION, Go-PV and SUPER PV held online from June 28th to June 20th, 2021.

The event was promoted via different platforms including:

- websites from TaiyangNews and from the different H2020 funded projects participating
- social media platform (LinkedIn, Twitter)
- newsletters from TaiyangNews and from the different H2020 funded projects participating
- YouTube publications

Overall, TaiyangNews received a total of 825 registrations with 851 total users (including all panellists and attendees) for day-1, 477 total users for day-2, and 352 total users for day 3. In addition TaiyangNews performed an analysis of the registration showing that event reached a global audience (see Figure 7) across multiple business segments (see Figure 8) such as: wafer/cell/module manufacturers, research institute/universities, EPC/project developers, production equipment suppliers, material suppliers, PV consulting companies/laboratory, etc.

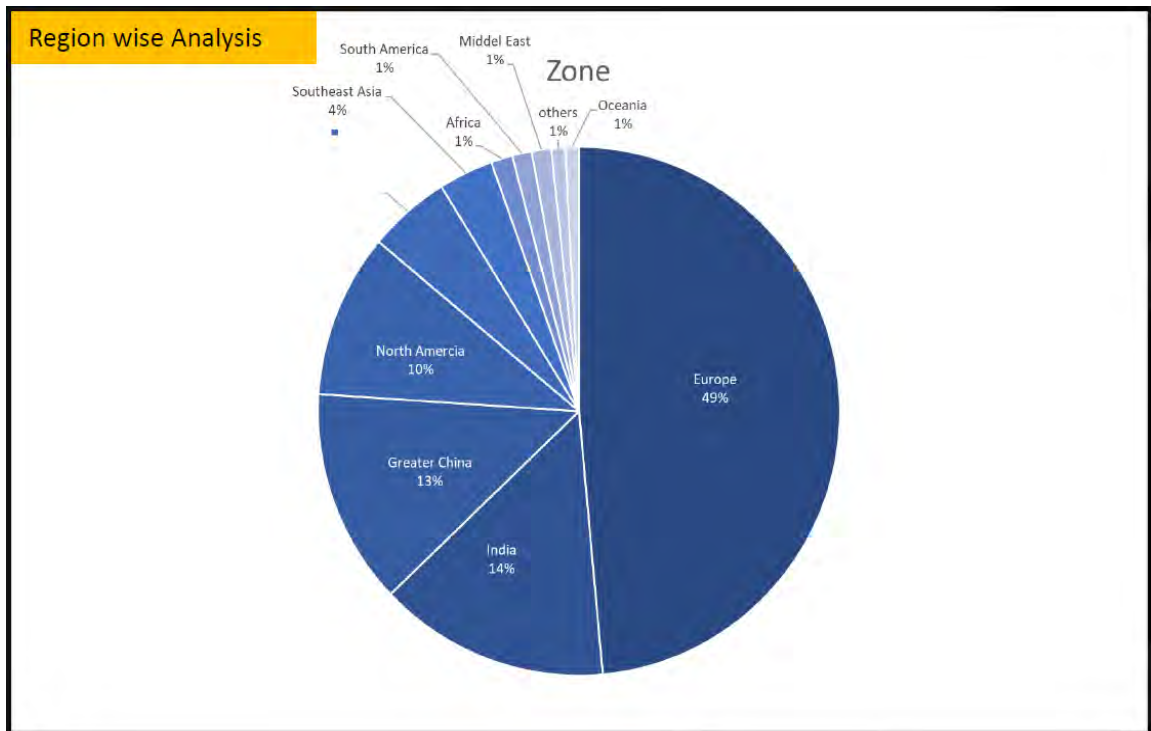


Figure 7: Region wise analysis of registered participants to the 1st Open Workshop. Source: TaiyangNews.

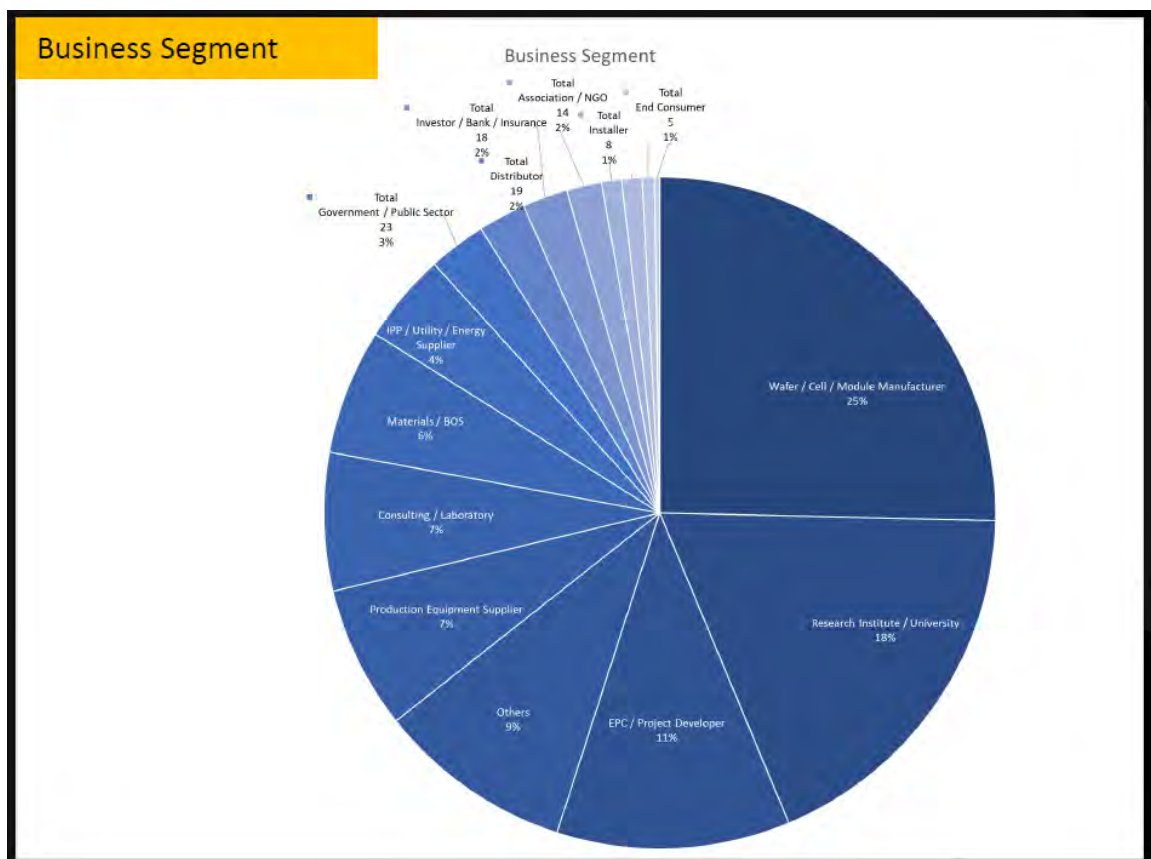


Figure 8: Business segment analysis of registered participants to the 1st Open Workshop. Source: TaiyangNews.

Finally, another benefit of organizing the event with TaiyangNews is the fact that all recording of presentations and panel discussions remain freely available in dedicated playlists on the TaiyangNews YouTube channel.

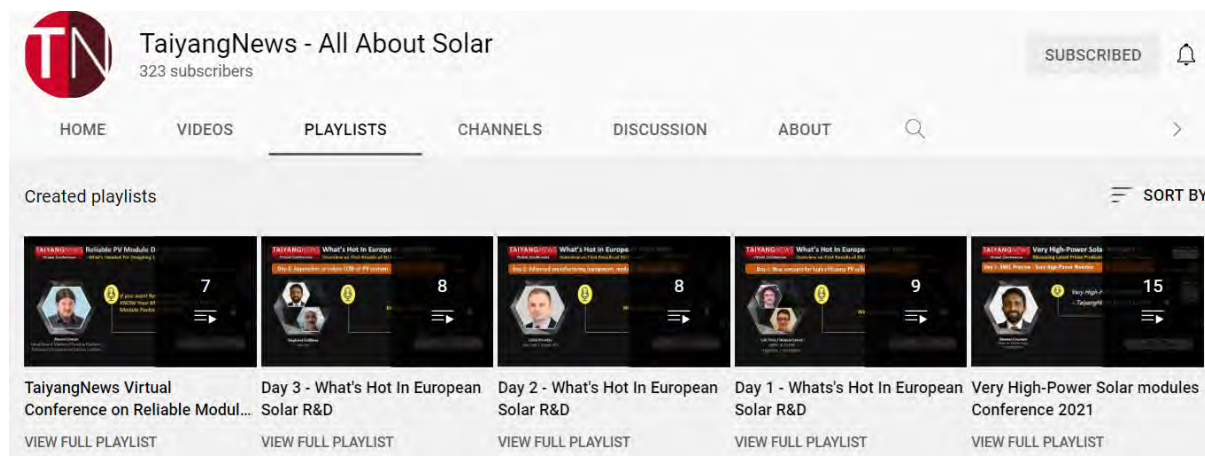



Figure 9: Overview of dedicated playlists on TaiyangNews YouTube channel including the contributions from the 1st Open Workshop about "What's Hot in European Solar R&D".

2.8. Publications in conference proceedings, journals, and specialized magazines

Publications in conference proceedings, journals and specialized magazines are an effective to reach to the R&D and academic PV communities and members of the PV industry (wafer/cell/module manufacturers, production equipment and material suppliers, PV consulting companies/laboratory, EPC/project developers, PV policy makers, etc.). That's why the HighLite project partners have been publishing extensively about the project results in:

- Conference proceedings of major PV events such as the EU PVSEC and the IEEE PVSC.
- Leading PV journals such as Solar Energy Materials and Solar Cells, Progress in Photovoltaics, IEEE Journal of Photovoltaics, Renewable Energy, Solar Rapid Research Letters (RRL) among others.
- Specialized magazines such as PV magazine and Photovoltaics International
- Internal magazines that distributed to a wide audience such as the imec magazine or, the EPFL magazine.

Overall, the HighLite project partners reported a total of 23 publications in the M18 interim report with many more publications in preparations as indicated by the internal excel tracking sheet. As required by the EC, all listed publications are available in an open access public repository. In addition, the details of each publication are also listed on the HighLite project website as shown in Figure 10.

Publication title	Details
Toward Shingling Interconnection with SHJ Solar Cells	<p>Authors: C. Carrière (CEA-INES), V. Barth (CEA-INES), A. Bettinelli (CEA-INES), S. Harrison (CEA-INES), A. Derrier (CEA-INES), L. Cerasti (AMAT), M. Galiazzo (AMAT)</p> <p>Journal:Conference proceeding Publisher: EUPVSEC 4CO.1.1 Publication date: Sep 7, 2020 DOI: 10.4229/EUPVSEC20202020-4CO.1.1 </p>
Annual energy losses due to partial shading in PV modules with cut wafer-based Si solar cells	<p>Authors: Kristijan Brecl (UL), Matevž Bokalič (UL), Marko Topič (UL)</p> <p>Journal:Renewable Energy Publisher: Science Direct Publication date: Dec 18, 2020 DOI: 10.1016/j.renene.2020.12.059 </p>
Stress Induced Inhomogeneities in Crystalline Silicon Solar Cells: From Characterization to Advanced Electrical Modelling	<p>Authors: M. Kikelj (UL), B. Lipovsek (UL), M. Bokalič (UL), M. Topic (UL)</p> <p>Journal:Conference proceeding Publisher: EUPVSEC 2CO.15.6 Publication date: Sep 7, 2020 DOI: 10.4229/EUPVSEC20202020-2CO.15.6 </p>
Spatially resolved electrical modelling of cracks and other inhomogeneities in crystalline silicon solar cells	<p>Authors: Miha Kikelj (UL), Benjamin Lipovšek (UL), Matevž Bokalič (UL), Marko Topič (UL)</p> <p>Journal:Progress in Photovoltaics: Research and Applications Publisher: Wiley Publication date: Sep 20, 2020 DOI: 10.1002/pip.3348 </p>

Latest news

Interview with Gizem Nogay (CSEM), Antonin Faes (CSEM), and Stefan Wendlandt (PI-Berlin)

Webinar: What's Hot In European Solar R&D

HighLite list of publications for 2020

Selection of Flanders Make as subcontractor

Q&A with Tuukka Savisalo (Valoe), Julius Denafas (SoliTek R&D) and Povilas Lukinskas (Valoe Cells)

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Events

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Figure 10: Overview of publications performed in the frame of the HighLite project that are currently listed in the HighLite project website. This website is regularly updated with new publications.

3. Conclusions

In this document, we give an intermediate report of the dissemination activities that have been performed by the project partners in the past 24 months. This includes **over 23 publications in articles/proceedings/journals**, participation to multiple international conferences/workshops, publication of regular electronic newsletters, press releases, and involvement in networking events such as the event organized by ENEA on 1st December 2020. To disseminate the results of the project to the broad public and to get into a dialogue with the academic and industrial actors in the field, an open workshop was held online from June 28th to June 30th, 2021. In this **1st open workshop**, we presented the “First Results of EU funded Horizon2020 PV Projects HighLite, HIPERION, GoPV, and SuperPV” and held panel discussions about “What’s Hot in European Solar R&D” **in front of an audience of over 851 total users covering various segments of the PV industry**. A second open workshop will be organized at M36 (September 2022) to disseminate the final results of the HighLite project. Several related deliverables will be published at the end of the HighLite project including D2.5 “Final Report on dissemination activities”, D2.6 “Final Report on dissemination activities”, and D2.8 “Communication Report”.