

**SOLAR-ERA.NET**  
**ERA-NET ON SOLAR ELECTRICITY FOR THE IMPLEMENTATION**  
**OF THE SOLAR EUROPE INDUSTRY INITIATIVE**

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ABSTRACT: SOLAR-ERA.NET is a network that brings together more than 20 RTD and innovation programmes in the field of solar electricity technologies in the European Research Area. The network of national and regional funding organisations has been established in order to increase transnational cooperation between RTD and innovation programmes and to contribute to achieving the objectives of the Solar Europe Industry Initiative (SEII) through dedicated transnational activities (especially transnational calls). SOLAR-ERA.NET is an EU funded FP7 project running from 2012 to 2016. Through the support of the funding organisations, more than 100 MEUR shall be mobilised for transnational RTD and innovation projects. Results are presented for the three sets of transnational calls carried out so far.

Keywords: R&D and Demonstration Programmes, Photovoltaic, Funding and Incentives, Strategy

## 1 INTRODUCTION AND CONTEXT

SOLAR-ERA.NET is a European network of national and regional funding organisations and RTD and innovation programmes in the field of solar electricity generation, i.e. photovoltaics (PV) and concentrating solar

power (CSP) / solar thermal electricity (STE). SOLAR-ERA.NET shall contribute to reaching the objectives of the Solar Europe Industry Initiative (SEII) by carrying out the coordination and support actions for the implementation of the SEII between national and regional RTD and innovation programmes.

The SEII is a joint initiative of the industry sector, EC and member states and is embedded in the European Strategic Energy Technology Plan (SET-Plan) which aims to increase, coordinate and focus EU support on key low-carbon energy technologies in order to achieve Europe's 2020 energy objectives in the future.

## 2 NETWORK AND MISSION

### 2.1 Network

As the largest ERA-NET (network in the European Research Area) ever in the solar power field, SOLAR-ERA.NET involves more than 20 national and regional RTD and innovation programmes dealing with PV and CSP. This high level of involvement of most relevant stakeholders provides excellent outreach and allows for a solid coordination needed for an efficient and coherent approach in the highly diverse and versatile RTD landscape.

The network is composed of 19 organisations being programme owners and / or programme managers (see list of authors). Countries and regions participating in the SOLAR-ERA.NET consortium and / or in the transnational calls are identified in Figure 1. SOLAR-ERA.NET is in principle open to other countries and programmes wishing to join in transnational calls.



**Figure 1:** Countries and regions involved in the SOLAR-ERA.NET consortium and / or in the transnational calls

### 2.2 Missions and goals

SOLAR-ERA.NET has two fundamental missions. As a network supported by the EC within the ERA-NET scheme, the mission is to improve the coordination and cooperation between national and regional RTD programmes. In the context of the Solar Europe Industry Initiative (SEII), the mission of the network is to implement central parts of the SEII on a transnational level and thus contribute to achieving the goals defined in the SEII.

The more specific and essential goals and activities of SOLAR-ERA.NET are i) to launch joint calls for RTD proposals by national and regional RTD and innovation programmes and ii) to define and support the best joint activities, strategic information exchange and use of

implementation tools.

By identifying and choosing SEII priority topics based on the Implementation Plans for PV respectively CSP for transnational calls, the SOLAR-ERA.NET network shall select and fund industrially relevant transnational RTD and innovation projects in the field of solar electricity technologies.

In quantitative, financial terms, SOLAR-ERA.NET shall result in a total funding volume by the participating national and regional programmes of approximately 50 MEUR and, in total, expects to mobilise some 125 MEUR for innovative projects.

## 3 ACTIVITIES, FACTS AND FIGURES

### 3.1 Set up of transnational calls

The network started in November 2012. Three sets of transnational joint calls have been launched so far in March 2013, January 2014 and December 2014 with the participation of up to 17 countries covering up to 8 PV and 4 CSP topics. The number of countries and regions as well as of topics increased from the first to the third call.

Call topics in photovoltaics (PV) and concentrating solar power (CSP) are commonly defined by the SOLAR-ERA.NET consortium and adopted by the participating programmes and countries according to their national / regional priorities. The topics can be found in Table 1.

The transnational call is based on a 2-step/stage-procedure with i) a preproposal and ii) a full proposal stage. Preproposals are checked according to the national / regional regulations and then discussed in the SOLAR-ERA.NET consortium setting up lists of preproposals recommended respectively not recommended for stepping on to the full proposal phase.

Once the full proposals are evaluated by independent international experts as well as by national experts, a list of projects suggested for funding is established. The ultimate funding decisions are however taken by the national agencies / ministries.

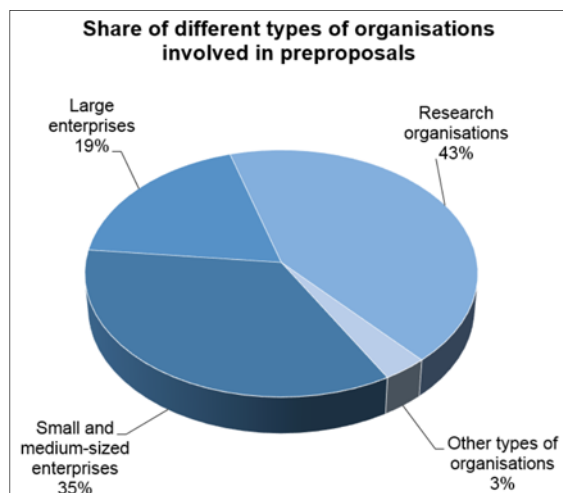
The transnational SOLAR-ERA.NET joint calls are each allocated with a total public funding budget of approximately 12 million euros provided by the participating national and regional programmes and agencies. The joint call consortium is mainly composed of SOLAR-ERA.NET partners but can be extended by associate partners (like Denmark and Israel). Applicants may also come from other countries (like Ireland and Norway) but they do have to provide their own funding for their participation in the projects.

### 3.2 Participation in transnational calls

The three transnational SOLAR-ERA.NET calls found good interest in the solar power industry sector and research community. Some 141 preproposals were submitted involving 629 partners from 18 countries. 66 full proposals were submitted.

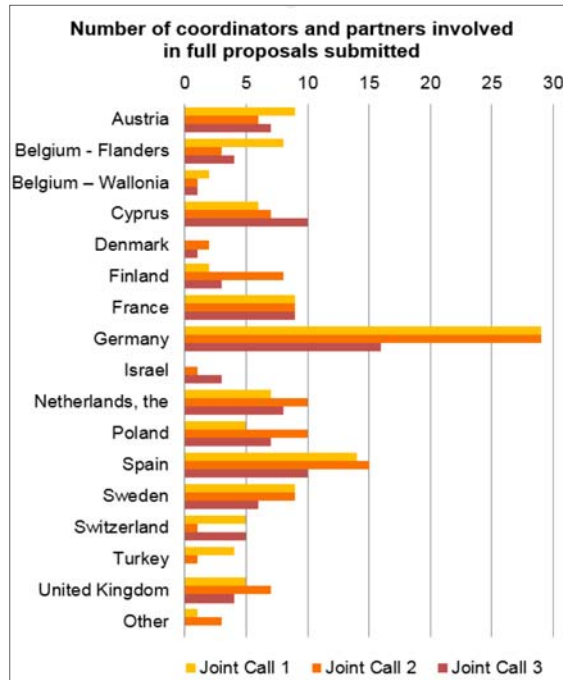
The majority (54%) of the organisations involved in

the preproposals submitted belong to the categories of small and medium sized enterprises and large enterprises; research organizations have a share of 43%. Figure 2 shows the share of different types of organizations among the partners being involved in the full proposals submitted.



**Figure 2:** Share of different types of organisations involved in preproposals

Figure 3 shows the number of coordinators and partners in the full proposals submitted by call as well as by country / region.



**Figure 3:** Number of coordinators and partners in full proposals submitted according to the countries / regions participating in the three transnational SOLAR-ERA.NET calls

Out of the 66 full proposals submitted, 57 were for PV topics and 9 for CSP topics. Table 1 shows the number of full proposals submitted per call topic. Some topics have been added in the second and third call.

**Table 1:** Three transnational SOLAR-ERA.NET calls - topics and numbers of full proposals submitted (number of full proposals per call and topic as well as total sum)

Transnational SOLAR-ERA.NET topics in calls 1, 2, 3 and all three together	1	2	3	$\Sigma$
PV1 Innovative processes for inorganic thin-film cells & modules	3	4	2	9
PV2 Dedicated modules for BIPV design and manufacturing	6	3	1	10
PV3 Grid integration and large-scale deployment of PV	3	2	4	9
PV4 High-efficiency PV modules based on next generation c-Si solar cells	3	5	4	12
PV5 Solar glass and encapsulation materials	2	3	1	6
PV6 Concentrator PV technology	-	3	3	6
PV7 Si feedstock, crystallization and wafering	-	2	1	3
PV8 Organic solar cells and other emerging concepts	-	-	2	2
CSP1 Cost reduction and efficiency increase in components	2	0	1	3
CSP2 Dispatchability through storage and hybridisation	2	1	1	4
CSP3 New fluids for CSP plants	0	1	1	2
CSP4 Innovative thermodynamic cycles	-	0	0	0
<b>Total</b>	<b>21</b>	<b>24</b>	<b>21</b>	<b>66</b>

### 3.3 Projects initiated and lessons learnt

The first set of transnational joint calls PV1 and CSP1 resulted in a list of 13 projects being suggested for funding. The budget of these projects amounts to 28 MEUR including funding requested of 18 MEUR. This list was agreed on by the SOLAR-ERA.NET joint call consortium in November 2013. Although this list is a result out of common discussions, it is not a legally binding document for all national and regional funding agencies. Applicants do have to fulfill all national and regional requirements as well and some projects find themselves on a waiting list because of oversubscription of initial funding budgets available in some countries or regions.

9 out of 13 projects are running. 1 project could not start due to a negative funding decision in one country. Another project is about to start with some delay due to late delivery of documents needed. 2 projects got stranded, one of which was the largest project that finally could not take off due to insolvency of one of the partners. These cases reflect the harsh economic situation for the solar sector in general and in some countries in particular.

The expected total project costs will be around 13 MEUR of which public funding will be around 8 MEUR and thus below the funding budget of 12 MEUR initially foreseen. The main reason in the first call is the financial situation of some industry stakeholders but also funding budget stranded in some countries / regions as other countries have already used up their funding budgets and cannot support yet another transnational project for which some country / countries would still have some funding available.

With respect to the second set of transnational calls, 4 projects are already running. Another 11 projects are in the negotiation and contractual phase.

By the time of writing this contribution, the full proposals submitted in the third set of transnational joint calls (submission deadline was 8 September 2015) are being evaluated. Successful projects are expected to start from early 2016 on.

## 4 PRELIMINARY AND EXPECTED RESULTS

### 4.1 Preliminary results

The first two sets of transnational SOLAR-ERA.NET calls shows good interest and participation of the sector:

- 141 preproposals submitted with total project costs of 181 MEUR and funding requested of 109 MEUR
- 629 partners involved in preproposals
- 17 countries and regions participating in the joint call consortium
- 66 full proposals submitted
- 13 projects running

Although some delay and insolvency occurred, SOLAR-ERA.NET is rather on track, dedicating about 8 to 12 MEUR of funding per set of transnational joint calls on innovative PV and CSP projects.

The 13 projects (the first and for the time being the only one in the CSP area) running are:

- SLAGSTOCK: Low-cost Sustainable Thermal Energy Storage Systems Made of Recycled Steel Industry Waste
- LIMES: Light Innovative Materials for Enhanced Solar Efficiency
- INTESEM: Intelligent Solar Energy Management Pipeline from Cell to Grid
- NOVACOST: Non vacuum based strategies for cost efficient low weight chalcogenide photovoltaics
- NovaZolar: All-non-vacuum processed ZnO-based buffer and window layers for CIGS solar cell technology
- HyLight: Design, development and application of a technologically advanced system of natural daylight and artificial PV lighting - Hybrid Light Tube
- InnoModu: Leadfree modules with low silver content and innovative busless cell grid
- AER II: Industrialization and System Integration of the Aesthetic Energy Roof Concept
- PV4FACADES: Photovoltaics for high-performance building-integrated electricity production using high-efficiency back-contact silicon modules
- BLACK: Black silicon and defect engineering for highly efficient solar cells and modules
- PV2GRID: A next generation grid side converter with advanced control and power quality capabilities
- THESEUS: Tandem High Efficiency Solar Cells Utilizing III-V Semiconductors on Silicon
- APPI: Atmospheric Pressure Processing for Industrial Solar Cells

Their project costs sum up to 16 MEUR of which slightly more than 10 MEUR is coming from public funding.

### 4.2 Expected results

SOLAR-ERA.NET aims at launching joint calls once a year and mobilising substantial resources for innovative projects.

The project proposals must clearly demonstrate i) potential commercial impact / relevance to industrial and market needs / contribution to the Solar Europe Industry Initiative and added transnational value, ii) scientific and technological excellence and iii) high quality and efficiency of the implementation and the management.

Through these joint calls for RTD and innovation topics in PV and CSP, SOLAR-ERA.NET shall contribute to reaching the objectives of the SEII; namely boosting the development of the PV and CSP sector beyond “business-as-usual,” and of the ERA-NET, while specifically enhancing cooperation between the national / regional programming stakeholders at European level.

With respect to the successful projects from the transnational joint calls, relevant information will be provided on the solar-era.net website.

## REFERENCES

Further information is available on the project website [www.solar-era.net](http://www.solar-era.net).

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