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| HORIZON
STE

Proceedings of the EU Cooperation Event

Deliverable D4.8

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	PP = Restricted to other program participants (including the EC)
	RE = Restricted to a group specified by the consortium (including the EC)
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This report should be cited as:

Project Coordinator, Work Package Coordinator and
Lead Beneficiary



ESTELA, European Solar Thermal Electricity Association

Contributing Partners



CIEMAT, Centro de Investigaciones Energéticas,
Medioambientales y Tecnológicas



ENEA, Agenzia nazionale per le nuove tecnologie,
l'energia e lo sviluppo economico sostenibile



DLR, Deutsches Zentrum fuer Luft - Und Raumfahrt
EV



METU, Middle East Technical University



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ABOUT THE PROJECT

HORIZON-STE is a Horizon 2020-funded project aiming at supporting the Implementation of the Initiative for Global Leadership in Solar Thermal Electricity (STE), also known as Concentrated Solar Power (CSP), which was launched by the European Commission and adopted within the Strategic Energy Technology Plan (SET-Plan) of the European Commission.

Since more than a decade, Europe's STE sector holds a worldwide technology leader until its further development abruptly hindered in Europe. To unlock this situation, the European Commission has launched a dedicated Initiative – Initiative for Global Leadership in CSP focusing on 2 targets: a cost reduction target and an innovation target, in order to keep STE's global technology leadership and rebuild a home market in Europe.

Acting as competence centre of the Implementation Working Group within the SET Plan of the European Commission, the overall goal of HORIZON-STE is to support the execution of the Implementation Plan regarding both STE Research and Innovation lines as well as First-Of-A-Kind projects that will help steer countries through political, legislative, and institutional shortcomings linked to various national policies concerning solar thermal electricity. Much of the focus centres on improving procurement of manageable renewable energy sources (RES) and increased public funding for STE research.



Implementation of the
Initiative for Global Leadership in
Solar Thermal Electricity

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1. INTRODUCTION

The HORIZON-STE Deliverable D4.8 “Proceedings of the EU Cooperation Event” is an outcome of Task 4.2 “Tools and activities for communication and dissemination” as part of Work Package (WP) 4 “Communication and dissemination” for which ESTELA is WP leader. As a reminder, the overall objectives of WP4 are labelled as follows in the initial proposal:

“Establishing effective channels, platforms and means for:

- Disseminating the project objectives, activity progress and outcomes to all relevant stakeholders.
- Informing relevant stakeholders on progress and achievements of the CSP SET Plan and the Implementation Working Group to foster their engagement and commitment.
- Informing and engaging decision makers in SET Plan countries, to streamline alignment and strengthen commitment to the execution of the Implementation Plans.
- Raising awareness and mobilising wider audience and showing how the impacts are relevant to public audiences, by creating jobs, introducing a better way of energy mix for a sustainable future.
- Organising events, conferences and site visits for:
- Showcasing how the collaboration between CSP/STE industry and research institution can be archived for the sake of realisation of the FOAK project(s) in Europe.
- Making better use of the results by documenting and presenting the policy advices and ensuring the messages are taken up by policy makers.

Ensuring the alignment of the project’s dissemination activities with international and national events of relevant EU projects and initiatives, as well as SET Plan Annual Events”.

Task 4.2 lasted from M1 to M42 and was based on the outcomes of the country reports from Task 2.3 and Task 2.4 in WP2. The EU Cooperation Event with stakeholders, including national decision makers and authorities, industry, and R&I representatives was held in Brussels, Belgium after the series of six (6) Joint Industry and R&I National Events across Europe resulting in country mapping related to cooperation opportunities. The objective of this Event was twofold:

- To present the findings of the mapping exercise between needs and CSP/STE value proposition opening ground for potential cooperation.
- To facilitate the dialogue and information exchange in a bidirectional manner (i.e., incorporate lessons learnt and discuss draft results and findings) – at European level.



This EU Cooperation Event was organised together with the Closing Event (also referred to as Final conference) as a full day event with two sessions, i.e., the so-called “EU cooperation and closing event”. The first session was devoted to the presentation of the project’s key findings, while the second one was focused on the potential cooperation opportunities.



2. OVERVIEW

The EU Cooperation & Closing Event was held on 14 September 2022 in the Hotel HILTON Brussels Grand Place and via Webex. The use of the online participation method allowed wider participation, enabling the message to be extended across EU and Turkey. The Event, organised by ESTELA, was attended by industry representatives, research institutions, decision-makers and authorities and others. The main goal of the EU Cooperation Event (i.e., session II of EU Cooperation & Closing Event) was to present the findings of the mapping exercise between needs and CSP/STE value proposition and open doors for potential cooperation opportunities between the countries of focus.

Following the Closing Event (i.e., session I of EU Cooperation & Closing Event) that presented the final findings of the project, the EU Cooperation Event was organised as three roundtable discussions looking at the present and future of CSP/CST from a different angle:

- The policy perspective, with focus on CSP's role in reducing EU's dependency on Russian gas.
- The industrial perspective, with focus on national interests for potential uses of CSP/CST.
- The R&I perspective, with emphasis on collaboration at EU and global level.

The first roundtable discussion, which brought in focus the policy perspective, was made of representatives from DG ENER, IWG CSP, DG RTD and IRENA with a moderator from ESTELA.

The second roundtable discussion, that brought in focus the R&I perspective, was made of representatives from ENEA, CIEMAT, DLR and METU with a moderator from Flagsol Engineering GmbH.

The third and final roundtable discussion, that brought in focus the industry perspective, was made of representatives from Protermosolar, Flagsol Engineering GmbH, Rioglass, ENGIE, John Cockerill Group and ACS Industria with a moderator from ESTELA.

The Event was wrapped up by incoming and outgoing Secretary Generals of ESTELA and a representative from DG RTD highlighting the CST potential for the future of the European energy market and thanking everyone for joining the EU Cooperation & Closing Event.



HORIZON STE

Implementation of the
Initiative for Global Leadership in
Solar Thermal Electricity



HORIZON
STE

HORIZON-STE EU COOPERATION & CLOSING EVENT

WHICH INCENTIVES ARE NEEDED FOR
MORE EU COOPERATION?

Brussels, 14 September 2022

(hybrid event presential & online)
Hotel HILTON Brussels Grand Place
Ball Room Elisabeth
Carr de l'Europe 3
1000 Brussels



DRAFT PROGRAMME

09:30	Welcome coffee
09:50	Opening address by J.L. Martinez Dalmau, ESTELA President
10:00	Project HORIZON-STE: Project objectives & main lessons learnt (Marcel Bial, Secretary General ESTELA)

Session I – PRESENTATION OF PROJECT RESULTS

10:15	Findings from R&I perspective in countries of focus Presenters: Julian Blanco/Eduardo Zarza (CIEMAT), Peter Heller (DLR), Simona De Iuliis (ENEA), Derek Baker/Yelda Erden Topal (METU)
10:45	Findings from industry perspective in countries of focus Presenter: Marcel Bial (ESTELA)

11:15 – 11:30 Coffee break

11:30	Integrated findings and recommendations Presenter: Marcel Bial (ESTELA)
12:00	Q&A

Session II – PANEL DISCUSSIONS

12:15 – 13:15 Round Table I:	Institutional framework
Panellists: – Ignacio Asenjo (DG ENER) – Cristina Trueba (IWG CSP) – Piero de Bonis (DG RTD) – Pablo Ralon (IRENA)	Moderator: Marcel Bial (ESTELA)

13:15 – 14:15 Lunch break

14:15 – 15:15 Round Table II:	R&I perspective
Panellists: – Simona de Iuliis (ENEA) – Eduardo Zarza (CIEMAT-PSA) – Peter Heller (DLR) – Derek Baker (METU)	Moderator: Mark Schmitz (Flagsol Engineering GmbH)

15:15 – 16:15 Round Table III:	Industry perspective
Panellists: – Gonzalo Martin Barrera (Protermosolar) – Mark Schmitz (Flagsol Engineering GmbH) – Jeroen Van Schijndel (Rioglass) – Lorraine Devouton (ENGIE) – Pedro Cabanillas (John Cockerill Group) – José Alfonso Nebrera (ACS Industria)	Moderator: Bérénice Crabs (ESTELA)

16:15 – 16:30 Conclusions	Piero de Bonis (DG RTD) & Marcel Bial (ESTELA)
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16:30 – 17:00 Networking coffee

Figure 1: The programme of EU Cooperation & Closing Event



3. PARTICIPANTS

The EU Cooperation & Closing Event, organised in Brussels, Belgium, and via Webex, was attended by 27 in-person participants and 105 remotely connected participants. Figure 2 and Table 1 show the breakdown of the participants into four categories, as indicated in Section 2. The significant interest from research institutions indicates the potential for innovation and development of the CST in Europe and Turkey and with one-third of the attendees representing industry it is clear there is interest in CST for commercial applications.

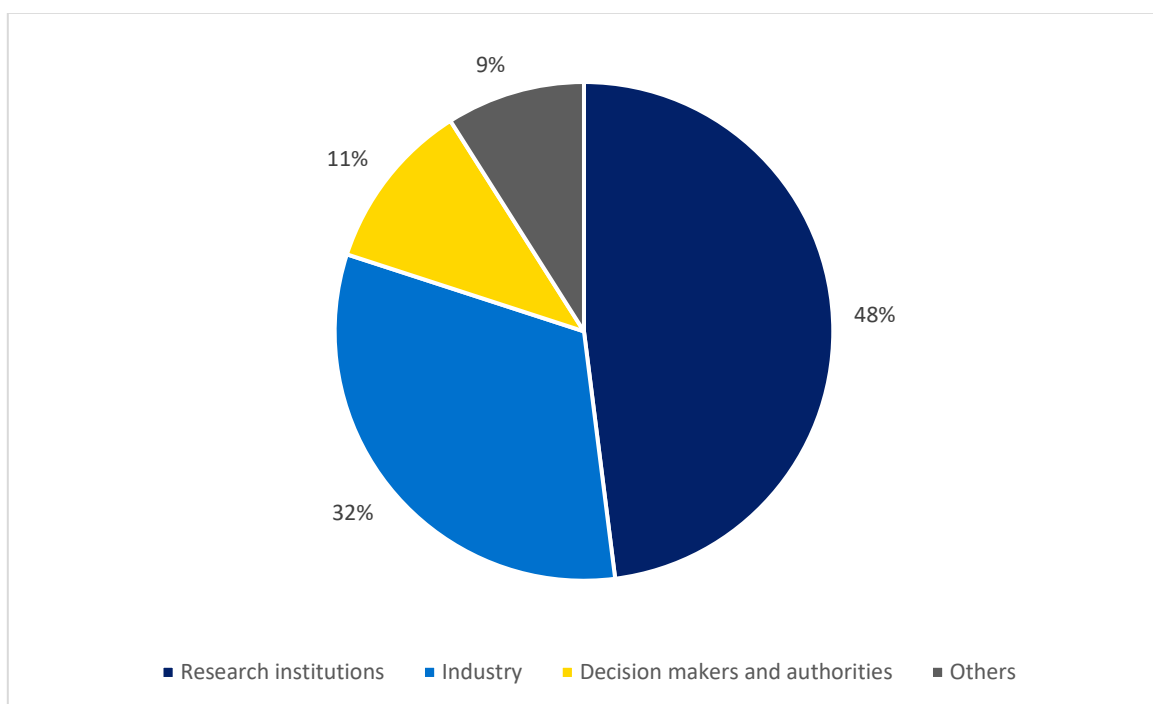


Figure 2: Breakdown of participants in EU Cooperation & Closing Event

Category	Number of participants	%
Research institutions	63	48%
Industry	42	32%
Decision makers and authorities	14	11%
Others	12	9%

Table 1: Breakdown of participants in EU Cooperation & Closing Event



4. PHOTOGRAPHS OF THE EVENT

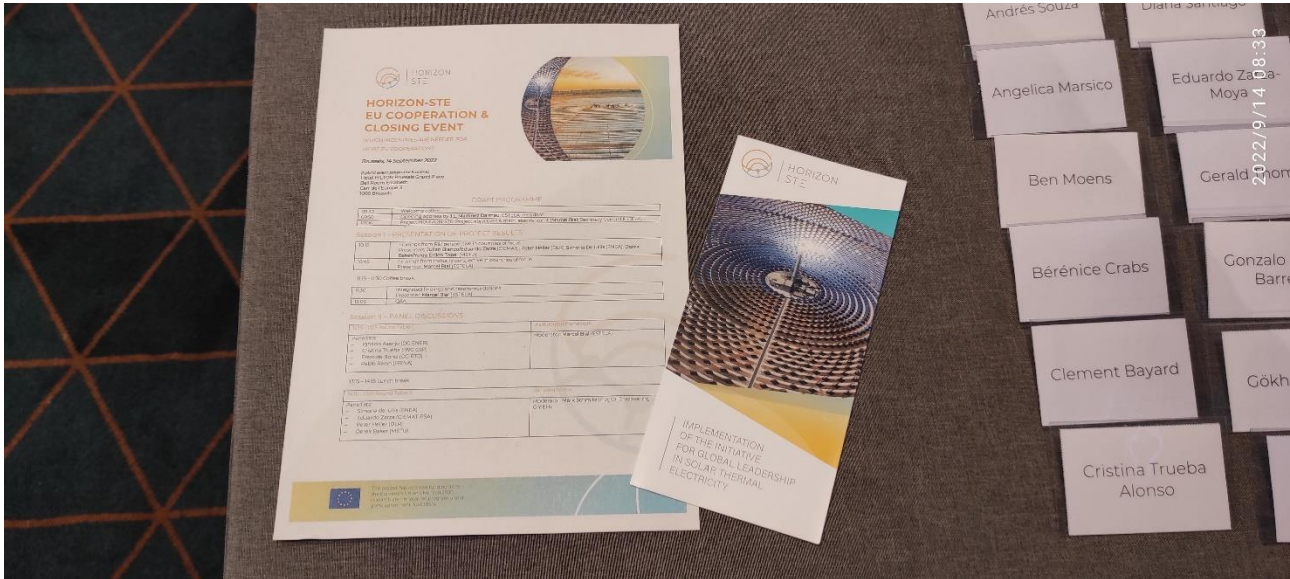


Figure 3: EU Cooperation Event's programme, brochures, and name tags distributed



Figure 4: Opening of the EU Cooperation Event - Roundtable I: Institutional framework



Figure 5: Roundtable II: R&I perspective



Figure 6: Roundtable III: Industry perspective



Figure 7: Conclusions and farewell to the attendees by representative from EC and outgoing and incoming ESTELA Secretary Generals



5. CONCLUSIONS & HIGHLIGHTS DRAWN FROM THE EVENT

5.1 Discussion round I – the institutional framework

One of the main learnings of the project is that the (re)deployment of (not only) CST depends in the essence of the national energy policy objectives, translating into regulatory conditions and various procurement processes to which industry and R&I respond – so far, such framework conditions open doors to real business cases.

The project systematically refers to these energy policy strategies and conditions. While the “market” or the “cost level” are frequently referred to as reasons for the deployment of a technology, this is not backed by our investigation results and appears more than ever a disputable approach under the current crisis.

The current energy crisis delivers striking evidence that EU member states did not take into account the risks and the true costs of dependencies on manufacturing, on technology leadership (not only from the Russian gas but also during the COVID crisis) looking at these risks as a kind of “force majeure”, that today painfully demonstrates its reality.

About the reviewed national institutional frameworks, the sole recommendation of the project directed to the CST “sector” itself for getting better framework conditions is to better “mobilize” itself and demonstrate that this industry matches the respective national objectives. Another recommendation would consist especially in times of the called-for “system integration” to search for alliances or niches with established major players to open doors for CSP in each country. Doing so, is also a chance to overcome the artificial “technology silo thinking” provided by most lobbying associations via trade associations in Brussels since this does not reflect the industry reality.

A first issue of the discussion dealt therefore with the issue about how European or international institutions such as EC (ENER, RTD, SET Plan, etc.) or IRENA, could better cover the potential of CST in major documents (EU Solar Strategy, REPowerEU, REDIII, IRENA reports, Horizon Europe next work programs, funding initiatives, etc.).

As example, the project coordinator pointed at the genesis of the EU Solar Strategy and at the fact that the market potential of CST was not addressed, especially the fact that CSP capabilities to enter the heat market as well as its potential role for the development of new “green” fuels (“green” hydrogen derivatives) were not addressed.

Likewise, only battery-related aspects were considered in the valuation of the storage needs without addressing the contribution of thermal energy storage (TES) and its capability of supplying large amounts of power at any time (day and night).



EC pointed in this context at the results of the internal modelling tools (a.o. PRIMES) used by the Commission that forecast a further deployment of PV and the fact that the EC services do not “regulate” or “cover” the heat market due to the unavailability of sufficient data.

However, the ongoing process of reforming the entire electricity market will be subject to a European debate in the coming months, which will include issues such as flexibility, storage, electricity demand, thermal storage, and any solution resulting from the debate will be technology neutral.

The SET Plan is considered the first instrument for establishing an energy technology R&I policy for Europe. The SET Plan was conceived to give provide a strong impetus to European energy research and promote the development of low-carbon technologies, However, for CSP stakeholders it still can be improvable.

At the European level, the SET Plan aimed to accelerate the deployment of green technologies and was supposed to bring together and support industry representatives to open doors and facilitate the entry of CSP technology. This goal has not been achieved, as it is necessary to consider the degree of participation of member states and representatives involved in the SET Plan working structures such as the Implementation Working Groups that were set up to foster the implementation of Industry initiatives.

The effort of SET Plan and IWGs was not successful due to the lack of interest of the member states (especially those called “relevant” in the project).

In spite of the fact that there is so far no obligation for member states to participate, more cooperation is needed to achieve a true “sector integration” including all renewable technologies. The fact that the number of member states representatives has decreased over time shows that the planned objectives were not in line with national demands – which clearly confirms the decisive importance of the national institutional framework reported in the project.

Regarding the hoped-for support by other international institutions such as IRENA, the project coordinator invoked that in July 2022, IRENA published a study on Hydrogen “Global hydrogen trade to meet the 1.5°C climate goal part I trade outlook for 2050 and way forward” based on a production of green hydrogen from variable renewable energy technologies only (solar PV, onshore wind and offshore wind) while other renewable technologies are seen as “excluded” from the analysis. In particular concentrated solar power is excluded due to its high capital costs, which would lead to high hydrogen production costs.

It should be avoided that such publications – even when they do not reflect the formal position of the institution – send signals and messages going against the obvious needs of many countries to move swiftly to a full integration of energy sources able to deliver a short-term contribution to the decarbonization objectives and the current energy crisis.



5.2 Discussion round II – R&I and concentrated solar technology.

Most of the discussion addressed the ongoing efforts towards updating the Implementation Plan of the “Initiative for Global Leadership in Concentrated Solar Power” aiming at reflecting the potential of CSP technology beyond electricity, i.e., heat for industry, and hydrogen (in the context of new fuels).

There is a growing interest in hydrogen production and new interests are emerging to produce hydrogen with different processes. These processes are becoming interesting because it is a high-priority topic and there is a lot of funding for research into hydrogen production and how CST can be applied to hydrogen.

Projects for process heat generation using CST technology are becoming commercially viable and – since now also financially supported – should substantially expand.

Spain remains a specific case since a strong research activity with a clear focus on power generation is ongoing since the use of CST for the electricity was the first application and remains the sole case at utility scale in Europe.

Hydrogen has always had a research program in Germany, participating in many key programs, and currently working on new technologies with improvements in the future, such as improved cloud cover for irradiation, etc, while continuing to work on the production of hydrogen in solar energy.

Process heat is involved in smaller programs and some companies have decided to exit from these programs in this last decade of 2022.

The Italian research program is working on reducing the costs and improving the performance of the equipment and the use of transmission fluid, as the use of thermal oil is considered toxic for the environment in the Italian legislation and cannot be used. Both technologies - trough and Fresnel - are improving the receiver, and research will lead to cost reduction and performance improvement. The hybridisation of the technologies allows the optimisation of the use of complements working in parallel, without exclusion.

System modularity and automation are something that needs to be focused on, to achieve the goals of both modularity and revenue duplication. It is important to connect CSP with industrial processes to bring the technology to the larger scale of industrial production. The CSP system and technology must be as cost-effective as possible but well integrated into the environment. System modularity is important, and digitization will help, along with standardization of components such as boilers, etc.

The normalisation of the components' dimensions will review the engineering costs that seem to be a barrier.



Establishing a production line of components appears unsustainable when there's no underlying market application, and for that reason R&I focuses on identifying systems attractive to technology providers and constitute real business cases.

The greatest difficulty for the R&I activities lays in the reluctance among industry players to share information and such data that could better guide the related R&I activities. There is a true need for a better organisation of an information sharing platform for the CST sector.

5.3 Discussion round III – the industry perspective

CST plays an important role in the production of electricity, heat, and hydrogen, and after ten years of waiting, there will finally be a tender for the CST in Spain, scheduled for October 25, 2022. Even though this tender of 220 MW for CSP does not seem in quantitative terms sufficient to reactivate the sector over the next decades, it will be a benchmark for the CST in Europe and reveal how many developers will react with project concepts. This could be also a starting point for other countries to reconsider the potential of this technology, since many companies in countries like Namibia, South Africa, etc. are looking with interest at renewable alternatives, including CSP.

Besides the a.m. Iberian perspectives regarding CST/CSP as useful technology to decarbonise the high-temperature heat sector, there is growing interest in ammonia production and this also means growing interest in hydrogen production and fertilizers, which can be supported by CST.

It is necessary to change the mindset of industry that should learn from the industrial development of photovoltaics (but also from the boundary conditions that lead to the deployment of other RES technologies) regarding investment risks.

A common European position would be important in this context also to preserve the technology leadership against China, even though China's market has grown strongly in over the last 20 years.



6. GLOSSARY

<i>CSP</i>	Concentrated Solar Power
<i>CST</i>	Concentrated Solar Technology
<i>RES</i>	Renewable Energy Sources
<i>SET Plan</i>	Strategic Energy Technology Plan
<i>STE</i>	Solar Thermal Electricity
<i>TES</i>	Thermal Energy Storage
<i>WP</i>	Work Package