Erasmus + KA2 Cooperation for innovation and the exchange of good practices
Capacity
Building in the field of Higher Education

Proposal:	**ERASMUS-EDU-2023-CBHE-STRAND-2**
Project number N.	**101128871**
Project acronym	**DEBSEUz**
Full title	**Development of the targeted Educational program for Bachelors in Solar Energy in Uzbekistan**
Coordination institution	**Tashkent University of Information Technologies (TUIT)**
Project duration	**01 November 2023 – 31 October 2026**

Local training

T 2.7

WP/ Deliverable: **WP2/T2.7** Planned Date: **12/09/2025** Due Date: **12/09/2025** Nr. pages: **10** Dissemination Level: **Public**	Partner responsible: **TIIAME NRU** Person Responsible: **Ilkhom Siddikov, Dilshod Kodirov** Author: **Jurabek Izzatillaev** Document version: **1** Reviewed/supervised by: **TUIT, POLITO, UEVORA, UPM, TTPU, TIIAME, ASU, JizPI, FerPI,**

History of revisions

Rev No.	Description	Author	Review	Date
0	Draft	TUIT	Draft creation	24/09/2025
1	Revision	All partners	Contents integration, Partners check	25/09/2025
2	Final check	TUIT	Final review after PA last signature	30/09/2025

Executive summary

The Erasmus+ project titled "Development of the Targeted Educational Program for Bachelors in Solar Energy in Uzbekistan" aims to address the growing demand for skilled professionals in the field of solar energy within Uzbekistan. As the country seeks to enhance its renewable energy capacity, this project focuses on creating a comprehensive educational framework that aligns with international standards and meets local needs.

The project's core objective is to design and implement a modern bachelor's curriculum in solar energy that is aligned with European educational standards while tailored to Uzbekistan's unique climatic, economic, and industrial conditions. The curriculum emphasizes both theoretical knowledge and hands-on skills, enabling graduates to address real-world challenges in solar power generation, system design, installation, and maintenance.

Key activities include:

- Developing new courses and teaching modules in solar energy and renewable technologies;
- Training academic staff through international collaboration and capacity-building workshops;
- Establishing laboratory facilities and simulation tools for practical, application-based learning;
- Creating partnerships between universities, industry stakeholders, and government institutions to ensure relevance and sustainability of the program.

The expected outcomes of the project are:

- A fully accredited bachelor's program in solar energy in participating Uzbek universities;
- A new generation of graduates with competencies that meet the growing labor market demand;
- Strengthened collaboration between Uzbekistan and European institutions in renewable energy education;
- Enhanced research and innovation potential in solar energy within the country.

Local training plan

The DEBSEUz project aims to develop a new bachelor degree and courses in the field of solar energy. In addition, in order to enhance the collaboration with institutional and industrial stakeholders, the project aims to develop labs and co-working spaces. The DEBSEUz proposal considered an initial set of courses to be developed, listed below:

1. Technological measurements and instruments of the industry
2. Electronic technical materials and elements
3. Electrical technological devices
4. Solar Power
5. Optical and physical properties of semiconductor materials
6. Design of energy devices and stations based on alternative energy
7. Hybrid solar power plants
8. Production, transmission and distribution of electrical energy
9. Solar thermal devices and systems
10. Technology for the preparation of solar elements, photoelectric batteries and their component devices
11. Energy storage methods and devices
12. Design of new technical developments based on alternative energy.

The Third Technical training and fourth Consortium meeting was organized by Universidad Politecnica de Madrid, and it happened on June 9-13, 2025, in Madrid, Spain.:

Objectives of the Training

- To present and discuss the methodologies developed during the project;
- To learn from the advanced practices of Spanish partner institutions;
- To disseminate knowledge through local-level training activities;
- To align training modules with the overall goals of the DebseUz project.

Participating Institutions:

- Tashkent University of Information Technology (TUIT), Uzbekistan
- Politecnico Di Torino (POLITO), Italy
- Universidade de Evora (UEVORA), Portugal
- Universidad Politecnica De Madrid (UPM), Spain
- Turin Polytechnic University in Tashkent (TTPU), Uzbekistan
- Jizzakh polytechnic institute (JizPi), Uzbekistan
- Fergana Polytechnic Institute (FerPi), Uzbekistan
- Andijan state university (ASU), Uzbekistan
- National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers institute" (TIIAME), Uzbekistan
- Karakalpak State University (KSU), Uzbekistan
- Ministry of higher education, science, and innovations of the Republic of Uzbekistan (MHSSERUZ)

During the meeting, all participating universities delivered their presentations covering the different sections of the project, highlighting their achievements, experiences, and contributions. These sessions provided a comprehensive overview of the progress made and ensured transparency and knowledge exchange among the partners.

In addition, participants actively took part in all seminars and training sessions on solar energy that were organized at the Universidad Politécnica de Madrid (UPM). These sessions were highly interactive and focused on both theoretical and practical aspects of solar energy technologies, project implementation, and modern teaching methodologies.

Through these activities, the participants gained valuable knowledge and skills that will significantly contribute to the successful realization of the project objectives in Uzbekistan. The training not only enhanced technical expertise but also strengthened the capacity of academic staff to deliver high-quality education in the field of renewable energy.

Training Overview

- Energy Efficiency in Solar Energy Systems

This session introduces the fundamental concepts of energy efficiency within solar power systems. Participants will learn about strategies to reduce energy losses throughout the system-from photovoltaic panels to inverters and wiring-while improving overall system performance. Emphasis will be placed on design considerations, technology selection, and maintenance practices that help maximize energy output and cost-effectiveness.

- Smart Grid Technologies and Integration

In this session, we explore the evolving landscape of smart grid technologies and their critical role in modern energy systems. Attendees will gain an understanding of how digital communication, automation, and advanced control systems enable efficient integration of renewable energy sources like solar power. The session will cover benefits such as improved grid reliability, demand response, and enhanced energy management that support the transition to sustainable energy networks.

- Environmental Impact Assessment of Solar Energy Projects

This session highlights the importance of conducting thorough environmental impact assessments (EIA) before implementing solar energy projects. Participants will learn how to evaluate potential effects on local ecosystems, water resources, land use, and communities. The session will also cover regulatory frameworks and best practices to ensure solar developments are environmentally responsible and aligned with sustainable development goals.

- Policy and Economic Aspects of Renewable Energy Deployment

This session provides an overview of the key policy frameworks and economic factors shaping renewable energy deployment. Topics include government incentives, subsidies, tariffs, and regulations that influence market growth and investment in solar and other renewable technologies. Participants will also discuss economic benefits such as job creation, energy security, and long-term cost savings that underpin the shift toward cleaner energy systems.

- Battery Management Systems for Solar Energy Applications

This session focuses on the role of battery management systems (BMS) in optimizing energy storage for solar power applications. Participants will learn how BMS monitor battery health, regulate charging and discharging cycles, and protect against faults to extend battery lifespan and ensure safety. The session will also cover the importance of efficient storage solutions for enhancing solar energy reliability and integration into power systems.

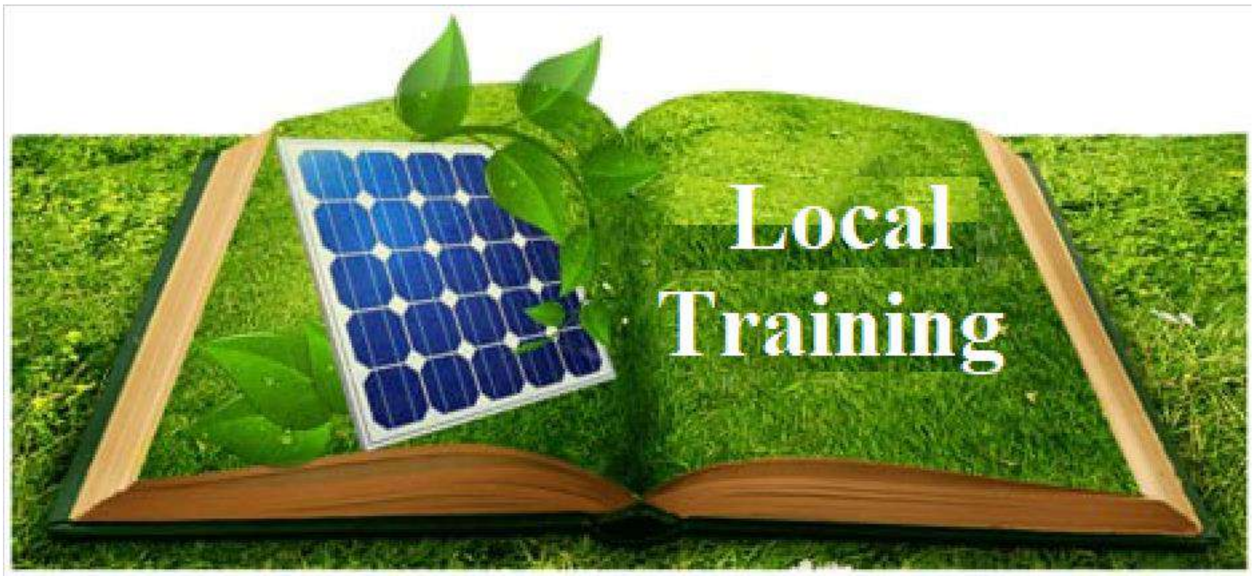
Appendix A.

AGENDA

Erasmus+ KA2 Capacity Building project

Development of the targeted Educational program for Bachelors in Solar Energy in Uzbekistan

(DEBSEUz)



09 September 2025

Local Training

Venue:

Tashkent 100000, 39 Kori Niyazi street
"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers"
National Research University

Participating Institutions:

- "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers" National Research University ("TIIAME" NRU), Uzbekistan
- Ministry of Energy of Republic of Uzbekistan
- "Mir Solar" LLC

10:00 – 10:30	**Opening, Welcome**
	• Welcome Addresses • Welcome address from Project Coordinator – DEBSEUz **Dilshod Kodirov,** TIIAME NRU, Uzbekistan • **Abdusaid Isakov,** Dean of the Faculty of "Energy" National Research University "Tashkent Institute of Irrigation and Agricultural Mechanization Engineers", Uzbekistan
LOCAL TRAINING SESSIONS	
10:30 – 12:30	**Local training sessions** • **Modernization of elecrical nets: Smart technologies end their advanteges** *Ilkhomjon Siddikov*, Professor of TIIAME NRU, Uzbekistan • **Integration of Photovoltaic power plants into main grid** *Akrom Mirzabaev*, Director of Mir Solar LCC, Uzbekistan **Prospects and current issues of renewable energy in Uzbekistan** *Bekzod Tokhirov*, Leading specialist in Ministry of Energy of Republic of Uzbekistan
12:30 – 13:00	**Q&A**
14:00-17:00	**Local training sessions**
	• **Development of an energy-efficient solar heating system for rural areas** *Voxidov Akmal Ulashevich*, Associate Professor of TIIAME NRU, Uzbekistan • **The main problems in the design of photovoltaic stations** Jurabek Izzatillaev, Associate Professor of TIIAME NRU, Uzbekistan • **Energy efficient modern solar collectors** *Alisher Davirov*, Associate Professor of TIIAME NRU, Uzbekistan

Appendix B.

Attenders list

LIST OF PARTICIPANTS

of the project financed under the Erasmus+ Programme - Capacity-Building Projects in the field of Higher Education, Grant Agreement

Development of the targeted Educational program for Bachelors in Solar Energy in Uzbekistan

101128871 — DEBSEUz — ERASMUS-EDU-2023-CBHE

Appendix C

Photo Archive