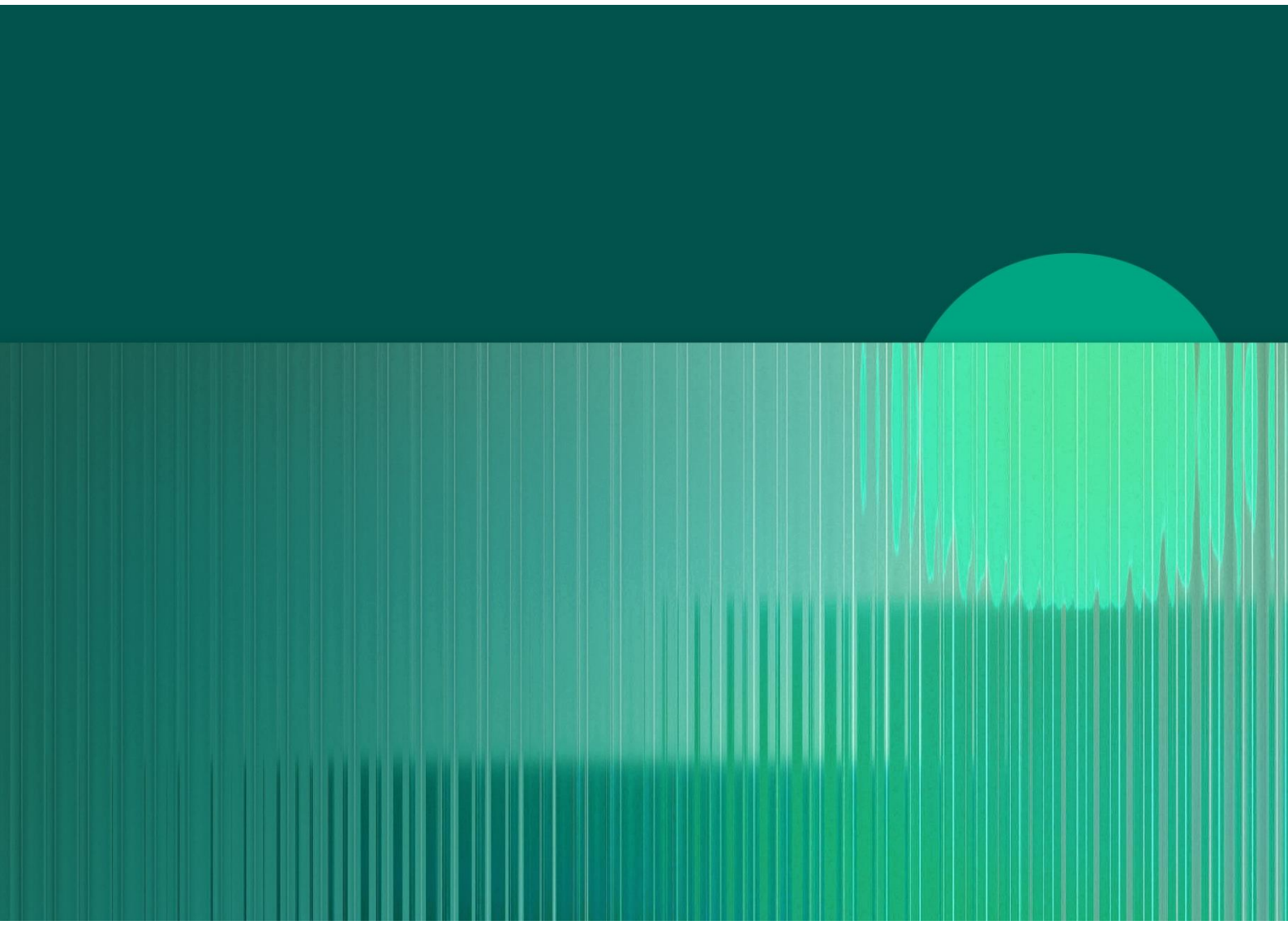

Monitoring report for technology mobilities I (D 1.2)

Energytran

Research infrastructures cooperation for energy transition between European and Latin American and the Caribbean countries.

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Narrative report on the scientific mobility process with a focus on technology dimension, within the framework of the Energytran project

1. Introduction

The project Energytran aims to tackle the shared challenge of the energy transition by facilitating the exchange, generation, and transfer of knowledge among EU (Europe) and LAC (Latin-American and the Caribbean Countries) research infrastructures from a multidisciplinary perspective (technological, environmental, social). The project supports the development of public policies and regulatory frameworks that promote climate neutrality and a clean, sustainable, and just energy sector transition to advance toward a resilient society.

EU-SOLARIS ERIC is the leader of Work Packages (WP) 1 related mainly to technology mobilities on the framework of the Energytran project. EU-SOLARIS ERIC shall establish and operate a **world-class distributed research infrastructure on concentrated solar thermal /solar thermal energy (CST/STE)** to be set up as a central hub responsible for the coordinated operation of national research centres in CSP/STE technologies, which shall dedicate part of their research and development capacities to EU-SOLARIS ERIC, sharing contents, tools and know-how related to CSP/STE technologies.

2. Background

In the context of the Energytran project, several mobilities between LAC and EU research infrastructures are being organized to promote scientific cooperation networks During this activity, participants from LAC will have the opportunity to become familiar with the resources and services provided by EU-SOLARIS ERIC, INESCTEC and IPS and team members from EU-SOLARIS ERIC the opportunity to visit LAC research infrastructures; promoting interdisciplinary collaboration and the exchange of knowledge in the field of energy transition. These mobilities will also be carried out from EU to LAC.

The technological mobility project of the WP 1 of the ENERGYTRAN project is part of a strategic international collaboration focused on the research and development of concentrated solar energy technologies. This context is part of a broader effort to respond to the challenges of the global energy transition, promoting the development of sustainable technologies and fostering cooperation between European and Latin American **institutions leading the advancement of renewable energies.**

Interest in carrying out the mobility

For both the sending and receiving institutions, mobility represents a valuable opportunity to strengthen specific skills and areas of knowledge in the field of solar technology, as well as other types of energy and items related to energy transition, such as Concentrated Solar Power (CSP) / Solar Thermal Electricity (STE), Lithium exploitation and Hydrogen Valorization.

From the point of view of the sending institution, this mobility facilitates its researchers' access to experiences and the possibility of first-hand learning about technological innovations and applied research methodologies. For EU-SOLARIS ERIC's members/ partners, (DLR, CIEMAT, CNRS, LNEG and UEVORA)

, INESCTEC and IPS, hosting researchers and organizing mobilities for other European institutions allows it to enrich its own research ecosystem, while generating opportunities for future collaboration with highly qualified professionals from institutions in Latin America and the Caribbean, expanding its network of knowledge and strategic alliances.

Objective of promoting international collaboration

The ENERGYTRAN project, by promoting these mobilities, aims to strengthen scientific cooperation between the Ibero-American and European research communities in the field of concentrated solar energy, other technologies and items related to energy transition. This collaboration is essential not only to share technical and scientific knowledge, but also to create a space for exchanging ideas that encourages joint innovation. Mobility experience becomes a platform for developing networked research that can provide effective responses to contemporary energy challenges, contributing to a faster and more effective energy transition.

Interest in improving skills and strengthening ties

One of the main interests of this mobility is the improvement of the skills of researchers, who will be able to hone technical skills and gain in-depth knowledge of new techniques and specialized equipment. In addition, mobility strengthens ties between institutions, establishing trust relationships that can lead to long-term collaborative projects, joint development of technologies and capacity building on both sides of the Atlantic. These networks are also essential to open opportunities for future research projects, in areas related to the shared goal of advancing renewable energies.

Need for exchange of knowledge and good practices

Mobility facilitates an enriching exchange of knowledge and good practices in the management of research and development in sustainable energies. This interaction is crucial to establish common standards and for LAC and European researchers to share successful approaches, both in the use of advanced technology and in the implementation of research methodologies that have proven to be effective. In addition, it allows for the identification of synergies in terms of innovation and sustainability approaches that are priorities on both continents.

Alignment with European Research Infrastructures objectives

The mobility project is also directly aligned with the internationalization objectives of EU-SOLARIS ERIC, INESCTEC and IPS, in terms of energy transition research and technology at a global level. Their collaboration with LAC institutions fits perfectly with their international expansion strategy, while strengthening their research and innovation capacities. Within the framework of a fair and sustainable energy transition, these mobilities promote the generation and transfer of knowledge, facilitating the creation of innovative solutions that can be implemented in the context of intercontinental collaboration.

Mobilities from WP 1 are emerging as initiatives that not only enhance the technical knowledge of the participants, but also strengthen institutional ties and promotes a global research network focused on sustainable development and energy transition.

3. Description of technology mobilities

This section presents the description of the tasks carried out during the first 12 months of Energytran project implementation related to research infrastructures mobilities with a technological focus within the framework of WP 1 Mobilities for Technology, leaded by EU SOLARIS.

The WP 1 forecast includes the implementation of a total of 15 scientific mobilities.EU SOLARIS received 18 requests.

As a first step, Energytran Consortium launched and Expression of Interest to European Research Infrastructures involved on the project. Initially, 38 Expressions of Interest were submitted for hosting these mobilities, of which only 15 could be answered within the framework of the project. Finally, thanks to the efforts of the LAC partners, 16 mobilities from LAC to EU research infrastructures were approved. In addition, UNSAM partners agree 4 mobilities from Argentina to Life Watch ERIC.

Nevertheless, the project couldn't cover all of the expression of interest of EU Research Infrastructures (18 will not be covered by the project). So, it is still necessary to support this kind of cooperation.

Each mobility lasts between 5 and 25 days, depending on the nature of the research to be developed and the agreement established with the host institution.

The process by which these technological mobilities have been identified has been led by EU-Solaris, as leader of the WP1.

4. Statistics of the mobilities in terms of Expression of interest regarding the European Research Infrastructures:

The total number of expressions of interest submitted for these mobilities was 38, as the table below showed.

Proposed institutions for receiving mobilities in Europe	Number of vacancies
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT) - Plataforma Solar de Almería (PSA)	**8**
▪ Topics of the mobility:	
-CSP / STE	5
-Lithium	1
-Hydrogen Valorization	2
Laboratoire Procédés, Matériaux et Energie Solaire(CNRS PROMES)	**2**
▪ *Topics of the mobility:*	
-CSP / STE	1
- Others	1
German Aerospace Center (DLR)	**2**
▪ *Topics of the mobility:*	
-CSP / STE	2
Institute for Systems and Computer Engineering, Technology and Science (INESC TEC)	**3**
▪ *Topics of the mobility:*	
- Hydrogen Valorization	2
- Others	1
Instituto Politécnico de Setúbal (IPS)	**4**
▪ Topics of the mobility:	
-Lithium	2
-Hydrogen Valorization	2
Laboratório Nacional de Energia e Geologia (LNEG)	**5**
▪ *Topics of the mobility:*	
-CSP / STE	3
-Hydrogen Valorization	1
-Others	1
The Cyprus Institute	**2**
▪ *Topics of the mobility:*	
-CSP / STE	2
Universidade de Évora (UEVORA)	**12**
▪ *Topics of the mobility:*	
-CSP / STE	4
-Lithium	4
-Hydrogen Valorization	4
Total general	**38**

5. Final technology mobilities

The mobilities ultimately selected from the 38 expressions of interest submitted, due to the availability within the framework of the program, have been 16. This has demonstrated the interest of European institutions in hosting researchers from LAC institutions, with the aim of establishing new frameworks and collaborations for work and knowledge exchange between the two regions.

Senidng Institutions from LAC	EU institutions for receiving mobilities
From Pontificia Universidad Católica de Chile (PUC), 4 mobilities:	1 to the Plataforma Solar de Almería (PSA)
	1 to the Instituto Politécnico de Sétubal (IPS)
	1 to the Laboratório Nacional de Energia e Geologia, (LNEG)
	1 to the Universidade de Évora (UEVORA)
From Universidad Nacional del Nordeste (UNNE), 4 mobilities:	2 to Plataforma Solar de Almería (PSA)
	1 to the Centro Aeroespacial Alemán (DLR)
	1 to the Universidade de Évora (UEVORA)
From Centro Nacional de Alta Tecnología (CENAT), 2 mobilities:	1 to the Centre national de la recherche scientifique (CNRS)
	1 to the Institute for Systems and Computer Engineering, Technology and Science (INESCTEC)
From Tecnológico Nacional de México (TECNM), 6 mobilities:	2 to the Plataforma Solar de Almería (PSA)
	1 to the Instituto Politécnico de Sétubal (IPS)
	1 to the Laboratório Nacional de Energia e Geologia, (LNEG)
	1 to the Cyprus Institute (CYI)

At this point and given that the demand for expressions of interest to carry out mobility has been much higher than anticipated within the framework of the project, and therefore many institutions that expressed interest in hosting researchers have been unable to do so, we wish to highlight the need to promote the exchange of researchers within the framework of scientific cooperation between the EU and LAC. We also wish to emphasize the interest that European institutions have in establishing close ties of knowledge exchange and cooperation with institutions in LAC.

6. Collaborating destination institutions

Following table shows the institutions with which the different mobilities from Latin America to Europe are finally agreed. The mobilities will be carried out with the following institutions and countries during the identified dates:

Name of the host institution	City and country	Name of the sending institution	Country of origine	Duration of the mobilities (in days)	Specific dates
CIEMAT-PSA	Almería (Spain)	PUC	Chile	NA	NA
		UNNE	Argentina	15	1st of July 2025
		UNNE	Argentina	25	25/10/2024 – 20/11/2024
		TECNM	México	25 days	12 May – 7 June 2025
		TECNM	México	NA	NA
German Aerospace Center (DLR)	Jülich, Germany	UNNE	Argentina	NA	NA
Instituto Politécnico de Setúbal (IPS)	Setúbal/Portugal	PUC	Chile	10 days	NA
		TECNM	México	10 days	August 2025
Laboratório Nacional de Energia e Geología (LNEG)	Lisboa, Portugal	PUC	Chile	NA	NA
		TECNM	México	30	May 2025
Centre national de la recherche scientifique (CNRS - PROMES)	Font Romeu, France	CENAT	Costa Rica	25	Feb 2025
		TECNM	México	TBC	TBC
The Cyprus Institute	Pentakomo, Cyprus	TECNM	México	NA	May 2025
Universidade de Evora (UEVORA)	Évora, Portugal	PUC	Chile	7 days	Feb or May 2025
		UNNE	Argentina	23 days	05/03/25 – 28/03/25
Institute for Systems and Computer Engineering, Technology and Science (INESC TEC)	Porto (Portugal)	CENAT	Costa Rica	NA	NA

7. Technology Mobility Period

As the table below shows, the technology mobilities period will take place between October 2024 and August 2025. At the end of the first middle period of Energytran project implementation, only one mobility was carried out from UNNE (Argentina) to PSA-CIEMAT (Spain).

8. Agreed Activities Overview

Below is a general list of agreed-upon activities to be carried out during the mobilities period:

- Collaborative Research: Participation in joint research projects on topics of mutual interest.
- Access to Specialized Laboratories: Use of specific facilities.
- Network Development: Meetings with researchers and experts to establish future collaboration lines.
- Knowledge Transfer.
- Signing of Bilateral Agreements: Establishing agreements between the host and sending institutions to continue the relationship after the mobility period.

With regard to the content of the activities, the scope of intervention for the mobilities will be as follows:

- **Concentrated Solar Power (CSP) / Solar Thermal Electricity (STE)**

-Application of solar thermal energy to desalination and brine concentration

-Line-focus Solar Collectors and Applications

-Materials for CSP/STE technologies

-Solar tower demonstration site

-Development and study of components and systems for SHIP and STE applications, including linear and point focusing systems and thermal energy storage systems. At the request of the applicant the following material related topics can also be included in this mobility: corrosion at high temperatures with molten salts and durability of receivers and absorbers.

-Corrosion at high temperatures with molten salts

-Durability

-High tempertaure solar heat for industry

-Solar tower demonstration site

-Application of solar thermal energy to desalination and brine concentrations

-Carnot Batteries

- **Lithium:**

-Brine concentration for obtaining added value elements.

-Prospecting, exploration and valorization of lithium.

-Energy Storage, Renewable Energy.

- **Hydrogen Valorization:**

-Production and Utilization Hydrogen.

-Techno-economic assessment.

-Solar-driven thermochemical processes.
-Use of electrolysers and flexibility assets for grid operation.

-Flexibility of assets in Ports in the production of hydrogen and amonya.

-Water production with thermal desalination for electrolysis.

-Coupling green hydrogen production with membrane distillation

- **Others:**

-Solar photovoltaics, solar thermal energy, wind power, nZEB, Smart Cities. At the request of the applicant the following areas can also be included:CSP/STE, Hydrogen.

-Materials elaboration and thermal treatment.

-Smart grid and renewable energy integration.

9. Relevance of the Activities Carried Out with Respect to the Final Objective of the Project

Below, we outline the relevance of each activity in relation to the project's objectives.

The activities carried out during the mobilities will play a crucial role in achieving the final objective of the project: generating new scientific knowledge and fostering lasting cooperation ties at the bi-regional level between LAC and the EU. All the mobilities achievements will be included on the deliverable 1.3. Monitoring report for technology mobilities II that will be elaborated at the end of the project

For this reason, the activities conducted within the framework of technological mobility promote:

- Collaborative research, enabling access to knowledge and techniques that would otherwise be unavailable.
- Training and development of researchers, strengthening their scientific skills in areas such as lithium, solar and wind energy, and green hydrogen.
- Access to advanced technology for experimentation.

10. Evaluation of the Mobility Process

Each research participant involved in the technological mobilities carried out within the framework of the Energytran project will be responsible for preparing a final report. This report will serve to evaluate the mobility process.

11. Conclusions

Upon completion of the mobilities, the project is expected to have strengthened the research capacity of the participants/host institutions and to open new avenues for cooperation. The next steps will include identifying funding opportunities for future joint projects, second phases, as well as deepening the development of the networks created, promoting the exchange of knowledge and making visible the work on scientific cooperation between LAC and the EU. On the other hand, within the framework of the Energytran project, we want to

highlight the importance of the EU investing in LAC through scientific research mobility, in order to promote, at a bi-regional level, both scientific cooperation and scientific diplomacy within an Ibero-American framework.

To this end, it is proposed:

- **Strengthening international cooperation:** Scientific collaboration fosters strong ties between the EU and Latin America, promoting:
    - Closer diplomatic relations, based on shared objectives such as sustainable development and technological innovation, as well as scientific diplomacy.
    - An exchange of knowledge that benefits both regions in areas such as energy, energy transition, and climate change.

- **Innovation and sustainable development:** Latin America has a wealth of natural resources and social challenges that offer a unique framework for research:
    - Developing new technologies for biodiversity, renewable energy, and environmental protection.
    - Promoting solutions to global challenges, such as water management or the climate crisis, which also impacts the EU.

- **Access to human talent and multiculturalism:** Latin America has a young and well-educated population, although sometimes there are limitations in access to certain resources and opportunities:
    - Scientific mobility allows researchers from both regions to combine diverse and creative perspectives, which enriches the results.
    - It promotes the training of new Latin American scientists, which helps to close educational and technological gaps in the region.

- **They boost trade and technology transfer:** Shared research can translate into:
    - Development of new technological and scientific markets.
    - Exchange of innovative technologies between companies and universities in the EU and LAC.

- **Historical and geopolitical responsibility:** The EU and LAC share deep historical and cultural ties. In this context:
    - Scientific investment is a diplomatic strategy to balance the influence of other powers such as China or the United States in the region.
    - It reinforces the role of the EU as a global leader committed to scientific progress and human development.

- **Existing programs as an example:**
    - Projects such as Horizon Europe, in which Energytran and the technological mobilities are framed, and bilateral programs have proven successful in:
    - Promoting joint research in critical and specific areas.
    - Creating solid and lasting scientific networks.

Investing in scientific mobility not only brings academic benefits, but also promotes economic growth, global innovation, and long-term cooperation between both regions.

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