Synergies exploited: What each IWG has managed to have learned of the common ground it shares with others (final)

D1.3 Synergies exploited - Final Update

WP 1 Collaboration and development of cross-thematic synergies amongst energy stakeholders / T 1.4 Closing interviews

Author: Ingrid Weiss (WIP)

Review: Greg Arrowsmith (EUREC)/Paola Mazzucchelli (CIRCE)

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More and better designed public support for energy technology Research and Innovation

Technical references

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PU = Public

PP = Restricted to other programme participants (including the Commission Services)

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

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Partners

EUREC The Association of European Renewable Energy Research Centres

circe Centro de Investigación de Recursos y Consumos Energéticos

EASE European Association for Storage of Energy

ESTELA European Solar Thermal Electricity Association

ECTP Innovative Built Environment

EGEC Geothermal

EMIRI Energy Materials Industrial Research Initiative

FNR Fachagentur Nachwachsende Rohstoffe e.V.

Ocean Energy Europe

WIP Renewable Energies

zabala innovation consulting

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List of abbreviations and acronyms

RES: Renewable Energy Sources
ETIP: European Technology and Innovation Platform
IWG: Implementation Working Group
SET: Strategic Energy Technology
SRIA: Strategic Research Innovation Agenda

Executive & publishable summary

The overall objective of Work Package 1 is to identify technology synergies and non-technology synergies across the SET-Plan and to follow-up with the Implementation Working Groups (IWGs) to find out whether they were able to exploit them.

This final report takes stock of the information that has been previously collected and analysed in Deliverables 1.1 and 1.2, and presents some recommendations for future activities in order to further strengthen the existing complementarities and to exploit the synergies between the different IWGs.

Moreover, this final Deliverable takes into account the results of the first ETIPs Forum, which was organised online on 2nd June 2021, whose objective is to foster discussion amongst the ETIPs on synergies between their research agendas. SMARTSPEND participated in this event presenting the main conclusions of its Deliverable 1.1 “Overlapping interests: A description of the common ground between Implementation Plans”.

At this event potential collaboration activities between the sectors and technologies were discussed for further exploiting synergies. The discussion will continue after the end of the project.

1. Introduction

The overall objectives of Work Package 1 are to identify technology synergies and non-technology synergies across the SET Plan and to follow-up with the Implementation Working Groups (IWGs) to find out whether they were able to exploit them.

This final Deliverable provides an overall appreciation of the process, and provides some ideas to bring the process forward after the SMARTSPEND project ends.

The report is available on SMARTSPEND website www.smartspend.eu/reports/ (Synergies exploited: What each IWG has managed to have learned of the common ground it shares with others (final)): Overlapping interests: A description of the common ground between Implementation Plans (D1.1) can be found in the document.

SMARTSPEND contributed to the SETIS study on common synergies in a timely way and participated in the workshop held in February 2020. A commonly agreed monitoring methodology was developed during a co-creation workshop organized by SETIS in February 2020 in cooperation with the IWGs-Chairs. In future, ETIPs will work closely with the IWGs and actively support them through the new Horizon Europe contracts for ETIPs to be implemented by the 4th Quarter 2022.

The main results for common collaborations of the different technologies are presented in this report. However, discussions will continue also after the end of SMARTSPEND project, possibly as part of ETIP Forum, bilaterally or under loose facilitation by a trusted third party.

2. Technical and non-technical synergies

The main technology synergies between the SET-Plan IMPLANs (T1.1) was conducted, mapping all potential overlaps and complementarities between the different technical activities proposed in the 12 IMPLANs. The results of this analysis are extensively presented in the SMARTSPEND Deliverable 1.1, and summarised in the Table below:

SMARTSPEND	Photovoltaics	Concentrated Solar Power	Offshore Wind	Ocean Energy	Deep Geothermal	Smart Cities	Energy systems	Energy Efficiency for Buildings	Energy Efficiency in Industry	Batteries	Bioenergy and Renewable Fuels	CCS and CCU
Photovoltaics												
Concentrated Solar Power												
Offshore Wind												
Ocean Energy			1									
Deep Geothermal		1										
Smart Cities												
Energy systems					1	1						
Energy Efficiency for Buildings	1	1			1	2	1					
Energy Efficiency in Industry		1	3		1			2				
Batteries					1			1				
Bioenergy and Renewable Fuels		1	1						2			
CCS and CCU					1				1			

Overview of **technology synergies** found in Deliverable 1.1 of SMARTSPEND.

In total, 23 technology synergies were identified and described in detail in an equal number of fiches.

Combining the resources dedicated to these identified applications could potentially bring important savings to the European Commission and Member States, while it would maximise the available budget and the synergies between the developments carried out in the different projects in this area.

20 non-technology issues were also identified through several workshops.

Examples of these non-technical issues include **financial conditions** (fit-for-purpose design and availability of all financial instruments; better access to finance; improving investors' confidence and knowledge), **regulation** (covering existing gaps, overcoming potential barriers; clarifying ambiguous regulatory texts; simplified permitting processes), **public policy**

(improving public support mechanisms; reinforcing trust in cooperation instruments; inclusion of environmental benefits); **social issues** (enhancing public acceptance; increasing public awareness of benefits), **training and education** (improving knowledge transfer mechanisms), and **certification and standardisation** (developing higher quality standards; homogeneous approach to environmental impact assessment).

For more detailed information, please visit the SMARTSPEND website on this link.

3. Methodology & Summary of Interviews

This chapter provides a summary of the interviews performed in the Deliverable on technical and non-technical synergies by the project partners representing the different technology sectors. In addition, it summarizes the preliminary collaboration activities of the different sectors.

The SMARTSPEND list of partners and the related interviewed sectors are as follows:

- EUREC (Scientific coordinator) representing ETIP RHC, www.etip-rhc.eu, www.eurec.be
- OEE (Ocean Energy) www.oceanenergy-europe.eu
- EMIRI (Advanced materials for clean energy & clean mobility) www.emiri.eu
- CIRCE Foundation representing SPIRE[1] (Process industry) www.spire2030.eu
- ZABALA Brussels representing ETIP SNET (Smart energy networks) www.etip-snet.eu
- WIP representing ETIP PV (Photovoltaics) www.etip-pv.eu
- ESTELA (Solar thermal electricity (concentrated solar power) www.estelasolar.org
- EASE (Energy Storage) representing ETIP on Batteries (BATTERIES EUROPE) www.ease-storage.eu
- EGEC (Geothermal energy) representing ETIP DG, www.etip-dg.eu, www.egec.org
- ECTP (Innovative and energy-efficient built environment and construction sector) www.ectp.org
- FNR representing ETIP Bioenergy (Bioenergy and biofuels) www.etip-bioenergy.eu

In order to receive a feedback from the SET-Plan IWGs, the following activities were performed in the first period:

1. Send to all the IWGs Chairpersons the deliverable on technical and non-technical synergies (D1.1).
2. Arrange interviews with the chairs and/or co-chairs of the IWGs by the responsible partner for the relevant sector

[1] With the start of Horizon Europe, SPIRE has become a Co-Programmed Partnership called Process4Planet

3. Those IWGs who agreed to take part in the interview were further informed about the sector specific synergies.

For the update of this deliverable, the consortium has decided to involve more the individual ETIPs as they will work very closely with the SET Plan IWGs in future with the new EC contracts. On 2nd June 2021, the overlapping synergies were presented again to a wider audience of energy research related groups, during the ETIPs Forum. The potential collaboration possibilities and further exploitation of the common synergies of the technology sectors were discussed. The event was organised by Zabala as leader of the contract supporting ETIP SNET activities. CIRCE presented D1.1. Discussions on joint activities and collaboration will continue after the end of the project.

Finally, CIRCE again presented D1.1 at SMARTSPEND's final Access to Risk Finance and closing conference on 18 November 2021[2].

The summaries of the individual discussions/follow-up/update are the following:

EUREC: ETIP – RHC - Renewable Heating and Cooling sector: Information exchange with the chair of the Implementation Working Group Energy Efficiency in Buildings took place. Information about the overlapping synergies with the other technology sectors were provided. Indeed, the chair found it a very useful document and it is a good starting point to approach other IWGs regarding the overlaps.

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the ETIPs Forum:

- Heat distribution with ETIP SNET
- Heat pumps, District Heating, Heat demand side with ETIP DG
- Energy Efficiency in buildings: heating and cooling with CSP IWG and ETIP DG

OEE Ocean Energy: The chair of the IWG Ocean and the IWG representatives has been informed at the JRC Workshop for the SET Plan Reporting & Monitoring.

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the ETIPs Forum:

- Integration into the future Energy System with ETIP – Batteries, SNET, PV, CSP IWG and Wind
- Infrastructure and grid requitements for off-shore deployment with ETIP Wind
- Accelerating consenting processes with ETIP WIND
- Marine Spatial planning with ETIP SNET
- Flexible Electricity generation with ETIP SNET

[2] https://smartspend.eu/events/access-to-risk-finance-conference-and-smartspend-closing-event/

EMIRI on Advanced materials for clean energy & clean mobility: No SET Plan Implementation working groups exists on these technologies. However, EMIRI will follow up with the Energy Storage IWG.

CIRCE Foundation in representation of SPIRE (Process industry): The chair of IWG Energy Industry efficiency processes was informed about the overlapping synergies and found it interesting.

ZABALA Brussels in representation of ETIP SNET (Smart energy networks): ETIP SNET follows several sectors that can be related to the other ETIPs from several aspects.

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the ETIPs Forum:

- Integration into the future Energy System with ETIP – Batteries, Ocean, PV, CSP IWG and Wind
- Flexible Electricity Generation with ETIP Ocean
- Heat distribution with ETIP RHC
- Definition for KPIs for storage technologies with ETIP Batteries
- Many other collaboration activities with other technologies under discussion

WIP in representation of ETIP PV (Photovoltaics): The report was disseminated to the chair of IWG PV and the Steering Committee members of the ETIP PV. An interview took place with the chair of the IWG PV and he was informed about the overlapping synergies and agreed to them. For the PV sector it is important to look in deeply into applications and energy efficiency in buildings. He proposed a common meeting which took place at the SC meeting in October 2019. In 2021, at a joint meeting of IWG 5 and IWG PV on 23, it was decided that a possible collaboration between the two on the topic of active façades could happen[3].

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the ETIPs Forum and at the IWG meeting:

- Integration into the future Energy System with ETIP – Batteries, SNET, Ocean, CSP IWG and Wind
- Energy efficiency in buildings: Active façade for buildings with ECTP

ESTELA in representation of the Solar thermal electricity (Concentrated Solar Power sector): The chair of the CSP IWG has acknowledged the synergies between of the technologies and certain research agendas, and at the JRC Workshop for the SET Plan Reporting & Monitoring were informed about D1.1. Further possibilities for cooperation are still being explored. It appears that cooperation opportunities across technologies could be implemented at EU level, while such possibilities for industry need to be considered in distinctive regional/national approaches.

[3] Minutes circulated by IWG5 leader on 29 Apr 2021

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the ETIPs Forum:

- Integration into the future Energy System with ETIP – Batteries, SNET, PV, Ocean and Wind
- Energy Efficiency in buildings: heating and cooling with ETIP RHC and DG

EASE Energy Storage/Batteries: Exchange with the co-chair of the SET Plan Temporary Working Group on Batteries, took place. It is important to become competitive in the global battery sector to drive e-mobility and stationary storage forward. He had the following statements, which are summarised here:

- In D1.1 synergies were reported on 5. Deep geothermal and on 11. Batteries within the IMPLAN of IWG Storage, however, he does not see significant synergies
- Synergies were reported on 9. Energy efficiency in buildings and 11. Batteries with the IMPLAN IWG Storage where he does not see significant synergies. But he sees synergies on hybridisation of battery systems for stationary energy storage and second use and smart integration into the grid.
- He believes the non-technical synergies are well-defined.

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the ETIPs Forum:

- Integration into the future Energy System with ETIP – SNET, PV, Ocean, Wind and CSP IWG
- Definition for KPIs for storage technologies with ETIP SNET

EGEC ETIP DG: At different occasions the chairs from of the IWG Deep Geothermal were informed about the overlapping interests and synergies.

For geothermal, for example, there are synergies with several IWG: positive energy districts, EE in industry, EE in buildings, Batteries, Energy Systems reported in D1.1 from SMARTSPEND and this should also be reported in the SET Plan Reporting & Monitoring report.

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the ETIPs Forum:

- Energy Efficiency in buildings: heating and cooling with CSP IWG and ETIP RHC
- Synergy with the Smart Cities: due to its contribution to the heating of buildings and e-mobility

ECTP (Innovative and energy-efficient built environment and construction sector Energy-efficient buildings and construction): The chair of the IWG was informed about the availability of D1.1 at the JRC Workshop for the SET Plan Reporting & Monitoring.

The following common potential/preliminary collaboration activities were discussed and identified with other ETIPs during the IWG meeting:

- Energy efficiency in buildings: Active façade for buildings with IWG-PV

FNR ETIP Bioenergy: The chair of IWG Bioenergy was contacted and was informed about the synergies. He was also informed about the availability of D1.1 at the JRC Workshop for the SET Plan Reporting & Monitoring.

Cross-sectorial and horizontal activities for future potential collaborations are the following:

- Sustainability & circular economy
- Education and training
- Digitalisation and data space
- Dissemination activities (e.g. Access to risk finance conference, continuation)

Currently, frameworks for ETIPs to collaborate are under discussion.

In Nov 2021 the Commission released its assessment of IWGs' potential to work together in its SET Plan Progress Report 2021, commenting that there was "more readiness to collaborate between [IWGs] than ever before"[4]. At the SET Plan Conference held that same month, the Commission noted a need "exploit synergies better between EU and national/sub-national funding", which could be a non-technical area in which IWGs could work together.

Finally, most of the ETIPs have recently developed (or are still in the process of developing) a 'Strategic Research and innovation Agenda' (SRIA) whose results will also be used by the IWGs to identify new priorities.

4. Conclusions

SMARTSPEND's D1.1 report Overlapping interests: A description of the common ground between Implementation Plans identifies 23 technological synergies and 20 non-technological synergies. As such, it represents a first step in identifying and exploiting the synergies between different energy sectors, as identified in the SET-Plan.

In order to have a proper set of synergies between different IWGs, it is crucial to have a more holistic and inclusive approach, which involves other energy research-related groups, such as ETIPs. In fact, ETIPs play an important role in identifying the main research priorities for the SET-Plan sectors, and will be supporting more closely the work of the IWGs, with the Horizon Europe contracts expected to start in the fourth quarter of 2022.

[4] Figs 2, 3, 4

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The SMARTSPEND consortium has been instrumental in starting the process of identifying and exploiting the synergies amongst different energy sectors. This work now needs to be further continued through potential collaboration amongst the sectoral ETIPs (technology sector).

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Annex - Overlapping interests between Implementation Plans - Summary

Overlapping interests between Implementation Plans

Industry, national governments and the European Commission all want to invest in **clean energy** research & development. **SMARTSPEND** is a 3-year, EU-funded project running until 30 November 2021 that aims to find new ways to coordinate and increase those investments.

www.smartspend.eu

The SMARTSPEND project is supporting the execution of the Strategic Energy Technology Plan (**SET-Plan**) of the European Commission. Its main objectives are to foster efficiency in allocation of **public & private funding**, and to better inform stakeholders through the preparation and dissemination of six reports. Another key dissemination action is based on **engagement with policy makers**.

The deliverable '**Overlapping interests: a description of the common ground between Implementation Plans**' is the main result of activities tasks T1.1 (*Technology synergies*) and T1.2 (*Non-technology synergies*) of the SMARTSPEND project coordinated by EUREC and funded by European Union's Horizon 2020 programme.

The main aim of this deliverable is to present, in a concise and clear manner, the critical **overlaps and synergies** between the different Implementation Plans (also referred as "IMPLANs") developed in the framework of the 10 Key Actions defined by the SET-Plan and outline suggestions to grasp these synergies.

The key objective is to achieve a more **efficient and effective** use of the national and European **public funding** for R&D&I in the energy sector

To achieve the objectives of T1.1 and T1.2, a two-fold methodology was followed. On the one side, a desk study-based methodology to identify the **main technology synergies** between the SET-Plan IMPLANs (T1.1) was conducted, mapping all potential overlaps and complementarities between the different technical activities proposed in the 12 IMPLANs.

	Photovoltaics	Concentrated Solar Power	Offshore Wind	Ocean Energy	Deep Geothermal	Smart Cities	Energy systems	Energy Efficiency for Buildings	Energy Efficiency in Industry	Batteries	Bioenergy and Renewable Fuels	CCS and CCU
Photovoltaics												
Concentrated Solar Power												
Offshore Wind												
Ocean Energy			1									
Deep Geothermal		1										
Smart Cities												
Energy systems					1	1						
Energy Efficiency for Buildings	1	1			1	2	1					
Energy Efficiency in Industry		1	3		1			2				
Batteries					1			1				
Bioenergy and Renewable Fuels		1	1						2			
CCS and CCU					1				1			

Overview of **technology synergies** found in Deliverable 1.1 of

These were analysed in detail in the deliverable by way of a **fiche system** that describes the overlaps and proposes potential solutions.

In order to optimally describe the synergies detected, several fields were defined and agreed with the members of the consortium, including number of synergetic **activities**, IMPLANs, description of the synergy, **common targets**, TRLs, common member states and stakeholders and budget synergies.

In total, **23 technology synergies** (22 doubles and 1 triple) were identified in this report. These were also described in an equal number of fiches, following the same approach than the IMPLANs for ease of reference.

Combining the resources dedicated to these and other identified applications could potentially bring **important savings** to the European Commission and Member States, while it would maximise the available budget and the synergies between the developments carried out in the different projects in this area.

Many countries are found to be interested in dedicating resources to actions **overlapping with each other**

A different approach was followed for the **non-technology synergies**. In this case, the scope of the analysis went beyond the activities included in the 12 IMPLANs, as in many cases non-technology activities were not present. To identify the common non-technology factors to all SET-Plan sectors that condition the fulfilment of the IMPLANs' targets, a **half-day workshop** with all SMARTSPEND partners was organised, since SMARTSPEND partners are mainly European associations, which are directly involved in the work of the IMPLANs, and regularly monitoring regulatory and other non-technical issues that can have an impact on their sectors' development. A discussion to agree on those issues that were relevant for several sectors followed, resulting in **20 non-technology issues.**

Examples of this non-technical issues include **financial conditions** (fit-for-purpose design and availability of all financial instruments; better access to finance; improving investors' confidence and knowledge), **regulation** (covering existing gaps, overcoming potential regulatory barriers; clarifying ambiguous regulatory texts; simplified permitting processes), **public policy** (improving public support mechanisms; reinforcing trust in cooperation instruments; inclusion of environmental benefits); **social issues** (enhancing public acceptance; increasing public awareness of benefits), **training and education** (improving knowledge transfer mechanisms), and **certification and standardisation** (developing higher quality standards; homogeneous approach to environmental impact assessment). Increasing public awareness of the benefits of the SET-PLAN technologies is considered as the most relevant non-technical factor that could boost the uptake of these technologies. Other important factors are: inclusion of environmental benefits in support schemes; boosting customer/public engagement; and ensuring a long-term and stable regulatory framework. Finally, the

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SMARTSPEND consortium suggests common actions that could be undertaken to overcome these issues, such as the introduction of a carbon tax, the definition of a long-terms strategy that involves all concerned stakeholders, and the establishment of Regulatory Innovation Zones (RIZ).

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Being most of these issues rather **horizontal**, the potential synergies mapped between sectors and IWGs are much higher than in the case of technology synergies. In order to tackle these issues, Member States and the European Commission will need to **cooperate** across Implementation Working Groups. Prospective alternatives were also proposed and included in the report.

In conclusion, this deliverable has **identified key synergies** between IMPLANs and funding mechanisms that affect how resources are dedicated and distributed among member states. SMARTSPEND's recommendations **help the European Commission and Member States** to build an optimised, integrated approach that goes beyond technology silos to overcome the ambitious challenges that Europe is facing.

Consortium

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