



Report on options for financing instruments and schemes

Deliverable 1.4

WP 1: Implementation Plan Status Update and Revision

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ESTELA, European Solar Thermal Electricity Association

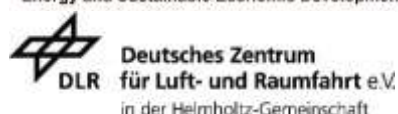
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ABOUT THE PROJECT

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 Solar Thermal Electricity 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 Concentrated Solar Power focusing on 2 targets: a cost reduction target and an innovation target, in order to keep STE/CSP's global technology leadership and rebuild a home market in Europe.

Acting as competence centre of the Implementation Working Group within the Strategic Energy Technology Plan (SET Plan) of the European Commission, the overall goal of HORIZON-STE is to support the execution of the Implementation Plan regarding both STE/CSP 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 RES and increased public funding for STE/CSP research.

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EXECUTIVE SUMMARY

This document is part of the activities planned in Task 1.3 “*Framework conditions and financial mechanisms (R&I)*” of HORIZON-STE project, and it is publicly available, not only for members of the consortium and the European Commission.

This document includes a comprehensive list of funding sources that can be used for development of the activities (both R&I activities and FOAK) composing the Implementation Plan for the SET plan of CSP/STE (hereinafter referred to as “IP”). This information is expected to be useful for consortia willing to promote R&D projects related to the IP and looking for funding support.

Section 2 of this document is devoted to the analysis of European funding opportunities at transnational level. Those funding programs and schemes that can provide support for international R&D activities related to the IP (ERANET Cofund, EUREKA, European Joint Programmes, Horizon 2020 and Horizon Europe) are analysed in section 2.

Section 3 provides the list of national funding options in the European countries having an interest in solar thermal power plant technologies (Belgium, Cyprus, France, Germany, Greece, Italy, Portugal, Spain and Turkey). Section 4 is devoted to the funding sources that could be used to get financial support for the First-of-a-Kind (FOAK) plants proposed in the IP.

Elaboration of this document has been coordinated by CIEMAT in collaboration with the other HORIZON-STE partners (DLR, ENEA, ESTELA and METU) and with external contributions given by: Joao Cardoso (LNEG, Portugal), Alain Dollet (CNRS, France), George Karagiannakis (CERTH, Greece), Alain Stephenne (Belgium, Wallonia) and Manuel Blanco (CYI, Cyprus), concerning the national funding programs existing in their countries suitable for CSP/STE R&D activities.

As explained in Section 2, the EU Framework Programmes have been the most popular funding source for international R&D projects developed by partners from E.U. Member States and/or Associated Countries. Horizon 2020 is the current Framework Program and its successor will be Horizon Europe, the next research and innovation EU Framework Programme, which will cover the period 2021 – 2027 and will be funded with 100 billion Euro (approx.). Since the funds devoted in the Framework Programmes to the different technologies are decided by the representatives of the Member States participating in the preparation of the periodic Work Programmes that will define the calls, rules and topics to be addressed, CSP/STE stakeholders must be in close contact with their national representatives in order to get concentrating solar thermal (CST) technologies within the topics included in the several Work Programmes of Horizon Europe. This is the only way to assure the allocation of funds for CST technologies within Horizon Europe.

As recently seen in the list of topics proposed for the areas covered by the *Green Deal Initiative* call that is planned by the end of 2020, Wind and Photovoltaic (PV) sectors have a significant influence at political level in the European Commission and topics directly related to CST technologies have been, at least initially, excluded from the call. Therefore, a very small amount of funds, if any, will be devoted to CST technologies within Horizon Europe if the CSP/STE sector does not succeeds in clearly explaining the advantages of solar thermal power plants and their excellent complementarity with wind farms and PV plants.

Concerning coordination of national research and innovation programs at European level *ERANET Cofund* (or its likely successor in Horizon Europe “*European Partnership*”) and *European Joint Programmes* (EJP) seem to be the better options to align national efforts of those member states interested on CSP/STE. Although EJPs participating entities are typically research funders or governmental research organizations participating on the basis of their institutional funding, the possibility to implement an EJP for CSP/STE will be evaluated within the framework of HORIZON-STE in 2021.

The current CSP ERANET project is providing funding for R&D projects related to the development of the IP. However, the very different national contributions and the rules defined for eligibility are important barriers to achieve a significant progress in the development of the IP. Therefore, some internal rules, especially that requesting the participation of entities from at least three countries, should be revised. It has also been depicted that the national contributions should be more balanced and over a minimum threshold level defined for all the participating countries in order to allow a more balanced participation of entities from all the countries and projects with higher TRL, which usually demand the development and implementation of expensive prototypes.

Information given in section 3 of this document clearly shows that there is a wide list of funding programs at national level in the countries analysed (Belgium, Cyprus, France, Germany, Greece, Italy, Portugal, Spain and Turkey). The list of national funding programs covers very different types of R&D projects: projects with industrial partners only, projects with R&D centres only, projects with industrial partners and R&D centres, projects of low TRL, projects of medium TRL, projects of high TRL and projects for collaboration of national entities with foreign partners, etc. Therefore, organizations willing to get national financial support for their R&D project must look for the most suitable funding program available in their respective country. The information delivered in section 3 is expected to be useful for consortia willing to promote R&D projects related to the IP and looking for national funding support, which may be sometimes complemented with financial support provided by the European Commission.

It has been found that in most of the countries analysed, the funding programs are not aimed at a specific technology, but at a wide list of technologies and the project proposals must compete among them to get part of the funding available. However, CST technologies are eligible for most of the national funding programs because topics

related to sustainable energies and the climate change mitigation are considered high-priority topics by all the European countries analysed.

Nevertheless, most of the national funding programs available are not suitable for large projects with a high budget and TRL (e.g., implementation of demonstrators or pilot plants) as those addressed in the IP, so that the funding for such R&D projects must be obtained either from the European Framework Programs, from a future European Partnership or from a specific European Joint Program for CSP/STE with national contributions higher than those already given for CSP ERANET.

Concerning development of a First-of-a-Kind project (FOAK) four possible funding instruments have been identified and its suitability for CSP/STE is analysed in section 4. The selection of the best funding instrument or combination of instruments for a FOAK project requires a detailed analysis of advantages and disadvantages of each instrument. These four funding instruments analyzed in section 4 are:

Innovation Fund – DG CLIMA: up to 60% of the additional capital and operational costs linked to the presented innovation can be funded. It is the impression of the industry that it can in fact be a useful tool for financing part of a FOAK. However, the “real” likelihood of obtaining funds will strongly depend on how the final evaluation criteria is defined.

Connecting Europe Facility – Energy: it is an instrument that provides EU funding for infrastructure projects, which in the case of energy, shall increase competitiveness, enhance the EU's security of energy supply, and contribute to sustainable development and protection of the environment. This funding instrument can enhance cross border cooperation on renewables, and especially for CSP/STE. However, the lengthy and complex administrative procedure could be a significant handicap for the industry.

EU Financing Mechanism for Renewables: this instrument is being designed by the European Commission with the main objective of enabling Member States to work more closely in order to achieve their individual and collective renewable energy targets. According to the draft currently under discussion, it enables “contributing Member States” to pay voluntary financial contributions, which will be used to tender support for new renewable energy projects in all Member States willing to host such projects (“hosting Member States”). However, there is no direct link or negotiation between the contributing and hosting Member States, as the Commission runs the process.

InnovFin Energy Demonstration Project: it is a financial instrument deployed by the European Investment Bank. It provides loans, loan guarantees or equity-type financing typically between EUR 7.5 million and EUR 75 million to innovative demonstration projects in the fields of energy system transformation, including but not limited to renewable energy technologies. It is specially aimed at helping innovative firms access finance more easily. However, as it can only cover a relatively small part of the investment required by a FOAK project, it would be necessary to blend this support with other existing ones.

1 INTRODUCTION

This deliverable document D1.4 is part of the activities planned in Task 1.3 “*Framework conditions and financial mechanisms (R&I)*” of HORIZON-STE project. Due to its nature this document is publicly available, not only for members of the consortium and the European Commission.

This document was planned to evaluate and compile the funding opportunities for development of the activities (both R&I activities and FOAK) composing the Implementation Plan (hereinafter referred to as “IP”) for the SET plan of CSP/STE, thus providing a comprehensive information about this subject. This information is expected to be useful for consortia willing to promote R&D projects related to the IP and looking for funding support.

The evaluation of funding opportunities is performed at European level (ERANET Cofund, EUREKA, European Joint Programmes, Horizon 2020, Horizon Europe) in section 2 of this document, while section 3 provides the list of national funding options in the European countries having an interest in solar thermal power plant technology (Belgium, Cyprus, France, Germany, Greece, Italy, Portugal, Spain and Turkey). Section 4 is devoted to the funding sources that could be used to get financial support for the FOAK plants proposed in the IP of the CSP/STE SET Plan.

Elaboration of this document has been coordinated by CIEMAT, with valuable contributions by the other HORIZON-STE partners (DLR, ENEA, ESTELA and METU) and external entities from Belgium, Cyprus, France, Greece and Portugal. Special thanks are given to: Joao Cardoso (LNEG, Portugal), Alain Dollet (CNRS, France), George Karagiannakis (CERTH, Greece), Mr. Alain Stephenne (Belgium, Wallonia), Dr. Manuel Blanco (CYI, Cyprus), for the information they have delivered concerning the national funding programs existing in their countries suitable for CSP/STE R&D activities.

2 POSSIBLE EUROPEAN FUNDING SCHEMES AND THEIR SUITABILITY FOR THE R&I ACTIVITIES OF THE IP FOR THE CSP/SET PLAN

This section is devoted to analyse the funding opportunities and schemes available at European level for CSP/STE R&D activities. These funding sources could therefore be used to provide European consortia with funds to support the development of the IP R&I activities. However, some changes could be implemented in next years for some funding schemes (e.g., ERANET Cofund) and the information given in this section could be no longer valid after about two years from now.

2.1 ERANET

ERANET is not really a funding program but a funding scheme under which national and regional funding entities identify research programmes they wish to coordinate or open up mutually using a budget composed of financial contributions made by each entity. ERANET is aimed at developing and strengthening the coordination of national and regional research programmes to support transnational R&D activities developed by entities from the countries contributing with funds to that program. This European funding scheme has been evolving since its implementation in the 6th Framework Program (FP6).

The fact that the partners of ERANET projects are directly funded by their national or regional funding entities applying their own rules concerning eligible costs and time schedule for project proposals evaluation and approval introduces some problems of synchronization among the partners from different countries collaborating in the same project. An additional problem is the different criteria of the funding entities about the eligible costs, so that in the same project there can be partners covering only their marginal costs, while other partners cover all the costs associated to the project, including permanent staff. This creates significant uneven cost coverage for the several partners in the same project. For instance, ERANET scheme is not very appealing for Spanish R&D entities (i.e. Universities, technological centers and public R&D centers) because only their marginal cost can be funded, thus reducing their usefulness to promote participation of Spanish R&D entities in projects funded under ERANET scheme.

However, it seems that the ERANET scheme will be no longer used after the Framework Program Horizon 2020, because it will likely be replaced in the Framework Program Horizon Europe by a new funding scheme called “*European Partnerships*” which will foster joint actions between Horizon Europe EU program and national funding

programmes on common R&I priorities, building on – and bringing forward – the work carried out in the SET-Plan.

2.1.1 *ERANET Cofund*

ERANET Cofund is the successor of the ERANET and ERANET Plus schemes. It was implemented under the Horizon 2020 Program and it is still active. The main innovation of ERANET Cofund when compared with their predecessors is the top-up funding from the European Union (EU) for transnational research and innovation in selected areas with high European added value and relevance for Horizon 2020.

The ERANET Cofund scheme aims at increasing the share of funding that Member States jointly dedicate to challenge-driven research and innovation agendas. In Horizon 2020 the EU contribution is limited to a maximum of 33% of the total eligible costs of the action (i.e. costs for support to or implementation of transnational projects) and the duration of the actions should not be longer than 5 years.

ERA-NET Cofund scheme allows, when justified by the research area addressed and the underlying national programmes, to target research performing organizations (RPOs) with the co-funded call for proposals being based on in-kind contributions from their institutional funding. This is accommodated within the so-called in-kind ERA-NET Cofund. In this case the beneficiaries carry out the transnational projects resulting from their call for proposals themselves and the Cofund grant reimburses the costs of transnational projects, implemented by the beneficiaries, on the basis of Horizon 2020 rules for eligible direct and indirect costs.

One disadvantage of the ERANET Cofund scheme is the lack of a unified time schedule for the Calls at European and national levels. The duration of the funding period and the funding intensity for R&D entities are additional disadvantages for Partners from some countries (e.g. Spain). Duration of Spanish ERANET projects is usually up to 36 months only and the maximum amount of funding per project has been usually less than 250 k€, while in Germany it could be more than 1 M€. This lack of uniformity in the funding intensity, time schedule and criteria for eligible costs should be avoided in future ERANET funding schemes.

Several Calls have been issued so far under the ERANET Cofund scheme for solar energy, thus promoting European collaboration in this field.

2.1.2 *CSP ERANET*

In the ERANET Cofund scheme the EU funding may be used not only for financing transnational research projects but also to cover (partially) the preparation and management of additional joint activities to be performed by the consortium aiming to

increase coordination of national/regional programmes. This is the case of the CSP ERANET project (<https://csp-eranet.eu/>).

As explained in its web site: CSP ERANET is the result of a joint EU will for bridging the gap between research and commercial deployment in the Concentrated Solar Power (CSP) technology, so that this technology can play a main role in the European renewable electricity generation in a medium term.

CSP ERANET aims to coordinate the efforts of Member States, Associated Countries and Regions towards achieving CSP SET Plan objectives, by pooling their financial resources to implement joint calls for R&I proposals, resulting on strategic projects with substantial volumes of investment, which cannot be allocated by individual countries or by the European Commission on their own.

CSP ERANET started in 2019 with a duration of 5 years, and it constitutes a public-public partnership gathering 11 representatives from Member States, Associated Countries and Regions which so far have committed more than 9 M€ public fund for launching joint calls of proposals under the ERANET scheme to finance transnational research actions directly related to the R&I activities defined in the IP [1].

CSP ERANET launched a first Joint Call in October 2019 and four more Joint Calls are expected until the end of the project with financial resources from multiple countries, the Commission and the private sector, in order to invest a total lump sum of 29 M€ in the R&I activities for the development of the IP. Taking into account the information available about the first Joint Call launched in October 2019 the R&D partners of HORIZON-STE have proposed in [2] some Actions for the CSP ERANET Funding Agencies in order to achieve the maximum benefit from the funding devoted to next Joint Calls.

CSP ERANET partnership will finance 8 topics selected among the 12 R&I topics defined in the IP. The rules implemented by each funding agency participating in the Joint Calls can be found in the respective Guidelines of each Call, which will be published in the web site of CSP ERANET (<https://csp-eranet.eu/>).

2.2 EUREKA

EUREKA (<https://www.eurekanetwork.org/>) is a market-driven intergovernmental network established in 1985 with three basic objectives:

- to play the role of a leading facilitator of innovation, providing a proven platform for international R&D&I cooperation,
- to promote and support market-oriented international R&D&I project generation, and

- to facilitate access to finance for companies involved in its projects.

With these objectives, EUREKA aims at increasing the competitiveness and productivity of European industry and the member States economies by increasing the collaboration among industries and research centres in advanced technologies, thus improving the position of the European industry at international level.

EUREKA currently counts 41 full members, including the European Union, 1 partner country: South Korea and 4 associated countries: Argentina, Canada, Chile and South Africa. Albania and Bosnia and Herzegovina are National Information Points.

Countries participating in EUREKA issue multilateral Calls for EUREKA projects. These calls are announced at: <https://www.eurekanetwork.org/calls-for-projects>. The profile of entities looking for partners to propose an EUREKA project are announced at: <https://www.eurekanetwork.org/companies-looking-partners>, while new project proposal can be defined and submitted at: <https://www.eurekanetwork.org/propose-project-idea>

National Project Coordinators (NPC) act at operational level, running the National EUREKA Offices. They are the direct contact for project participants. NPCs facilitate the setting-up and running of a project and are responsible for project generation, national and international support and follow-up.

The EUREKA Initiative is not a direct funding instrument because EUREKA projects are funded in a decentralised manner from national sources and depending on national rules. Project participants should contact their EUREKA National Project Coordinator to receive information regarding funding availability and conditions in their respective countries. So, those projects approved by EUREKA get a quality label that will facilitate the access to national funding programs collaborating with EUREKA.

In over 30 years EUREKA initiative has mobilized more than 37 billion Euro for more than 6000 projects (1 billion Euro/year on average). CSP/STE –related projects can be supported by EUREKA because it supports projects in any technology field.

EUREKA has several ways to bring innovation to market: a) EUROSTARS Projects, b) EUREKA Network Projects, c) EUREKA Umbrellas, and d) EUREKA Clusters. These options are explained in sections 2.2.1, 2.2.2 and 2.2.3.

2.2.1 EUROSTARS Program

The EUROSTARS program is supported by 36 Eurostars Participating States and Partner Countries. These countries are, of course, also participants of EUREKA. Each country has a National Project Coordinator (NPC) who can provide guidance through the application process and information on the national funding rules and procedures.

EUROSTARS is a European Joint Programme specially dedicated to the R&D performed by European SMEs, and co-funded by the European Union and the participating

countries. Eurostars aims to stimulate these SMEs to lead international collaborative research and innovation projects by easing access to support and funding. It is fine-tuned to focus on the needs of SMEs, and specifically targets the development of new products, processes and services and the access to transnational and international markets.

This program has a central submission and evaluation process, and synchronized national funding in all the participating countries. Eurostars projects are collaborative, meaning they must involve at least two participants (legal entities) from two different Eurostars participating countries. In addition, the main participant must be a research-performing SME from one of these countries.

The role of the SME participants in the project should be significant. At least 50% of the project's core activity should be carried out by SMEs. The consortium should be well balanced, which means that no participant or country can have more than 75% of the total project costs. A Eurostars project should be market-driven: it must have a maximum duration of three years, and within two years after project completion, the product of the research should be ready commercialization. The exception to this rule applies to biomedical or medical projects, where clinical trials must be started within two years of project completion.

Further information on EUROSTARS Program is available at the WEB site: <https://www.eurekanetwork.org/eureka-eurostars>

Since EUROSTARS is a European Joint Programme especially dedicated to the R&D performed by European SMEs and it is clearly market-driven with the commitment to have the products in the market within 2 years after project completion, in principle it does not seem to be a very appealing funding option for the IP R&D activities. However, it should be kept in mind.

2.2.2 EUREKA NETWORK and Umbrellas

EUREKA Network Projects are market-driven innovative R&D projects, devised and run by an international consortium. The consortium can take many forms, composed of small, medium or large companies; universities or research centres. Partners based in a non-Eureka country can join a EUREKA NETWORK, but only if two EUREKA countries are already involved and the partners from non-Eureka countries declare their ability to self-fund their activities.

Participants in Network Projects undertake the development of an innovation: a product, process or service for civilian purpose. The flexible 'bottom-up' nature of EUREKA Network Projects continues to differentiate EUREKA from others. 'Bottom up' means that the project consortium defines the technology to be developed and how the project comes together as a whole. The consortium also agrees upon the intellectual property rights.

EUREKA Umbrellas are thematic networks within the EUREKA framework which focus on a specific technology area or business sector. The main goal of an umbrella is to facilitate the generation of EUREKA projects in its own target area. Umbrella activities are coordinated and implemented by a working group consisting of EUREKA representatives and industrial experts.

Further information on EUREKA Networks and Umbrellas is available at the Websites: <https://www.eurekanetwork.org/network-projects>

and

<https://www.eurekanetwork.org/content/what-eureka-umbrella> respectively.

Due to the state-of-the-art of the CSP/STE technologies and the nature of the R&D activities defined in the IP, together with the fact that there is already a CSP Joint Program of EERA and there is a good link among the stakeholders in this sector, an EUREKA Network or Umbrella does not seem a very attractive option to get the funding required for IP development.

2.2.3 EUREKA Clusters

Initiated by European industry, EUREKA Clusters are long-term and strategically significant initiatives that develop technologies of key importance for European competitiveness. Addressing the needs of both large companies and SMEs, they are the engine for industrial innovation and economic growth. CSP/STE is eligible for EUREKA Clusters.

Clusters catalyze the generation of innovative, industry-driven, near to the market and pre-competitive R&D projects in their respective domains. Through their industrial representation, EUREKA Clusters have a prominent and active role to play in bringing innovation to the market.

The EUREKA Cluster instrument reflects synergies where European industry's research and collaboration interests, innovation capacity - and national funding opportunities meet. EUREKA Cluster projects are completed and evaluated following each Cluster's internal procedures. More information about EUREKA Clusters is given in [3].

Due to its long-term strategy, implementation of a CSP/STE EUREKA Cluster could help coordinate R&D actions and strategy if the main European industrial stakeholders agree on that

2.3 European Joint Programm Cofund (EJP Cofund)

European Joint Program (EJP) Cofund under Horizon 2020 is a co-fund action designed to support coordinated national research and innovation programs. The EJP Cofund aims at attracting and pooling a critical mass of national resources on objectives and challenges of Horizon 2020 and at achieving significant economies of scales by adding related Horizon 2020 resources to a joint effort.

EJP Cofund allows implementation of a joint program of activities, ranging from research and innovation projects to coordination and networking activities, as well as training activities, demonstration and dissemination activities, support to third parties etc. The EJP Cofund supports direct consortium activities and/or (single or multiple) calls for proposals for financial support to third parties.

The minimum number of participants in a EJP is five independent legal entities from different Member States or associated countries. Participating entities are typically research funders or governmental research organisations participating on the basis of their institutional funding. Their participation has to be mandated by the "owner" of the program, the national/regional authorities in charge.

In addition to the minimum conditions, other legal entities may participate if justified by the nature of the action, in particular entities created to coordinate or integrate transnational research efforts, grouping funding from both national and private sources. The Horizon 2020 contribution will be limited to 70% of the total eligible costs of the action, unless otherwise specified in the call conditions, in line with the objective of achieving a balanced funding of the EJP Cofund from Horizon 2020 and participating public programmes.

The EJP Cofund will identify the objectives, work and the schedules of activities to be carried out. It will be necessary to provide a detailed description of these activities for the initial and each successive twelve-month periods of the EJP Cofund. The duration of EJP Cofund actions is fixed to 5 years with 12-month reporting periods to evaluate the level of accomplishment of the work plan proposed for every year.

At present there are six EJP Cofund, and none of them is related to CSP/STE:

- EUROFUSION (<https://www.euro-fusion.org/>)
- CONCERT (<https://www.concert-h2020.eu/en/>)
- HBM4EU (<https://www.hbm4eu.eu/>)
- One Health EJP (<https://onehealthjep.eu/>)
- Rare Disease EJP Cofund (<https://www.ejprarediseases.org/>)
- Soil (launched in February 2020, official WEB page not yet available)

At present, it is not very clear the suitability of EJP Cofund to get funding for CSP/STE R&D activities because there is no EJP for CSP/STE at present, and participating entities are so far typically research funders or governmental research organisations participating on the basis of their institutional funding, while the achievement of the targets defined in the IP requires a significant involvement of the industry. However, the possibility of implementing a EJP for CSP/STE will be analyzed with more detail in the HORIZON-STE document D3.3 “Report on options for future European Joint Programme for the CSP/STE sector”, to be delivered in 2021.

2.4 Horizon-2020

Traditionally, the EU Framework Programmes have been the most popular funding source for international R&D projects developed by partners from EU Member States and/or Associated Countries. Horizon 2020 is the current Framework Program. With an EU budget of about 80 Billion Euro Horizon-2020 (hereinafter referred to as “H2020”) has covered the period 2014-2020, with the main objective of securing Europe's global competitiveness.

H2020 funding for R&D activities is awarded by means of competitive Calls, which topics are jointly decided by the representatives of the Member States in the several working groups and included in multi-annual work programmes defining the Calls to be launched during its duration, the topics, the objectives and the eligibility criteria. Unfortunately, a low number of Calls directly related to CSP/STE have been launched in the last years.

H2020 is based on three main pillars:

- Excellent Science
- Industrial Leadership
- Societal Challenges

2.4.1 *Excellent Science*

Activities under this H2020 pillar aim to reinforce and extend the excellence of the European Union's science base and to consolidate the European Research Area (ERA) in order to make the European Union's research and innovation system more competitive on a global scale. The Excellent Science pillar has main four specific objectives, two of which can be used to get funds for the development of the IP:

- Future and emerging technologies: it supports collaborative research in order to extend Europe's capacity for advanced and paradigm-changing innovation. They

will foster scientific collaboration across disciplines on radically new, high-risk ideas and accelerate development of the most promising emerging areas of science and technology as well as the Union-wide structuring of the corresponding scientific communities.

- Research infrastructure (including e-infrastructures): it is used to develop European research infrastructure for 2020 and beyond, foster their innovation potential and human capital, and complement this with the related Union policy and international cooperation. Although this section of H2020 does not provide fund directly for R&D activities, the improvement and installation of new research infrastructure for CSP/STE will somehow help develop R&D activities defined in the IP. Preparation and implementation of EU-SOLARIS (www.eusolaris.eu) is taking place within this program devoted to research infrastructures.

2.4.2 Industrial Leadership

This H2020 pillar aims to speed up development of the technologies and innovations that will underpin tomorrow's businesses and help innovative European SMEs to grow into world-leading companies.

This pillar is not considered suitable for funding R&D activities related to the IP because its goal is to make Europe a more attractive location to invest in research and innovation (including eco-innovation), by promoting activities where businesses set the agenda. It will provide major investment in key industrial technologies, maximise the growth potential of European companies by providing them with adequate levels of finance and help innovative SMEs to grow into world-leading companies.

2.4.3 Societal Challenges

This pillar was designed as a challenge-based approach to bring together resources and knowledge across different fields, technologies and disciplines, including social sciences and the humanities. This covers activities from research to market with a new focus on innovation-related activities, such as piloting, demonstration, test-beds, and support for public procurement and market uptake. It will include establishing links with the activities of the European Innovation Partnerships (EIP).

This pillar is a very suitable funding source for the activities of the IP, because its funding is focused, among others, on the following two challenges:

- Secure, clean and efficient energy;
- Climate action, environment, resource efficiency and raw materials;

Almost 6 billion Euro have been devoted in H2020 to "Sustainable Energy", which is one of the topics included in "Secure, clean and efficient energy".

2.5 Horizon Europe

Horizon Europe is the next research and innovation EU Framework Programme, which will cover the period 2021 – 2027 and it will be funded with 100 billion Euro (approx.). It will have three basic objectives: a) tackling climate change, b) helping to achieve sustainable development goals, and c) boosting the European Union's competitiveness and growth.

Horizon Europe funding for R&D activities will be awarded by means of competitive Calls, which topics must be jointly decided by the representatives of the Member States in the several working groups. An increased effort has been done to increase the use of simplified forms of grants where appropriate, while keeping the attractive H2020 funding model, including up to 100% funding rate of direct costs and a single set of rules principle.

The Strategic Plan for implementing Horizon Europe will prepare the content in the work programmes and Calls for proposals for the first four years. A balance between research and innovation, as well as a clear definition of plans for dissemination and exploitation of results will be basic principles inspiring the work programs and eligibility criteria. Early involvement and extensive exchanges with Member States and consultations with stakeholders and public at large are foreseen for the preparation of the Strategic Plan for the period 2021-2024 and the Work Programme for 2021-2022.

Similarly to H2020, Horizon Europe will be based on three pillars:

- Excellent Science;
- Global Challenges and European Industrial Competitiveness;
- Innovative Europe

Within the pillar Excellent Science, only the subject "*Research Infrastructures*" has some direct connection with CSP/STE via EU-SOLARIS, the European distributed e-infrastructure for CSP/STE, because the R&D infrastructures coordinated by EU-SOLARIS will be very valuable for the development of the innovations and improvements defined in the IP.

The pillar "Global Challenges and European Industrial Competitiveness" is where the main EU funding for the R&D activities of the IP will probably be allocated because it includes the subjects "*Climate, Energy and Mobility*" and "*Food, Bioeconomy, Natural Resources, Agriculture & Environment*".

Some funding useful for CSP/STE activities could also be allocated within the pillar "Innovative Europe". In any case, the EU Member States interested in CSP/STE must

request the inclusion of topics related to this technology in the work programmes that will be elaborated with the Calls. The national representatives of these Member States in the working groups elaborating the working programs, in collaboration with the stakeholders, must request the inclusion of specific calls for CSP/STE, as in H2020.

The ERANET cofounding scheme existing in H2020 is likely to be replaced in Horizon Europe by another cofounding scheme called “*European Partnerships*” which will foster joint actions between Horizon Europe EU program and national funding programmes on common R&I priorities.

3 NATIONAL FUNDING SOURCES FOR R&I ACTIVITIES

Funding sources suitable for CSP/STE R&D projects and available at national level in those European Countries having an interest in CSP/STE technologies and their applications are included in this section, grouped by country. The information given in this section shows that there is a variety of funding programs at national level providing financial support to both industrial partners and R&D centres. Some national funding programs are only available for the development of national projects, while others are also supporting the participation of national partners in international projects.

3.1 Belgium (Wallonia)

Belgium does not have a specific budget for CSP/STE R&D activities. However there is a general budget for all kind of R&D projects that can be used to grant CSP/STE projects. These funds are available continuously. The programme owner and manager is SPW Recherche.

The eligibility criteria are similar to those used to evaluate the quality of project proposals in general: scientific quality technological quality, financial criteria and valorisation perspectives.

Concerning the limit of the maximum amount of funds, there is no legal limit. The limit is the amount of the general budget, compared to the valorisation perspectives. Generally speaking, there are no, or very few, projects above 5 Mio€ of public funding.

There is an “open desk” for industrial entities. R&D centres, alone or in partnership with enterprises, must submit projects to periodic calls. The duration of the project proposed must be in line with the scope of the project. Generally speaking, the project duration is rarely more than 4 years.

The funds available may be used to support national stakeholders when participating in international projects. It is even encouraged with a higher level of subsidy granted to international projects.

Further information about the R&D funds managed by SPW Recherche is available at: <https://recherche-technologie.wallonie.be/>

3.2 Cyprus

The funding source in Cyprus for R&D projects is the Research and Innovation Foundation (RIF), which targets research, technological development and innovation

through the Work Programme called RESTART 2016-2020. The latest funding initiative is estimated to have a budget of €99,140,000 which are or will be assigned to various beneficiaries i.e. research and academic institutions, enterprises, organization and any other interested entity that meet the requirement of each Program.

RIF does not allocate specific amount to CSP/STE technologies, but funds can be channelled through its energy-related projects. The three pillars that are applied to RIF programmes, (Smart Growth, Sustainable RTDI Systems and Transformation of RTDI Systems) can accommodate CSP/STE projects. Even if there is specific priority at the first pillar regarding energy, R&D can be accommodated at other pillar as well. Energy is a dominant priority sector in CYPRUS, since it attracts a large percentage of the aforementioned grants.

RIF also provides information to research and academic institutes about EU funding opportunities for research. Also, there are different funds for participation in international projects to support national stakeholders. Some of the grants are based on the first-come, first-serve basis, and target the upgrade ability to carry out international level research.

RIF also participates in all Joint Transnational Calls announced by the network acting as the national funding mechanism, channelling funds to Cypriot beneficiaries. The programme that has specific reference to CSP/STE, is SOLAR ERA-NET. Cyprus, via RIF participates in SOLAR ERA-NET, a network bringing together 16 funding agencies in the field of electricity generation from solar energy, in particular PV and CST technologies. It is a two-stage call, with a publication date two months prior the deadline. The call budget is €400k and the maximum grant per project is €200k. The duration of the proposals should be less than 36 months. The total budget provided for SOLAR ERA-NET call for the whole Europe was € 22 M, from which only €400 k for Cyprus. The call is usually open every year.

3.3 France

There are several funding sources in France that could be used for CSP/STE R&D projects. However they are not specific for CSP/STE, but generic funding programs covering many different topics and R&D fields. The main French public entities managing these national funds for R&D are (see sections 3.3.1, 3.3.2 and 3.3.3 for further information):

- ANR (Association Nationale de la Recherche)
- ADEME (L'Agence de la Transition Écologique)
- PIA-BPI (Banque Publique d'Investissements)

Additionally there are regional funds that could be used for CSP/STE R&D projects. Since there are 19 Regions in France, it is out of the scope of this document to explain in detail all the R&D regional funding programs existing in France. A good example of these regional funds for national projects is that available in the yearly call “*Recherche et Société(s) – R&D*” issued in the Region Occitanie (<https://www.laregion.fr/>), which gives a maximum 70-80% of the total project cost (and always less than the marginal cost). Both Industrial and academics can apply to this funding program, for a project duration between 12 and 36 months. This fund is aimed at projects with medium TRL and each industrial partner must provide at least 5% of the project cost. Since Energy transition is one of the priorities of the Occitanie region, CSP/STE projects are eligible for this funding program.

The Centre National de la Recherche Scientifique (CNRS, www.cnrs.fr) also provides some funding in a yearly call for projects proposed by research centres, with a maximum amount of 20 k€ per project and a minimum duration of 12 months (<https://www.celluleenergie.cnrs.fr/2020-Appel-a-Projets-Exploratoires-de-la-Cellule-Energie-du-CNRS>). These funds are aimed at projects of Low TRL and led by CNRS joint units (CSP projects already funded).

3.3.1 Funding programs of ANR (Agence Nationale de la Recherche)

The Association Nationale de la Recherche (<https://anr.fr/>) has several funding programs that could be used for CSP/STE R&D.

3.3.1.1 ANR- Appel à Projets Générique

ANR issues a yearly call (*ANR- Appel à Projets Générique*) that is not focused on a specific topic and it is suitable for R&D projects with a minimum duration of 24 months. The maximum funding for a single project is not defined a priori, because it depends on the annual budget of the Agency and on the type of project, number of partners, etc. It rarely exceeds 1 M€ for a single project involving 3-5 partners. This funding program covers 4 project categories: PRC (Projets de Recherche Collaborative), PRCE (Projets de Recherche Collaborative Entreprises), PRCI (Projets de Recherche Collaborative Internationale) and JCJC (Jeunes chercheuses et jeunes chercheurs).

Collaborative projects (PRC, PRCI) and projects for young scientists (JCJC) involve only University and Research centers, while PRCE projects involve both academics and industry. The minimum project duration is 24 months and the submission process is developed in two steps.

Concerning the geographical extension of the projects, PRC, PRCE and JCJC support National projects, while funding for projects PRCI support International projects between France and a specific country (depending on a previous agreement between ANR and a foreign funding Agency).

Requested TRL is low to medium and all topics are a priori accepted. A few CSP/CST projects are supported each year and CSP/STE is usually among the keywords mentioned in the calls.

3.3.1.2 Call “Equipex+”

ANR also manages a funding program specially aimed at implementing R&D facilities that may be used for both national and international cooperation projects. The maximum funding for a single project is 20 M€, with a maximum duration of 8 years.

Calls for this funding program are not issued regularly (3 major calls over the past ten years). It is specially designed for Academics/R&D (Industry can only participate but not lead).

Project TRL must be low to medium and the funding awarded can be devoted to large equipment only, but a priori any kind of equipment is eligible (including for CST technologies).

3.3.2 Funding programs of ADEME (L'Agence de la Transition Écologique)

ADEME (<https://www.ademe.fr>) manages two main funding programs that can provide financial support to R&D CSP/STE projects. These two programs are explained in sections 3.3.2.1 and 3.3.2.2. For further information see:

<https://www.ademe.fr/recherche-innovation/programme-dinvestissements-davenir/presentation-pia-3>

3.3.2.1 PIA-third phase (Investments for the Future)

Related to the French Program PIA (Investment for the Future)-Third phase ADEME manages two different calls:

3.3.2.1.1 Concours d'innovation i-Nov

These calls are issued twice in a year with a maximum funding (grants and refundable advances) of 500 k€ per project and they are devoted to industrial partners only (SME or start-up) proposing national projects with a minimum duration of 12 months. TRL must be medium to high and renewable energies are usually within the eligible topics.

3.3.2.1.2 DTIGA Systèmes énergétiques - Villes et Territoires durables

Although there is not a pre-defined maximum funding for a single project, a minimum budget of 2M€ is required to the project. Both Industry and Academics are allowed to participate with different funding rules. Although these calls are not periodic, they are

usually open during a wide time frame. Projects submitted must be at national level and the requested TRL is usually medium, preferably demonstration projects.

3.3.2.2 ADEME Funding Program for research Projects

Additionally to the PIA-third phase funds managed by ADEME, this French Agency also issues other calls for research projects allowing CSP/STE activities. Several calls are issued each year for thematic R&D projects. A good example is the call: *APRED - Energie Durable : production, gestion et utilisation efficacities*, which will be open from October to December 2020.

The maximum funding per project is usually around 250 k€ and 70% max of the total cost. Both Industries and Academics (not academics alone) are eligible partners. Projects submitted must have a medium TRL

3.3.3 Funding Programs of the PIA-BPI (Banque Publique d'Investissements) for R&D projects

The French Banque Publique d'Investissements manages two different funding programs for R&D projects where a leading company must conduct its research in France. One Foreign company may participate without getting funding from these programs:

- Aide aux projets de recherche et développement structurants pour la compétitivité (PSPC)
- Aide aux projets de recherche et développement structurants pour la compétitivité (PSPC-Région)

Both programs have yearly calls and are for both industrial partners and public research centers. However, the project must be led by an industrial partner and the TRL must be medium to high. The minimum number of partners is 3 (including at least 2 industrial and at least one small or medium size company + 1 Research center).

The main differences between these two programs are:

- the PSPC program provides a funding support of up to 40-60% of the total project cost, which must be between 4 and 50 M€, or 100% of marginal costs for R&D centres
- the PSPC-Région program provides a funding support of up to 30-50% of the total project cost, which must be between 1 and 4 M€, or 100% of marginal costs for R&D centres
- The projects supported by the PSPC-Région program are co-funded by regional authorities. Projects labeled by a competitiveness cluster may benefit from an enhanced support)

Further information is available at the link:

<https://www.bpifrance.fr/A-la-une/Appels-a-projets-concours/Appel-a-projets-Projets-Structurants-Pour-la-Competitivite-PSPC-Regions-n-1-46227>

3.4 Greece

There are no *a priori* special national funds dedicated to CSP/STE in Greece. Funding to developmental STE-related projects comes from the same pool as all other R&D areas. This is rather usual in most of the countries analyzed.

Current R&D funds are part of the National Strategic Reference Framework (NSRF) 2014-2020 (extension until 2022 possible and will most likely happen). The total budget for all R&D activities for the period in question is about 956 M€, while the total budget for NSRF is about 25,565 M€. The NSRF budget is a mix of EU and national funds at a ratio of approximately 80/20. Despite the high rate of participation of EU funds, the whole package categorises (with a few exceptions) as “*funded by national sources*”.

The main actions of the R&D funds package, in which also STE-relevant activities are in-principle included but not in the form of designed STE-dedicated actions, are briefly described in the following sections. National R&D activities in Greece are funded by such multiyear NSRF programmes, which are also the main developmental tools for a variety of other than R&D sectors. R&D funds are managed by the General Secretariat for Research & Technology (Acronym: GSRT, website: www.gsrt.gr) of the Ministry of Development and Investments.

Concerning periodicity of the Calls, the funding sources in Greece are relatively unstable with respect to the periodicity of the Calls of most actions. Typically in the beginning of each NSRF period, there is a delay of 1-2 up to several years before most of the actions are initiated. In the last NSRF, after the delayed activation for its R&D part, a relatively good periodicity was observed but in any case the situation in Greece in terms of this aspect is quite far compared to the exemplary stability of H2020 or other past EC R&D Framework Programmes.

Some funding programs in Greece support national stakeholders when participating in international projects. This is the case for the ERANET and the Transnational (bilateral) R&D Collaboration funds, which both have a total budget of 75M€ for the current period.

3.4.1 “Research-Create-Innovate” Action

This R&D action provides support not only to collaborative R&D projects but also to activities related to support of R&D in SMEs and their access to innovation data and

activities. Two Calls with a total budget of 610 M€ were issued until 2029 (1st in 2017 and 2nd in 2019). Not expected to have another Call within this NSRF.

There have been two specific call topics for STE in the Energy sector: one involving use of solar thermal heat in industrial processes and one for development of innovative components for STE concepts. Eligible entities for funding are R&D organizations and companies/enterprises of all forms having an active department in Greece.

The maximum financial support granted to a single project was 1 M€, and the project duration was up to 36 months.

3.4.2 Special Action for innovation in aquaculture, industrial materials & culture

This funding program is mainly devoted to collaborative projects. Although there is no specific topic for CSP/STE, a properly formulated STE concept involving industrial materials can be eligible for this program, which has a total budget of 40 M€.

R&D organizations and companies/enterprises of all forms having an active department in Greece are eligible for this funding action. The maximum financial support granted to a single project was 0.6 M€, and the project duration allowed is up to 36 months.

3.4.3 Program for Transnational (bilateral) R&D Collaboration

This funding action is focused on collaborative R&D projects under a Greece-third country (typically but not limited to China, Germany, Israel and France), thus promoting the collaboration of Greek entities with partners from these countries. Although there is no specific call topic for CSP/STE usually “Energy” is included and thus a properly formulated STE concept can be eligible for this funding action, which has a total budget of 50 M€.

R&D organizations and Greek companies/enterprises of all forms are eligible for this funding action. The maximum financial support granted to a single project is usually 200-300 k€ per Greek partner of the project (in the Greece-France scheme it is usually much smaller), and the project duration may be up to 36 months.

3.4.4 ERANET or ERANET-relevant actions

In Greece there is also a funding action to provide financial support to international collaborative projects under the ERANET modality, thus allowing the participation of Greek partners in most topics of CSP-ERANET and SOLAR-ERANET.

The total budget allocated to this funding action is 25 M€. R&D organizations and Greek companies/enterprises of all forms are eligible for this funding action. The maximum

financial support granted to a single project is usually 200-250 k€ per Greek partner of the project, and the project duration is up to 36 months.

3.4.5 Funding Program for Clusters

It is devoted to collaborative clusters involving R&D organisations & companies for the developments of innovative products in their targeted sectors. There is a Cluster, called “Chorus Cluster” that has a part of activities allocated to CSP/STE. The contact person for this Cluster is: Dr. Athanasios Konstandopoulos (agk@cperi.certh.gr) (for further information see also website: <http://www.choruscluster.org/>).

The total budget allocated to for this funding action is 24 M€. R&D organizations and Greek enterprises of all forms are eligible for this funding action. The maximum financial support granted to a single project is 2 M€ (indicatively), and the typical incubation/funding period is normally 2-3 years.

3.4.6 Funding program for Competence Centers

This program supports laboratory infrastructures to provide specialized services and knowhow related to cutting edge technology sectors and with emphasis on collaboration with enterprises. This funding action is not really intended for R&D activities themselves, but to have infrastructures for R&D activities. So, acquisition of infrastructures for CSP/STE is supposed to be within the scope of this funding program to prepare competence centers in Greece covering this field.

The total budget allocated to this funding action is 30 M€ and the eligible entities are Greek R&D organizations.

3.4.7 Funding Program for National Infrastructures

This funding program is also more related to the implementation of infrastructures that would contribute to the R&D effort required to develop the Implementation Plan, than the R&D activities themselves. It provides support to infrastructures that are in line with Smart Specialisation Strategy to promote their creation and upgrade for the provision of open access to interested users at the national level. Promotion of networking with European & International relevant infrastructures is also supported.

There is one Infrastructure, called “PROMETHEUS” that has already been included in the relevant national roadmap and has a significant part allocated to STE. The contact person for this is: Dr. Athanasios Konstandopoulos (agk@cperi.certh.gr).

The total budget allocated to this funding action is 91 M€ and the eligible entities are Greek R&D organizations. Up to 2-3 M€ can be awarded to a single R&D organization and the duration is typically less than 1 year.

In parallel with this funding program there is also an Action for Regional Excellence, which provides support of R&D infrastructures in underdeveloped regions of Greece. This action is provided with a total amount of 54 M€ for Greek R&D organizations. However, this funding action is not likely to have a direct connection with CSP/STE.

3.4.8 Strategic development of R&D organisations

This funding program supports the strategic targets of R&D organizations to promote development & excellence. This support included basic, applied research & experimental development activities. Since there is freedom to R&D organizations to formulate their proposals, they can include CSP/STE technology development in the workplan providing that this is included in their business plans.

The total budget allocated to this funding action is 32 M€ and the eligible entities are Greek R&D organizations. There is no official limitation for the amount given to a single entity. Projects are normally subjected to budget cut considering the number of proposals submitted. Although there is no official limitation concerning the duration of the grants, the duration is typically defined by the NSRF duration.

3.5 Germany

Additionally to the funding given in Germany for R&D activities developed by national entities using the ERANET Cofund and CSP ERANET schemes, there are three national funding sources in Germany for research activities related to CSP/STE. These three funding sources are explained in sections 3.5.1, 3.5.2 and 3.5.3.

The main responsible entity in Germany to fund CSP/STE research and development is BMWi (Federal Ministry for Economic Affairs and Energy). The program is coordinated by the Project Management Jülich (PtJ) (<https://www.ptj.de/en/project-funding/applied-energy-research>), the main contact persons there are:

- Mr. Tarik Schwarzer. Tel.: +49 02461 61-9157. E-mail: t.schwarzer@fz-juelich.de
- Dr Sabine Semke. Tel.: +49 02461 61-2738. E-mail: s.semke@fz-juelich.de
- Dr Frank Stubenrauch. Tel.: +49 02461 61-4744. E-mail: f.stubenrauch@fz-juelich.de
- Markus Kratz. Tel.: +49 02461 61-8644. E-mail: m.kratz@fz-juelich.de

3.5.1 7th Energy Research Program of the BMWi (Federal Ministry for Economic Affairs and Energy)

The Federal Government promotes research and development in the field of forward-looking energy technologies. The Federal Ministry for Economic Affairs and Energy (BMWi) is therefore using the 7th Energy Research Programme to help companies and research establishments to research and develop technologies for the energy supply of tomorrow. CSP/STE activities are eligible for these funds.

The 7th Energy Research Programs define the current principles and priorities for Federal Government funding for innovative energy technology. In this context, assistance is aimed primarily at technologies that meet the requirements of the energy transition. As regards the thematic priorities of energy efficiency and renewable energies, the focus is on funding measures for technologies in the fields of wind and solar power generation, a higher proportion of renewables in the heating sector through biomass and geothermal energy, energy-optimised buildings and neighbourhoods, and energy efficiency in the industrial sector. Special emphasis is placed on issues relating to the integration of new technologies into the energy system, the development of the grids, energy storage, and sector coupling.

For more information on BMWi's 7th Energy Research Programs, see:

https://www.bmwi.de/Redaktion/EN/Publikationen/Energie/7th-energy-research-programme-of-the-federal-government.pdf?__blob=publicationFile&v=5

3.5.2 International Climate Initiative of the Federal Minister for the Environment, Nature Conservation, and Nuclear Safety (BMU)

The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety developed the program International Climate Initiative (IKI) which finances climate and biodiversity projects in developing and newly industrialising countries, as well as in countries in transition. The Initiative places clear emphasis on climate change mitigation, adaption to the impacts of climate change and the protection of biological diversity. In the mitigation context, IKI supports partner countries in the development and implementation of innovative instruments to reduce their greenhouse gas emissions. As such it may be principally also considered as suited for funding activities related to the IP although not explicitly mentioned in the program. The goal is a transformation towards a sustainable and low-emission economy and supply structure. The conceptual focus is on policy advice, capacity building and suitable training measures as well as technology cooperation. The IKI projects are focusing on the increasingly important regional level in their implementation. By the end of 2017, more than 300 projects had been approved in the area of mitigation. Funded projects can be found under <https://www.international-climate-initiative.com/en/projects/>

3.5.3 Helmholtz Program-oriented Funding

In the case of the Helmholtz Association, funding for research is organized into programs. The Association designs these programs in accordance with the strategic guidelines formulated by the funding partners in dialog with the Helmholtz Association. Program-oriented funding (PoF) seeks to establish a balance between cooperation and competition: Structuring the research according to research programs enables researchers to pool their expertise across centers and disciplines and enhances their cooperation. At the same time, the programs compete for funding. In addition to these research and development activities, Helmholtz provides large-scale scientific equipment and large platforms for scientific communities of users that typically include members from around the world. For more information, see:

https://www.helmholtz.de/fileadmin/user_upload/01_forschung/pof/EN_Factsheet_PoF_as_of_180914.pdf

3.6 Italy

Italy considers the Strategic Energy Technology Plan (SET Plan) to be a vital tool for tackling new challenges; in the next few years, the SET Plan will constitute the reference point for EU, national, regional and private investments in energy research and innovation. In Italy, the Ministry of Economic Development and the Ministry of University and Research have been tasked with coordinating the SET Plan.

A series of policies and measures have been put in place to achieve the objectives. The most significant regarding CSP related activities consist of the following funds explained in sections 3.6.1 and 3.6.2. Additional measures, for the industrial sector, that could play a significant part in achieving the SET Plan objectives are described in sections 3.6.3, 3.6.4 and 3.6.5. Finally, co-founded (European-national) research and innovation activities are guaranteed through the following instruments:

3.6.1 Electric system research fund

This fund is financed through a levy placed on electricity tariffs, and having the principal objective of supporting both research of general interest, as part of specific programme agreements, and industrial research. This fund supports research projects of general interest to the Italian electricity system, focusing on applied research and a system-oriented approach. It is financed through a specific component of the end-user electricity price, which is determined annually by the Italian Regulatory Authority (ARERA), and currently amounts to about EUR 0.015 per kilowatt hour. A new three-year

plan for 2019-2021 (available resources equal to €210 million) is currently being drawn up, which will set new research objectives in line with the SET Plan and the involvement in Mission Innovation. The research projects related to CSP are implemented under a Programme Agreement between the Italian Ministry for Economic Development and ENEA, with the contributions of the main national Universities. Available resources for the 2019-2021 three-year period equal to €2 million.

3.6.2 Energy technology cluster

In August 2017, the Ministry of University and Research (by way of Directorial Decree No 1853 of 26 July 2017) approved the setting-up of public-private research partnerships. The initiative is coordinated by ENEA, and has so far attracted more than 90 public and private entities. It follows the priority European, national and regional technological trajectories, which are characterised by differing technology readiness levels, and will play a part in reaching the research planning targets set out in the SET Plan, the National Energy Strategy, the National Research Programme, the Smart Specialisation Strategy - S3, and the Industry 4.0 initiatives, and through the involvement in Mission Innovation. Two pilot projects are currently running and one of them is related to CSP: NeMESi (Nuovo Mix Energetico Sostenibile - New Sustainable Energy Mix), led by ENI S.p.A. with a budget of €1.2 million.

3.6.3 Tax credit

This instrument, which forms part of National Industrial Plan 4.0, is for the more immediate use by companies, and is aimed at stimulating private investments in R&D in order to innovate processes and products and guarantee the future competitiveness of the companies not only in the energy sector. It consists of a 50 % tax credit for incremental Research and Development costs, which may be granted up to a maximum annual amount of €20 million per recipient and is calculated on a fixed basis stemming from the average Research and Development costs for the 2012-2014 period. The measure is applicable to Research and Development costs that will be incurred during the 2017-2020 period. The instrument has a capacity of €1.2 billion per year up to 2020, and will also draw on as much additional private funding resources, giving a total of €8-9 billion for the 2017-2020 period. As has been mentioned, the credit is not specifically calibrated to the energy sector, but on the basis of the trends observed, it is estimated that the incremental energy R&D costs will be around €440-500 million.

3.6.4 Proceeds from CO₂ auctions

The funds available from CO₂ auctions (Legislative Decree No 30/2013) will cover experimental development, in particular in order to ensure that demonstration projects (first-of-a-kind) are supported, with the results being passed on to the production system.

3.6.5 ERA-NET cofund

ERA-NET Cofund under Horizon 2020 is designed to support Public-Public Partnerships, including Joint Programming Initiatives between Member States. It is implemented by using "programme co-fund actions". The main and compulsory activity of the ERA-NET Cofund under Horizon 2020 is the implementation of the co-funded joint call for proposals that leads to the funding of trans-national research and/or innovation projects. CSP ERANET constitutes a public-public partnership gathering 11 representatives from Member States, Associated Countries and Regions which have committed 13-million-euro public fund for launching joint call of proposals to finance transnational research actions. During the 5 years of CSP ERANET the consortium intends to pool together financial resources from multiple countries, the Commission and the private sector, in order to invest more than 29 million euro to finance large-scale projects implementing medium/high TRL research, which will accelerate the time to commercial deployment of affordable, cost-effective and resource-efficient CSP technology solutions. This partnership will finance 8 topics which were selected among the 12 R&I topics defined in the CSP Implementation Plan.

3.7 Portugal

Currently, the main funding sources in Portugal for CSP/STE R&D activities are the Fundação para a Ciência e Tecnologia (FCT) and the Portugal 2020 programme (the Partnership Agreement between Portugal and the European Commission for 2014-2020). The characteristics of these two funding sources are summarized in sections 3.7.1 and 3.7.2. There are other funding sources that may, on occasion, be available for CSP/STE projects, such as the *Innovation Support Fund for Renewable Energies and Energy Efficiency*, *Fundo de Apoio à Inovação*, operated by ADENE, the national Agency for Energy.

3.7.1 Fundação para a Ciência e Tecnologia (FCT)

FCT's general calls for scientific research and technological development projects, which maximum amount of funding available for each project is 250k€. Both R&D centres and industrial entities can access these funds. However, industrial entities can only access the funds within projects coordinated by R&D centres. The maximum duration of the projects funded by FCT is limited to 36 months and these funds are available only for national projects.

Although during the last decade this funding program was managed through biennial calls, the periodicity foreseen for the next few years is annual.

Further information about this funding program is available at: <https://www.fct.pt/>

3.7.2 Portugal 2020 programme

Portugal 2020 calls for R&D and innovation projects. The maximum amount of funding available for each project is Call dependent. These funds are usually available for both R&D and industrial entities, however there are Call specific limitations that may restrict the ability of both type of entities to apply to the same call (e.g., some calls are only for industrial entities, others require both industry and R&D centres participation or project coordination by industrial entities, etc.). The Portugal 2020 calls are structured within Operational Programmes (OP). The relevant OP for CSP/STE are the regional OP, managed at regional level, the Competitiveness and Internationalization OP (COMPETE 2020) and the Sustainability and Efficiency in the Use of Resources OP (POSEUR), both managed at the national level.

Although the maximum duration of the projects funded by Portugal 2020 programme is typically 36 months, it can vary from one Call to another (it is Call specific). There are no periodic Calls, these are only issued from time to time and there are specific Calls that support the participation of national entities in international projects.

Further information about this funding program is available at: <https://poseur.portugal2020.pt/en/portugal-2020/>

3.8 Spain

At national level, there are two main public entities in Spain financing R&D projects: CDTI (Centre for Industrial Technological Development) and the AEI (State Research Agency), both managed by the Spanish Ministry of Science and Innovation. The Spanish contribution to the common fund managed by CSP ERANET has been channelled through these two funding entities. The characteristics of the funding provided by these two public entities are explained in sections 3.8.1 and 3.8.2.

There are also some funding opportunities offered by Spanish regional governments. However, these regional funds are mainly focussed on entities (industries and research centres) located in the same region, so that industries or R&D centres located in another region of Spain can't apply for those funds. Another limitation of these regional funding sources is the low amount of funding that can be allocated to single projects. These regional funds are distributed by means of periodic Calls issued by the regional government, though the interval between two consecutive calls is not always the same. Due to the nature of these regional funds, the calls are published at regional level, mainly. Due to all these restrictions, and the fact that the main objective of these regional funds is to contribute to the financial sustainability of University R&D groups,

regional research centres and industries, the funding sources provided by the regional governments in Spain are not considered very suitable for the development of the R&I activities integrated in the IP of the CSP/STE SET Plan at international level. However, they can be useful to tackle the development of single activities than can be developed at regional level by a small consortium and demanding a small budget (e.g. development of a new solar tracking system, modelling&simulation studies and activities targeting a low final TRL).

3.8.1 CDTI (*Centre for Industrial Technological Development*)

CDTI has different instruments to fund the R&D projects of the Spanish industry. The funding is mainly made of grants + soft loans in an open, not competitive call. There is not a dedicated budget per energy sector but almost no budget limitation either. In projects funded by CDTI Spanish entities, other than industry, must participate in the projects as subcontracted entities of the industrial partners. Therefore research centres can't be partners in a projects funded by CDTI.

Funds for R&D distributed by CDTI are not only provided by the Spanish Government, but also by the Structural and Investment European Funds and the Investment European Bank. CDTI has different funding programs, some of them providing grants + soft loans while others only grants. Although most of the funding programs are for R&D activities (see section 3.8.1.1), there are also funding programs for Innovation and expansion (see section 3.8.1.2). Detailed information about the funding programs managed by CDTI is available at:

https://www.cdti.es/index.asp?MP=100&MS=898&MN=1&r=1600*900

3.8.1.1 CDTI funding programs for research and development projects

CDTI has more than ten different funding programs for R&D projects, thus covering a wide spectrum of projects (i.e. national, international and regional projects).

In all cases CDTI provides financial support to R&D projects provided that they are promoted by Spanish industrial partners and the projects are aimed at creating or achieving a significant improvement of production processes, services or products. Project activities may include industrial research activities and also experimental development activities. CSP/STE is one of the eligible fields to get CDTI financial support within these funding programs.

In many cases the Calls for these funding programs are open all through the year and the project duration must be between 12 and 36 months. The minimum eligible budget per project is 175 k€. Funding provided by these programs may be used to cover

manpower, equipment, consumable items, research subcontracts, patents and other running costs associated to the activities composing the project.

The project may be proposed by a single partner (funding program for *Single R&D Projects*) or by a consortium composed of a maximum number of six partners (funding program for *National Collaborative R&D Projects*).

There is also a specific funding program to support the participation of Spanish enterprises in international R&D projects for technological collaboration, not limited to Europe. Participation of Spanish enterprises in EUREKA, IBEROEKA or PRIMA projects is supported by this program. CDTI has also bilateral agreements signed with funding entities of other countries (not limited to Europe) and the participation of Spanish enterprises in R&D projects with partners from those countries within the framework of these bilateral agreements is also supported by this CDTI funding program.

Another CDTI funding program is specifically defined to support the participation of Spanish enterprises in European R&D projects for technological collaboration. Participation in Projects of Common European Interest (PIICE projects, notice 2014/C 188/2 in Official Journal of the E.U. 20.06.2014) and ERANETs projects are financed by this program.

Another CDTI funding program where CSP/STE is eligible is the *Program for International Technical Qualification*, which provides Spanish enterprises with financial support to participate in international tendering processes managed by entities where Spain is a member state. This funding program could be useful for Spanish companies to participate in tendering processes issued by EU-SOLARIS to purchase equipment or technical services.

Within the set of CDTI funding programs for R&D projects there are three programs with special requirements and characteristics: the funding programs CIEN, CERVERA and MISIONES. CIEN is a program designed for large R&D projects requesting funding in the range: 5-20 M€/project, and the project duration must be 3 or 4 years. The projects eligible for this funding program are large industrial research and experimental development projects promoted by joint ventures and aimed at developing a research program in strategic areas with potential international impact. Since this program is also designed to enhance public-private partnership in R&D, it is compulsory the participation of research centres as subcontractors of the joint venture to undertake relevant activities in the project. CSP/STE is eligible for this program and each project must be composed of a minimum of three and a maximum of eight entities, with at least one SME (small or medium enterprise).

The program CERVERA is designed for R&D activities related to a selected group of technologies, within which CSP/STE is included. Participation of technological centres as subcontractors of SMEs is compulsory to get fund from this program.

The MISIONES funding program is also a program focussed on large strategic R&D initiatives aimed at identifying and solving the challenges of critical productive sectors

for the Spanish economy. Projects submitted to this program have to be promoted by joint ventures of more than three industrial partners, which must subcontract at least 15% of the total budget to research centres. The minimum eligible budget per project must be in the range: 5 Mio€ to 10 Mio€ (projects submitted by large enterprises) or in the range from 1500k€ to 3000k€ (projects submitted by SMEs). This funding program is especially suitable for large R&D initiatives related to CSP/STE.

CDTI also has a specific funding program to promote regional cooperation with projects aimed at the fulfilment of the need of specific Spanish regions to generate innovative capacities enhancing the regional cohesion in Spain. The name of this funding program is FEDER Interconecta. Only projects to be developed in those regions of Spain considered with less technical development are eligible for this program.

The funding program INNOGLOBAL was implemented to foster the international technical cooperation of the Spanish industries with the objective to improve our presence in the international R&D sector. So the main objective is the provision of support to achieve a significant international activity of the Spanish industry, acting as a catalyzer to mobilize the private investment to create jobs and thus achieving a better technological balance of Spain. The maximum funding per project is 400k€ and there are specific Calls of this program

3.8.1.2 CDTI Funding programs for Innovation Projects

CSP/STE is also eligible for two CDTI funding programs within the category of “Innovation”. For both programs the minimum budget of projects is 175k€ and the duration shall be in the range 6-18 months. The program Expansion provides funds for the acquisition of new assets by Spanish enterprises to introduce innovation and improve the capacities of the enterprise submitting the project. Not only durable equipment, but also patents or licences are eligible costs for this funding program.

The program Innovation is designed to provide funds to projects with very high TRL (near-to-market products) and increasing the competitiveness of the enterprise by incorporating emerging technologies in the production process.

3.8.2 AEI (State Research Agency)

The *State Research Agency* also supports R&D projects in Spain mainly through competitive yearly calls for consortia including Spanish companies and/or research organizations. The main difference with CDTI is that R&D centres may be partners, instead of subcontractors. The goal of this funding is to promote the development of new technologies, and the business application of new ideas and techniques. There is not a dedicated budget per sector and CSP/STE projects must compete with the rest of technologies in the competitive-calls launched by the AEI. The funding support is again with grants + soft loans, depending on the specific funding program.

The “*Spanish National Plan for Scientific and Technical Research and Innovation*” defines the main framework for the Spanish R&D policy and related funding, which is distributed via three programs, two of which can be used by CSP/STE projects. These two funding programs managed by the AEI are:

- State Programme for Knowledge Generation and Scientific and Technological Strengthening of the R&D&I System: This program includes three sub-programs and only the sub-program “Knowledge Generation R&D Projects” could be useful for CSP/STE projects. It is aimed at financing the execution of R&D projects led by teams from public research organisations, universities, technology centres and non-profit public and private entities linked to science, technology, research and innovation. The objective is to finance research projects that are relevant, ambitious, with a high socio-economic impact, avoiding the fragmentation of research groups and promoting synergies and the association of teams in a single project of sufficient size and critical mass to face the challenges that Spanish research faces in the context of the European Research Area.
- State R&D Program Oriented to the Challenges of the Society: this program is aimed at financing the execution of R&D&I projects led by teams from public research organisations aimed at solving problems linked to the major challenges facing Spanish society included in the 2017-2020 State Plan for Scientific and Technical Research and Innovation. It is the most suitable funding program for CSP/STE projects, which are included in the topic “Safe, efficient and clean energy”. However, maximum funding per project is usually below 500k€ and only marginal costs are eligible. Therefore, only small projects, mainly promoted by public R&D entities are usually funded by this program.

The funding granted by the AEI to R&D projects is usually modest (<500 k€) and not suitable for large projects. Further information about the funding programs and Calls issued by the Spanish AEI is available at:

http://www.ciencia.gob.es/portal/site/MICINN/menuitem.29bfd64be21cddc5f09dfd1001432ea0/?vgnextoid=fae4b9746e160210VgnVCM1000001034e20aRCRD&id2=-%09State+Programme+for+Knowledge+Generation+and+Scientific+and+Technological+Strengthening+of+the+R%26D%26i+System&id1=1&id3=0&btn_modulo_ayudas=Search#

3.9 Turkey

In Turkey, R&D activities are supported by national funding mechanism through monetary incentives and supported via Specific Laws (in the form of tax exemptions & deductions or special funding). The monetary funds are provided by the Scientific and Technological Research Council of Turkey (TUBITAK), Ministry Industry and Technology (MIT), Small and Medium Enterprises Development Organization of Turkey (KOSGEB)

and Technology Development Foundation of Turkey (TTGV). Most of the national R&D funding mechanisms provide grants directly to the researchers and research institutions who intend to make research, development and/or innovation activities in their research area of expertise, and most of these grants are call based supports.

On the other hand, Tax Exemption/Deductions and Special fund are provided for R&D Support through the Law on Supporting Research, Development and Design Activities (No: 5746).

Detailed support mechanisms are as follows:

3.9.1 TUBITAK Funding Mechanisms

TUBITAK is the central authority to provide national funding sources for R&I activities. TUBITAK funds are classified under five branches: 1) academic; 2) business/industry; 3) public institutions; 4) scientific events; and 5) science and society¹. National funding sources for R&I activities belong to the first three branches of these TUBITAK funds. While Turkey does not have a National Program relevant to the IP specifically or CSP more generally, Turkey is participating in the on-going Horizon 2020 CSP ERANET and HORIZON-STE projects to execute the IP through TUBITAK's coordination. Additionally, TUBITAK is announcing national calls for different types of R&I activities. Among them are the calls targeting highly efficient solar energy technologies that will include (but are not limited to) CSP technologies. Moreover, there are general programs targeting R&I activities in different technology and research areas including but not limited to energy

Turkey has a range of national funding programs under TUBITAK that can be used to support the IP as detailed below. With each funding mechanism, the interested researchers from academics, industrial partners, companies and research centres apply for funding for the proposed projects and for the research processes fitting the funding mechanism. In Turkey, R&D activities are also supported by tax deductions/exemptions in addition to TUBITAK's monetary funding mechanisms.

Note that as an EU candidate country rather than an EU member state, Turkey has its own currency, which is the Turkish Lira (TRY). The TRY exchange rate is variable, and in response to these variations, TUBITAK periodically adjusts project budget limits. For example, approximately three years ago, the project budget limit for TUBITAK 1001 projects described below was doubled from 360 000 TRY to 720 000 TRY. While the budget numbers presented here are accurate at the time this deliverable was written, interested parties should consult the relevant TUBİTAK webpages for current budget information.

¹ Details are found in TUBITAK's main page under the "Funds" tab: <https://www.tubitak.gov.tr/en>

The specific Turkish national funding sources for R&I activities are explained in the next sections:

3.9.1.1 1001-Scientific and Technological Research Projects Funding Program

This is the primary funding mechanism for research at lower Technology Readiness Levels (TRLs) and is open to universities, public research institutes, industry and Small and Medium Enterprises (SMEs). 1001 calls are typically opened 1-2 times per year and are entirely open for all research topics. There is no inherent budget limit for this mechanism, but a budget limit is set for each call. Currently, this budget limit is typically 720 000 TRY (~ 100 000 €) for equipment, consumables, travel, and student scholarships. An additional budget is given to cover overhead costs and personnel costs in addition to student scholarships such as for faculty members at universities. For more information, see:

<https://www.tubitak.gov.tr/en/funds/academy/national-support-programmes/content-1001-scientific-and-technological-research-projects-funding-program>

3.9.1.2 1002-Short Term R&D Funding

The mechanism aims to support short-term R&D projects with small budgets and immediate start requirements. Proposals are accepted from members of universities, and research institutes. The maximum project duration is 12 months for each project proposed under the program. The maximum grant amount is 45 000 TRY (~ 6 000 €) regardless of the project duration. The budget does not include equipment costs. There is no deadline for the applications under the program. For more information, see:

<https://www.tubitak.gov.tr/en/funds/academy/national-support-programmes/content-1002-short-term-rd-funding-program>

3.9.1.3 1003-Primary Subjects R&D Funding Program

This funding program generally addresses higher TRLs than the TÜBİTAK 1001 program. In contrast to the 1001 program, 1003 calls are only opened in specific areas. Projects are classified as Small, Medium, or Large with the following characteristics. Small projects last up to 24 months and have budgets up to 750 00 TRY (~100 000 €). Medium projects last up to 36 months and have budgets between 750 001 and 1 500 000 TRY (~ 100 000 - 200 000 €). Large projects also last up to 36 months but have budgets between 1 500 001 and 3 750 000 TRY (~200 000 – 350 000 €). Not included in these budget limits are overhead costs and personnel costs in addition to student scholarships such as for faculty members at universities. For more information, see:

<https://www.tubitak.gov.tr/en/funds/academy/national-support-programmes/content-1003-primary-subjects-rd-funding-program>

3.9.1.4 1005-National New Ideas and Products R&D Funding Program

This funding program targets decreasing import dependency. In this program, frequently imported devices and materials are intended to be developed nationally, without violating patent rules. Thus, new devices and materials will be developed. Within the context of the program, funds will be granted for projects that aim to create new features and new products by making additions to frequently used technological products. The maximum project duration is 18 months for each project proposed. The maximum grant amount is 200 000 TRY (~ 30 000 €) regardless of the project duration. The budget includes the scholarship for graduate students, travel expenses, dissemination expenses (to disseminate the results of a project). TUBITAK annually announces application due dates (usually in early March and September). Project applications are electronically submitted by the following link: <http://ardeb-pbs.tubitak.gov.tr>. For more information, see:

<https://www.tubitak.gov.tr/en/funds/academy/national-support-programmes/content-1005-national-new-ideas-and-products-rd-funding-program>

3.9.1.5 1071 - Programme for Increasing Capacity to Benefit from International Research Funds and Participation in International R&D Cooperation:

This is the primary funding mechanism for international research activities. The purpose of the 1071 programme is to support research and innovation activities of the Turkish stakeholders via enabling the cooperation of academy and industry for the international R&D projects. Higher education institutions, education and research hospitals, public institutions and organizations and private institutions (companies regardless of sector and size) are supported with a 100% support rate over their agreed budgets. Evaluation criteria for the proposals are Scientific / Technological Excellence, Methodology, Project Management skills and methods, The Importance of International Cooperation built by the project and Impact of the project. For more information (in Turkish), see:

https://www.tubitak.gov.tr/sites/default/files/3125/1071_arastirma_projeleri_surec_dokumani.pdf

3.9.1.6 1501-Industrial R&D Projects Grant Programme

This programme is carried out with budget-based calls. These calls open twice a year, starting from January 2020. The program aims to support project-based R&D&I activities of Small and Medium-Sized Enterprises (SMEs), and therefore only organizations of SME scale can apply to the program. To choose the projects to support, the outcomes and impacts of the applicant companies (if any) within the scope of their previously

supported projects, attempts to benefit from alternative non-public funding sources (especially applications to the European Union Framework Programs) and the priority of the project subject will be evaluated. The project duration is 36 months at most. There is no budget limit in the program. For more information (in Turkish), see:

<https://www.tubitak.gov.tr/tr/destekler/sanayi/ulusal-destek-programlari/icerik-1501-tubitak-sanayi-ar-ge-projeleri-destekleme-programi>

3.9.1.7 1505-University-Industry Collaboration Support Program

It aims to promote the transfer of knowledge and technologies of universities and public research institutions to industry, based on the requirements of companies, which are residing in Turkey and committing to realizing the project outputs in Turkey. In this program, university-industry collaboration projects are supported in the form of grants for a maximum duration of 24 months. Projects should involve a technology provider (university or public research institution) and a client (large firm or SME). TÜBİTAK funds 60 % to 75% of the project budget. The remaining project budget is covered by the client, depending on its size. Client co-finance is 40% for large firms and 25% for SME's. Project budget may consist of Personnel costs, travel costs, equipment, software, publication costs, service procurement and materials costs. Project budget can be up to 1 million TRY (excluding PPP) (~150 000 €). To apply, the project proposals are submitted to TÜBİTAK at any time. Supported projects are monitored every six months. For more information, see:

<https://www.tubitak.gov.tr/en/funds/industry/national-support-programmes/content-1505-university-industry-collaboration-support-program>

3.9.1.8 1509-International Industrial R&D Projects Grant Programme

This program funds market-focused R&D Projects between European countries using cooperation networks such as EUREKA to increase cooperation between European firms, universities and research institutions. The programme is open to all R&D topics, including CSP/STE. The call is open to SMEs and large companies settled in Turkey. Eligible costs include personnel, travel, equipment/tool/software, R&D services from domestic RTOs, consultancy/other services, and material costs. The program funds applied research and experimental development (i.e. higher TRL activities). There is no budget limit for this programme, and the limits depend on call. Note the 1509 Programme has not been used recently and therefore an accessible webpage does not exist. However, it is a valid program, and when a specific call is open, the program starts working again. For more information, see:

<https://www.tubitak.gov.tr/en/funds/industry/international-support-programmes/content-1509-tubitak-international-industrial-rd-projects-grant-programme>

3.9.1.9 1511-Research & Technology Development and Innovation Program

This funding program has Priority Fields, and it supports and coordinates result-oriented, observable, national R&D and Innovation projects that are well-matched with the priority fields determined within the scope of the National Science Technology and Innovation Strategy, which includes Solar Energy. 1511 is similar to the 1003 Programme except that an industrial organization/SME must be included. The budget limit is specified according to individual calls. For more information (in Turkish), see:

<https://www.tubitak.gov.tr/tr/destekler/sanayi/ulusal-destek-programlari/icerik-1511-tubitak-oncelikli-alanlar-arastirma-teknoloji-gelistirme-ve-yenilik-p-d-pteknoloji-odakli>

3.9.1.10 1512 –Techno-Entrepreneurship Capital Support Programme (BiGG)

The mechanism supports activities from the idea to the market so that entrepreneurs can transform their technology and innovation-focused business ideas into enterprises. The aim is to encourage qualified entrepreneurship and to create start-up firms that can develop internationally competitive, innovative, high-tech products and services. Within the scope of the program, entrepreneurship training is given to the entrepreneurs, and guides with industry experience are provided to support the entrepreneur on technical, commercial, and administrative matters. This program consists of the three stages described for the transformation of innovative business ideas into commercial products/processes/services. All future business ideas from every field of technology are eligible. Entrepreneur candidates who have a technology-based, innovative, commercializable business idea and fulfil the "entrepreneur" definition in the Program Application Principles can apply. The maximum project duration is 18 months for each project proposed. The maximum grant amount is 200 000 TRY (~30 000 €) regardless of the project duration. The budget includes personal costs, travel expenses, tools, equipment, software and broadcast purchase expenses, and national and international service costs. The call is open for two periods of application. For more information, see:

<https://www.tubitak.gov.tr/en/funds/industry/national-support-programmes/content-1512-entrepreneurship-multi-phase-programme>

3.9.1.11 1515-Frontier R&D Laboratory Support Programme

This program applies an integrated perspective that extends beyond a consideration of the initial, establishment phase of the R&D laboratory. R&D laboratories flourish with long-term commitments. For this reason, the support of the 1515 Program extends to the phase of sustaining the activities of R&D laboratories in the long-run. The program offers an entirely grant-based financial model to cover up to 75% (for personnel expenditures, in some cases up to 100%) of the operating expenses of the R&D

laboratory in Turkey with up to 10 million TRY (~ 1.5 M€) for each calendar year for a duration of at most ten years. The grant support covers personnel costs, general operating costs, consultancy fees, and education fees. The program is designed to "facilitate" the process of allowing leading firms to undertake frontier R&D activities in their laboratories in Turkey. The basic expectations after a positive evaluation are that the R&D laboratory puts into place a research plan to realize the following: (i) Expand the boundaries of existing scientific understanding; (ii) Bring new scientific knowledge to natural phenomena; (iii) Conduct research activities that are directed to providing solutions to existing (or expected) scientific challenges; (iv) Conduct research that has the potential to influence new and emerging technological trends; and (v) Perform basic and/or applied research for "proof of concept" activities and/or those that are directed to the establishment of new scientific frameworks. For more information, see:

<https://www.tubitak.gov.tr/en/funds/industry/national-support-programmes/content-1515-frontier-rd-laboratory-support-programme>

3.9.2 Non-TUBITAK Funding Mechanisms

3.9.2.1 Ministry of Industry and Technology-R&D Project-Based Incentives

This support mechanism is a project-based incentive. The project-based investment, minimum 50 million TRY within the scope of Technology Focused Industry Mobility Program or 500 million TRY for other kinds of investments, are supported via a special incentive mechanism. For this support, the project-based investment should (i) meet the critical needs of Turkey that may arise in the present or future; (ii) increase supply security; (iii) reduce foreign dependency; (iv) realize the technological transformation; (v) be Innovative, R&D intensive and high-added value. These investments are supported by the regulation of Law on Supporting Investments on Project Bases (No: 6745). In this mechanism, there are tax exemptions/ deductions, employment incentives, financial supports and other supports (such as public procurement). The applications are collected either through calls or invitation. Ministry of Industry and Technology collects the applications and performs the evaluation. The realization of the project is decided and operationalized by the Presidency. For more information (in Turkish), see:

<https://www.sanayi.gov.tr/destek-ve-tesvikler/yatirim-tesvik-sistemleri/md0303011615>

3.9.3 Small and Medium Enterprises Development Organization of Turkey (KOSGEB) R&D and Innovation Support Programme

The purpose of the KOSGEB R&D and Innovation Support Program is to enable small and medium-sized enterprises and entrepreneurs who have new ideas and inventions to produce new products, new processes, information and/or services through research and development and innovation activities. This is a project-based support programme

that has been designed and coordinated by the Technology, Innovation and Localization Department of KOSGEB. Applications are made via KOSGEB Website (www.kosgeb.gov.tr). The maximum grant amount is 750 000 TRY (~100 000 €) regardless of the project duration. The support includes office rent support, Machinery-Equipment, Hardware, Raw Materials, Software and Service Procurement Expenses, personnel expenses, initial capital support and project development support. For more information, see:

<https://en.kosgeb.gov.tr/site/tr/genel/destekdetay/1229/rd-and-innovation-support-programme>

3.9.4 Technology Development Foundation of Turkey (TTGV) R&D Incentives

Under the Green Technology Projects (YETEP) Support Program, TTGV provides repayable financial support to industrial enterprises for the implementation of projects in the areas of climate-friendly technologies, clean production technologies and energy efficiency, renewable energy and other energy technologies. It is aimed to increase the environmental performance of the industrial enterprises and reduce production costs, and thus to support implementations that increase competitiveness. In these projects, it is aimed to encourage the development/production of technologies that use local resources by giving priority to domestic technologies. YETEP consists of three different support areas: 1) “Climate-Friendly Technology Support”; 2) “Clean Production Technologies Support”; and 3) “Energy Efficiency, Renewable Energy and Other Energy Technologies Support”. Industrial enterprises may apply for projects in one or more of these areas. In the plans, the use of domestic technology and equipment as well as advanced technology (materials, electronics, software, etc.) are among the priorities of TTGV, and it is aimed to support applications with innovative dimensions. Organizations that are residing in Turkey and operating in the same field at least three years can apply to the program. The project support period is a maximum of 15 (fifteen) months. The project support budget between 100 and 400 kUS Dollars. In the projects to be supported, TTGV only covers up to 50% of machinery/equipment costs (excluding VAT) and consumption expenses (excluding VAT) of up to 5% of TTGV support. Other types of expenditures (personnel, transportation, construction, etc.) within the scope of the project belong to the industrial enterprises. For more information, see:

<https://ttgv.org.tr/en/programs/green-technology-projects-yetep-support-program>

3.9.5 Tax Exemption/Deductions and Special funds

Tax Exemption/Deductions and Special funds are provided by the specific Law on Supporting Research, Development and Design Activities (No: 5746) through R&D

Centres and R&D Projects Granted by the Government Institutions. Details are as follows:

This Law, which is accepted in 2008 and will be valid until 2023, aims to increase Turkey's international competitiveness through:

- the production of technological knowledge;
- innovation in product and production processes;
- increasing product quality and standards
- increasing efficiency;
- reducing production costs;
- commercialization of technological knowledge;
- developing pre-competitive collaborations;
- and increasing R&D personnel and qualified labor force employment

to support and encourage economic growth through R&D and innovation activities. This Law regulates the R&D supports for Technology centers, R&D centers in Turkey (within the company which employs at least fifty full-time equivalent R&D personnel), R&D projects, Pre-competitive cooperation projects and Technological Entrepreneurship. The support mechanisms provided by this Law are:

- R&D Discount (100% of the R&D costs are discounted from the company's total taxable income).
- Income Tax Support (At specific percentages for different groups of researchers, the income of R&D personnel are free from income tax)
- Insurance Payment Supports (Certain amounts of insurance payments of R&D personnel are reimbursed by the government for five years).
- Operational payments Exemption (Some cost such as stamp tax is exempted)
- Support for initial investment capital to the companies that conduct R&D activities.

These supports are given to the organizations mentioned above if they perform R&D activities. There are no limitations for research and technology areas. The companies and R&D centres who are conducting research and technology development for CSP/STE Technologies are included in the scope of this Law.

For the whole text of Law (in Turkish), see:

<https://www.resmigazete.gov.tr/eskiler/2016/08/20160810-7.htm>

For brief of the supports provided by the Law, see

https://www.oka.org.tr/assets/upload/dosyalar/108turkiyede_saglanan_tesvik_ve_destekler_v2.pdf

4 EUROPEAN FUNDING INSTRUMENTS FOR FOAK (FIRST OF A KIND) PLANTS:

Within the universe of public instruments provided by the European Commission, several instruments are available for supporting the development of renewable energy projects. These include: the InvestEU Fund, the ERDF and Cohesion funds, the Horizon Europe Framework programme and other co-funding instruments and the LIFE energy transition fund, among others. However, due to their design or objectives, it has been considered that four other instruments could turn out to be more suitable and accessible in the short term for the development of a First-of-a-Kind project (FOAK).

The four instruments that will be addressed in this section, and which appear most suitable at the moment of writing, are:

- a) Innovation Fund – DG CLIMA
- b) Connecting Europe Facility Energy – DG ENER
- c) EU Financing Mechanism for Renewables – DG ENER
- d) Innovfin EDP – EIB

However, in the light of the on-going discussions of the European Green Deal (which will be covered in the deliverable 1.5 (“Update to the framework conditions”), and the eventual recovery funds that may come to existence as a way to deal with the negative economic impacts of the COVID-19 pandemic, new financial instruments could emerge as appropriate for this purpose.

4.1 Innovation Fund – DG CLIMA

As described by the European Commission², the Innovation Fund is one of the world’s largest funding programmes for demonstration of innovative low-carbon technologies. It pursues the following objectives:

- help create the right financial incentives for projects to invest now in the next generation of technologies needed for the EU’s low-carbon transition,

² Further information about the Fund and the corresponding procedures can be found in the website of the Commission: https://ec.europa.eu/clima/policies/innovation-fund_en#tab-0-0

- boost growth and competitiveness by empowering EU companies with a first-mover advantage to become global technology leaders, and
- support innovative low-carbon technologies in all Member States in taking off and reaching the market.

It will focus on the following areas:

- Innovative low-carbon technologies and processes in energy intensive industries, including products substituting carbon intensive ones
- Carbon capture and utilisation (CCU)
- Construction and operation of carbon capture and storage (CCS)
- Innovative renewable energy generation
- Energy storage

The funds for the Innovation Fund will be provided by the EU Emissions Trading System (EU ETS), through the auctioning of 450 million allowances from 2020 to 2030, as well as any unspent funds from the NER300 programme (some 735 million EUR).

The Fund may amount to up to €10 billion, depending on the carbon price. Hence, it is expected that it could be a relevant instrument for delivering the EU's economy-wide commitments under the Paris Agreement and its objective to be climate neutral Europe by 2050.

The Fund will support up to 60% of the additional capital and operational costs linked to the presented innovation. The grants will be disbursed in a flexible way based on project needs, considering the milestones achieved during the project lifetime. Up to 40% of the grants can be given based on pre-defined milestones before the whole project is fully up and running. Figure 4.1 below shows the predefined timing of the financing:

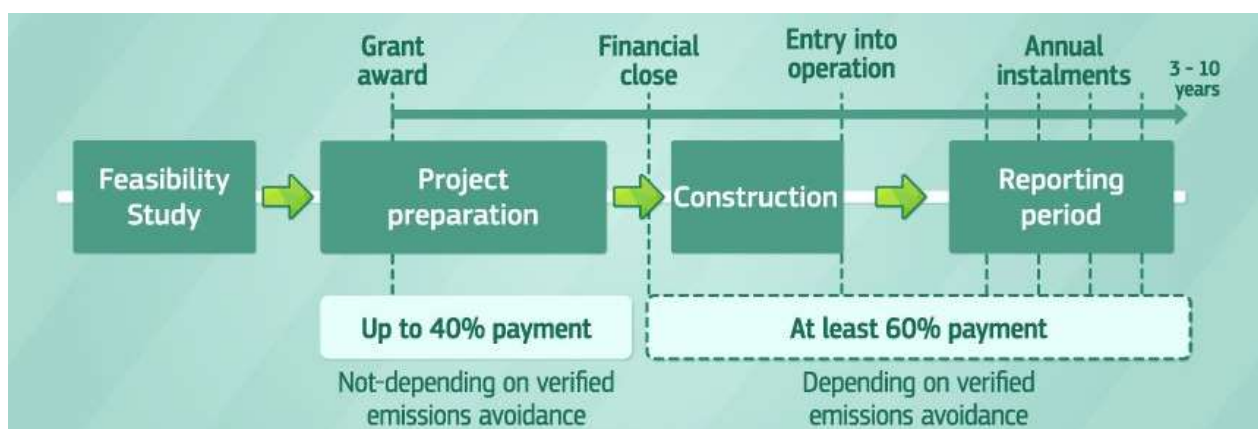


Figure 4.1. Grant financing (Source: https://ec.europa.eu/clima/policies/innovation-fund_en).

4.1.1 *Involvement of the industry*

ESTELA, through two of its members, participated as part of the Innovation Fund Expert Group, which gathered experts from all sectors to advise in the design of the instrument, the call and the evaluation procedures. This was carried out through a series of events during 2019 and 2020.

In addition, as part of the preparation of the first call for proposals, which is still expected to come out in late 2020, the Commission invited sector associations and Member States to organise sectorial workshops. ESTELA participated in the solar energy sector event, where it came together with the other two solar energy associations to share initial thoughts and feedback about the design of the instrument and present examples of innovative project which would participate in the first edition of the call.

In addition, both Protermosolar (the Spanish association for the promotion of CSP/STE) and Rioglass Solar, a component manufacturer and member of ESTELA, attended the Member State Workshop in Spain and presented one project each concerning solar thermal electricity for the Spanish islands and applications of concentrated solar heat for industrial processes, respectively.

From the knowledge obtained so far about the instrument, it is the impression of the industry that it can in fact be a useful tool for financing part of a FOAK. However, the “real” likelihood of obtaining funds will strongly depend on how the final evaluation criteria are designed. During the last events, concerns were raised (from different sectors) based on the possibility of grouping all renewable sector in one same category, instead of building separate categories for different types of renewables. Such categorisation would strongly (or completely) hinder the possibilities for CSP to beat other projects as typically indicator based on costs and LCOEs have a strong weight in the score. In response, feedback to the Commission was provided stating that the different sectors of renewables should not compete against each other.

4.2 Connecting Europe Facility – Energy (Cross-border cooperation on renewables)

The *Connecting Europe Facility – Energy* is an instrument that provides EU funding for infrastructure projects, which in the case of energy, shall increase competitiveness, enhance the EU's security of energy supply, and contribute to sustainable development and protection of the environment (for example, by maximising the use of renewable energy and smart energy networks), according to the EC. The total grant budget to support energy projects for the 2014-2020 period under the CEF Energy programme is

€4.6 billion. The majority of the funding is made in the form of allocated grants following competitive calls for proposals.

Following the adoption of the 2020 CEF Energy Work Programme on March 2020, the 2020 CEF Energy call for proposals was opened, offering funding to support projects of common interest in the energy sector, in the areas of electricity, gas, smart grids and cross-border carbon dioxide networks.

The European Commission will release €979.6 million of EU funding for supporting energy infrastructure projects of common interest that have significant societal benefits and that ensure greater solidarity among Member States.

Moreover, it aims at financing actions contributing to the EU's mid-term and long-term objectives in terms of decarbonization. Considering that the EU's Green Deal Communication has further emphasized the key enabling role of energy infrastructure, including cross-border carbon dioxide networks, in the transition to a climate neutral economy, financial assistance provided under this call for proposals should maximise its added value towards decarbonization.

To be eligible to apply for CEF funding, projects must be designated as Projects of Common Interest (PCIs) in the EU's fourth PCI list. PCIs are considered essential for completing the EU's internal energy market and are required to have a significant impact on at least two EU countries.

Proposed projects, which can be either studies or works, are evaluated against several criteria. These include their state of maturity, their cross-border dimension, and to what extent they will remove bottlenecks and end energy isolation.

In the original timeline, the deadline for submitting proposals is established for 27 May 2020. Projects submitted in response to this call would be evaluated between June and September 2020, and the results are expected to be communicated in October 2020. However, due to the unexpected COVID-19-related circumstances, a different timeline could be expected, with no news about it at the time of writing.

The CEF Energy call for proposals and follow-up on the technical and financial implementation of the projects with the beneficiaries is managed by the Innovation and Networks Executive Agency (INEA).

4.2.1 A new “window of opportunity”

In addition to the previous general framework of CEF-Energy, the new “**CEF window on cross border RES (also known as CB RES)**” is a new provision that will be included through a delegated act, once the new regulation for CEF after 2020 is approved.

The following information has been extracted from the most recent stakeholder workshop conducted by DG ENER in December 2019.

The CB RES has the main objective of **promoting cooperation between Member States and 3rd countries based on mechanisms in RED II**. It also aims at:

- supporting joint planning, development & cost effective exploitation of renewables and EU target achievement,
- contributing to EU's Long Term Decarbonisation Strategy and to the strategic uptake of innovative renewables technologies,
- facilitating their integration through energy storage and conversion facilities.

Eligible projects will be related to:

- Renewable generation in electricity, heating & cooling, transport and their grid connection
- District heating
- Storage / conversion Facilities

There won't be capacity thresholds or corridors restriction, as well as being an open technology list. The eligible entities will be Member States (MS) and legal entities in a MS/OCT/3rd country associated to CEF. In addition, projects can be:

- Individual projects - Physical cross-border impact
- Individual projects - No physical cross-border impact
- Multiple projects - Not necessarily physical cross-border impact

The instrument will be based on 2 key elements, as described by the EC:

1. EU Label for Cross Border Renewables Project

The expected benefit of this is improved visibility for the project, e.g. for grid planning or access to finance. Also, to include the possibility to combine preparatory study grant with loan.

Main Requirements:

- Supporting Letter of intent by at least one MS
- High-level qualitative CBA demonstrating EU added value ("net benefit of cooperation", based on a standardized template)

2. CEF Funding

The expected benefit of this is:

- Up to 50 % co funding for e.g. technical & feasibility studies; EIA or Works (in cases of significant EU added value & commercial viability gap)

Main Requirements:

- “EU Label”
- LOI of all involved MS or MoU for draft cooperation agreement for studies
- Draft agreement for works
- Further developed CBA
- Compliance with award criteria of the relevant CEF call

4.2.2 Methodological aspects

The assessment will have a starting point on DG REGIO’s CBA guidance, with elements from EIB’s CBA guidance and ENTSO-E’s methodology.

Detailed guidance will be provided about:

- Requirements for MS endorsement of projects
- Degree of detail for assessment

Investment Cost threshold for CBA requirements:

- Simplified CBA requirements for projects under 50 million (no need for system modelling, general LCOE, energy output and qualitative description of system effect, quantitative description of impacts)
- Detailed CBA requirements for projects over 50 million (e.g. tech/site specific LCOE, scenario-based CBA above 50 million EUR for works, ideally quantification/monetisation of key impacts e.g. system integration)

The current best approach to the evaluation of projects includes the following elements:

- a) Info on cooperation mechanism
- b) EU added value (for MS, for EU)
- c) Economic assessment of costs and benefits
- d) Financial assessment of project (including: 8 indicators: Cost of energy, System integration, Support costs, Emissions, Security of supply, Air, local nature, Innovation/Regulatory convergence)
- e) Risk assessment,
- f) Assessment of costs and benefits to society across

Other important known considerations:

- Counterfactual: same size/technology/support scheme in non-host country. Possibility to develop a case specific counterfactual.

- Assessment time period: minimum 15 years; beyond: pre-defined technology lifetimes.
- WACC: default 4%, deviation to be justified by applicant.
- Eligible costs in CEF: cost of equipment, facilities, infrastructure, no operating costs nor land purchase costs (the latter can go into financing gap calculation though).
- For joint tendering: promoter should first secure national support, then CEF funding.

4.2.3 Current status & next steps

- Delegated Act on selection criteria/process for cross border renewable projects; Publication of CBA methodology (once basic act comes into force in 2020).
- The first call for pre-status supporting studies and for status as cross border project is (originally) planned for autumn 2020. First call for studies and works, on autumn 2021.

Figure 4.2 below shows the intended timeline at the moment of the presentation. However, an adjusted timeline due to the impact of the COVID-19 pandemic, could be expected.

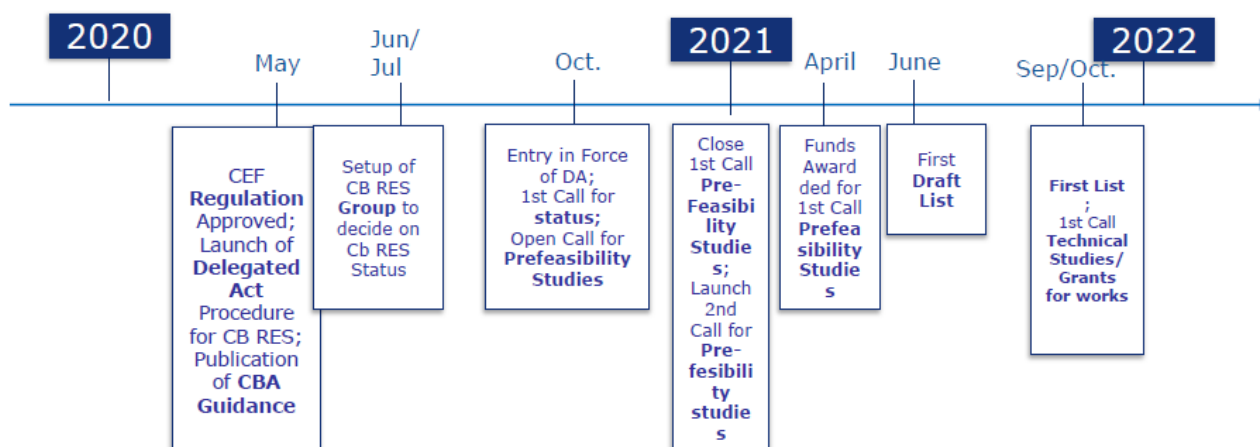


Figure 4.2. Tentative Timeline for deployment of the CB RES instrument (Source: <https://ec.europa.eu/>).



4.2.4 Towards a project pipeline by 1st Jan. 2021

- MS are in the “driving seat” – every project under CEF RES needs a cooperation agreement (exception: renewables as ancillary component of a CEF synergy action)
- Private project developers, regions, etc. need to bring MS early on board
- 11 MS indicated will to use CEF RES (EE, DE, HU, IT, LT, LC, LU, MT, NL, PT, ES), so far mainly in electricity
- Broader policy context – European Green Deal including: Strategy on decarbonisation through sector integration (2020), strategy on sustainable and smart mobility (2020) and strategy for offshore energy (2020)

Figure 4.3 below shows the indicative budget of the instrument (subject to final adoption of MFF and CEF):


CEF Budget Support		
		
BUDGET: 15% of CEF ENERGY Funding subject to market uptake* (indicative €1,2 bln, final decision on budget end 2019)		
Delivery Mechanism	Examples	Co-Financing Rates
Pre-feasibility studies to help identify/set up cooperation (projects)	high level CBA, mapping of potential sites, assessment of regulatory/financing conditions, preparation of a bilateral agreement...	up to 50%
Grants for Studies	Technical & feasibility studies to support concrete project development, EIA...	up to 50%
Grants for Construction Works	Upfront investment support <u>only</u> for projects with significant EU-added Value & commercial viability gap	up to 50%
Blending of grants with Invest EU/private financing	See works	n/a.
* if 15% is reached increase to 20% of CEF ENERGY, subject to market uptake		

Figure 4.3. Indicative CEF CB RES Budget support.



4.2.5 Adequacy of the instrument, synergies and problems identified:

From the available information to the moment, the industry welcomes the Connecting Europe Facility – Energy instrument and the increased attention on the potential for cross border cooperation on renewables, and especially for CSP/STE.

In fact, it is worth mentioning that, in the stakeholder meeting held by the Commission in June 2019 together with the consultants Navigant and EY (who were tasked with developing recommendations for selecting & allocating financial support and developing a draft CBA methodology for the instrument), **a case study example portraying a CSP/STE plant with storage developed in Portugal and exporting its electricity generation to Germany, was used as an example.** Although being completely hypothetical, this was very well received by the sector, which had been providing inputs to the Commission during the previous months. Figure 4.4 below shows the concluding case study example. It was used to exemplify step by step the process and evaluation for the reception of the support.

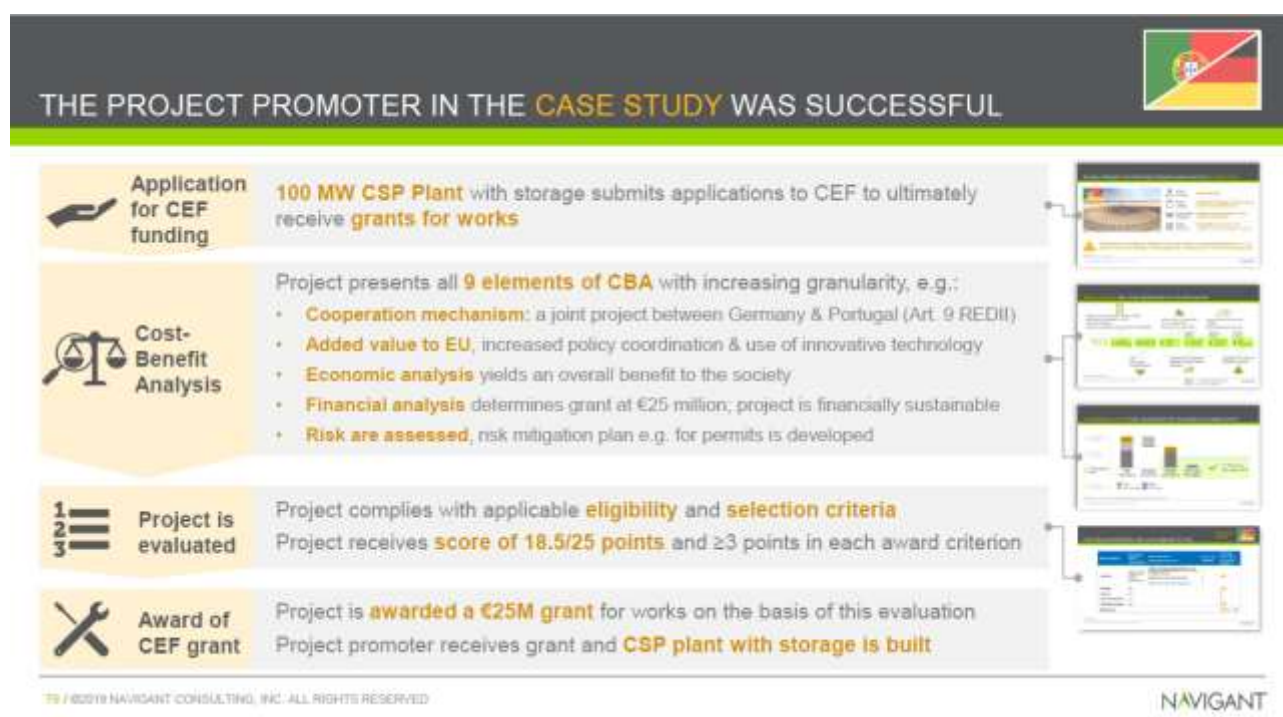


Figure 4.4. Case study example of cooperation between Portugal and Germany through a CSP/STE power plant with storage [9].

However, the fact that Member States should be in the “driver seat”, that thorough CBAs linked to different methodologies are required, and that complex and lengthy processes such as obtaining a EU label (that could be similar to becoming a PCI), scares away the enthusiasm of the industry as they see the process far too complex and without guarantees of being useful (which might not be the case). Nevertheless, interest from the Commission has been drawn to the interim results of the project MUSTEC (Market

Uptake of Solar Thermal Electricity through Cooperation), in which ESTELA is partner, and working relationships for further support have been started.

4.3 EU Financing Mechanism for Renewables

The European Commission has devised this instrument with the main objective of enabling Member States to work more closely in order to achieve their individual and collective renewable energy targets. It also aims to facilitate a more cost-effective deployment of renewables across the EU, in areas that are better suited for it in terms of geography and natural resources and ultimately, feed into the European Green Deal ambition of achieving EU carbon-neutrality by 2050. As foreseen under the Governance Regulation, the mechanism should be in place by the start of 2021.

As outlined in the draft implementing act, this new mechanism enables “contributing Member States” to pay voluntary financial contributions into the scheme, which will be used to tender support for new renewable energy projects in all Member States willing to host such projects (“hosting Member States”). Hence, “contributing” countries that are struggling to meet their targets can finance renewables projects elsewhere, which would count towards their targets and are potentially more cost effective than renewables produced on their own territory. For the “hosting” Member State, the advantage is that it receives additional local investment in renewables projects – and can therefore enjoy the benefits in terms of local employment, lower greenhouse gases emissions, improved air quality, modernisation of the energy system and reduced dependency on imports. However, there is no direct link or negotiation between the contributing and hosting Member States, as the Commission runs the process and allocates the statistics.

The draft rules foresee that the statistical benefits of these projects should be split between the participants, reflecting their participation, to provide incentives for both “hosting” and “contributing” countries. Figure 4.5 below, obtained from the stakeholders workshop conducted by Navigant and EY (in connection with the one aforementioned for the design of the CEF CB RES), summarises the expected balanced benefits.

At the moment of writing, a four-week public consultation on the draft rules to establish the mechanism³ is open and ESTELA intends to provide feedback to the Commission.

The instrument seems to be very adequate and strongly complementary to the CEF CB mechanism. Although the final version is still in development, it provides a good

³ The draft implementing regulation can be accessed through the website: <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12369-Union-renewable-Financing-mechanism>



framework for facilitating the assessment of benefits for both parties and hopefully the utilisation of the Cooperation Mechanisms stated in the RESII directive. Since a FOAK could take the form of a cross-border project (i.e. providing electricity from southern to northern European countries), the industry will be encouraged to follow closely this instrument and the possibility for blending it with other supports.

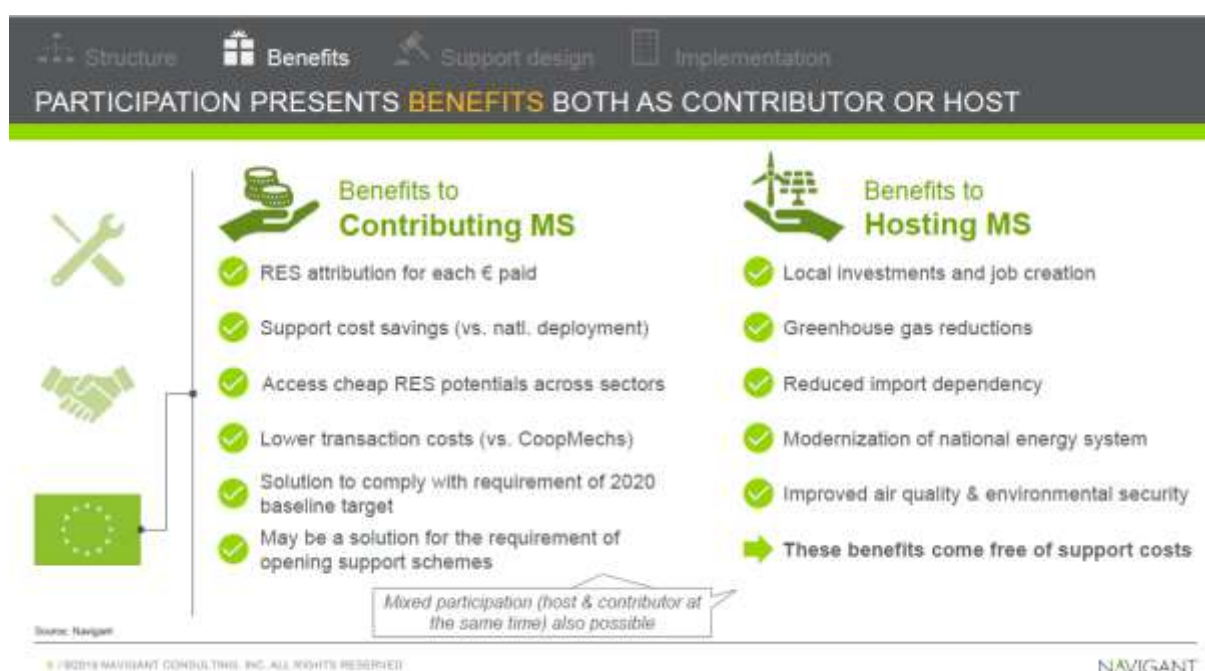


Figure 4.5. Benefits to both Member States through the use of the mechanism [9].

4.4 InnovFin Energy Demonstration Projects - EIB

The *InnovFin Energy Demonstration Projects* product is a financial instrument deployed by the European Investment Bank. It provides loans, loan guarantees or equity-type financing typically between EUR 7.5 million and EUR 75 million to innovative demonstration projects in the fields of energy system transformation, including but not limited to renewable energy technologies, smart energy systems, energy storage, carbon capture and storage or carbon capture and use, helping them to bridge the gap from demonstration to commercialisation.

According to the EIB, the projects shall, through their design and scale, contribute to de-risking the technologies and reassuring financial investors of their commercial viability. The goal is to help bridge the “valley of death” from demonstration to

commercialisation, supporting the further rollout of innovative low-carbon energy technologies to the market.

The product has been designed to address the financing bottleneck identified in the EU's Strategic Energy Technology (SET) Plan. Under Horizon 2020, the EU research and innovation (R&I) programme for 2014-20, the European Commission and the European Investment Bank Group (EIB and EIF) launched a new generation of financial instruments and advisory services in 2014 to help innovative firms access finance more easily. Until 2020, "InnovFin – EU Finance for Innovators" is offering a range of tailored products which provide financing in support of research and innovation by small, medium-sized and large companies and the promoters of research infrastructure.

Unfortunately, even though this instrument has been available throughout the Horizon 2020 framework programme, it has not been used for CSP/STE projects so far.

Its adequacy has been assessed by the industry as useful. However, as it can only cover a relatively small part of the investment required by a FOAK project, it would be necessary to blend this support with other existing ones. This is in fact possible as demonstrated by other renewable projects funded by it. Further information can be found in the EIB website⁴.

⁴ <https://www.eib.org/en/products/blending/innovfin/products/energy-demo-projects.htm>

5 GLOSSARY

<i>AAP</i>	Appel à Projets
<i>ADEME</i>	L'Agence de la Transition Écologique
<i>AEI</i>	State Research Agency (Spain)
<i>ANR</i>	Agency Nationale de la Recherche
<i>ANRT</i>	Association Nationale de la Recherche et de la Technologie
<i>BMWi</i>	Federal Ministry for Economic Affairs and Energy
<i>BMU</i>	Federal Minister for the Environment, Nature Conservation, and Nuclear Safety
<i>BPI</i>	Banque Publique d'Investissements
<i>CBA</i>	Cost-Benefit Analysis
<i>CDTI</i>	Centre for Industrial Technological Development
<i>CEF</i>	Connecting Europe Facility
<i>CNRS</i>	Centre national de la recherche scientifique
<i>CO₂</i>	Carbon dioxide
<i>CSP</i>	Concentrating Solar Power
<i>CST</i>	Concentrating Solar thermal
<i>ADENE</i>	Agência para a Energia
<i>EC</i>	European Commission
<i>EU</i>	European Union
<i>EIA</i>	Environmental Impact Assessment
<i>EIB</i>	European Investment Bank
<i>ENI</i>	Ente Nazionale Idrocarburi
<i>ENTSO-E</i>	European Network of Transmission System Operators for Electricity
<i>ERA</i>	European Research Area
<i>ETS</i>	Emissions Trading System



<i>FCT</i>	Fundação para a Ciência e Tecnologia
<i>FOAK</i>	Fist-of-a-Kind
<i>FP6</i>	6th Framework Program
<i>GSRT</i>	General Secretariat for Research & Technology
<i>HSM</i>	Heat Storage Medium
<i>HTF</i>	Heat Transfer Fluid
<i>IKI</i>	International Climate Initiative (Germany)
<i>IP</i>	Implementation Plan for the CSP/STE SET Plan
<i>JCJC</i>	Jeunes chercheuses et jeunes chercheurs
<i>KPI</i>	Key Project Indicator
<i>LCOE</i>	Levelized Cost of Energy
<i>NSRF</i>	National Strategic Reference Framework
<i>MFF</i>	Multiannual Financial Framework (the budget of the EU)
<i>MS</i>	Member State
<i>O&M</i>	Operation and Maintenance
<i>OCT</i>	Overseas Countries and Territories
<i>PCI</i>	Projects of Common Interest
<i>PRC</i>	Projects de Recherche Collaborative
<i>PRCE</i>	Projects de Recherche Collaborative Enterprises
<i>PRCI</i>	Projects de Recherche Collaborative Internationale
<i>RPO</i>	Research Performing Organization
<i>R&I</i>	Research and Innovation
<i>R&D</i>	Research and Development
<i>RIF</i>	Research and Innovation Foundation
<i>SET</i>	Strategic Energy Technology
<i>SME</i>	Small and Medium Enterprise



<i>STE</i>	Solar Thermal Electricity
<i>SPW</i>	Service Public de Wallonia
<i>TES</i>	Thermal Energy Storage
<i>TRL</i>	Technology Readiness Level
<i>TRY</i>	Turkish Lira
<i>UAE</i>	United Arab Emirates
<i>WACC</i>	Weighted Average Cost of Capital

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- [9] Authorised presentations provided by Navigant and EY, assigned consultants by the European Commission for the preparation of the described instruments.