CAPACITY BUILDING PROGRAM FOR SUSTAINABLE RECONSTRUCTION - REBUILD

Deliverable 2.1

Report of Virtual Study visit in UA, MD and GE *

Author(s)	**Lorenzo Stefanini, Giorgia Predari**
PP	**UNIBO**

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Technical References

Project Acronym	**REBUILD**
Project Title	**Capacity Building Program for sustainable reconstruction**
Project Coordinator	**Istituto per l'Istruzione Professionale dei Lavoratori Edili della Provincia di Bologna - IIPLE**
Project Duration	**Jan 2025 – Dec 2026**

Deliverable No.	**D2.1**
Dissemination level [1]	**PU**
Work Package	**2**
Task	**T2.4 - Virtual Study visit in UA, MD and GE ***
Lead beneficiary	**UNIBO**
Contributing beneficiary(ies)	**-**
Due date of deliverable	**30.04.2025**
Actual submission date	**30.04.2025**

[1] PU = Public
PP = Restricted to other programme participants (including the Commission Services)
RE = Restricted to a group specified by the consortium (including the Commission Services)
CO = Confidential, only for members of the consortium (including the Commission Services)

Document history

V	Date	Beneficiary	Author
1	18.04.2025	UNIBO	LS, GP
2			
3			
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Summary

REBUILD – Capacity Building Program for Sustainable Reconstruction is an international initiative aimed at strengthening vocational education and training (VET) systems in Eastern Neighbourhood countries not associated with the Erasmus+ programme, specifically Ukraine, Georgia and Moldova. The project focuses on transferring knowledge and best practices from EU countries to support the sustainable reconstruction of buildings and infrastructure in the aftermath of natural disasters or conflicts.
Through a targeted training programme for construction sector trainers, REBUILD addresses four core areas: EU regulations, economic tools and funding access, reconstruction techniques, and digital innovation in construction.
Training activities will be developed based on a thorough needs analysis in the target countries and delivered through a dedicated Moodle platform. In addition to online modules, REBUILD will include international exchanges, study visits, and expert-led seminars to foster practical learning and peer-to-peer knowledge exchange.

Key expected results include:

- Strengthening the skills of VET trainers in the construction sector, with a focus on green and digital transitions;
- Enhancing cooperation between VET providers and construction industry stakeholders;
- Developing and disseminating replicable, adaptable digital training content;
- Contributing to social resilience and sustainable recovery in areas affected by crises;
- Promoting the adoption of innovative tools and methodologies for post-emergency reconstruction;
- Ensuring long-term impact through a sustainability plan and a Memorandum of Understanding among partners.

REBUILD positions itself as a catalyst for positive change, supporting the development of more responsive, modern, and labour market-oriented VET systems aligned with Europe's green and digital transformation goals.

1. Introduction

1.1 Purpose of this document

The Report of Virtual Study visit in UA, MD and GE is the first deliverable (D2.1) of WP2 – Deepening knowledge through targeted analyses.

The main purpose of this report is to describe the key features and how the virtual study visits were organized in the three target countries: Ukraine, Moldova, and Georgia.

These visits had several important goals, all aligned with the overall objectives of the Project:

a) to start disseminating the Project by involving relevant stakeholders;

b) to share the analysis results beyond the immediate group of project partners;

c) to provide all participants with an overview of local contexts, especially regarding disasters, reconstruction methods, and rehabilitation procedures used in the past.

The report is divided into three parts, each dedicated to a specific virtual study visit.

Then, each section is further divided:

(1) general description of the event,

(2) official agenda,

(3) detailed description of the activities conducted.

At the end of this document, the reports prepared by the target countries according to the instructions provided by the WP leader are attached.

2. General structure of the event

The event was held during the fourth month of activities, in line with the initial timeline established by the project.

Each partner involved in the organization had structured their respective study visit to present to key stakeholders and partner countries the first activities carried out, as well as the initial outcomes achieved.

The topics addressed during the event corresponded to those outlined in Work Package 2 and detailed in Tasks T2.1, T2.2, and T2.3.

Specifically, the study visits focused on:

- The analysis of the most likely catastrophic events that may affect the target countries;
- The assessment of regional conditions, including: 1) climatic and environmental characteristics, 2) hydrogeological features, 3) seismic vulnerability and associated risks, 4) geopolitical context and implications;
- The examination of existing post-disaster reconstruction procedures promoted by local authorities;
- A review of intervention techniques that have been employed in recent years in response to major events;
- The documentation and comparison of national expertise regarding: 1) survey methodologies, 2) management strategies for construction and demolition debris, 3) the application and integration of BIM (Building Information Modeling) technologies;
- A preliminary analysis of the current state of vocational education and training in the construction and reconstruction sectors;

Overall, the study visits provided a structured opportunity to exchange knowledge among partners, to identify common challenges, and to lay the groundwork for further collaborative work in the subsequent phases of the project.

The event was conducted online via the Zoom platform to ensure broad participation from individuals from different countries. In order to further facilitate attendance and maximize stakeholder engagement, Rebuild staff decided to concentrate the virtual study visits into a single day. This approach was intended to provide all project partners with the opportunity not only to present their own work, but also to observe and engage with the activities carried out by the other institutions involved in the project.

The virtual study visits were scheduled for April 11th, 2025. The program began at 9:00 AM (CET) with an introductory session, including a presentation of the project and welcome remarks by the project leader, IIPLE. The first part of the morning, from approximately 9:15 to 10:45 AM, was dedicated to the Georgian partners: Construction College Construct 2 (PP7) and College Spectri (PP5), who presented their respective contributions.

Following a short coffee break, the virtual visits resumed with presentations from the Moldovan and Ukrainian partners. The Moldovan institution, Institutia Publica Centrul de Excelență (PP6), and the Ukrainian partner, Lviv Applied College of Building, Architecture and Design (PP8), were each allocated approximately one hour to share their work. The event concluded with closing remarks and final greetings delivered by representatives from UNIBO and IIPLE.

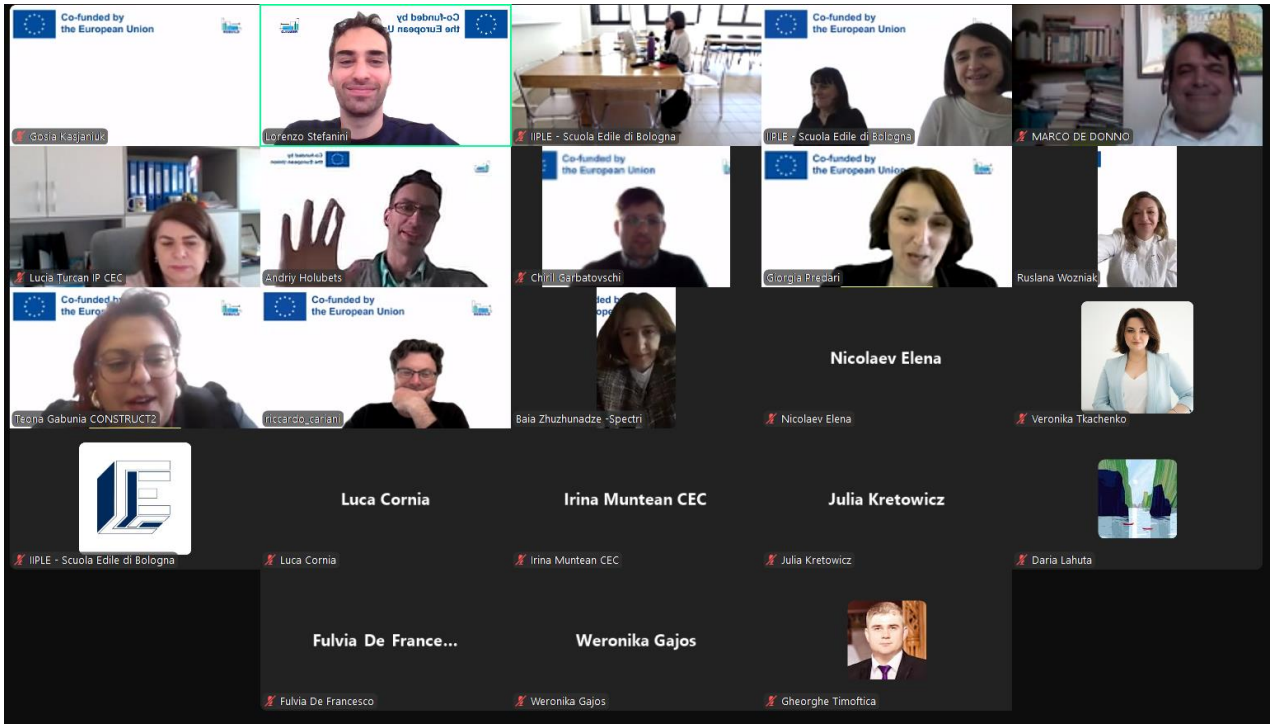


Figure 1 - Greetings from the virtual event

3. Georgian event

3.1 General description

The event organized by the Georgian partners was the first study visit of the day.

Given that it involved two institutions—College Spectri (PP5) and Construction College Construct 2 (PP7)—rather than a single partner, additional time was allocated compared to the other sessions. This extended slot enabled both institutions to provide a more detailed overview of their respective contexts, which differ significantly due to their locations in distinct regions of Georgia. The presence of two different partners from the same country make the presentation richer and allowed for a better understanding of local challenges.

The session was structured using an alternating format of live presentations and pre-recorded videos. This approach contributed to a more dynamic and engaging meeting and was particularly effective in maintaining participants' attention throughout the session. Including video materials also facilitated more precise visualization of on-site activities and infrastructure, especially for remote participants.

Georgian session lasted approximately one hour and thirty minutes and it was held on April 11th, 2025. 38 people attended the event, comprising stakeholders and project partners. The participant list, compiled and provided by the Georgian organizers, included representatives from the following institutions:

a) Istituto per l'Istruzione Professionale dei Lavoratori Edili della Provincia di Bologna (IIPLE);
b) Alma Mater Studiorum – Università di Bologna (UNIBO);
c) Akademia WSB (WSB);
d) Construction College Construct 2;
e) Institutia Publica Centrul de Excelență în Construcții (PubInCetExCo);
f) College Spectri (LEPL College Spectri);
g) Lviv Applied College of Construction, Architecture and Design (LvivACBAD);
h) the European Center of Entrepreneurship Competence & Excellence (ECECE);

Several key themes were presented as part of the content addressed under Work Package 2 (WP2). These included the ongoing program for replacing Soviet-era buildings in Tbilisi, highlighting both the rationale behind the initiative and the strategies being employed. A case study was also provided on the rehabilitation of the Tsiskarauli Tower, which offered insight into heritage preservation efforts and their integration with modern building techniques. Further presentations addressed the current state of vocational education and training (VET) in Georgia, focusing on gaps, opportunities, and areas for potential collaboration with EU partners. Lastly, examples of newly constructed buildings utilizing advanced and environmentally sustainable techniques were shared, emphasizing innovation in materials, energy efficiency, and green construction practices.

The last part of the event was devoted to the Q&A session, where participants were able to interact directly with local experts.

3.2 Agenda of the event

Virtual Study Visit Program

11th of April 2025
Online event

Register to the event within the 9th of April 2025 at the link

TIME (CET)	ACTIVITY	SPEAKERS
09.00 to 09.15	**Welcome & Introduction to the REBUILD project** - Presentation of the event's objectives	*IIPLE (Project Coordinator) – Luisa Sileni and Giulia Pazzaglia*
09.15 o 10.45	**Virtual study visit in Georgia** • Challenges for sustainable reconstruction • Best practices and project progress • Natural disasters, their causes and impacts	*Construction College Construct 2 (PP5) and College Spectri (PP7)*
10.45 to 11.00	*Coffee break*	
11.00 to 12.00	**Virtual study visit in Moldova** • Challenges for sustainable reconstruction • Best practices and project progress • Natural disasters, their causes and impacts	*Institutia Publica Centrul De Excelenta (PP6)*
12.00 to 13.00	**Virtual study visit in Ukraine** • Strategies for sustainable post-conflict reconstruction • Best practices and project progress	*Lviv Applied College of Building, Architecture and Design (PP8)*
13.00 to 13.15	**Conclusions and Closing Remarks** - Summary of key takeaways - Next steps and follow-up actions - Thanks to all participants	*University of Bologna (PP2) and IIPLE (Coordinator)*

Figure 2 - agenda of the event, Georgian virtual study visit

3.3 Activities conducted and topics covered

As anticipated, the Georgian session addressed several topics aligned with the project's objectives. This section outlines the key elements presented during the study visit, offering a general overview of the content shared by the partners.

The session opened with a summary of the main natural and human-induced hazards affecting Georgia. This contribution was based on the work carried out for Task T2.1 and included a general picture of the most relevant risks in the country.

The goal was to provide contents for the technical and educational approaches discussed later in the meeting.

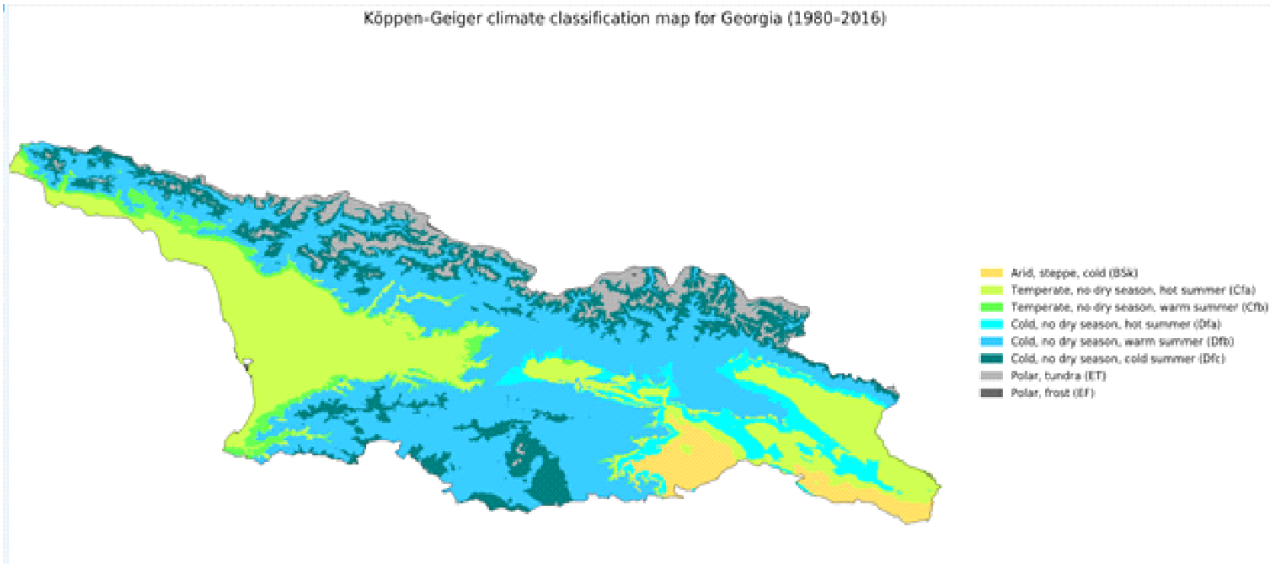
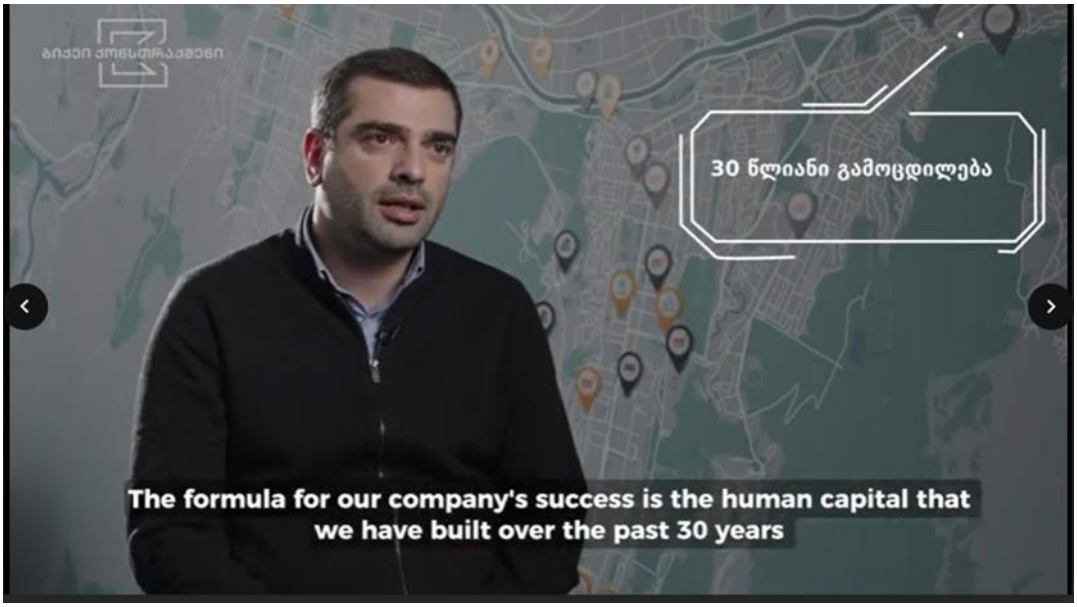


Figure 3 - climate map of Georgia

One part of the session focused on current construction practices, highlighting how building methods are evolving and how safety regulations are gradually being updated to align with European standards. Two different strategies for managing structural vulnerability were presented: new construction and renovation. For the first, a short video was included, featuring recently completed buildings and interviews with professionals involved in the projects. The aim was to give a practical sense of how new developments are designed to meet seismic and environmental requirements, especially in higher-risk areas.



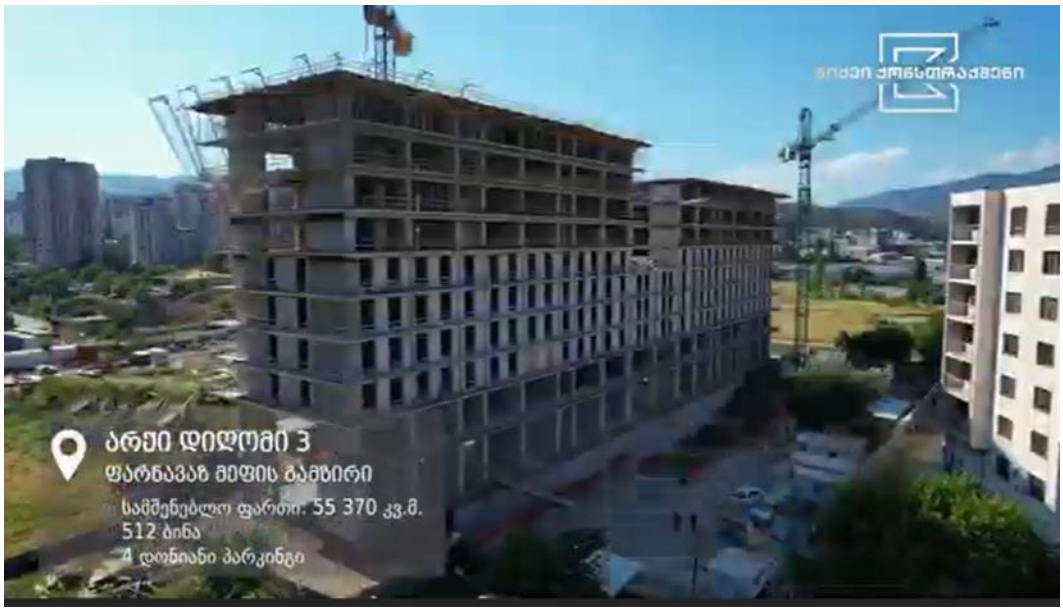


Figure 4 - excerpts from the videos

In terms of restoration, the case of the Tsiskarauli Tower was presented. This medieval building was damaged by a Russian missile in 2001. The restoration involved materials similar to the original ones. The project was carried out with the help of volunteers and international organizations.

The presentation focused on the reasoning behind the intervention and the technical solutions adopted.

Figure 5 - Tsiskarauli Tower

Another topic covered was the replacement program for unsafe buildings currently ongoing in Tbilisi. The initiative, supported by public and private actors—including BK Construction—aims to improve the safety and quality of housing in selected urban areas.

The case was presented as an example of how policy, technical expertise, and long-term planning come together in practice.

Figure 6 – Replacement f old buildings

During the session, Project Partners presented on vocational education in Georgia, particularly concerning the construction sector. The partners discussed how training programs are being updated to better respond to labor market demands and to support construction practices that are both safe and sustainable.

Some of the challenges faced by training institutions were mentioned, along with opportunities for closer collaboration with the private sector.

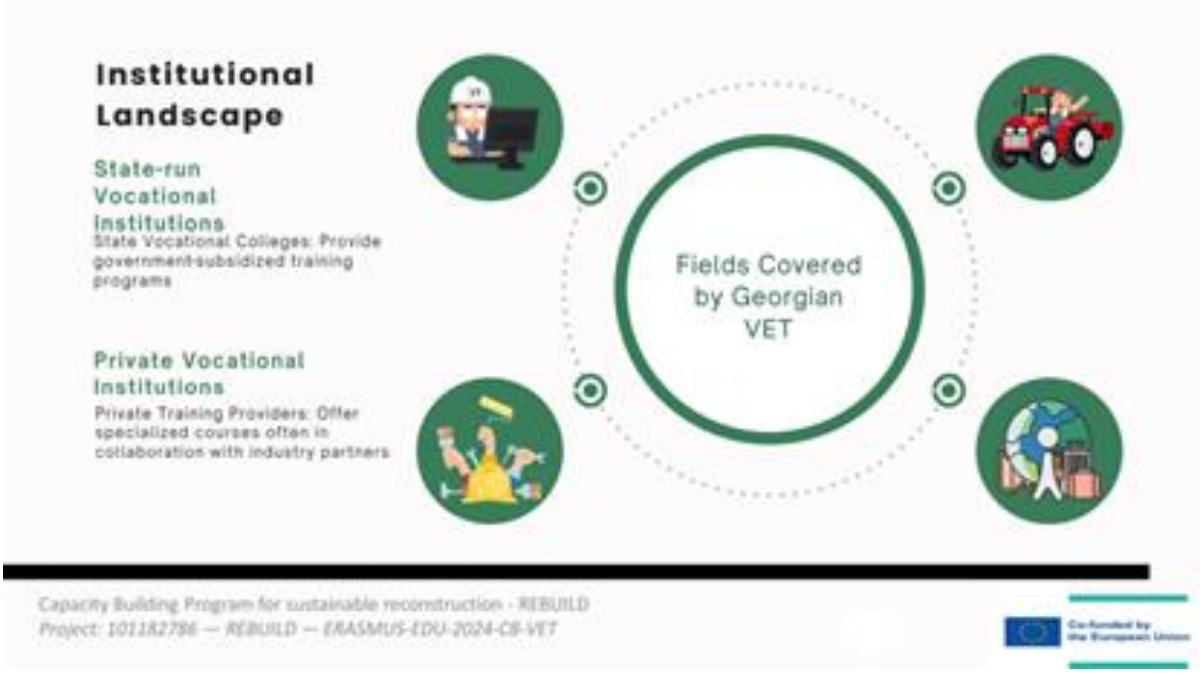


Figure 7 – VET presentation

4. Moldavian event

4.1 General description

The study visit organized by the Moldovan partners was the second session held on the day and it was coordinated by Institutia Publica Centrul De Excelență în Construcții (PP6).

The event lasted around 60 minutes, the same amount of time dedicated to the Ukrainian delegation. It took place on 11th April 2025, from 11:00 a.m. to approximately 12:00 p.m., and counted 38 participants, including project partners and relevant stakeholders.

The structure of the session had the same format of the previous one led by the Georgian partners: combining live presentations with short video contributions. This approach helped keep the session dynamic and accessible while offering a more complete view of shared activities and experiences.

The discussion focused on the topics of the Work Package 2. In particular, the Moldovan team presented an overview of major disasters that have affected the country. These topics were illustrated with supporting data and visuals, including a deeper focus on the flooding event that impacted the city of Chișinău.

The use of maps, images, and local reports helped frame the event's consequences and highlighted how the built environment responded under stress.

The second part of the session was devoted to building rehabilitation and it was illustrated from two different but complementary perspectives. First, the focus was on historical buildings, especially the listed ones.

An example was the restoration of the 15th-century Tighina Fortress. The team explained the intervention choices in detail, particularly the decision to use compatible materials and techniques that respected the original structure. The project was described as a collaborative effort involving local professionals and international partners.

The conversation then moved to a different set of buildings: multi-storey residential blocks, often constructed during the Soviet era using prefabricated systems. These structures, still common on the outskirts of Moldovan cities, were presented as a major concern due to both their ageing condition and low energy performance.

Their vulnerability, both structural and environmental, poses long-term challenges for public safety and urban planning. The Moldovan partners stressed the importance of developing practical strategies to address these weaknesses, including pilot interventions and wider policy support.

Although not the central focus of the session, the link between technical needs and vocational education was briefly touched upon. The role of construction training programmes, especially those aimed at young workers, was presented as a key element for ensuring long-term capacity in the sector; particularly in supporting rehabilitation and sustainable construction practices.

4.2 Agenda of the event

Virtual Study Visit Program

11th of April 2025
Online event

Register to the event within the 9th of April 2025 at the link

TIME (CET)	ACTIVITY	SPEAKERS
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13.00 to 13.15	**Conclusions and Closing Remarks** - Summary of key takeaways - Next steps and follow-up actions - Thanks to all participants	*University of Bologna (PP2) and IIPLE (Coordinator)*

Figure 8 - agenda of the event, Moldavian virtual study visit

4.3 Activities conducted and topics covered

The study visit organized by the Moldovan partners focused on recent disasters that have affected the country and the construction and restoration techniques currently employed in response. Much of the information focused on the region surrounding the capital, Chișinău, which has played a fundamental role in national restoration and rehabilitation initiatives.

The session opened with a video introduction to Moldova and its capital. This provides participants with a background before moving on to more specific presentations. This overview helped to contextualize the subsequent discussions.

Figure 9 – video about Moldova

Then, the presentation included the leading environmental catastrophes that have concerned Moldova in recent years. The region has been afflicted by floods, particularly after the overflow of major rivers, with the most critical event observed in 2010.

Storms and earthquakes also caused thousands of problems during the years. For example, there was a strong earthquake that was recorded in the sixth degree on the Richter scale in 2004 that caused many building collapses. The whole value of catastrophic events exceeds 3 per cent of the Moldava's GDP.

Figure 10 – excerpt from the presentation

During the presentation, the Moldovan partners highlighted that a large amount of reconstruction funding has been directed to historical or culturally significant buildings, due to their importance to the national heritage. However, limited financial resources remain an important issue for public administrations, making it difficult to address the broader need for repairs and improvements throughout the country.

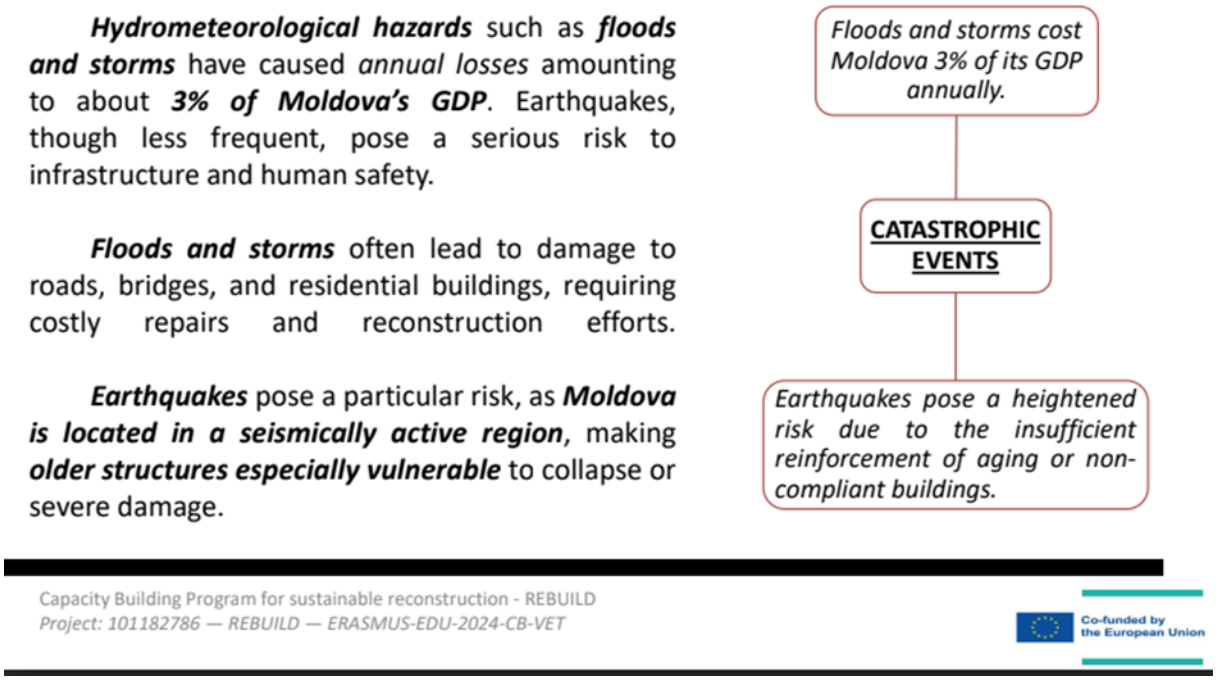

Figure 11 – consequences of disasters

Figure 12 – Fortress roof

One of the examples discussed during the presentation was the restoration of the Tighina Fortress. This project was highlighted as a successful case of restoration in accordance with European standards. The replacement of the fortress's roof with wooden tiles was presented as an illustration of integrating traditional techniques into modern restoration practices.

The following part of the event was devoted to Chișinău and its current architectural landscape. A major concern raised was the vulnerability of many Soviet-era buildings, especially those constructed with prefabricated concrete panels, which are the main part.

The difference between these kind of structures and newly constructed, privately financed buildings was highlighted. New buildings meet modern standards and are made energy efficient. Old structures have many critical issues and their performance is complicated to improve given their construction characteristics.

Figure 13 – soviet-era old buildings

The lecturer concluded the discussion emphasizing the seismic risks associated with much of Chișinău's building stock. It was noted that a significant proportion of these buildings predate the current seismic safety standards. It is estimated that around 80% of them are at risk and require targeted intervention. Addressing these issues is of the utmost importance in order to tackle seismic risk.

The study visit provided a clear picture of the Moldovan situation in terms of strategies for disaster rehabilitation and construction (or reconstruction).

During the event, Project Partners highlighted the country's significant challenges in terms of infrastructure vulnerability. The discussions stressed the importance of investing in modern construction practices, restoring historic structures, and strengthening existing buildings to meet contemporary safety requirements.

CONCLUSIONS:

Moldova's built environment is highly vulnerable to catastrophic events leading to **structural degradation and costly reconstruction**.

Key considerations:

- **Hydrometeorological risks** contribute to annual losses amounting to **3% of GDP**.
- **Seismic exposure** to high-magnitude earthquakes (≥7.0 Richter scale) poses a **critical risk** to older structures, especially Soviet-era and historic buildings.
- **Restoration challenges** include **80% of protected buildings requiring urgent rehabilitation**, but limited funding, early-stage training programs, and skilled labor shortages **impede preservation efforts**.
- **Modernization trends** focus on concrete and modern elements for efficiency, yet **historical conservation remains under developed.**
- **International cooperation and sustainable urban resilience strategies remain essential.**
- **Ensuring structural integrity while advancing restoration practices is essential for Moldova's architectural sustainability.**

Figure 14 – conclusions of the presentation

5. Ukrainian event

5.1 General description

The study visit coordinated by the Ukrainian partners represented the third and final session of the day. It was organized by the Lviv Applied College of Building, Architecture and Design (PP8) and followed the structure used also for the previous visits, both in terms of format and the thematic content.

The event lasted 60 minutes, including the Q&A session, scheduled at the end of the presentations. It took place from about 12:00 a.m. to 1:00 p.m. CET and, like previous events, included a combination of live presentations and pre-recorded videos.

While the framework remained aligned with the objectives of the WP2 work package, this particular session was marked by the disaster caused by the Russian invasion of Ukraine. This issue emerged as a central theme, not only because of its scale and impact, but also due to the human, economic, and infrastructural consequences it continues to generate across the country.

The initial part of the presentation covered an overview of the country, including a brief historical review of major catastrophic events that have occurred in last decades. Among the others, the Chernobyl nuclear disaster was cited, which cannot be considered as resolved.

A series of successful examples of reconstruction and new construction were then mentioned, many of which were undertaken in response to the destruction caused by the ongoing war. Emphasis was placed on the use of modern, sustainable building methods, alongside efforts to preserve architectural identity wherever possible.

The final part of the session was dedicated to the conflict itself. Through a combination of data, maps, and firsthand accounts, the Ukrainian partners illustrated how the aggression is affecting civilian infrastructure and the immense challenge of rebuilding under ongoing threat.

5.2 Agenda of the event

Virtual Study Visit Program

11th of April 2025
Online event

Register to the event within the 9th of April 2025 at the link

TIME (CET)	ACTIVITY	SPEAKERS
09.00 to 09.15	**Welcome & Introduction to the REBUILD project** - Presentation of the event's objectives	*IIPLE (Project Coordinator) – Luisa Sileni and Giulia Pazzaglia*
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13.00 to 13.15	**Conclusions and Closing Remarks** - Summary of key takeaways - Next steps and follow-up actions - Thanks to all participants	*University of Bologna (PP2) and IIPLE (Coordinator)*

Figure 15 - agenda of the event, Ukraine virtual study visit

5.3 Activities conducted and topics covered

The virtual study visit organized by the Ukrainian partners was relevant to the themes envisaged by the Project and specifically WP2. As anticipated, in this case, in addition to natural disasters the focus was devoted to economic and social losses caused by the ongoing conflict with Russia.

Initially, participants were given general information about the country in order to provide a necessary cognitive framework for subsequent in-depth studies. Next, information was given on a) floods, b) landslides, c) fires, and d) nuclear disaster (Chernobil and Zaporizhzhia).

CHAPTER 2 - FLOODS

Floods in Ukraine are adverse hydrological phenomena, usually caused by atmospheric processes and phenomena. Floods are an annual in Ukraine, prolonged rise in the water level in a river, which leads to flooding of the river valley.

Reasons:

-Long rains

-Melting snow

-Excessive deforestation

The most likely areas of possible flooding:

- In the western regions - the basin of the upper Dniester, Tisza, Prut, Western Bug.
- In the eastern regions - the basin of the Seversky Donets, Vorskla, Sula, Psel.
- In the southern and southwestern regions - the basins of the Danube, Southern Bug.

Catastrophic floods most often occur in: Carpathians, observed 12 times in the last 40 years.

CHAPTER 3 - LANDSLIDES

Landslides are slippery displacements of rock masses down a slope, which occur due to a violation of equilibrium. Landslides occur due to the weakening of the strength of rock due to weathering, washing out by precipitation and groundwater, systematic shocks, reckless human economic activity, etc.

A landslide occurred at a quarry in the village of Kolchyno, Mukachevo district, Transcarpathian region.
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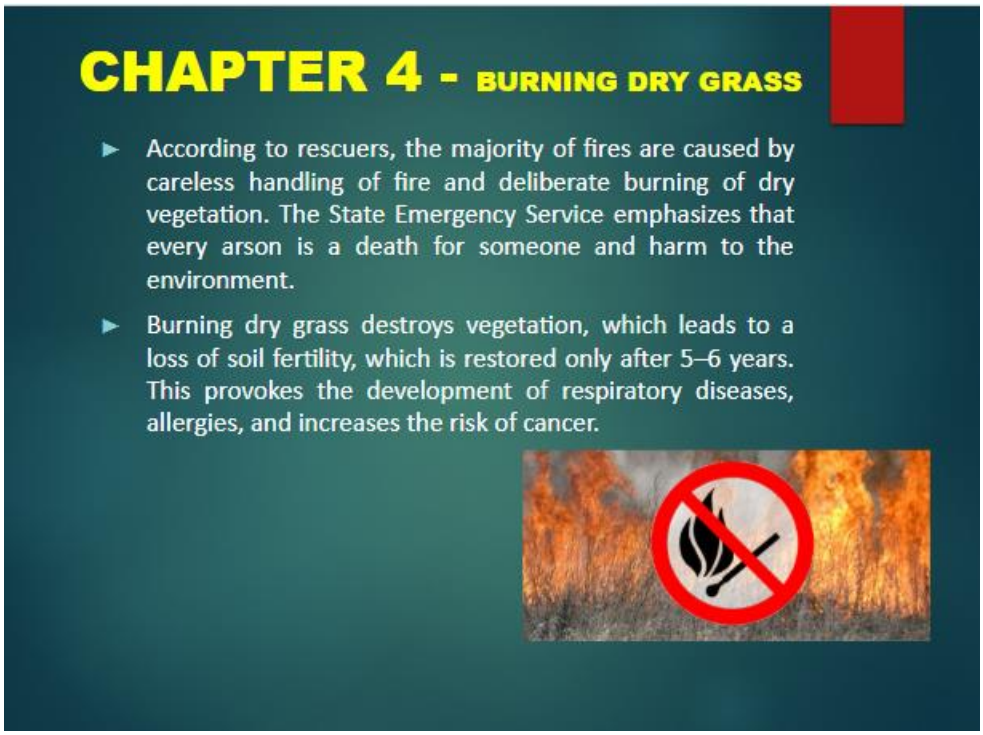

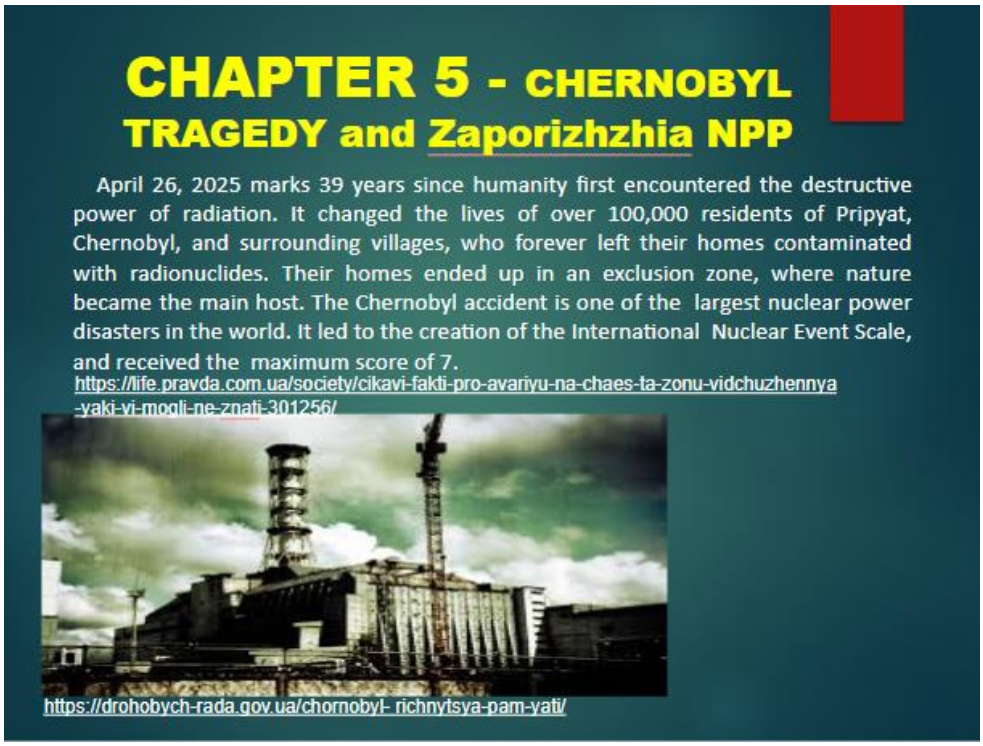

Figure 16 – main topics of the first presentation

The second part of the study visit focused on the ongoing conflict. The main types of damage caused by the war were outlined, including:

- The complete or partial destruction of civilian infrastructure, such as residential buildings, hospitals, schools, kindergartens, government facilities, and energy infrastructure.
- The mass displacement of the population: over 8 million Ukrainians have become internally displaced persons (IDPs), with even more seeking refuge abroad.
- High levels of mortality and injury among the civilian population, including children, the elderly, and persons with disabilities.
- Prolonged stress, psychological trauma, and a constant sense of threat affecting both frontline communities and those residing in relatively safer regions.

In response to these events, the Ukrainian population has implemented a range of measures, briefly summarized in the presentation slides. These actions have involved all levels (political, economic, and administrative) and led to the development of strategies to contain or mitigate the ongoing impact of the conflict.

Figure 17 – partially reconstructed building

The reconstruction process has also required a framework of regulations and financial provisions, some of which were already in place, while others were introduced in response to the emergency. One example is the law “On Compensation for Damaged and Destroyed Property” (No. 2923-IX, dated February 23, 2023), which establishes mechanisms for compensating citizens whose real estate was damaged or destroyed as a result of hostilities.

As was the case in the other study visits, a distinction was made between rehabilitation interventions—defined as actions aimed at restoring the functionality, safety, or habitability of buildings—and demolition and reconstruction efforts, which are necessary in cases where damage is so extensive that repair is not feasible.

The presentation included numerous technical details and outlined the solutions adopted in both rehabilitation and new construction scenarios. A selection of these examples, identified as best practices, was presented and is summarized below.

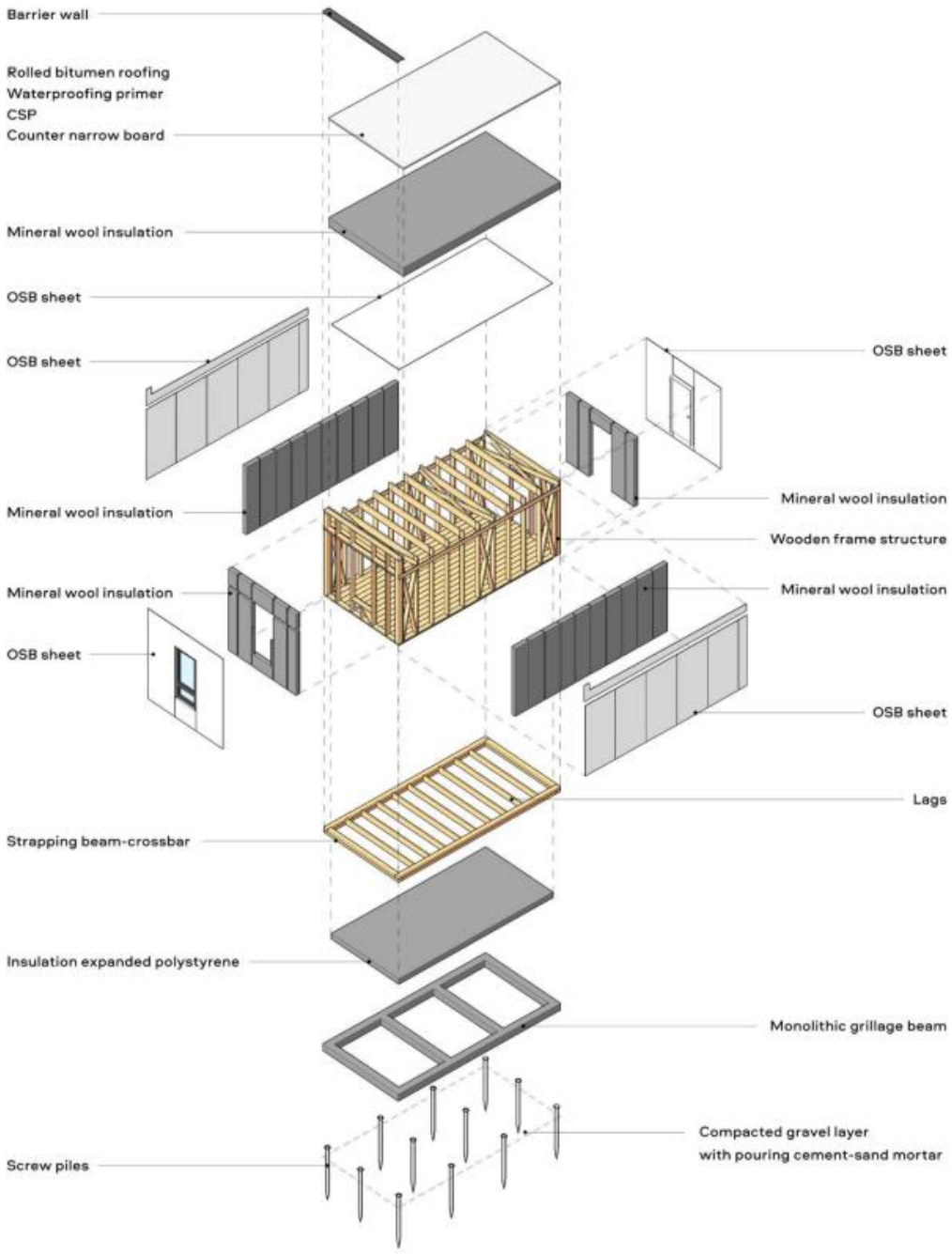

Figure 18 – Modular building for rapid wartime reconstruction

Capacity Building Program for sustainable reconstruction

REBUILD

Project: 101182786 — REBUILD — ERASMUS-EDU-2024-CB-VET

Co-funded by the European Union

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Annexes

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REPORT OF THE VIRTUAL STUDY VISIT: Construction College Construct2

Work Package	**2**
Activity	**T2.4**
WP Partner Responsible	**UNIBO**
Guidelines	**Report of the virtual study visit**
Data	**15.04.2025**

General information

Date	**11.04.2025**
Duration	**4 hours and 15 minutes**
List of participants involved (name and organization)	**ISTITUTO PER L' ISTRUZIONE PROFESSIONALE DEI LAVORATORI EDILI DELLA PROVINCIA DI BOLOGNA (I.I.P.L.E.); ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA (UNIBO); AKADEMIA WSB (WSB); CONSTRUCTION COLLEGE CONSTRUCT 2; INSTITUTIA PUBLICA CENTRUL DE EXCELENTA IN CONSTRUCTII (PubInCetExCo); College Spectri (College Spectri LEPL); Lviv Applied College of Construction Architecture and Design (LvivACBAD); EUROPEAN CENTER OF ENTREPRENEURSHIP COMPETENCE & EXCELLENCE (ECECE)**
Total number of participants	**38 (presenters and guests)**

Agenda of the event

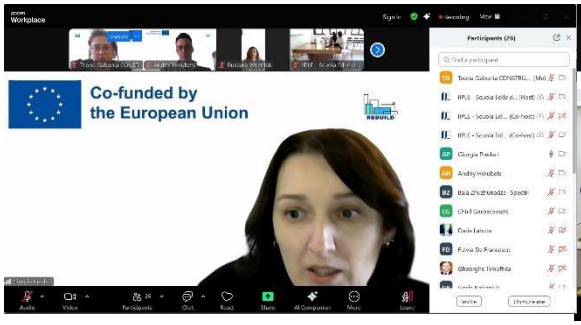
Please include the agenda of the event.

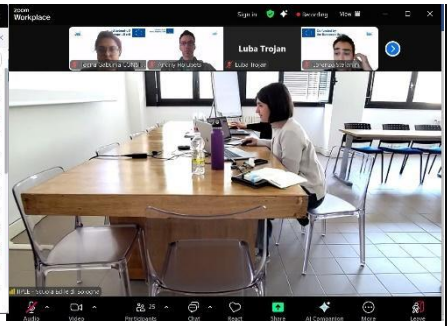
TIME (CET)	ACTIVITY	SPEAKERS
09.00 to 09.15	**Welcome & Introduction to the REBUILD project** - Presentation of the event's objectives	*IIPLE (Project Coordinator) – Luisa Sileni and Giulia Pazzaglia*
09.15 o 10.45	**Virtual study visit in Georgia** • Challenges for sustainable reconstruction • Best practices and project progress • Natural disasters, their causes and impacts	*Construction College Construct 2 (PP5) and College Spectri (PP7)*
10.45 to 11.00	*Coffee break*	
11.00 to 12.00	**Virtual study visit in Moldova** • Challenges for sustainable reconstruction • Best practices and project progress • Natural disasters, their causes and impacts	*Institutia Publica Centrul De Excelenta (PP6)*

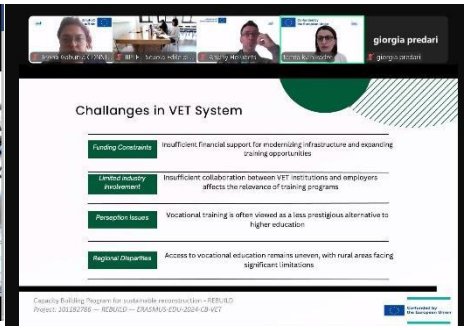
12.00 to 13.00	**Virtual study visit in Ukraine** ● Strategies for sustainable post-conflict reconstruction ● Best practices and project progress	*Lviv Applied College of Building, Architecture and Design (PP8)*
13.00 to 13.15	**Conclusions and Closing Remarks** - Summary of key takeaways - Next steps and follow-up actions - Thanks to all participants	*University of Bologna (PP2) and IIPLE (Coordinator)*

Photos of the event

Please provide some pictures (screen shot) from the event.







Contents illustrated during the event

Illustration of results of activities T2.1, T2.2 and T2.3

Briefly summarize the main topics covered (approx. 4000 characters including spaces).

In the first part of the project (started in January 2025), within Work Package 2 (Deepening Knowledge through Targeted Analyses), led by University of Bologna, partners from target countries (Georgia, Moldova and Ukraine) carried out analysis on:

- Defining and assessing the impact of Catastrophic Events
- Analysis of widespread reconstruction procedures in target countries
- State of vocational training

As part of the ongoing activities within the ReBuild project, a virtual study visit was organized to facilitate the exchange of knowledge and experiences among stakeholders engaged in construction, vocational education, and urban resilience. The visit served as a valuable opportunity to explore current challenges and initiatives related to building safety, vocational training, and post-disaster recovery efforts in Georgia.

Overview of the Study Visit

The virtual session brought together representatives from educational institutions, construction companies, and public sector stakeholders. The main focus of the visit was to share practical insights and developments in Georgia's approach to building resilience, vocational education, and reconstruction efforts following catastrophic events.

Key Topics Covered:

Catastrophic Events in Georgia

Participants examined the impact of recent natural and man-made disasters in Georgia. Case studies highlighted the vulnerabilities in urban areas and emphasized the importance of proactive planning, risk assessment, and early intervention to mitigate the effects of future events.

Construction Specifications and Building Standards

Discussions focused on current construction practices, the evolution of safety standards, and the role of engineering oversight in ensuring quality and sustainability. Particular attention was given to updating construction codes in line with European standards.

Vocational Education in Georgia

A comprehensive overview of Georgia's vocational education landscape was presented, with emphasis on training programs for construction trades. The visit explored how vocational institutions are adapting curricula to meet modern labor market demands and support disaster-resilient construction practices.

Hazardous Building Replacement Program in Tbilisi

A case study of the hazardous building replacement program currently underway in Tbilisi was shared. BK Construction's involvement in the initiative was highlighted as an example of public-private collaboration aimed at improving urban safety and housing standards.

There is a growing recognition of the need to integrate vocational education with practical, on-the-ground construction challenges.

Cross-sector collaboration, particularly between educational providers and construction firms, is essential for sustainable development.

Targeted replacement of unsafe buildings in urban areas is a high-priority issue that requires both technical expertise and long-term policy commitment.

The virtual study visit successfully provided a platform for dialogue, learning, and cooperation among key actors in the construction and education sectors. Insights gained from the visit will contribute to the continued development of safe, sustainable, and skills-focused construction initiatives under the ReBuild project framework.

Local building characteristics and intervention techniques

Briefly summarize the main topics covered (approx. 4000 characters including spaces).

The virtual study visit conducted through the ReBuild project provided a comprehensive look at the prevailing building characteristics in Georgia, as well as the intervention techniques currently employed to enhance safety and resilience.

One of the core issues discussed was the vulnerability of existing building stock in both urban and rural areas, particularly in the context of Georgia’s exposure to natural hazards such as earthquakes and landslides. Many structures, especially in older districts, were constructed decades ago without modern seismic considerations, using materials and methods that are now considered outdated or unsafe. These include unreinforced masonry, non-engineered concrete, and poorly maintained utility infrastructures.

The discussion emphasized the importance of building assessments to determine the structural integrity of such buildings. During the session was highlighted the hazardous building replacement program in Tbilisi, where outdated and structurally deficient buildings

are being systematically assessed, demolished, and replaced. BK Construction's active role in this initiative was presented as a practical example of how local companies are contributing to safer urban development.

The study visit also focused on intervention techniques, including both retrofitting and reconstruction strategies. Retrofitting is often applied in cases where complete replacement is not feasible, especially in heritage buildings or densely populated areas. Techniques such as reinforcement of walls and foundations, installation of shear walls, and upgrading of roofs and frames were discussed as part of ongoing projects.

In parallel, the visit examined the integration of modern construction standards, aligned with European norms, into local practices. Emphasis was placed on ensuring that new constructions meet current seismic safety regulations and environmental standards, particularly in high-risk zones.

Another critical component covered was the role of vocational education in supporting these intervention efforts. Georgia's vocational institutions are increasingly updating their curricula to include modern construction techniques, safety protocols, and hands-on training. This ensures that future builders and technicians are well-prepared to apply best practices in both new construction and renovation work.

In conclusion, the session underscored that improving Georgia's building resilience requires a multi-pronged approach: identifying risks, replacing or retrofitting unsafe structures, enforcing updated standards, and equipping the workforce with the necessary skills. These combined efforts are central to the ReBuild project’s goals of fostering safer and more sustainable built environments.

Co-funded by the
Erasmus+ Programme
of the European Union

REPORT OF THE VIRTUAL STUDY VISIT: Centre of Excellence in Constructions, MOLDOVA(IP CEC)

Work Package	**2**
Activity	**T2.4**
WP Partner Responsible	**UNIBO**
Guidelines	**Report of the virtual study visit**
Data	**(11.04.2025)**

General information

Date	**11.04.2025**
Duration	**4 hour, 15 minutes**
List of participants involved (name and organization)	**Țurcan Lucia,** *Centre of Excellence in Constructions* **Garbatovschi Chiril,** *Centre of Excellence in Constructions* **Tatiana Cotîrșev,** *Centre of Excellence in Constructions*
Total number of participants	**3**

Agenda of the event

Virtual Study Visit Program

11th of April 2025
Online event

Register to the event within the 9th of April 2025 at the link

TIME (CET)	ACTIVITY	SPEAKERS
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Photos of the event

Please provide some pictures (screen shot) from the event.

Contents illustrated during the event

Moldova faces **moderate to high risks** from natural disasters due to its geographical location and climatic dynamics. Compared to other European countries, its vulnerability to climate-related disasters is heightened by its dependence on agriculture and **limited disaster management resources**.

In terms of catastrophic events that impacted the architectural heritage and infrastructure, Moldova is notably vulnerable to:

- Floods;
- Severe storms;
- Earthquakes.

Floods

Flooding is a major concern, with **over 11% of Moldova's territory prone to inundation**. **Historical floods**, such as those in **1947, 2008, and 2010**, have caused extensive damage to homes, farmland, and infrastructure, displacing communities and requiring expensive recovery efforts.

Severe Storms

Moldova has experienced damaging storms, including Cyclone Carpathia (1965) and the storm of June 2016, which led to crop destruction, infrastructure failures, and power outages. Strong winds and hailstorms further exacerbate the risks to buildings, agriculture, and communication networks.

Earthquakes

As part of a **seismically active region**, Moldova has suffered high-magnitude earthquakes, notably in **1940 (Magnitude 7.4), 1977 (Magnitude 7.4), and 1990 (Magnitude 6.7)**. These pose a **severe threat to older structures**, especially Soviet-era buildings, making earthquake preparedness critical.

Overall, **floods and storms** lead to **annual losses of approximately 3% of Moldova's GDP**.

Earthquake present a high threatening because 80 % of protected buildings require urgent rehabilitation, conservation and building restoration.
The last building condition assessment was 20 years ago and 10 of Chișinău's population lives in century old, unreinforced buildings that have endured three major earthquakes over 7 0 magnitude.

Recontruction efforts

Most of reconstruction projects in Moldova have been primarily driven by significant building deterioration over time or emergency situations These initiatives have been made possible through key restoration efforts led by public authorities in collaboration with Romania and the EU The reconstruction process primarily relies on modern construction techniques and materials however, restoration projects present a significant challenge for Moldova.

- Limited funding;
- Training programs in the field of building restoration are in their early stages;
- Shortage of skilled labor;
- Building restoration it is generally in early stage for Moldova.

As notably experiences we can mention: **Reconstruction of Cotul Morii Vilage** after flood and the **restauration** of few **historic buildings(Vladimir Herța's urban villa, Soroca Fortress, The The building of the Organ Hall from Chișinău, Tighina Fortress** etc.).

Local building characteristics

Chișinău's architectural landscape is diverse
• Historic Structures 18 th-19 th centuries) Religious edifices, aristocratic mansions, and administrative buildings in neoclassical and eclectic architectural styles;
• Interwar Architecture 1918-1940 Neo Romanian and Art Deco buildings, characteristic of the Romanian administration's urban expansion;
• Soviet Era Constructions 1945-1991 Standardized residential blocks Khrushchyovka and Brezhnevka large scale administrative complexes, and industrial facilities built for functionality and mass housing;
• Contemporary Developments (Post 1991).

Moldova's built heritage consists of a mix of historical influences and modern developments Soviet era and older buildings make up a large part of the city's architecture especially in residential areas and government buildings. Many

structures date from the mid 20th century featuring **reinforced concrete and prefabricated elements**.

A substantial portion of the built environment, particularly individual residential houses and low rise buildings, is constructed using **limestone block masonry**.

Most of **new buildings** are developed by private investors using modern construction techniques The load bearing structure is typically a reinforced **concrete frame or a mixed system with reinforced concrete and steel concrete elements**, or, occasionally, a steel or wooden frame, depending on engineering needs.

CONCLUSIONS:

Moldova's built environment is highly vulnerable to catastrophic events leading to structural degradation and costly reconstruction.

Key considerations:

•Hydrometeorological risks contribute to annual losses amounting to 3% of GDP.

•Seismic exposureto high-magnitude earthquakes (≥7.0 Richter scale) poses a critical riskto older structures, especially Soviet-era and historic buildings.

•Restoration challengesinclude 80% of protected buildings requiring urgent rehabilitation, but limited funding, early-stage training programs, and skilled laborshortages impede preservation efforts.

•Modernization trends focus on concrete and modern elements for efficiency, yet historical conservation remains under developed.

•International cooperation and sustainable urban resilience strategies remain essential.

•Ensuring structural integrity while advancing restoration practices is essential for Moldova's architectural sustainability.

REBUILD

Co-funded by the
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REPORT OF THE VIRTUAL STUDY VISIT: Lviv Applied College of Building, Architecture and Design (Ukraine)

Work Package	**2**
Activity	**T2.4**
WP Partner Responsible	**UNIBO**
Guidelines	**Report of the virtual study visit**
Data	**(11.04.2025)**

General information

Date	**11.04.2025**
Duration	**4 hour, 15 minutes**
List of participants involved (name and organization)	**Oksana Makohin,** *Lviv Applied College of Building, Architecture and Design* **Ruslana Wozniak,** *Lviv Applied College of Building, Architecture and Design* **Andriy Holubets,** *Lviv Applied College of Building, Architecture and Design*
Total number of participants	**3**

Agenda of the event

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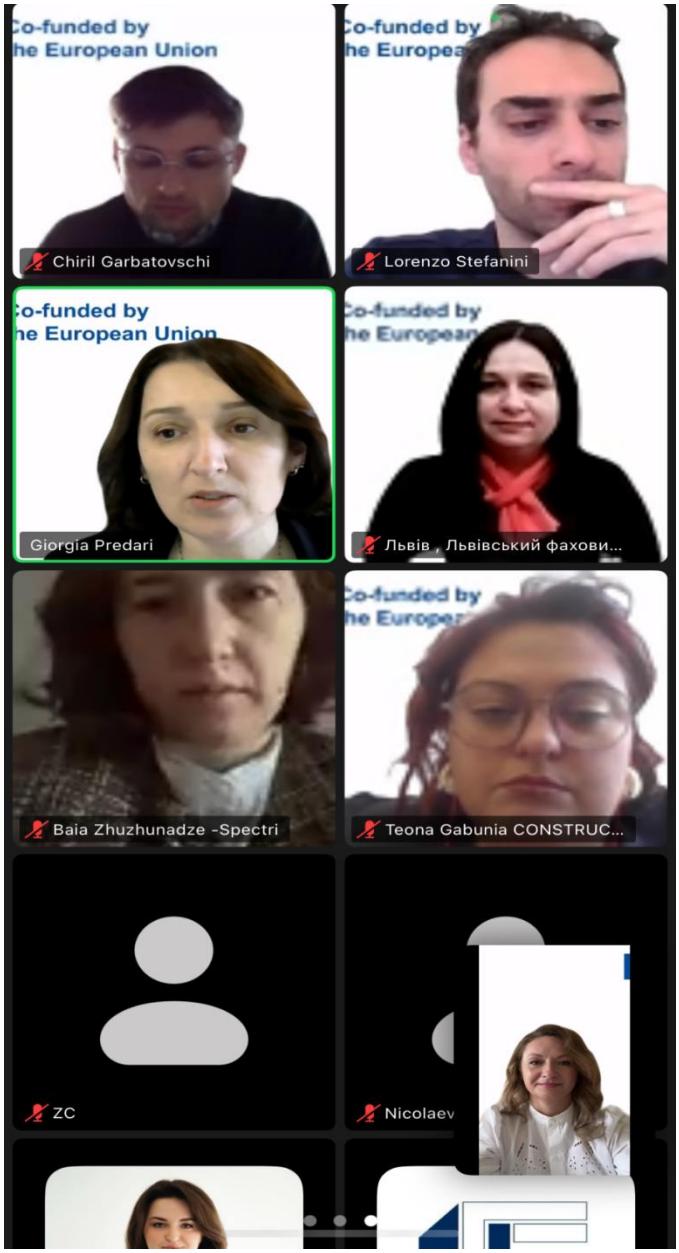

Contents illustrated during the event

The study visit focused on the catastrophic impact of the ongoing Russian invasion of Ukraine, particularly highlighting the destruction caused by missile and drone attacks on residential, critical, and public infrastructure. The Ukrainian delegation presented a detailed overview of how the war has reshaped emergency management and reconstruction policies at both the local and national levels.

Key aspects discussed included:

Contents illustrated during the event

The study visit focused on the major ecological and natural disaster challenges faced by Ukraine, especially in the context of ongoing war-related risks. The Ukrainian delegation presented an overview of environmental vulnerabilities, emergency responses, and the regulatory framework shaping current practices.

Key aspects discussed included:

- **Types of catastrophic events**: Ukraine experiences a wide range of natural disasters, including floods, landslides, wildfires, and ongoing ecological risks related to industrial facilities.
- **Floods**: Severe floods frequently affect western regions such as the Carpathians, caused by heavy rainfall, snowmelt, deforestation, and ecosystem degradation. The major floods of June 2020 and April 2023 were highlighted, showing significant damage to infrastructure and agriculture.
- **Landslides**: Especially common in the Carpathian region, landslides are linked to soil instability and poor land management practices. Notable cases occurred in Lazeshchyna (March 2024) and Ivano-Frankivsk region (June 2021).
- **Wildfires (burning dry grass)**: Widespread throughout Ukraine, wildfires damage ecosystems, reduce soil fertility, and contribute to air pollution and health risks. Government penalties and public education campaigns are ongoing but face challenges during wartime.
- **Chornobyl disaster risks**: The legacy of the 1986 Chornobyl nuclear disaster remains a significant concern, with renewed threats due to military operations and drone attacks near the exclusion zone.
- **Zaporizhzhia Nuclear Power Plant crisis**: Russian occupation of Europe's largest nuclear plant has created critical risks of nuclear terrorism, raising global alarms about environmental security.
- **Debris and post-disaster management**: Emergency responses include debris clearance, environmental monitoring, and strategic land restoration projects to mitigate further ecological degradation.
- **Regulatory framework**: Ukraine’s response is supported by a strong legal base, including the Constitution, the Civil Protection Code, the Environmental Protection Law, and specialized legislation on biodiversity, atmospheric protection, and disaster prevention.

Types of catastrophic events: The primary causes of destruction in Ukraine since February 2022 have been high-intensity missile strikes, drone attacks (including Shahed UAVs), artillery shelling, and targeted infrastructure sabotage.

Scale of destruction: Tens of thousands of residential buildings, schools, hospitals, and critical infrastructure facilities have been either partially damaged or completely destroyed across multiple regions.

Immediate response and damage assessment: Rapid damage evaluation has been conducted using advanced technologies such as drones, LiDAR scanning, and satellite imaging. The collected data is integrated into national platforms like DREAM (Digital Restoration Ecosystem for Accountable Management) to support efficient recovery planning.

Presentation of modular housing projects: Modular settlements constructed in Lviv, Rivne, and Kyiv regions were showcased. These facilities were specifically built to provide temporary housing for internally displaced persons (IDPs) affected by the war, demonstrating a rapid and humane response to urgent housing needs.

Rehabilitation interventions: Emphasis is placed on temporary repairs to restore basic functionality (e.g., roof replacement, window repairs, stabilization of structures) before full reconstruction. Energy-efficient and resilient materials are prioritized.

Reconstruction interventions: When buildings are unsalvageable, Ukraine implements rapid modular construction, lightweight steel frame systems (LGSF), and hybrid designs, balancing speed, safety, and sustainability. Standardized designs are widely used to optimize time and costs.

Debris management: Extensive removal and sorting operations are organized by the State Emergency Service (DSNS) and local authorities. Recyclable debris is repurposed where possible, supporting circular economy principles.

Use of BIM technology: BIM (Building Information Modeling) has been progressively integrated into reconstruction projects to coordinate design, cost estimation, logistics, and long-term facility management. Public platforms ensure transparency and stakeholder collaboration.

Community involvement and international support: Local communities, NGOs, and international organizations (e.g., UNDP, USAID, EU) actively participate in funding, rebuilding efforts, and capacity developm

CONCLUSIONS

Ukraine faces a complex array of environmental and disaster-related threats, exacerbated by ongoing military aggression. Nevertheless, the country demonstrates a proactive approach in implementing emergency response mechanisms, strengthening regulatory frameworks, and integrating environmental protection into broader recovery strategies.

Key strengths include technological adoption for damage assessment, active community engagement, and international cooperation. Critical challenges remain in managing cumulative risks, restoring damaged ecosystems, and ensuring the resilience of critical infrastructure under wartime conditions.

Ukraine's experience offers valuable lessons in how to integrate ecological resilience into post-conflict reconstruction, highlighting the inseparable link between environmental security and national survival.

The Ukrainian case demonstrates an evolving model of post-conflict recovery built on resilience, technological innovation, and strong community engagement. Despite facing ongoing military threats, Ukraine has managed to create structured procedures for damage assessment, debris management, rehabilitation, and reconstruction.

The integration of BIM technologies, digital management systems, modular construction, and sustainable practices reflects a progressive approach to rebuilding not merely structures, but more resilient, efficient, and inclusive communities. International cooperation and local empowerment are key pillars supporting the success and scalability of Ukraine's reconstruction efforts.