



Creating a Centre of EXCELlence on sustainable Energy at NCSR Demokritos

Deliverable 4.2 – Personnel and synergies with NCSR labs

List of recruited personnel, including their expertise, and established synergies with NCSR labs

Management Board, NCSR

EXCELLEND – A HORIZON Coordination & Support Action funded under HORIZON-WIDERA-2023-TALENTS-01-01 - ERA Chairs

Grant no. 101185742

Start date: 01/02/2025

Duration: 60 months

Project coordinator: National Centre for Scientific Research “Demokritos” (NCSR)

Coordinator contact: George Kosmadakis, gkosmad@ipta.demokritos.gr



**Funded by
the European Union**

Deliverable title		Deliverable No
Personnel and synergies with NCSR labs		D4.2
Author(s) Management Board, NCSR		Pages 20
		Date of delivery 29/04/2026 – M15
Summary This deliverable includes two main parts, with the first related to the recruitment of researchers to form the new team, and the second to the synergies with the existing staff of different laboratories at the National Centre of Scientific Research “Demokritos” (NCSR). Regarding the set-up of the team, the initial plan of the Centre of Excellence (CoE) has been updated at the early stages of the project, to finalise the research topics, integrating the know-how and expertise of the ERA Chair holder, Prof. George Tsatsaronis (GT). The second part of this deliverable concerns the meetings of the management board (MB) of the CoE with the staff of different laboratories of NCSR, aiming to establish collaborations related to the defined research topics.		
Confidentiality PU – Public		Type R — Report
<i>Funded by the European Union’s Horizon Europe research and innovation programme under grant agreement nr. 101185742. The information and views expressed are those of the authors and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.</i>		

Document history

Version	Date of issue	Content and changes
1	11/11/2025	First draft
2	01/03/2026	Second draft and review
3	09/04/2026	Final draft
4	29/04/2026	Final version

Table of Contents

1	Introduction	5
2	Research topics and required expertise of the team.....	5
2.1	Final research topics.....	5
2.2	Highlights of the research topics/groups	7
2.3	Required expertise of the team	8
3	Recruitment process and team members.....	9
3.1	Open vacancy notices.....	9
3.1.1	First open vacancy notice with 1 position	9
3.1.2	Second open vacancy notice with 1 position	9
3.1.3	Third open vacancy notice with 4 positions	10
3.1.4	Fourth open vacancy notice with 1 position	10
3.1.5	Fifth open vacancy notice with 1 position.....	10
3.1.6	Sixth open vacancy notice with 2 positions	11
3.2	The recruited team members.....	11
3.3	The recruited personnel to support the Team	12
3.4	Gender balance of recruited team members.....	12
4	Synergies with NCSR laboratories.....	13
4.1	Solar & other Energy Systems Laboratory.....	13
4.2	Integrated Hydrogen Laboratory.....	14
4.3	Laboratories of the Institute of Informatics & Telecommunications.....	16
4.4	Membranes and Materials for Environmental Separations Laboratory & Environmental Research Laboratory	18
4.5	ENVIRONMENTAL Radioactivity & Aerosol technology for atmospheric and Climate impact Lab 18	
4.6	Summary of synergies and possible collaborations with NCSR laboratories.....	18
5	CoE team meetings	19
5.1	First CoE team meeting	19
5.2	Second CoE team meeting	19
5.3	Third CoE team meeting.....	20
6	Conclusions and next steps.....	20

Abbreviations

AI	Artificial intelligence
CoE	Centre of Excellence
ENRACT impacT Laboratory	ENvironmental Radioactivity & Aerosol technology for atmospheric and Climate impact Laboratory
ERA	European Research Area
EREL	Environmental Research Laboratory
GA	Grant agreement
GK	George Kosmadakis
GT	George Tsatsaronis
H2Lab	Integrated Hydrogen Laboratory
IIT	Institute of Informatics and Telecommunications
INN	Institute of Nanoscience and Nanotechnology
INRASTES	Institute of Nuclear & Radiological Sciences and Technology, Energy & Safety
IRP	International Recruitment Panel
MB	Management board
MESL	Membranes and Materials for Environmental Separations Laboratory
NTUA	National Technical University of Athens
ORC	Organic Rankine cycle
SESL	Solar & other Energy Systems Laboratory
SKEL	Software & Knowledge Engineering Laboratory

1 Introduction

This deliverable includes two main parts, with the first related to the recruitment of researchers to form the new team, and the second to the synergies with the existing staff of different laboratories at the National Centre of Scientific Research “Demokritos” (NCSR), as well as the team meetings.

Regarding the set-up of the team, the initial plan of the Centre of Excellence (CoE) has been updated at the early stages of the project, to finalise the research topics, integrating the know-how and expertise of the ERA Chair holder, Prof. George Tsatsaronis (GT). According to the structure of the CoE, each research topic corresponds to a group, with each one involving senior and young researchers. Once this first step was concluded by M3 of the project, the number of researchers to be recruited was identified at 8, with the next step being the definition of the necessary expertise of each one based on the research topics of the groups. These requirements drove the drafting of the evaluation criteria to be included in the open vacancy notices that were released in different stages during 2025 and early 2026. This procedure is described in this deliverable, resulting in the final list of recruited researchers, with their short CVs provided on the project website¹.

The second part of this deliverable concerns the meetings of the management board (MB) of the CoE with the staff of different laboratories of NCSR, aiming to establish collaborations related to the defined research topics. These meetings started early in the project, from M2 and onwards, in order to have sufficient time to identify the laboratories with which there could be strong synergies during the project and afterwards. Moreover, three team meetings took place during this first period with the participation of the recruited members and of representatives from other groups at NCSR.

2 Research topics and required expertise of the team

During the proposal preparation, five research topics were identified that reflected the existing and anticipated expertise that will be available in the new team, also introducing the expertise of GT. This led to the formulation of the 5 groups with each one corresponding to a separate research topic. However, these groups do not operate independently within the CoE, because the whole team is built upon a highly collaborative approach. In other words, it is expected that each group will closely collaborate with other groups, working synergistically.

The final research topics of the new team were defined at the early stages of the project, in order to drive the activities from that moment and onwards. The content of these research topics determined the specific skills required for the team members, driving the open recruitment of both senior and junior researchers.

2.1 Final research topics

One of the first items for discussion in the kick-off meeting that took place in March 2025 was the finalisation of the research topics, an item that also affects the possible joint work that could be conducted in cooperation with other NCSR laboratories, as discussed in several meetings that took place with the staff of those laboratories. Moreover, the content of group 4 has been revised to better integrate the know-how of GT related to exergy-based methods for the evaluation of energy conversion processes, which can contribute to the process optimisation. GT will lead this group. Other minor changes were implemented to better reflect the content of each group, keeping the number of

¹ <https://excellend-era-chair.eu/team/>

research topics/groups to 5, because this number is related to the number of researchers to be recruited.

The structure of the 5 finalised research topics ensures strong interaction and cross-fertilisation among them. The team members are assigned to each of those 5 groups, with each group addressing a specific research topic. In other words, a research topic and a group can be treated as interchangeable terms to some extent from now on.

A group leader is allocated to each group, to steer the activities of that group and explore new opportunities. Another role of this leader is to advance the knowledge of the young researcher of the same group, by providing guidance and training. For a better integration of the team at NCSR D and more precisely to the Solar & other Energy Systems Laboratory (SESL)² of the Institute of Nuclear & Radiological Sciences and Technology, Energy & Safety (INRASTES)³, existing senior personnel of INRASTES will be managing/leading the activities of two groups, initially under the guidance of GT and later under the permanent leader, when this person is appointed. This ensures at the same time a better understanding and use of the existing infrastructure and tools.

The final research topics and groups are given in Table 1, which also provides a short description of the content and some highlights of the technological solutions. The content and priorities of these groups may be updated along the project, as deemed appropriate. The fine-tuned topics will be included in the public deliverable *D6.1: Research priorities and topics*, to be submitted by M27.

Table 1. Final research topics and groups

Group No.	Group title	Description
1	Solar energy applications and thermal storage	This group deals with experimental and numerical tasks of: 1. solar thermal applications (low to medium temperatures) 2. heat storage at temperatures below 150-200 °C 3. solar thermal-driven systems
2	Heat pumps and refrigeration systems	This group conducts experimental and numerical work associated with: 1. heat pumps dealing with new refrigerants; cycle designs and components (e.g. compressors) 2. integration of heat pumps into energy systems (e.g. industry, mobility) 3. high-temperature heat pumps for waste heat recovery 4. relevant services that could be provided
3	Thermal processes and integrated energy systems	This group focuses on renewable (e.g. solar thermal, geothermal) and waste heat that is converted to power using a thermal cycle, such as an ORC, as well as on the use of green/alternative fuels and energy storage within integrated thermal-based energy systems. Applications include domestic, industrial, and marine ones based on thermal processes, with combined-heat-and-power, tri-generation and Power-to-X systems.

² <https://inrastes.demokritos.gr/laboratories/solar-other-energy-systems-laboratory/>

³ <https://inrastes.demokritos.gr/>

4	Evaluation and improvement of energy conversion processes	This group deals with advanced exergy-based methods for the evaluation and improvement of energy systems (exergy analysis, exergoeconomics, exergoenvironmental analysis) – further development and applications.
5	Digitalisation and flexibility	This group will be interacting with each of the above groups, since it focuses on smart/intelligent control and optimisation strategies of (sustainable) energy systems. Activities include model predictive control, machine learning, applications of artificial intelligence, and new control techniques of various energy systems.

2.2 Highlights of the research topics/groups

The first group is directly linked with the SESL of NCSR D that hosts the team members of the ERA Chair, expecting several synergies and the use of its existing infrastructure⁴ (e.g. a solar field of parabolic trough collectors or latent/sensible thermal storage units).

The second group deals with heat pumps and refrigeration systems, focusing on both domestic and industrial applications, including testing and modelling activities and the option of providing specific research services.

The third group focuses on thermal processes and cycles (heat-to-X conversion, including organic Rankine cycle (ORC) technology for converting waste heat to power) and on the integration of renewable energy sources.

The fourth group evaluates energy conversion processes possibly driven by renewables, with the aim to improve their performance (efficiency, costs and environmental impact). This improvement will heavily rely on exergy-based methods for evaluating the economic and environmental variables associated with different energy systems.

The fifth group uses advanced digital tools for the design and control of energy systems, including AI-based techniques and methods. This represents a new activity at NCSR D with a large potential. It is expected that this group will greatly interact with many other groups.

The above list of research topics/groups set the basis for the open recruitment process of the new team members, and defined the required qualifications of each member. The finalisation of this list was necessary to initiate the procedure for the drafting and then the release of the open vacancy notices. The entire process from the advertisement of the position until a contract is signed requires on average 2 months.

Finally, not all these research topics are entirely new to NCSR D (e.g. groups 1 and 2). However, their content and purpose was expanded, capitalising on the extensive expertise and know-how of GT. Moreover, these topics address open research activities closely related to the efforts of the EU (e.g. the European Green Deal⁵) to reduce carbon emissions and improve energy security.

⁴ http://www.solar.demokritos.gr/prometheus/index_en.html

⁵ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en.

The available (existing researchers of NCSR) and required expertise of the team (researchers to be recruited) based on the above discussion are presented next.

2.3 Required expertise of the team

As described in the Grant Agreement (GA), the leader of group-1 is a member of the SESL staff, Dr. Emmanouil Mathioulakis⁶, who has significant experience on experimental facilities related to solar thermal collectors and the design of experiments for more than 30 years. He will be leading the activities of this group and support the testing activities of other groups, in case this is needed. A senior researcher was recruited to work together with Dr. Mathioulakis, with a particular focus on integrating solar heat into industrial processes.

The second group is relevant to heat pumps and refrigeration systems, with emphasis on high-temperature heat pumps for industrial and marine applications. The group leader is Dr. George Kosmadakis⁷, as also described in the GA. He has an extensive expertise in such technologies for more than 10 years with a strong track record. A young researcher was recruited for this group to support the activities for the advancement of the heat pump technology, expecting large interaction with groups 1 and 3.

Group-3 includes several topics, since it is the result of merging two groups with some overlaps. This group deals with waste heat recovery solutions, integrated energy systems driven by renewables and the use of alternative fuels. Due to the large variety of technological solutions, it includes 3 members in total, a senior researcher to lead the activities of this group, and two young researchers.

Group-4 is dedicated to the know-how of GT related to exergy-based methods for evaluating the performance of energy systems. The research topic of this group is new and has been introduced by GT to expand the activities of NCSR. Therefore, it has been decided that GT himself will lead the group-4 activities, supported by a young researcher.

Finally, the work of group-5 represents a rather new activity to both NCSR and the CoE, but with significant room for integration and use of new techniques. The members of this group will be dealing with optimisation methods and smart control of energy systems based on computational methods, with some based on AI-based tools. Support will be provided by the personnel of another NCSR laboratory, SKEL Lab⁸, which belongs to the Institute of Informatics and Telecommunications (IIT)⁹, with which close collaborations have already been established. A senior and a young researcher were recruited to work in this group, expecting large interactions with the other groups.

It should be mentioned here that the term “*senior researcher*” corresponds to a Ph.D. holder or to a researcher with similar qualifications (e.g. research work for more than 4-5 years), equivalent to R2/R3 according to the European Framework for Research Careers¹⁰. Whereas the term “*young researcher*” corresponds to a researcher without a Ph.D. or with few years of research experience in the field (or with no prior experience), equivalent to R1 profile.

⁶ <https://inrastes.demokritos.gr/personnel/mathioulakis-emmanouil/>

⁷ <https://inrastes.demokritos.gr/personnel/kosmadakis-george/>

⁸ SKEL Lab of IIT: <https://www.skel.ai/>

⁹ <https://www.iit.demokritos.gr/>

¹⁰ <https://circabc.europa.eu/sd/a/d1ae7fdd-e80f-4b54-973b-dcea380132e4/ED-20120315-WG3-Point%203-Framework%20Research%20Careers-short.pdf>

3 Recruitment process and team members

The first step of the recruitment process was to identify the desired expertise of each researcher and to define the evaluation criteria that will be used during the recruitment process of the team members. This process started in May 2025 (M4) and it was decided to split the process into several stages. The whole process was supported by the International Recruitment Panel (IRP) that was formed at the initial stages of the project. One of its main tasks is to rank the applications based on the evaluation criteria, as described in the public deliverable *D1.5: Composition of the Int. Advisory Board and of the Int. Recruitment Panel*.

3.1 Open vacancy notices

The different rounds of recruitment are presented next, with a variable number of positions advertised each time according to the required/desired expertise.

3.1.1 First open vacancy notice with 1 position

The first stage concerns an open vacancy notice for the first researcher, which concerns the position of group-1, since its content was defined early with sufficient detail. The notice was released on the NCSR D website¹¹ and on Euraxess¹² in June 2025.

There were three applications with two of those in close competition, since the applicants were both holding a Ph.D. on solar thermal applications. After a very detailed evaluation of the supplied documents (also by the IRP), it was decided to proceed with the recruitment of Dr. Theodoros Papingiotis, a mechanical engineer from the National Technical University of Athens (NTUA) with a research experience on solar thermal collectors and solar-assisted applications. Theodoros actually belongs to the senior researcher category, although the initial intention was to recruit a junior researcher for that group. However, it was decided to involve Theodoros in the activities of other groups to a larger extent (e.g. group-2). The minutes of the selection process are open and published in the announcement page¹³ (available only in Greek), without disclosing the names of the applicants.

3.1.2 Second open vacancy notice with 1 position

The second vacancy notice concerns one senior position under group-5. The required qualifications of this position included a Ph.D. degree and an engineering background with extensive modelling experience. The notice was released on the NCSR D website¹⁴ and on Euraxess¹⁵ in October 2025.

For this position there was one candidate, Dr. Enrico Dal Cin, with his expertise matching the requirements of this position, as described in the selection minutes¹⁶. Dr. Dal Cin holds a Ph.D. in Industrial Engineering from the University of Padova, Italy, and his research activity focuses on the use of mathematical optimisation techniques for the design and operation of energy systems that are both economically and environmentally sustainable. Dr. Dal Cin is a senior researcher in EXCELLEND team and will lead the group-5 activities and effectively collaborate with the other groups of the project.

¹¹ <https://www.demokritos.gr/jobs/015-2025-2202/>

¹² <https://euraxess.ec.europa.eu/jobs/351413>

¹³ https://www.demokritos.gr/wp-content/uploads/2025/08/epikirosi_praktiko_0152025-2202.pdf

¹⁴ <https://www.demokritos.gr/jobs/015-2025-3784/>

¹⁵ <https://euraxess.ec.europa.eu/jobs/382142>

¹⁶ https://www.demokritos.gr/wp-content/uploads/2025/12/epikirosi_praktiko_0152025-3784.pdf

3.1.3 Third open vacancy notice with 4 positions

The third stage concerns an open vacancy notice for four (4) positions, two of which are researchers concerning the positions of groups 3 and 4, and another two positions for research management tasks (see section 3.3.). The notice included one junior researcher, chemical engineer, specialising in the field of energy systems (for group-4) and another senior researcher, mechanical engineer, holder of a Ph.D. diploma specialising in the field of energy systems and in particular low-temperature heat to power solutions such as ORC systems (for group-3). The open announcement was released on the NCSR D website¹⁷ and on Euraxess^{18,19} in November 2025.

There was one candidate for group-3, Dr. Erika Ntavou, and her expertise matched the requirements of the notice. She holds a Ph.D. in mechanical engineering from the NTUA with a research experience on low-temperature heat to power systems and also water treatment systems driven by ORC systems.

In group 4, there were two candidates, both chemical engineers. Both candidates had similar qualifications. After a detailed evaluation of the supplied documents (also by the IRP), it was decided to proceed with the recruitment of Ms. Alexandra Pavlidi. She studied at the NTUA, and is currently working on process design and modeling of liquid-organic-hydrogen-carrier systems combined with different powertrains for maritime and naval applications. The selection minutes for all positions were released in December 2025²⁰.

3.1.4 Fourth open vacancy notice with 1 position

The fourth vacancy notice concerns one junior position under group-5. The main required qualifications of this position included a mechanical engineering degree and basic knowledge on AI-based tools and methods. The notice was released on the NCSR D website²¹ and on Euraxess²² in November 2025 and two applications were received.

With feedback from the IRP, the position has been filled by Ms. Soultana Apostolia (Tania) Anagnostaki, a mechanical engineer from the NTUA with a background in energy systems and experience in computational analysis and engineering simulations, and in particular on Artificial Neural Networks for system performance prediction. The selection minutes were released at the end of December 2025²³.

3.1.5 Fifth open vacancy notice with 1 position

The fifth vacancy notice concerns one junior position under group-2. The required qualifications of this position included a mechanical engineering degree and knowledge in design and set up development

¹⁷ <https://www.demokritos.gr/jobs/015-2025-3977/>

¹⁸ <https://euraxess.ec.europa.eu/jobs/385722>

¹⁹ <https://euraxess.ec.europa.eu/jobs/385724>

²⁰ https://www.demokritos.gr/wp-content/uploads/2025/12/epikirosi_praktiko_0152025-3977.pdf

²¹ <https://www.demokritos.gr/jobs/015-2025-4223/>

²² <https://euraxess.ec.europa.eu/jobs/391316>

²³ https://www.demokritos.gr/wp-content/uploads/2025/12/epikirosi_praktiko_0152025-4223.pdf

of reversible heat pump/ORC systems for waste and/or renewable heat use. The notice was released on the NCSRD website²⁴ and on Euraxess²⁵ in January 2026.

There were two applications for this position, both from mechanical engineers. After consulting with the IRP members, the position has been filled by Mr. George Meramveliotakis, a mechanical engineer from the NTUA. His area of expertise covers numerical and experimental tasks of heat pumps and ORC systems, also having industrial experience relevant to automations and control of heat pumps and refrigeration systems. The selection minutes were released in April 2026²⁶.

3.1.6 Sixth open vacancy notice with 2 positions

The sixth (and final) vacancy notice concerns two junior positions under group-3, requiring a mechanical engineering degree. One researcher will be working on numerical and experimental investigations of cooling/heating energy systems for buildings, integrated with renewables. The second researcher will focus on the development of waste heat recovery systems. The notice was released on the NCSRD website²⁷ and on Euraxess^{28,29} in March 2026.

For the first position one application has been received from Mr. Nikos Maistralis, a mechanical engineer from the NTUA. Considering his qualifications and working experience, he has been selected to fill the position, after a positive response from the IRP.

For the second position three applications were received, with two of them being very relevant to the position's requirements. The interviews were conducted at the beginning of April 2026, and the response from the IRP members ranked the three applicants. Finally, Mr. George Choustoulakis was selected to cover the last position (a mechanical engineer from the Aristotle University of Thessaloniki). The selection minutes of both positions were released in April 2026³⁰.

3.2 The recruited team members

The recruitment process started in M4 (May 2025) and was finalised in M15 (April 2026), with all 8 researchers selected after an open procedure. The recruited team members are shown in Table 2, also indicating whether each member had any previous contract with NCSRD or not. The short CVs of all members are uploaded in the dedicated space of the project website³¹.

Table 2. Team members per group

Group Nr.	Group title	Recruited members	Previous contract with NCSRD
1	Solar energy applications and thermal storage	Dr. Theodoros Papingiotis	NO
2	Heat pumps and refrigeration systems	Mr. George Meramveliotakis	YES

²⁴ <https://www.demokritos.gr/jobs/015-2026-4/>

²⁵ <https://euraxess.ec.europa.eu/jobs/400124>

²⁶ https://www.demokritos.gr/wp-content/uploads/2026/04/epikirosi_praktiko_0152026-4.pdf

²⁷ <https://www.demokritos.gr/jobs/015-2026-1245/>

²⁸ <https://euraxess.ec.europa.eu/jobs/422991>

²⁹ <https://euraxess.ec.europa.eu/jobs/422992>

³⁰ https://www.demokritos.gr/wp-content/uploads/2026/04/epikirosi_praktiko-0152026-1245.pdf

³¹ <https://excellend-era-chair.eu/team/>

3	Thermal processes and integrated energy systems	Dr. Erika Ntavou (leader)	YES
		Mr. Nikos Maistralis	NO
		Mr. George Choustoulakis	NO
4	Energy conversion processes evaluation and improvement	Ms. Alexandra Pavlidi	YES
5	Flexibility and digitalization	Dr. Enrico Dal Cin (leader)	NO
		Ms. Tania Anagnostaki	NO

Out of the 8 recruited researchers, 3 had a previous contract with NCSR D, while the other 5 did not. Moreover, the recruited team members include 3 senior researchers (2 “new” and 1 “old”), perfectly aligned with the contractual requirements of NCSR D, as defined in the GA.

3.3 The recruited personnel to support the Team

In addition to the members of the research team presented above, another recruitment process (part of the third vacancy notice) concerned the personnel to work on upgrading the services provided to all NCSR D researchers, and specifically:

1. A project manager to contribute to proposal writing and fundraising activities.
2. A dissemination-communication-exploitation (DEC) manager to assist in DEC activities and networking.

Four applications were received for those two positions and the screening and selection process (including interviews with the applicants) concluded to the recruitment of:

1. Project manager: Dr. Sarantis Kotsilitis, Information and Communication Systems Engineer, and Ph.D. holder in Energy Monitoring Technologies for Energy Efficiency and Device Health Assessment. He has a long professional experience as technical leader, scientific coordinator, and project manager for various H2020-funded projects, while his expertise in energy applications will greatly accelerate his support to the team’s efforts.
2. DEC manager: Ms. Maria Symirdani who holds a bachelor degree in Communication and Digital Media and a Master Degree in International Relations. She has worked as communication assistant in the Council of Europe before joining NCSR D.

These two managers will be integrated to NCSR D and trained by Dr. Katerina Tzortzatou (the head of the newly established Fundraising Unit of NCSR D). She is also the person in charge of those tasks at NCSR D and the WP5 leader. Finally, the short CVs of the selected managers are included in the dedicated space of the project website³² (under “Research Management” staff members).

3.4 Gender balance of recruited team members

The total number of recruited researchers and managers is 10. Equal opportunities were given to all applicants during the process, regardless of gender or nationality. In total 19 applications have been received for those 10 positions, 6 applications from women and 13 applications by men. The participation of women in the recruited personnel is 40% (4 out of 10), which is higher than the average female participation of 28% in Greek research organisations relevant to engineering and technology³³.

³² <https://excellend-era-chair.eu/team/>

³³ EKT, 2022: <https://metrics.ekt.gr/en/publications/601>

4 Synergies with NCSRDL laboratories

In parallel to the recruitment process, the MB of the CoE was continually seeking collaborations within NCSRDL, in order to bring under the same umbrella some activities and thus expand the impact. To achieve this, a series of meetings were conducted between the MB of the project (includes GT and GK) and the staff and directors of various NCSRDL labs to discuss collaboration options.

GK had initial discussions with the staff of different NCSRDL laboratories since the project start to evaluate the interest and perform an initial screening and prioritisation of the laboratories that could be engaged. The MB decided to focus more on groups that could have a stronger interaction with the CoE. The meetings with such laboratories started from the very first visit of GT at NCSRDL in March 2025, which also served as an introduction to the activities and background of NCSRDL. In some cases, more than one meeting was needed, with all relevant activities per laboratory presented next.

4.1 Solar & other Energy Systems Laboratory

The first scheduled meeting with the staff of the Solar & other Energy Systems Laboratory (SESL) of INRASTES³⁴ took place in March 2025. This meeting included a short presentation of the laboratory activities by its Director, Dr. Elias Papanicolaou³⁵, followed by a presentation by GK of the main aim and scheduled activities of the project. The main topics discussed were: (1) the possibility of synergies, for example related to the use of existing infrastructure and experimental facilities, in order to expand their scope, and (2) the co-supervision of young researchers such as Ph.D. students and/or undergraduate students who could conduct their Diploma (or Master) Thesis. It was decided to arrange a follow-up meeting in the near future, when the research topics of the Chair are defined in detail, and to identify rooms for common research and training.

The meeting closed with a tour in the laboratory facilities, with the staff of the SESL presenting the research infrastructure of concentrating solar thermal collectors and thermal storage (Figure 1) and a heat pump-based energy system for buildings (Figure 2).



Figure 1. Tour at the concentrating solar thermal field and thermal storage infrastructure in March 2025

³⁴ <https://inrastes.demokritos.gr/laboratories/solar-other-energy-systems-laboratory/>

³⁵ http://www.solar.demokritos.gr/Papanicolaou_en.html



Figure 2. Tour at the heat pump-based pilot unit in March 2025

A second meeting of GT with the staff of SESL took place in May 2025, after the research topics had been defined. The discussions were more detailed about specific collaborations that could be established leading to joint (small-scale) projects, exploiting the available infrastructure. It should be mentioned here that the project team has frequent interactions with the staff of SESL, since they share the same office spaces (team hosted at SESL offices).

Follow-up meetings took place in the next months (e.g. in July and December 2025) with more detailed discussions and practical aspects, such as to include the modelling work of SESL on advanced thermal energy storage systems in the heat pump modelling of the CoE. The exact timeframe and activities of this joint work will be defined once the role of each team member is specified and the members begin their work.

4.2 Integrated Hydrogen Laboratory

Another meeting of the MB took place with Dr. Thanos Stubos in March 2025 (Figure 3), a researcher of the Integrated Hydrogen Laboratory (H2Lab) of INRASTES³⁶. That period was a transitional one with Dr. Stubos shifting from the Environmental Research Laboratory (EREL)³⁷ to the newly established H2Lab. The aim of this meeting was to explore possibilities for synergies and more specifically with hydrogen related research topics.

Different topics were discussed, spanning from possible methods of hydrogen production and storage to the use of alternative fuels in shipping (e.g. ammonia, methanol). Possible interactions include the coupling of electrochemical processes (topic of H2Lab) with the thermal processes (topic of the CoE) that accompany such systems, and more specifically the exploitation of waste heat for electricity generation or even heat upgrading with the use of high-temperature heat pump technology to also consider its use for hydrogen thermal-driven compression.

³⁶ <https://inrastes.demokritos.gr/laboratories/integrated-hydrogen-laboratory-h2lab/>

³⁷ <https://inrastes.demokritos.gr/laboratories/environmental-research-laboratory/>



Figure 3. Meeting of Dr. Stubos (at the right) with Prof. Tsatsaronis (at the left) in March 2025

A follow-up meeting took place in May 2025, to discuss concrete topics for joint work, also within future research projects. A new member of H2Lab participated in this meeting, Dr. Manos Stamatakis³⁸, who was recently appointed at NCSRDT to the permanent position of Researcher B', and his expertise is on hydrogen technologies. Two main topics for possible collaborations were discussed in detail:

1. The advancement of the thermal hydrogen compressor that the H2Lab is exploring³⁹ with a prototype system installed at the NCSRDT campus (Figure 4). The possibility of lifting the operational temperature to over 90 °C has been discussed, while integrating either heat-to-power (e.g. ORC system) or heat upgrading solutions (e.g. heat pump), with both technological solutions being within the research topics of the CoE.
2. The further work on the use of alternative fuels (e.g. ammonia, hydrogen) in shipping and in industry, by expanding the current collaboration of H2Lab with SESL within two research projects (Horizon Europe project SHIP-AH2OY⁴⁰ and national-funded GSRI project NAVGREEN⁴¹). The aim would be to perform more detailed assessments of such integrated energy systems and their heat integration, including the possible use of fuel cells, internal combustion engines and waste heat recovery solutions.

In a follow-up meeting during the summer of 2025, it has been decided to initially focus on the second collaboration option, and recruit a researcher to work in both groups (H2Lab and CoE) in a common topic. This topic has been defined as the hydrogen carrier options from production to end use, including economic, environmental and exergy-based assessments. A young researcher was recruited to work on this topic and co-supervised by GT. The selection of this researcher (Ms. A. Pavlidi) was part of the recruitment process presented in the previous section. She became the link between the two research groups, holding frequent meetings with Dr. Stubos about every month.

³⁸ <https://inrastes.demokritos.gr/personnel/stamatakis-emmanuel/>

³⁹ Gkanas EI, Stamatakis E, Christodoulou CN, Tzamalīs G, Karagiorgis G, Chroneos A, Kuganathan N, Khzouz M, Stubos AK. Study on the operation and energy demand of dual-stage Metal Hydride Hydrogen Compressors under effective thermal management. International Journal of Hydrogen Energy 2021;46(57):29272-87.

⁴⁰ <https://shipah2oy.eu/>

⁴¹ <https://navgreen.gr/en/>



Figure 4. The prototype hydrogen thermal compressor installed at the NCSR campus combined with hydrogen production and storage units

In one of those meetings, it was arranged to visit the hydrogen infrastructure at NCSR. In March 2026, Dr. Stubos presented the prototype hydrogen thermal compressor installed at the NCSR campus to the members of the CoE team (Figure 5). The team had the opportunity to receive insights of this innovative technology developed by NCSR researchers and consider possible integration to their future research, in the frame of synergy with the H2Lab.



Figure 5. Presentation of the hydrogen unit to the CoE team by Dr. Stubos in March 2026

4.3 Laboratories of the Institute of Informatics & Telecommunications

Another meeting took place in March 2025 with a representative of the Software & Knowledge Engineering Laboratory (SKEL) of IIT⁴², Dr. Stasinis Konstantopoulos⁴³, and the management board of the CoE (Figure 6). This laboratory belongs to a different Institute of NCSR (Institute of Informatics & Telecommunications – IIT⁴⁴), also dealing with artificial-intelligence (AI) applications in various domains, with some of those relevant to energy systems.

⁴² <https://www.skel.ai/>

⁴³ <https://www.iit.demokritos.gr/people/stasinis-konstantopoulos/>

⁴⁴ <https://www.iit.demokritos.gr/about-the-institute/>



Figure 6. Meeting of Dr. Konstantopoulos with the management board of the CoE in March 2025

Stasinou presented an AI-related EU project that is currently running (the MANOLO project⁴⁵) to establish a context of their activities and the discussion expanded to an existing collaboration between IIT and INRASTES within a national project related to green shipping (NAVGREEN project⁴⁶, which ended in December 2025). The possibility for member(s) of the CoE to be trained by the SKEL team on AI applications within energy systems has been discussed and agreed. Moreover, Stasinou presented some new innovative processing methods they are developing within the MANOLO project that could change the way of data processing in specialised applications, which remain to be defined and whether they can be applied for energy systems in general.

Another meeting of the MB with representatives of the SKEL lab took place in May 2025, with the main aim to explore possible applications and to discuss ways of collaboration in more detail. Moreover, joint communication actions were agreed to enhance the synergies of the involved groups. Another IIT researcher participated in that meeting, Dr. George Giannakopoulos⁴⁷, representing the INSANE group⁴⁸, further expanding the collaboration options. A useful outcome of that second meeting was that a better understanding of the options of such multi-disciplinary approach was gained. This conclusion is the starting point of a deeper exploration of collaboration options. This will be assisted by the recruitment of a senior researcher in the CoE, who will be leading these activities and facilitating direct communication with the IIT staff.

Once the two members of group-5 were recruited and integrated in the team in February 2026 (Dr. Dal Cin and Ms. Anagnostaki), monthly meetings were arranged with Stasinou to discuss their progress

⁴⁵ <https://manolo-project.eu/>

⁴⁶ <https://navgreen.gr/en/>

⁴⁷ <https://www.iit.demokritos.gr/people/george-giannakopoulos-3/>

⁴⁸ <https://insane.iit.demokritos.gr/>

and next steps. The possibility of joint publications was also discussed and agreed between the meetings' participants.

4.4 Membranes and Materials for Environmental Separations Laboratory & Environmental Research Laboratory

GK initiated discussions in April 2025 with the staff of the Membranes and Materials for Environmental Separations Laboratory (MESL)⁴⁹ of the Institute of Nanoscience and Nanotechnology (INN)⁵⁰ of NCSR-D, in order to arrange a first meeting in July 2025. This group deals with gas separation (including CO₂ capture) and sorption processes among others, with the latter being applicable in advanced heat pump technologies. Some preliminary brainstorming took place and possible collaboration options were discussed prior to the meeting. These will be used as a starting point for the discussions to follow. Moreover, the MESL staff is working closely with EREL of INRASTES on the above topics.

A physical meeting of the MESL and EREL staff with the MB of the CoE took place on the 15th of July 2025. Specifically, Dr. Theodore Steriotis⁵¹ (Researcher A') from MESL and Dr. Georgia Charalambopoulou⁵² (Researcher A') from EREL participated in that meeting, together with the MB of the CoE. The main topics of discussion were the use of porous materials in energy technologies and in particular sorption heat pumps for high-temperature heat supply (applicable for industrial applications). Possible ways of collaboration were discussed that could span from joint work to understand the limitations of these tuneable materials in practical applications up to small-scale testing of sorption materials at the appropriate conditions (e.g. temperature, pressure). A follow-up meeting took place in September 2025, in order to provide updates on possible ways of collaboration. While no firm plans were established at that time, common interests were reaffirmed, and opportunities to develop joint initiatives will continue to be explored.

4.5 ENvironmental Radioactivity & Aerosol technology for atmospheric and Climate impact Lab

The ENvironmental Radioactivity & Aerosol technology for atmospheric and Climate impact Lab (ENRACT)⁵³ of INRASTES deals with environmental processes for a better understanding of climate change. An activity of ENRACT is focusing on the long-term variation of solar radiation due to air pollution and other phenomena, which could have an impact on solar applications.

Within this context, a meeting of the MB of the CoE with the staff of the ENRACT took place in May 2025. It was decided that this topic will be revisited once the recruitment process is finished, and in case a team member will have the relevant expertise to jointly work on such topics.

4.6 Summary of synergies and possible collaborations with NCSR-D laboratories

The interaction and discussions of the MB of the CoE with different NCSR-D laboratories were initiated at the early stages of the project, in order to allow the MB to integrate the outcomes of those meetings in the strategic plan of the CoE. Collaborations were agreed with the staff of different laboratories, as

⁴⁹ https://inn.demokritos.gr/research_group/mmes/#people

⁵⁰ <https://inn.demokritos.gr/the-institute/at-a-glance/>

⁵¹ <https://inn.demokritos.gr/person/theodore-steriotis/>

⁵² <https://inraustes.demokritos.gr/personnel/charalambopoulou-georgia/>

⁵³ <https://inraustes.demokritos.gr/laboratories/environmental-radioactivity-aerosol-air-quality-climate-change-technologies-laboratory-enract/>

presented above. Moreover, some synergies could be stronger with specific groups, such as with the staff of SESL and H2Lab, due to more relevant research topics. These synergies are summarised in Table 3, also giving the highlights of the agreed research topics that collaborations will be explored, as well as the potential of each one in the scale of 1 to 5 (1 is the minimum, 5 is the maximum).

Table 3. Summary of synergies with NCSRD laboratories, research topic and potential

No.	NCSRD lab	Institute	Collaboration under the research topics	Potential (1-5)
1	SESL	INRASTES	- Integration of (concentrating) solar thermal collectors in industrial processes - Thermal storage solutions at temperatures of over 100 °C	5
2	H2Lab	INRASTES	- Waste heat recovery options in fuel cell-based systems - Use of alternative fuels in the marine and industrial sectors - Thermal processes in hydrogen compressors	5
3	SKEL	IIT	AI-based techniques for improving the performance of energy systems	5
4	INSANE		Development of advanced control algorithms and their implementation in prototype energy systems	4
5	MESL	INN	Heat upgrading with sorption processes with the use of new porous materials	3
6	EREL	INRASTES		
7	ENRACT	INRASTES	Effect of air pollution and atmospheric processes on solar radiation availability	1

This initial exploration of possible synergies spanned over 7 NCSRD laboratories across 3 Institutes, covering a variety of research fields.

5 CoE team meetings

Team meetings were organised once the first researchers were recruited. These meetings were scheduled according to the availability of GT and of invited guests from NCSRD laboratories. The next meetings with all team members will be scheduled and implemented under WP6.

5.1 First CoE team meeting

The first CoE team meeting took place in December 2025, where the first recruited team members along with the MB had the chance to meet each other and present their professional profiles and role in the EXCELLEND project. Each member presented the work done so far for EXCELLEND and the immediate future steps, which gave the chance to discuss the exploitation of each member's qualifications for the project. The meeting took place at the main meeting room of INRASTES at building nr. 17 of the NCSRD campus.

5.2 Second CoE team meeting

The second CoE team meeting took place on February 6 2026. With 5 team members recruited (and another two in the Fundraising Unit), the main goal of this meeting was to bring the team together,

introduce the new members and their role in the project and exchange ideas for the smooth beginning of the cooperation. Once again, each member presented their background and the work to be done in EXCELLEND, along with initial ideas and planning. Invited guest researchers from SESL and H2Lab participated, presenting their activities. The meeting took place at the main meeting room of INRASTES at building nr. 17 of the NCSR D campus.

5.3 Third CoE team meeting

The third CoE team meeting took place on March 24 2026, remotely (via Teams). The team had the chance to catch up and update the smooth collaboration between the members, coordinated by GT. Each member presented their research activities and the work done so far, which gave the chance to discuss the best possible orientation of each task.

6 Conclusions and next steps

The research topics of the CoE were finalised and provided here, in order to define the required expertise of the team members to be recruited. The recruitment process has been described with the participation of the management board, the NCSR D selection committee, and the IRP. This procedure concluded with the selection of the new personnel to work in this project, with their short CVs included in the project website.

Moreover, the final research topics provide opportunities for collaboration with NCSR D laboratories. Several meetings were implemented starting from the second month of the project (March 2025), discussing possible topics that could lead to joint work and future projects. Multi-disciplinary approaches to energy systems were also explored including for example digitalisation and AI-based methods, to expand the current activities of NCSR D. Finally, the potential of collaboration with NCSR D laboratories has been evaluated with the team being motivated to work on new topics, where deemed appropriate.