Skill Resilience 4EU

SkillResilience4EU
Resilience through re-skilling and upskilling for European labour markets in transition

D3.1 – Case Study Planning and Coordination

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Abbreviations and acronyms

Abbreviation or acronym used in this document	Explanation
CEFEFOP	European Centre for the Development of Vocational Training
EU	European Union
ESCO	ESCO is the multilingual classification of European Skills, Competences, and Occupations. ESCO is part of the Europe 2020 strategy.

Glossary

Term	Definition used or meaning in the Acronym project	Reference or source for the definition if applicable
Sikt	Sikt - Norwegian Agency for Shared Services in Education and Research is a public administrative body under the Ministry of Education and Research, Norway. Sikt offers a common infrastructure and joint services for the knowledge sector supporting digitalisation, data sharing and open research. All research projects at HVL that intend to gather personal information must be assessed by SIKT before the data collection commences	https://sikt.no/en/home
Teams	Teams is a collaboration platform provided by Microsoft 365. In this project the term "Teams" includes the Microsoft 365 services Teams, SharePoint and Onedrive. HVL uses Microsoft 365 as its standardized solution for communication, collaboration, and document management in daily work	
The Data Management Plan (DMP)	DMP provides a detailed framework to ensure the safe handling, storage, and sharing of project data. It is designed to meet the contractual requirements of each partner's funding agency, follow the internal rules set by the Consortium Agreement, and comply with relevant data protection laws.	D8.3 – Initial Data Management Plan, including Ethics and IPR

Executive Summary

The twin transition, encompassing both the green and digital transformations, poses significant challenges for European labour markets and societies. These transitions do not always progress at the same pace or reinforce each other; instead, they can create tensions, uneven impacts, and structural disruptions. On the one hand, the shift towards sustainability requires new green skills, investments, and institutional adjustments. On the other hand, digitalisation demands advanced technological competencies, continuous reskilling, and adaptability to automation.

Moreover, the challenges of the twin transition vary significantly across regions and sectors. Industrial areas face pressures of decarbonisation and automation, while rural regions struggle with limited access to digital infrastructure and training opportunities. These divergences make the implementation of the twin transition particularly complex, requiring tailored strategies that reflect sectoral and regional specificities.

In view of these challenges, a core element of the *SkillResilience4EU* project is conducting five case studies in the fields of green and digital transformation. By analysing various sectors across different European regions, the project will provide in-depth insights into mechanisms of job creation and destruction, identify groups most at risk of exclusion, and provide policy and institutional recommendations to support reskilling and upskilling strategies during the twin transition.

To thoroughly investigate the above within the SkillResilience4EU project, **mixed methods** will be applied in conducting five case studies in various sectors in Europe: tourism, food, agriculture, transportation, and energy. These sectors are interconnected through shared challenges, institutional frameworks, actors, and policy environments. This approach will highlight regional differences in skill needs, even within the same sector. Unlike traditional statistical sampling, this approach uses theoretical sampling—cases are chosen deliberately, not randomly. The objective is to develop and refine emerging theoretical insights.

Data collection follows through multiple qualitative and quantitative methods, including interviews, focus groups, surveys, and desk research, ensuring triangulation. The process continues with within-case and cross-case analyses to identify mechanisms of job creation, destruction, and resilience across sectors and regions. The final stage synthesises findings into reports, highlighting dynamics of social inclusion and exclusion, regional differences in skill needs, and recommendations for policymakers. This systematic approach ensures both empirical robustness and theoretical contribution.

The purpose of deliverable 3.1. is to set out the methodological framework and coordination plan for the five case studies on labour market resilience in the twin transition. The following report presents a detailed description of the research process applied in the implementation of the case studies.

The report is structured as follows. The first section provides the context, objectives, and details regarding the SkillsResilience4EU project, including work package 3, data flows between work packages, and data management.

The second section presents methodology based on mixed method case study based approach, a well-established method for theory building through case study research. It provides an overview of the research questions, key definitions, and concepts of the project, the rationale for selecting case studies in specific sectors and regions, the types of research tools applied, the

requirements regarding researchers' expertise in the field, the guidelines for data collection and theory building, as well as the expected research outcomes.

The third section provides an overview of the case study research process, which has been divided into five interrelated phases: (I) Exploration, (II) Multi-method collection of material, (III) Preparation & validation, (IV) Compilation of results, (V) Validation of results. Each phase is described in detail in this section of the report. The case study process employs a mixed-methods case study approach, integrating interviews, focus groups, desk research, and quantitative data, with triangulation to ensure validity. Using multiple sources and methods in a case study is a well-established practice that significantly enhances the quality of the research.

The final section presents the expected outcomes from the case study.

Table of Contents

List of Figures and Charts

List of Tables

1 Introduction

The following report outlines a case study methodology to explore the resilience of European labour markets under the twin transition—green and digital. It presents the guiding principles, methods, and research processes, as well as the coordination of Work Package 3 (WP3) to maximise the SkillResilience4EU project's impact.

1.1. Context of the SkillResilience4EU project

The SkillResilience4EU project is situated within the pressing challenges of the twin transition, defined as the simultaneous interplay of digital and green transformations reshaping Europe's economies and societies. These processes, accelerated by macroeconomic disruptions such as the COVID-19 pandemic and the energy crisis, profoundly restructure sectors, alter labour market dynamics, and generate mismatches between skills supply and demand. Such transformations pose risks to resilience, as they may intensify inequalities, marginalise vulnerable socio-demographic groups, and unevenly affect regions. Against this background, SkillResilience4EU seeks to reframe the concept of labour market resilience by developing a conceptual framework, conducting case studies in selected European regions, mapping mechanisms of job creation and destruction, and evaluating training pathways for reskilling and upskilling.

1.2. The objectives of the SkillResilience4EU project

The project's objectives are to:

- Develop a framework to understand the twin transition's effects on job creation and destruction in European labour markets.
- Explore specific sectors and regions to identify challenges and offer recommendations for managing the transition, especially for marginalized groups.
- Evaluate upskilling and reskilling educational programs, providing resources for individuals and employers focusing on career development.
- Ensure the sustainability of the project's results through dissemination and advocacy to engage key stakeholders.

1.3. Work Package 3: Labour Markets in Transition (WP3)

1.3.1. The objectives of WP3

The aim of Work Package 3*, Labour Markets in Transition*, is to investigate how European labour markets adapt to the twin transition by focusing on resilience mechanisms, social inclusion and exclusion dynamics, and emerging challenges. The principal undertaking of WP3 is to coordinate case studies across five different sectors: tourism, food, agriculture, transportation, and energy. Each case will encompass at least two regions, enabling a series of comparative analyses that capture variations in geographic, institutional, and socio-economic contexts.

The objectives of WP3 are as follows:

- coordinate the case studies across the project;
- explore, identify and describe the mechanisms and conditions that contribute to the labour market resilience in selected European regions and sectors;
- explore, identify and describe the mechanisms and conditions that hinder the labour market resilience in selected European regions and sectors;

- understand the dynamics of social inclusion and exclusion of specific socio-demographic groups and classify the factors influencing it;
- gain deeper insight into the labour market challenges that various stakeholders from selected sectors face in the process of the twin transition.

1.3.2. The tasks of Work Package 3

Led by the University of Warsaw, Work Package 3 (WP3) comprises four tasks: (1) case study planning and coordination, (2) analysis of mechanisms enabling or hindering resilience, (3) examination of social inclusion and exclusion dynamics (led by FHNW), and (4) identification of challenges faced by stakeholders across sectors and regions.

Table 1. Information on WP3: Labour Markets in Transition

Task	***Task Leader***	***Output***	***Methods***
3.1 Case study planning and coordination	UW	D3.1 Case studies planning	methodology design data needs
3.2 Mechanisms and conditions that contribute to and hinder the labour market resilience	UW	D3.2 Report on the mechanisms and conditions contributing to and hindering the labour market resilience	conducting a series of comparative analyses; multiple data collection techniques such as interviews and secondary data analysis
3.3 Social inclusion and exclusion dynamics	FHNW	D3.3 Report on dynamics and factors of social inclusion and exclusion in the labour market	focus groups data analysis
3.4 Labour market twin transition challenges	UW	D3.4 Report on challenges faced by European labour markets in transition	interviews round table data analysis

1.3.3. Roles and Responsibilities

The research team of WP3:

Dr. Magdalena Marczewska, Principal Investigator of the SkillResilience4EU project Assistant Professor at the Faculty of Management, University of Warsaw, Department of Organization Theory and Methods, Centre for Socially Responsible Innovations.

Responsibilities: developing research methodology and tools, data analysis, preparation of reports and scientific publications

Dr. Magdalena Klimaczuk-Kochańska, Researcher in the SkillResilience4EU project Assistant Professor at the Faculty of Management, University of Warsaw, Department of Organization Theory and Methods.

Responsibilities: developing research methodology and tools, data collection, data analysis, preparation of reports and scientific publications.

M.A. Justyna Szczepanik, senior specialist, research fellow at University of Warsaw Faculty of Management, Department of Organization Theory and Methods, Centre for Socially Responsible Innovations.

Responsibilities: data collection, data analysis, preparation of reports and scientific publications

Role of the project partners involved in the WP3 activities:

WP3 focuses on coordinating five case studies conducted by project partners in selected European regions over the course of the project, which spans from Months 4 to 24. The University of Warsaw (UW) leads this work package, with contributions from all project partners.

The University of Warsaw will be responsible for developing the methodological process of the case study, drafting guides for each research tool used, and conducting data processing and analysis.

All case study partners will be responsible for data collection in their regions and their preliminary analysis.

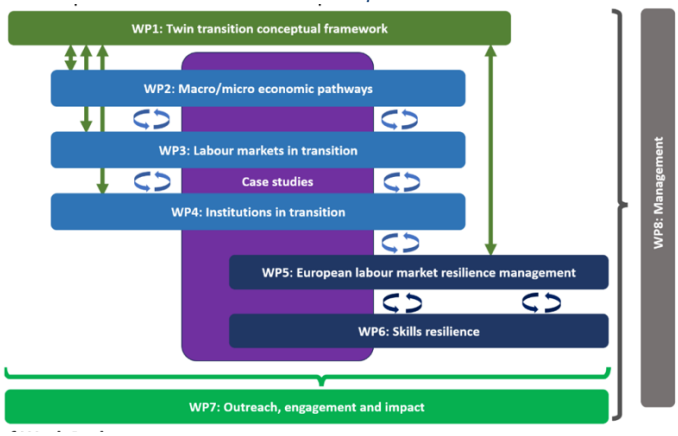
1.4. Data Flows between WPs in the SkillResilience4EU project

WP3 Labour Markets in Transition is closely interconnected with other work packages in the SkillResilience4EU project. Its activities encompass methodology design, identification of data needs in other WPs (especially WP4), and organising data flows between case studies. The key definitions have been developed in alignment with the conceptual framework and indicators established in **WP1 Twin transition conceptual framework** to establish a common understanding of the key concepts among project partners (pages 6-9).

WP3 has actively participated in preparing the stakeholder mapping methodology for **WP7 Outreach, engagement and impact** (in close collaboration with Task 7.2 Stakeholder Mapping), ensuring the inclusion of relevant actors in the research process. The UW research team have prepared StakeholderTrackingSheet and identify most relevant groups (according to the project application): research and innovation communities, policy and decision makers, practitioners, specific individuals, media and general public. The table was distributed by UW in April 2025, and serves as a starting point to gain an initial overview of stakeholders in each case study region. The table aims to support coordination for the case studies, refine the stakeholder map, and enable targeted communication of upcoming results. Additionally, WP3 will contribute to the preparation and coordination of stakeholder workshops, which create feedback loops for the empirical and analytical work of the project.

The findings from WP3 regarding labour market resilience, job creation and destruction mechanisms, as well as social inclusion and exclusion dynamics across regions and sectors, are linked with **WP4 Institutions in Transition**. This linkage will help assess the role of institutional and organisational contexts. The empirical insights and recommendations generated in WP3 directly inform **WP5 European labour market resilience management**, which focuses on developing a labour market resilience management tool, and **WP6 Skills resilience**, which is designed to create a twin transition self-assessment tool for both individuals and employers. Ultimately, the outcomes of WP3 will provide essential input to WP5, enriching policy recommendations and future scenarios for decision-makers.

Chart 1. The interrelations and dependencies between all WPs



1.5. Ethics and Data Management

The HVL (project coordinator) had prepared the Data Management Plan (DMP) for the SkillResilience4EU project, which provides a detailed framework to ensure the safe handling, storage, and sharing of project data. It is designed to meet the contractual requirements of each partner's funding agency, follow the internal rules set by the Consortium Agreement, and comply with relevant data protection laws. The Data Management Plan (DMP) will be a living document that is updated regularly until the project ends.

HVL is primarily responsible for overseeing data management. The DMP explains how data will be collected and stored securely, detailing what specific data the project will gather. It sets clear guidelines for sharing data among consortium members and makes sure all actions comply with relevant data protection laws. Ethical issues concerning research data will also be addressed, with templates provided to help manage these aspects.

1.5.1. Legal and ethical considerations

The project will follow institutional policies, codes of conduct, and ethical guidelines. Researchers involved are responsible for following their organizations' ethical standards and national laws. We will share best practices and collaborate with all participants to maintain high research standards and ethical excellence. While there are no specific ethical challenges with the project or its results, we will follow these ethical guidelines:

- General guidelines for research ethics
- Social Sciences, Humanities, Law and Theology
- Internet Research

Following the principle of "data minimisation," HVL, as the data controller, will collect only the personal information that is directly relevant and necessary for a specific purpose. The project will retain the data only for as long as needed to accomplish that purpose.

HVL have registered the project with SIKT, the Norwegian Agency for Shared Services in Education and Research, with which HVL has a Data Protection Services agreement. HVL must notify SIKT via an online notification form at least 30 days before data collection begins. SIKT then evaluates compliance with data protection laws and the legal access to personal data.

1.5.2 Legal basis for processing personal data

The legal basis for processing general personal data is Public Interest (General Data Protection Regulation art. 6 nr. 1 bokstav 2), jf. art. 9 nr. 2 bokstav j).

If appropriate, we will be using consent forms as an additional measure. For this, the project follows the SIKT guidelines for informed consent. An information sheet is distributed to each participant, a separate consent form is signed, returned and stored (see Annex 2: Information letter and informed consent). These will be kept on paper (or digital format when possible) and securely stored by the responsible partner or associated partner.

1.5.3 Ethical concerns

We will ensure that all participants directly involved in the project are informed about their rights and the possible impacts the project may have on them. Participants will be told that they can withdraw from the project at any time, and we will delete their personal data to the fullest extent possible. Additionally, we will discuss the study's objectives, and any potential risks related to their involvement. Matters concerning personal data management and privacy will also be thoroughly addressed. For this, the project adheres to the SIKT guidelines for providing information to research participants.[1]

[1]https://sikt.no/en/tjenester/personverntjenester-forskning/fylle-ut-meldeskjema-personopplysninger/information-participants-research-projects

2 Methodology and methods

2.1 Research Questions

a) Effects of the twin transition lie in the different degrees of green and digital transformation a region/sector undergoes, and these transitions do not always support one another. Due to the complexity of the issues, one of the main research questions is: **How can we conceptualize and empirically assess the combined effects of green and digital transitions, particularly in regions or sectors undergoing uneven transformation?**
b) **What mechanisms can anticipate the effects of the twin transition on labour market resilience?**
c) **How do structural disruptions and macro/microeconomic determinants influence resilience in different sectors?]** Due to the changes caused by the twin transitions and micro and macroeconomic determinants, the ability of the labour market to absorb and respond to changes in employment conditions and job availability might be disrupted.
d) **In what ways does the twin transition drive job creation and destruction, and which socio-demographic groups, sectors, or regions are most vulnerable to being marginalized?**
e) **What challenges do European labour markets face in adapting to the green and digital transitions?**
f) **What mechanisms of social inclusion and exclusion are emerging among different socio-demographic groups in response to the twin transition, and what contextual factors shape these outcomes?**

2.2 Key concepts and terms

The following point provides key terms to establish a shared understanding of the core concepts of the SkillResilience4EU project. Those terms will be used during the case study research (e.g., during interviews, focus groups, and roundtables).

2.2.1 Institutional and Organisational Frameworks

- **Twin Transition**: the coexistence and interplay of two major transformational processes shaping contemporary society: the green transition and the digital transition. It involves managing these processes in an integrated manner to achieve a sustainable, equitable, and competitive future (European Commission, 2022). *For example*: in the energy sector, the green transition involves decarbonisation and renewable energy adoption, while the digital transition involves smart grid technologies and AI-based demand management.

2.2.2 Labour Market Dynamics and Skills

- **Labour market resilience:** the capacity of a labour market or workforce to withstand and adapt to various changes in the economic system while maintaining stability and opportunities for workers. A resilient market ensures that workers can find employment, maintain job security, and adapt to changing dynamics in the face of adversity.

- **Climate Resilience:** ways to narrow the climate protection gap and increase the resilience of the economies and societies to the effects of climate change by promoting risk awareness, preparedness, and proactive measures in the face of climate change

(European Commission, 2024). Such adaptation frequently necessitates the development of new skills and the redeployment of workers from carbon-intensive sectors to greener industries.

- **Skills mismatch:** This occurs when sectors and industries are unable to meet, attract, or develop the necessary skills required for new and evolving jobs, or transfer them from other sectors and industries. It is often because training programs fail to keep pace with the changing demands of a region or sector. For example: 77 % of EU companies are reporting difficulties in finding workers with the skills they need (European Comission, 2023).

- **Green skills** (or **skills for the green transition**): include skills and competences but also knowledge, abilities, values, and attitudes needed to live, work, and act in resource-efficient and sustainable economies and societies (European Centre for the Development of Vocational Training [CEDEFOP], 2022). There are two main types:
  - **Technical green skills**: required to adapt or implement standards, processes, services, products, and technologies to protect ecosystems and biodiversity, and to reduce energy, materials, and water consumption. Technical skills can be occupation-specific or cross-sectoral.
  - **Transversal green skills**: linked to sustainable thinking and acting, relevant to work (in all economic sectors and occupations) and life. Alternatively referred to as 'sustainability competences', 'life skills', 'soft skills', or 'core skills'. They are comprehensively detailed in the European Commission's sustainability competence framework, GreenComp (Bianchi et al., 2022).

- **Digital skills:** digital competence involves the confident, critical, and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society (European Digital Competence Framework for Citizens (DigComp), [Vuorikari et al., 2022]). It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competencies related to cybersecurity), intellectual property-related questions, problem solving, and critical thinking.

- **DigComp 3.0**: the updated version of the European Competence Framework. It build on five priority themes which reflect a combination of digital technological developments, policy priorities, and stakeholders' views: (1) AI (and generative AI); (2) Citizen cybersecurity competence; (3) Rights, choice and responsibility; (4) Wellbeing in digital environments; and (5) Competence to tackle misinformation and disinformation. The development of DigComp 3.0 also acknowledges the importance of lifelong learning, the prerequisites for acquiring basic digital skills, differences in digital skills needs across people and over time, and the need for flexible, agile, and adaptable applications of the framework. [European Commission, 2025]

- **Technical skills:** specialized knowledge and abilities required to perform specific tasks or activities within a particular field or industry, often involving expertise in tools, software, or techniques.

- **Transversal skills:** transversal knowledge, skills, and competences are relevant to a broad range of occupations and economic sectors. They are often referred to as core skills, basic skills , or soft skills, the cornerstone for the personal development of a person. (European Commission's ESCO framework [European Commission, 2017] Transversal knowledge, skills, and competences are the building blocks for the

development of the "hard" skills and competences required to succeed on the labour market. The examples of the transversal skills: communication, teamwork, problem-solving, critical thinking, and adaptability, which are useful across various jobs, especially when roles are evolving rapidly.

2.2.3 Social Inclusion and Exclusion

The dynamics of the labour market, driven by the green and digital transitions, yield considerable social impacts. Key considerations in this regard include the processes of social inclusion and exclusion, along with the circumstances of 'left-behind' groups.

- **Social inclusion and exclusion:** refer to the processes that either enable or prevent individuals and groups from fully participating in the labour market and society. Inclusion means having equal access to opportunities such as education, training, and employment. Exclusion, on the other hand, involves limited or no access to such opportunities, which can lead to marginalisation over time. (World Bank, 2022).

- **'Left behind' groups:** these are socio-demographic groups or places, even entire regions, that may be negatively affected by the job destruction and creation processes of the transition processes (e.g., green and digital transformation) (Eurofound, 2021). These groups are not necessarily limited to manual workers. Still, they can also include low-skilled employees, people over fifty, women, migrants, or even high-skilled employees who need to adapt to new working methods. Their exclusion can stem from factors such as limited access to infrastructure, training, digital tools, institutional support, or broader systemic inequalities.

- '**Disadvantaged groups':** refer to a group of individuals who experience a higher risk of poverty, social exclusion, discrimination, and violence than the general population (European policy agenda). Disadvantaged groups include, but are not limited to: people with low income; one-parent families; ethnic minorities; migrants, refugees and asylum-seekers; Roma; children and young people; persons living with HIV/AIDS or other chronic illnesses; older workers; isolated, elderly people; transgender persons; people with disabilities; homeless; alcohol and drug abusers; early school leavers; long-term unemployed people. (CEDEFOP, 2020a).

2.2.4 Shifting Values of Work and Skills

The value of work in contemporary societies is understood as a multidimensional concept, extending beyond a purely remunerative function. A common analytical framework in the social sciences distinguishes between three key, interrelated dimensions of this value (e.g., Eurofound, 2017).

- **Economic value (of work):** refers to the measurable financial aspects of a job, such as wages, benefits, and overall job security.
- **Social value (of work):** relates to a job's contribution to social fairness, cohesion, and the well-being of the community.
- **Symbolic value (of work):** concerns the prestige, social status, and sense of identity or personal fulfilment that a job provides to an individual.

2.2.5 Public Policy for Re-skilling and Upskilling

Effectively navigating the green and digital transitions requires not only a coherent set of interventions (a policy mix) but also robust governance structures to design and implement them.

- **Policy mix:** a range of supranational, national, and regional policies (e.g., industrial, energy, and higher education) that collectively contribute to the green and digital transitions and address their associated shocks (OECD, 2021).
- **Governance (in the twin transition and labour market context):** the collaboration and decision-making processes among various actors, including public authorities, training providers, employers, and unions, to manage labour market resilience and changing skill needs (International Labour Organization, 2020).

2.3 Criteria for Case Selection

2.3.1 Differentiating features of the sectors

To thoroughly examine the conditions and mechanisms that influence job creation and destruction within the SkillResilience4EU project, five case studies will be conducted in various sectors in Europe: **tourism, food, agriculture, transportation, and energy**. These sectors are interconnected through shared challenges, institutional frameworks, actors, and policy environments. However, they are also uniquely impacted by the twin transition (green and digital) and broader macroeconomic forces, leading to diverse skill demands—even within the same sector.

2.3.2 Differentiating features of the regions

Each case study will be implemented in at least two different European regions, enabling comparative analysis across geographical, institutional, and socio-economic contexts. These comparisons will explore differences such as urban versus peripheral areas, border versus cross-border regions, varying levels of progress in the twin transition, geographic diversity, institutional contexts, and regional patterns of skill mismatches, etc.

The analysis will examine employment opportunities, the potential for future economic diversification, and the impacts of the twin transitions on different socio-demographic groups and selected European regions (NUTS2 level).

2.3.3 Conclusions

This approach will highlight regional differences in skill needs, even when the same sector is considered. The comparative analysis will follow **Eisenhardt's methodology**, a well-established approach for theory building through case study research. A critical next step in this process is case selection, which, according to Eisenhardt, functions similarly to population selection in hypothesis-driven research: it defines the boundaries within which findings can be generalized.

Unlike traditional statistical sampling, **this approach uses theoretical sampling**—cases are chosen deliberately, not randomly. The objective is to develop and refine emerging theoretical insights. Drawing from the logic of **grounded theory**, theoretical sampling seeks cases that are likely to **replicate, contrast, or extend** an evolving theory. This ensures that each selected case offers meaningful contributions to conceptual development, whether by confirming observed patterns or introducing new dimensions.

In this way, case selection is **strategic and purpose-driven**, not arbitrary. The value of each case lies in its potential to **advance theory**, rather than simply represent variation. The overall goal is to construct a robust, nuanced understanding of how sectoral and regional factors influence employment dynamics under the pressures of twin transitions in Europe.

Eisenhardt's methodology offers flexibility for building theories in new or underexplored fields, making it well-suited to capture the complex and dynamic nature of labour market transformations during the twin transition.

2.4 Triangulation and Data Types of Research Tools

In case study research, qualitative and quantitative methods enable triangulation and strengthen empirical evidence. Methodological triangulation refers to using various approaches - quantitative and qualitative - to better illuminate the studied phenomenon and enhance the internal validity of the research (Guetterman & Fetters, 2018). This may include analysing numerical and textual data within a single research project.

Using multiple sources and methods in a case study is a well-established practice that significantly enhances the quality of the research. A well-designed case study can draw on various data sources such as interviews, focus groups, and observations (e.g., data triangulation). Triangulation enables "stronger substantiation of constructs and hypotheses." While qualitative data primarily support theory-building (Eisenhardt & Graebner, 2007), quantitative data can support identifying relationships between constructs that may remain hidden within rich, extensive qualitative information. The goal is to obtain a more complete picture of the phenomenon and minimize the risk of bias from relying on a single method or source. At the same time, qualitative data help to understand these relationships more deeply. Triangulation also aids in identifying core patterns, relationships, and logic within the studied phenomenon (Eisenhardt & Graebner, 2007).

Research tools applied for triangulation in this project include:

- **Interviews (Phase II):** Collect data from various organizational informants (e.g., managers at different levels, operational staff) and external stakeholders. These may be structured, semi-structured, or unstructured interviews.
- **Focus groups / round tables (Phase II and Phase IV):** Used to generate discussion and explore shared perceptions across stakeholders.
- **Secondary data analysis (Phase I and Phase II)**

  (1) Document analysis: Analysis of internal documents (annual reports, memos, meeting minutes, presentations, performance data) and external sources (news articles, industry reports, public databases), as well as community-published documentation, such as monthly magazines, newsletters, and a book;

  (2) Quantitative Data: Including available numerical data (e.g., financial, operational) as an additional source of insight and validation.

  (3) (*additionally) Questionnaires/Surveys: Although the study is primarily qualitative, brief surveys can be used to gather specific quantitative data or validate certain aspects within the case on a broader scale.

All tools will evaluate the institutional, policy, and educational context of the labour markets.

The team WP3 will prepare:

- ***guidelines for each research tool***
- ***research tools templates***
- ***letters of recommendation with information about the project and the research***

- ***templates for interview summaries***

2.5 Researcher Requirements and Entering the Field

Case study as a research method is demanding and places specific expectations on researchers. To "increase the creative potential of research" (Eisenhardt, 1989), it is recommended to involve multiple researchers from diverse backgrounds. The outlines below are the key competencies required:

- **Ability to navigate ambiguity and complexity:** Researchers must be able to process large volumes of often contradictory qualitative data without prematurely simplifying the findings.
- **Theoretical sensitivity:** The ability to recognize patterns, theoretical constructs, and relationships in the data - even those that extend beyond existing theories. This requires both a solid grounding in theory and an openness to new ideas.
- **Systematic approach and methodological discipline:** Researchers must rigorously follow research procedures, particularly when it comes to comparing cases systematically and engaging in iterative analysis.
- **Open-mindedness:** A readiness to revise or even abandon initial hypotheses as new evidence emerges, and a commitment to avoid forcing data into pre-existing theoretical frameworks.
- **Strong interpersonal skills:** The ability to build rapport with respondents, conduct effective interviews, and navigate the complexities of field research.
- **Patience and persistence:** Theory building through case studies is a time-consuming process that demands repeated engagement with the data.

Researcher experience and bias

- Level of expertise: A researcher's level of knowledge may affect the sample size required to achieve data saturation.
- Researcher bias: This is a major challenge in qualitative case studies, as personal background, values, norms, experiences, and preconceptions can influence both data collection and interpretation. To minimize bias, researchers should practice reflexivity, seek feedback from peers (e.g., through peer debriefing), and apply triangulation strategies.

Qualitative case studies are generally time- and resource-intensive. They demand extensive fieldwork and active engagement with participants. The iterative nature of data collection and analysis, combined with the need for detailed documentation, adds to the overall complexity and duration of the research process.

The lead researcher will be directly involved in most aspects of data collection and analysis. However, additional researchers, support personnel, or students will be assisted in initiating contact with respondents and participating in interviews. These individuals contributed not only to the interviews themselves but also will play an important role in interpreting the findings. During interviews, they will ask additional questions, often prompting insightful discoveries. The research findings will be frequently discussed with these supporting researchers. For example, a discussion with a colleague led to the inclusion of new questions in a particular case study.

Taking into account human resource constraints, others who will be involved in the data analysis process in several ways:

- Engaging postgraduate students and research assistants in conducting in-depth interviews and participating in post-interview discussions to better understand the data.

- Sharing anonymised findings with these collaborators to obtain their feedback and perspectives.
- Reviewing and cross-checking data collected by the supporting researchers with data gathered directly by the lead researcher.
- Presenting preliminary findings multiple times to a panel of researchers to collect comments and improve the quality of analysis (Eisenhardt, 1989).

The research process also emphasises the importance of conducting research in teams, such as through joint fieldwork or co-led interviews, as the diverse perspectives of multiple researchers enrich the analysis and enhance confidence in the study's conclusions (Eisenhardt, 1989).

The research teams will prepare:

- ***Interview notes.***
- ***Suggestions for additional questions to enhance the research tools, transcription of interviews, and other relevant documents .***
- ***English translation (if English is not the main research language).***
- ***Summaries of interviews, based on the research notes template.***

2.6 Data Analysis and Data Collection in the Case-Based Theory – Building Process

2.6.1 Data Collection and Analysis in Case Study Methodology

In Eisenhardt's (1989) approach to theory building from case studies, data collection and data analysis are closely intertwined, often occurring in parallel. While some researchers, like Yin, advocate for beginning analysis only after the completion of data collection, Eisenhardt follows the principles of grounded theory and argues that overlapping these processes is both necessary and beneficial. This parallel process enables a flexible, responsive approach that allows researchers to adapt their data collection strategy based on ongoing insights—what Eisenhardt refers to as "controlled opportunism."

A crucial element of this stage is **systematic note-taking in the field**, which captures the researchers' reflections throughout the data collection process. These notes help ensure that important, especially one-time, observations are not lost. Reflective questions such as "What have I learned?", "How does this case differ from others?" and "What similarities are emerging?" guide the researcher's reflection and inform real-time decisions. The ability to adjust data collection in real time may include:

(a) **adding new cases** to deepen understanding of emerging themes,
(b) **formulating additional questions** in response to new observations, or
(c) **incorporating new data sources** like archival documents or direct observations.

Analysis is the backbone of the theory-building process. This analysis is both iterative and comparative, with two key stages: within-case analysis and cross-case analysis.

2.6.2 Within-Case Analysis

This first stage focuses on developing a deep understanding of each individual case. The volume of data collected in case study research can be overwhelming. Within-case analysis serves to simplify the process by producing rich, detailed narratives for each case. These descriptions may appear as pure narrative at first, but are essential for generating insights (Gersick, 1988; Pettigrew, 1988), helping researchers manage the early stages of analysis and identify key variables, processes, and patterns.

2.6.3 Cross-Case Analysis

Once individual cases are well-understood, the researcher moves on to cross-case analysis. Researchers often fall into the trap of drawing conclusions too quickly due to bias. To combat this, she suggests examining the data from multiple angles and employing various strategies to uncover patterns.

One method involves identifying relevant dimensions—drawn from the literature, research questions, or researcher judgment—and categorizing cases accordingly. For example, in a study on strategic decision-making, Eisenhardt and Bourgeois (1988) grouped firms based on factors like founder-led vs. professionally managed, high vs. low performance, product generation, and size. While some dimensions revealed no patterns, others—like performance—highlighted important similarities within groups and differences between them.

Another tactic is to compare cases in pairs, then compare each pair to others. This method reveals subtle differences and hidden similarities that lead to unexpected patterns. For instance, while initial impressions pointed to CEO power dynamics, pairwise comparisons revealed that decision-making speed was equally significant (Eisenhardt & Bourgeois, 1988).

A further approach is to analyse data by source - interviews, documents, surveys, and observations - independently, especially when multiple researchers are involved. Each researcher analyses a different source and later compares their interpretations, which strengthens the credibility of the emerging theory.

Cross-case analysis thus enhances the validity of the findings and increases the likelihood of identifying new patterns that might otherwise remain unnoticed.

2.6.4 Developing Hypotheses

Following pattern identification, the researcher begins to develop theoretical constructs and propose relationships between them. This process involves iteratively comparing emerging constructs with the data and refining both in light of one another. Although this may resemble hypothesis testing, there are key differences: in hypothesis testing, constructs are often predefined based on literature or pilot studies, and are assumed to apply to all data. In contrast, the approach followed in this project identifies constructs directly from empirical data, and these constructs may not appear in all cases.

To validate constructs, researchers must trace evidence from the data that supports their emergence. Constructs that lack sufficient evidence across cases may be dropped. However, disconfirming evidence can be valuable. For example, Eisenhardt and Bourgeois (1988) found a case that contradicted the emerging theory that political coalitions had stable memberships. Further investigation revealed that the executive team was newly formed, and another similar case led to the refinement of the theory: coalition stability increases over time. Such qualitative insights are crucial to understanding not just what relationships exist, but **why**.

2.6.5 Enfolding Literature

The penultimate step involves comparing the emerging theory with existing literature. Where researchers are encouraged to identify both consistencies and contradictions, emphasizing that reviewing diverse sources is essential. This comparison serves two purposes: first, it helps avoid

confusing the reader with unresolved contradictions, which may undermine the study's generalizability; second, it encourages critical thinking and offers opportunities to extend existing theory.

For example, when Eisenhardt and Bourgeois (1988) found that **centralization led to political behaviour**, contrary to the literature that made the same claim about decentralization, they sought further evidence. This led to the stronger, more nuanced theory that integrating both **centralization and decentralization fosters personal effectiveness and collaboration**.

Both confirming and disconfirming comparisons with literature **strengthen internal validity, theoretical generalizability, and conceptual depth**.

2.6.6 Reaching Theoretical Saturation

The final stage in the applied research method is achieving theoretical saturation (Glaser and Strauss, 1987). This is the point at which adding further cases yields **minimal new insights**, and incremental learning becomes marginal. Saturation often occurs between **4 and 10 cases**, though it may vary depending on the context.

Saturation also applies to the iterative process of theory development: once no new patterns emerge from returning to the data or literature, the researcher can conclude data collection and analysis. The iterative nature of this process—cycling between data and theory—mirrors grounded theory but is distinct in its **focus on theory building rather than theory testing**.

The team WP3 will prepare:

- ***template for within-case analysis***
- ***template for cross-case analysis***
- ***report(s) with results of analysis***

3 Methodological Process of the Case Study

3.1 General information

Application of Case Study Methodology:

- **Integrated Data Collection and Analysis:** Our research will intertwine data collection and analysis, allowing for adaptive strategies based on ongoing insights.
- **Iterative and Comparative Analysis:** We will employ both within-case and cross-case analysis, systematically comparing cases to identify patterns and refine understanding.
- **Empirically-Driven Theory Building:** Theoretical constructs and propositions will emerge directly from the empirical data, iteratively compared and refined.
- **Triangulation and Validation:** We will ensure reliability and completeness of findings through triangulation of methods and data sources, including interviews, focus groups, and document analysis. Communicative validation with stakeholders will also be used to confirm interpretations.

3.2 Guiding questions

All research questions listed on page 6 of this report have been further specified within the research process and divided into the following categories. The main area of interest is the further exploration of labour market aspects (WP3) and institutional changes (WP4).

3.2.1 Labour Market Perceptions

Objectives WP3 (e): To gain deeper insight into stakeholders' perceptions of labour market changes, including opportunities, challenges, and the role of different education pathways, within the twin transition

Guiding Questions:

- How were labour market changes perceived in the context of the twin transition?
- What opportunities and challenges were seen by different stakeholders?
- How is vocational training vs. academic education perceived?
- What are the prevailing narratives and sentiments (e.g., optimism, anxiety, resistance) among different stakeholder groups concerning the future of work under the twin transition?
- How do stakeholders perceive the effectiveness of current local/regional strategies in addressing skill gaps and promoting labour market resilience?
- What role do stakeholders believe different actors (e.g., government, industry, educational institutions, individuals) should play in navigating these labour market transformations?
- To what extent are stakeholders aware of, and how do they perceive, the specific skills (e.g., green skills, digital skills, transversal skills) required for emerging and transforming jobs?

3.2.2 Social Inclusion and Exclusion

Objectives WP3: d): Understand the dynamics of social inclusion and exclusion of specific socio-demographic groups and classify the factors influencing it

Guiding Questions:

- How is the inclusion or exclusion of specific socio-demographic groups perceived?

- Which groups are seen as “left behind” (in the five case study sectors)?
- What narratives dominate this perception?
- What are the perceived long-term consequences of social and labour market exclusion for the identified "left behind" groups and for regional resilience?
- How do intersectional factors (e.g., age, gender, ethnicity, disability, geographic location) combine to shape experiences and perceptions of inclusion or exclusion in the context of the twin transition?
- What are stakeholders' perceptions of the adequacy and accessibility of current support systems and policies aimed at promoting social inclusion for vulnerable groups in the labour market?

3.2.3 Valuation Perceptions (Shifting Values of Work and Skills)

Objectives WP3: b), c): To explore stakeholder perceptions regarding the changing value (e.g., economic, social, symbolic) of jobs, skills, and sectors resulting from the twin transition

Guiding Questions:

- How have values (price, aesthetics, symbolic meaning) been perceived or changed?
- In what spaces or media do these valuations take place?
- How have these valuation patterns evolved over time?
- How do these perceived valuations (e.g., higher or lower status, desirability) of certain jobs or skills influence individuals' career choices and engagement in reskilling or upskilling initiatives?
- What is the perceived impact of the twin transition on the valuation of traditional versus new or "green" and "digital" occupations?
- How do media representations and public discourse shape the societal valuation of different professions and skill sets affected by the twin transition?
- Are there perceived discrepancies between the economic value (e.g., wages, job security) and the social or symbolic value of certain jobs, and how does this affect labour market dynamics and individual well-being?

3.2.4 Institutional and Organisational Changes

Objectives WP4 (a): Map the evolution of the institutional context for labor market resilience in the regional case studies

Guiding Questions:

- What regulatory, normative, or cognitive changes have occurred related to the twin transition?
- When did they occur and on what spatial level?
- Which actor group initiated them (civil society, business, academia, public actors)?

3.2.5 Macro Level Changes

Objectives WP4 (b): Depict how these regional institutional contexts are influenced by changes at higher levels related to the twin transition

Guiding Questions:

- What major events or disruptions (e.g., the pandemic, natural disasters) have influenced institutional developments related to the green and digital transitions in the region?
- Which policy changes at the national or EU level have had an impact on the region?
- How have broader institutional or governance changes at higher levels shaped regional institutional responses or strategies?

3.2.6 Micro Dynamics

Objectives WP4 (c): Investigate how actors respond to these macro-level changes and drive forward institutional change

Guiding Questions:

- What new forms of collaboration are emerging among regional actors in response to these changes?
- What new organizational structures (e.g., networks, working groups) have been established to support the transition?
- To what extent are actors taking proactive measures rather than merely reacting to higher-level developments?

3.2.7 Key Actors

Objectives WP4 (c): Investigate how actors respond to these macro-level changes and drive forward institutional change

Guiding Questions:

- Who were the key actors driving the above changes?
- What were their positions and roles in networks or institutions?
- What were their motivations and visions?
- What activities or strategies did they employ?

3.2.8 Governance (Public Policy for Re-skilling and Upskilling)

Objectives WP4 (d): Define governance challenges and opportunities by integrating the expertise of various stakeholders from the labour market and higher education sector

Guiding Questions:

- What is already working well in terms of collaboration and governance across the labor market?
- Where are the leverage points for improving coordination, integration, or impact?
- What is currently not working as intended, e.g., which stakeholders are missing or underrepresented?

3.3 Mixed-methods case study approach

The guiding questions for Work Package 3 (WP3) *Labour Markets in Transition* will be primarily addressed through a **mixed-methods case study approach,** where data analysis draws on Eisenhardt's methodology. Key research techniques will include: **in-depth interviews** (individual, semi-structured), **focus group interviews**, **desk research**, including document analysis (policies, industry reports, databases), and available quantitative data. **Triangulation of methods and data sources** will be applied to ensure the reliability and completeness of findings. Case selection is based on **theoretical sampling** and was formulated in the course of the proposal's preparation. Using multiple sources and methods in a case study is a well-established practice that significantly enhances the quality of the research.

A research process has been developed consisting of five complementary phases: (I) Exploration, (II) Multi-method collection of material, (III) Preparation & validation, (IV) Compilation of results, (V) Validation of results. Each phase is described in detail in this section of the report.

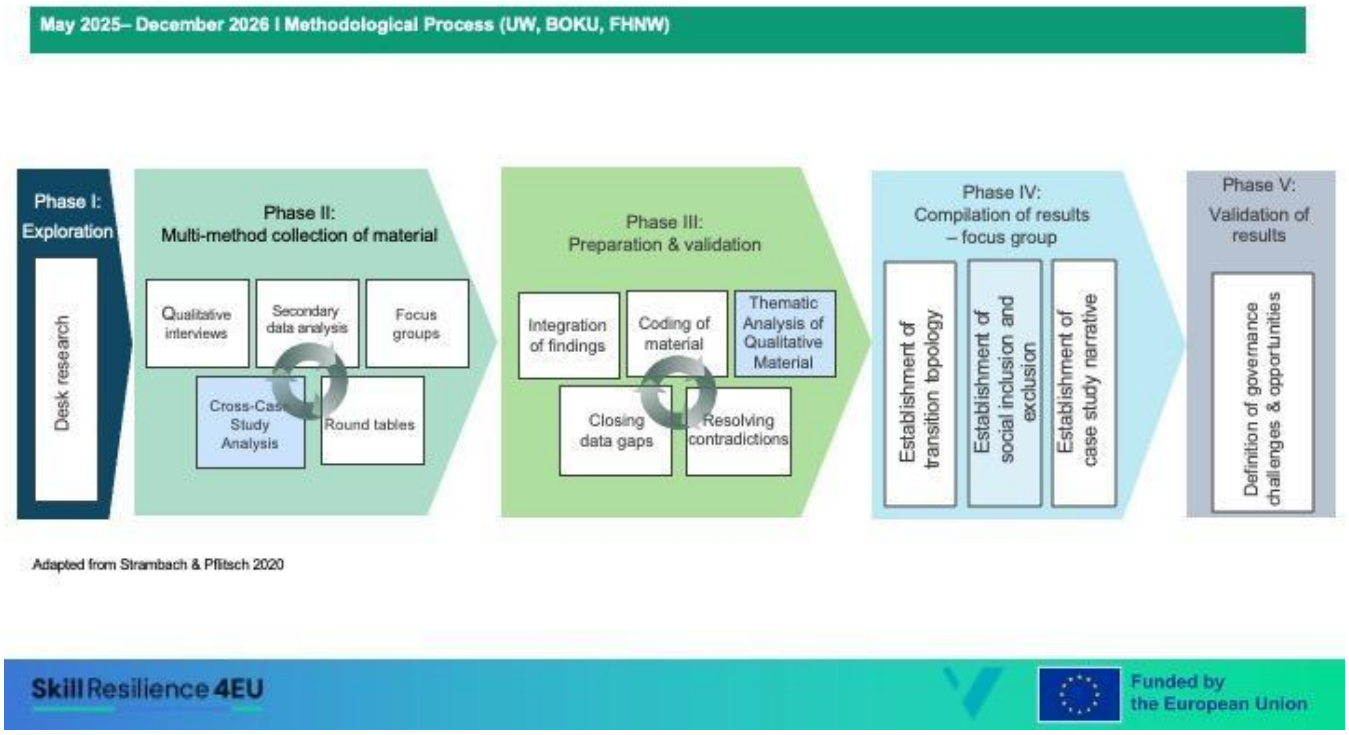
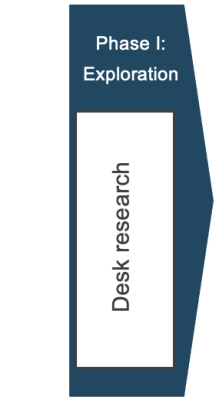


Figure 1. Methodological Process of Case Study, May 2025 – December 2026 (Strambach & Pflisch, 2020).

3.3.1 Phase I: Exploration



Phase 1 Exploration serves as the starting point of the case study process, aiming to map the regional and sectoral context. It involves identifying key stakeholders, documents, and supporting desk research on policies, strategies, reports, and statistical data. Researchers also conduct preliminary stakeholder mapping and hold informal discussions to secure access and gain contextual insights. This phase further examines institutional and organisational changes, labour market perceptions of skills, and narratives of social inclusion and exclusion. By establishing this foundation, Phase 1 ensures comparability across cases and prepares the ground for subsequent stages of the research.

Alignment of approach across case studies

Timeframe: May 2025 – August 2025

Figure 2. Phase I Exploration

The WP3 team has prepared the following materials:

- ***Stakeholder Tracking Sheet for mapping relevant partners and organisations.***
- ***Template for each case study to collect data from Phase 1.***
- ***Desk Research Report Template.***

Details concerning this phase of the research process are provided below.

Case definition

- Identification of potential sub-units within **NUTS-2** regions (based on relational logics)

- Sectoral delimitation informed by initial empirical insights
- Document analysis: official policy documents, industry and NGOs reports, regional and national strategies, scientific publications, media publications, publicly available databases (e.g., Eurostat, national/EU statistics)
- Initial collection of quantitative data, e.g., statistics on employment, education, demographics for the studied regions/sectors.
-

Stakeholder & document mapping

- Completion of initial stakeholder mapping - identification and mapping of key stakeholders (e.g., representatives of employers, academia, NGOs, policymakers) and initiation of informal talks with key actors to gain access to data and understanding of the local context
- Collection of key documents and clarification of access (e.g., by initiating first informal talks with key actors)

Collecting initial thematic insights

- Institutional changes: e.g., formal recognition of new education types, implementation of digitalization strategies
- Organizational changes: e.g., launch of new programs, emerging collaborations, initiatives for disadvantaged groups
- Labour market perceptions: e.g., skill needs, job creation and destruction, skills gaps, best practices, vocational vs. academic debates, perceived opportunities/risks, valuation dynamics in the context of the twin transition
- Social inclusion & exclusion: Who is left behind? Narratives and stereotypes, long-term consequences, support systems, skills barriers, skill gaps, job opportunities
- Education system perception, e.g., different education pathways, training, studies vs. apprenticeship, relevant educational programmes, best practices, skills gaps,
- Valuation dynamics: e.g., shifting product values (e.g., organic, digital); emerging valuation arenas (markets, media, policy)

Challenges and opportunities of the twin transition in the region

- What challenges and opportunities do you see in the areas of digitalization and sustainability for the labour market in your region?
- What overlaps between these two areas exist?
- Who is being left behind, and who is benefiting?
- How are these topics generally perceived by actors in the region?
- And how does this specifically apply to the selected sector?

Spatial dimension of the twin transition in the region

- Are the challenges of digitalization the same in all regions, or are there significant differences (e.g., between urban centers and rural areas)?
- Are there regions considered frontrunners, and others that are perceived as being left behind?
- Do the actors in your region (e.g., individual actors, companies, SMEs, municipalities) generally work together on this topic at the regional level, or are there mainly small-scale, local initiatives?

Temporal development of the twin transition in the region

- How have digitalization and sustainability evolved in your region since you started working on these topics?
- What were the specific milestones, such as new funding programs or laws, that have influenced this development? Or any political changes, such as shifts in government?

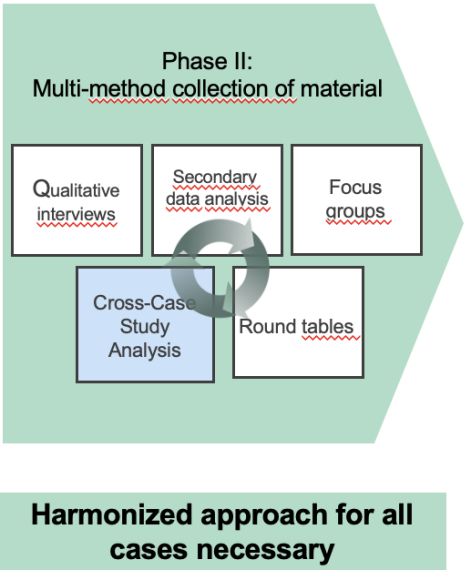
- How has the perception of this topic evolved alongside these developments?

Key actors driving these developments in the region

- Which individuals or stakeholder groups have played an active role in this process? In other words, who has actively contributed to achieving certain milestones?

Referrals, interests, and follow-up

3.3.2 Phase II: Multi-method collection of material



The purpose of this phase is to achieve a comprehensive understanding of regional transformation processes by employing key research techniques, including in-depth interviews (individual and semi-structured), focus group interviews, cross-case study analysis, and roundtables. Phase II Multi-method Collection of Material builds on the exploratory stage by gathering diverse empirical evidence to capture the complexity of regional labour market transformations under the twin transition. This phase is structured into four analytical dimensions: (1) What happened?—the identification of key events; (2) What led to these events or changes?—the examination of preceding activities and drivers;(3) What followed?—the assessment of consequences; and (4) Who was involved?—the analysis of actors, their roles, and motivations.

Timeframe: September 2025 – October 2025

Figure 3. Phase II Multi-method collection of material

What happened? (Event identification)

- What concrete institutional and organizational changes (=events) took place in the last 15 years (e.g., implementation of a new law, program launch, new network, organizational unit)? When (in which year) and where (local, regional, national) did it occur?
- What significant changes (e.g., job creation/destruction, skill demands) and challenges have occurred in regional labour markets due to the twin transition? **(Objective 3e; Task 3.4)**
- When did these changes become prominent, and which specific sectors and socio-demographic groups are most affected? **(Objective 3e; Task 3.4)**
- What specific initiatives, programs, or changes in the approach of stakeholders (e.g., employers, employees, VET providers, policymakers, trade unions, industry associations) have taken place in response to labour market transformations? **(Objective 3e; Task 3.4)**
- When and where (at what level – local, regional, national) did these actions become most visible?

What led to this event/changes? (Preceding activities)

- Which actions, discussions, or decisions preceded the event? Were there informal or preparatory steps (e.g., working groups, consultations, lobbying)? Were specific actors advocating for or resisting this development?

- What underlying mechanisms (e.g., technological adoption, policy frameworks, economic shifts, social factors) and conditions have contributed to or hindered labour market resilience in these transforming regions and sectors? **(Objectives 3b, 3c; Task 3.2)**
- What were the key preceding activities, decisions, or broader trends that shaped these mechanisms and conditions? **(Objectives 3b, 3c; Task 3.2)**
- How are labour market changes, challenges, and adaptation efforts perceived and narrated by these different stakeholder groups? **(Objective 3e; Task 3.4)**
- What were their primary concerns that prompted them to take action or change strategies?

What followed? (Consequences)

- Did this event lead to further institutional or organizational changes? Were new structures, programs, or actor constellations established as a result? Did it trigger public or political debate, shifts in perception, or funding reallocations?
- What have been the primary consequences of these labour market changes for overall regional/sectoral labour market resilience (e.g., adaptability, stability, opportunity)? **(Objectives 3b, 3c, 3d; Tasks 3.2, 3.3)**
- How have these changes impacted the dynamics of social inclusion and exclusion for specific socio-demographic groups (e.g., older workers, youth, migrants, gender-specific impacts)? **(Objectives 3b, 3c, 3d; Tasks 3.2, 3.3)**
- What factors are most influential in these dynamics?
- What were the primary strategies and perceived needs for support (e.g., reskilling, upskilling) reported by stakeholders? **(Objective 3e; Task 3.4)**
- Did their involvement lead to specific changes in policy, training programs, or employment practices?
- Were new structures, programs, or actor constellations established as a result?
- Did it trigger public or political debate, shifts in perception, or funding reallocations?

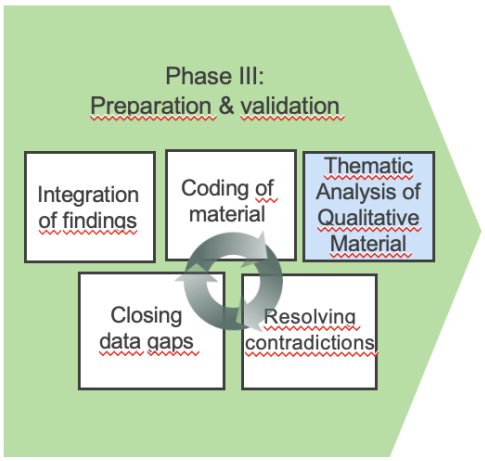
How was it framed or communicated? (Framing and Communication of Labour Market Transitions)

- How was the event presented in the media, policy documents, or internal communications? What narratives or symbols were attached to it (e.g., "green growth", "digital innovation")?
- How are narratives regarding the impact of the twin transition on labour market resilience presented in regional discourse (media, policy documents, industry)?
- How are the narratives around the twin transitions' impact on labour markets (e.g., "green jobs," "digital skills gap," "future of work") being framed in regional discourse by various actors (media, policy, industry)? **(Implicit in WP3 stakeholder engagement; Task 3.4)**
- How do these framings influence stakeholder attitudes, policy responses, and individual engagement with reskilling and upskilling initiatives? **(Implicit in WP3 stakeholder engagement; Task 3.4)**
- What symbols or key messages are used to describe these processes and their impact on employees and employers?

The WP3 team is preparing the following materials:

- ***Interview Guide***
- ***Focus Group Guide***
- ***Round Table Guide***
- ***Templates for Cross-Case Analysis***

3.3.3 Phase III: Preparation & validation



The aim of Phase III is to analyse, integrate, and validate data to establish a robust foundation. Phase III is structured into four interrelated components: (1) **Analysis**—systematic examination of collected data, (2) **Deduction and induction**—the iterative development and refinement of theoretical constructs, (3) **Integration**—the synthesis of findings into coherent case narratives and cross-case comparisons, and (4) **Validation**—the verification of results through triangulation and stakeholder feedback.

Timeframe: November 2025 – December 2025

Figure 4. Phase III Preparation & validation

Analysis:

I. Identify the most relevant **institutional and organizational changes** and their **connections** in the material.
II. Systematic within-case analysis to develop rich, detailed narratives for each case study, identifying key variables, processes, and patterns related to labour market dynamics, social inclusion/exclusion, and stakeholder challenges.
III. Cross-case analysis to identify commonalities, differences, and overarching patterns across diverse regional/sectoral contexts. Employs techniques like categorising cases by relevant dimensions and pairwise comparisons to deepen insights.
    - Identify and map the **core mechanisms and conditions influencing labour market resilience** in the context of the twin transition from collected case study data (from interviews, secondary data).
    - Pinpoint key **dynamics of social inclusion and exclusion impacting specific socio-demographic groups** within the transforming labour markets (from focus groups).
    - Discern significant labour market challenges and stakeholder perspectives as expressed across various sectors and regions.

Deduction & induction:

I. Use **theory-driven categories** (e.g., new organizations, networks, temporary events) while staying open to **inductively** identifying new categories.
II. Iterative development of theoretical constructs and propositions about labour market resilience and social inclusion, by comparing emerging patterns with data and existing literature (e.g., labour economics, social inclusion theories).
    - Utilise theory-driven categories from the project's conceptual framework (WP1), established labour economics, and social inclusion theories to guide initial data coding and interpretation.
    - Remain open to inductively identifying emergent themes, novel patterns, and unexpected insights concerning labour market phenomena and stakeholder experiences directly from the rich qualitative data gathered in the case studies.

Integration:

I. Combine findings into a **comprehensive database** containing **temporal, spatial, relational, and qualitative information** on each event.

II. Synthesis of findings into comprehensive reports, detailing mechanisms, conditions, social dynamics, influencing factors, and stakeholder-defined challenges. Development of templates for within-case and cross-case analysis to ensure systematic integration.
    - Combine and synthesize findings from diverse qualitative sources (interviews, focus groups) and secondary data analysis across the five sectoral case studies.
    - Develop comprehensive narratives and cross-case comparisons to build a rich, contextualized understanding of: How regional labour markets are transforming under the twin transition./ The interplay of mechanisms and conditions affecting resilience. / The lived experiences and influencing factors of social inclusion/exclusion. / The spectrum of challenges faced and perceived by different labour market stakeholders.
    - Consolidate analysed material into structured findings for WP3 reports, which will serve as a robust evidence base.

Validation (BOKU):
- **Cross-validate** findings to ensure internal consistency.
- Conduct **additional fieldwork** if contradictions arise.
- Use the **database or early visualizations** for **communicative validation** with stakeholders or interview partners.

Validation (UW):
Emphasis on data triangulation using multiple sources (interviews, focus groups, documents, quantitative data where applicable) to substantiate constructs and findings.
    - Conduct communicative validation: Present preliminary integrated findings to stakeholders (including representatives of affected groups, policymakers, and practitioners) in round tables to: Verify the accuracy and relevance of interpretations./ Gather feedback on the identified challenges, mechanisms, and dynamics./ Identify any remaining ambiguities or areas needing further clarification.
    - Address and resolve contradictions in the data through re-examination and discussion, ensuring the foundation for policy recommendations and tool development is sound

The WP3 team will prepare the following materials:
- ***Codebook for qualitative data analysis***
- ***Preliminary findings report for validation (template)***

3.3.4 Phase IV: Compilation of results (focus group)

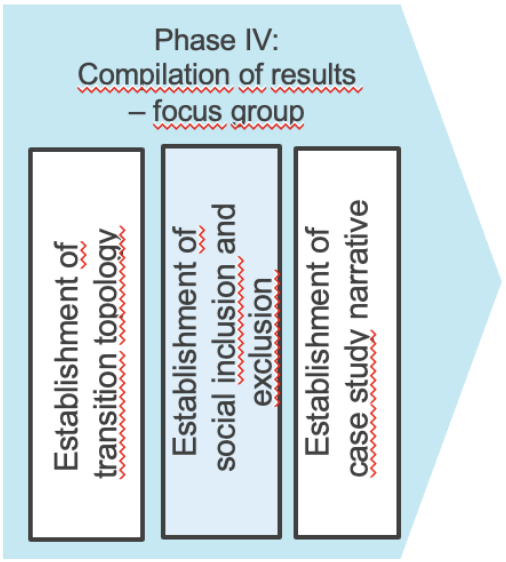


Figure 5. Phase IV Compilation of results – focus group

Phase IV Compilation of Results focuses on consolidating and interpreting the findings gathered in earlier stages of the research. Particular attention is given to the dynamics of social inclusion and exclusion within transforming labour markets, identifying factors that enable or hinder access to opportunities across different socio-demographic groups. This phase also involves establishing a transition topology, identifying key institutional and organisational changes, and mapping governance challenges that arise in the context of the twin transition. By synthesising results across regions and sectors, Phase IV provides a robust basis for evidence-informed recommendations and prepares the ground for the final validation phase.

Timeframe: January - February 2026 I BOKU
January 2026 - October 2026 I UW, FHNW

- Identification and classification of key factors (individual, social, institutional, policy-related) and dynamics leading to the inclusion or exclusion of specific socio-demographic groups in labour markets undergoing twin transition. Findings based on thematic analysis of focus group data.
- Development of rich, contextualized narratives for each case study detailing the specific dynamics and interplay of factors for identified groups.

By investigating dynamics in different institutional contexts, we will identify mechanisms that favour or affect labour market resilience and identify sociodemographic groups and places that are or risk being left behind in the twin transition.

The focus groups aim to better understand:

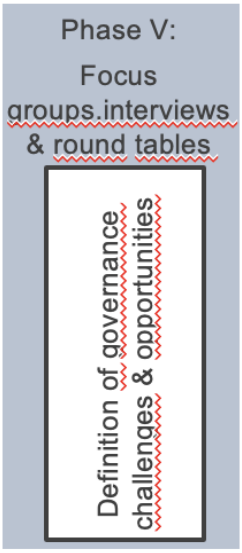
- The **dynamics of social inclusion and exclusion** of specific sociodemographic groups, and classify the factors influencing them
- **Perceived barriers and enablers** to labour market access and development opportunities,
- The links between these dynamics, **job vacancies, and skill mismatches** across Europe
- The influence of gender, age, and other intersectional factors on experiences of inclusion/exclusion

The scope of responsibilities and tasks carried out by the partners (UW, BOKU, FHNW) differs in the above phase. It has been prepared in accordance with the proposal.

The WP3 team will create the following materials

- ***The Focus Group Guide***
- ***Report templates for Phase IV***

3.3.5 Phase V: Validation of results



The Phase V aims to identify governance and labour market challenges and opportunities

Timeframe: June - September 2026 I BOKU;
September 2026 - December 2026 I UW, FHNW

Figure 6. Phase V Focus groups, interviews, and round tables

The visualization serves as a central discussion tool to make visible the **key institutional and organizational changes** as well as their **connections**. The focus groups aim to collaboratively:

- **Identify governance challenges** arising from the **complexity, fragmentation**, or **missing links** in the current transition process.
- **Uncover opportunities and leverage points** where improved cooperation, policy innovation, or new institutional formats could offer targeted support.
- **Validate, comment on, and expand** the relevance of individual events, networks, or institutions shown in the visualization.

II. Systematic qualitative analysis of interview and round table data will identify recurring themes, specific examples, and stakeholder consensus/divergence on key challenges (e.g., skill shortages, training gaps, policy inadequacies) and opportunities (e.g., new job roles, technological enablers, collaborative initiatives).

- Utilising **semi-structured interviews** with diverse stakeholders (e.g., employers, employees, VET, policy makers) to gain in-depth perspectives **on challenges and opportunities**.
- Organising **round tables** for collaborative discussion, validation of findings from earlier tasks (T3.2, T3.3), and **co-identification of leverage points and potential solutions** (Task 3.4)
- Providing **initial recommendations** for the conceptual framework and project tools , enhancing skills resilience (WP5, WP6).

The scope of responsibilities and tasks carried out by the partners (UW, BOKU, FHNW) differs in the above phase. It has been prepared in accordance with the proposal.

The WP3 team will create the following materials

- ***The Focus Group Guide***
- ***The Interview Guide (part 2)***
- ***The Round Table Guide***
- ***Report templates for Phase V***

4 The Expected Results of the Case Study

1. New knowledge and data from five sectoral case studies (tourism, food, agriculture, transportation, energy) in selected European regions.
2. Identification of labour market challenges related to the green and digital transitions in these selected European regions (NUTS2).
3. Defining opportunities for reskilling and upskilling in the five sectors (tourism, food, agriculture, transportation, energy) to ensure a smooth transition to the emerging jobs. The primary focus shall be on identifying the groups and places most affected by the twin transformation (groups and places are at risk of being left behind and social exclusion).
4. Study in depth the conditions and mechanisms that govern the job creation and destruction processes (identify patterns of unemployment and the factors contributing to job losses or the lack of new job creation, analyse new professions that contribute to economic progress).
5. Determine the impact of macro drivers on cross-border misalignments by incorporating dynamic analyses, geographical proximity, and border components in our case studies and policy recommendations.
6. Recommendations for enhancing the role of institutions during the twin transition.

5 References

1. Bianchi, G., Pisiotis, U., & Punie, Y. (2022). *GreenComp: The European sustainability competence framework*. Publications Office of the European Union. https://doi.org/10.2760/13286
2. Eisenhardt, K. and Bourgeois, L.J. (1988) Politics of Strategic Decision Making in High-Velocity Environments: Toward a Midrange Theory. Academy of Management Journal, 31, 737-770. http://dx.doi.org/10.2307/256337
3. Eisenhardt, K. M. (1989). Building theories from case study research. The Academy of Management Review, 14(4), 532–550. https://doi.org/10.2307/258557
4. Eisenhardt, K.M. , & Graebner, M.E. (2007). Theory Building From Cases: Opportunities And Challenges. Academy of Management Journal, Vol. 50, No. 1, 25-32. https://doi.org/10.5465/AMJ.2007.24160888
5. Eurofound. (2017). *European Quality of Life Survey 2016: Quality of life, quality of society and quality of public services*. Publications Office of the European Union.
6. Eurofound. (2021). *Upgrading Europe's 'left-behind' places: A smart specialisation approach*. Publications Office of the European Union.
7. European Centre for the Development of Vocational Training (CEDEFOP). (2022). *Work-based learning and the green transition*. Publications Office of the European Union. https://www.cedefop.europa.eu/files/2232_en_0.pdf
8. European Centre for the Development of Vocational Training (CEDEFOP). Terminology of European education and training policy, Glossary, Retrieved August 8, 2025 https://www.cedefop.europa.eu/en/tools/vet-glossary/glossary/achterstandsgroep-kansarme-groep-kwetsbare-groep-risicogroep
9. European Commission, *Joint Research Centre, Muench, S., Stoermer, E., Jensen, K., et al. (2022). Towards a green & digital future – Key requirements for successful twin transitions in the European Union. Publications Office of the European Union.* Retrieved August 8, 2025, https://publications.jrc.ec.europa.eu/repository/handle/JRC129319.
10. European Commission , *GreenComp The European sustainability competence framework,* 2022, https://publications.jrc.ec.europa.eu/repository/handle/JRC128040
11. European Commission. (2024). *Climate Resilience Dialogue Final Report*. https://climate.ec.europa.eu/document/download/4df5c2fe-80f9-4ddc-8199-37eee83e04e4_en?filename=policy_adaptation_climate_resilience_dialogue_report_en.pdf
12. European Commission. The Joint Research Center – EU Science Hub, Current Developments on DigComp 2024-2025, Retrieved August 8, 2025, from https://joint-research-centre.ec.europa.eu/projects-and-activities/education-and-training/digital-transformation-education/digital-competence-framework-citizens-digcomp/current-developments-digcomp-2024-2025_en
13. European Commission. (n.d.). *Transversal knowledge, skills, and competences*. ESCOpedia. Retrieved July 16, 2025, from https://esco.ec.europa.eu/en/about-esco/escopedia/transversal-knowledge-skills-and-competences

14. Guetterman, T. C., & Fetters, M. D. (2018). Two Methodological Approaches to the Integration of Mixed Methods and Case Study Designs: A Systematic Review. American Behavioral Scientist, 62, 900-918. https://doi.org/10.1177/0002764218772641

15. International Labour Organization. (2020). *The future of work: Governance and social dialogue for a just transition*. ILO Publishing.

16. Joint Research Centre (JRC), the European Commission's, DigComp 2.2 - The Digital Competence Framework for Citizens, 2022, https://publications.jrc.ec.europa.eu/repository/handle/JRC128415

17. Organisation for Economic Co-operation and Development (OECD). (2021). *Designing effective policy mixes for the green and digital transition*. OECD Publishing.

18. Rushworth, P., & Hackl, A. (2022). Writing code, decoding culture: digital skills and the promise of a fast lane to decent work among refugees and migrants in Berlin. Journal of Ethnic and Migration Studies, 48(11), 2642-2658.

19. Santoalha, A., Consoli, D., & Castellacci, F. (2021). Digital skills, relatedness, and green diversification: A study of European regions. Research Policy, 50(9),104340.

21. Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens – With new examples of knowledge, skills, and attitudes*. Publications Office of the European Union. https://doi.org/10.2760/115376World Bank. (2022). Social Sustainability and Inclusion. The World Bank. https://www.worldbank.org/en/topic/socialsustainability

Annex 1: The Consortium

Short name	Full name	Homepage	Logo
HVL	Western Norway University of Applied Sciences	https://www.hvl.no/en/	
BOKU	BOKU University	https://boku.ac.at/en/	
LSE	London School of Economics	https://www.lse.ac.uk/	
UoC	University of Crete	https://www.uoc.gr/en/	
UW	University of Warsaw	https://en.uw.edu.pl/	
UU	University of Utrecht	https://www.uu.nl/en	
FHNW	University of Applied Sciences and Arts Northwestern Switzerland	https://www.fhnw.ch/en/	
BFI	Berufsförderungsinstitut Wien	https://www.bfi.wien/	
Simplon	Simplon.co	https://www.simplon.co/	
MOP	Municipality of Platanias	https://www.platanias.gr/en/	

Annex 2: Project Summary

SkillResilience4EU - Resilience through re-skilling and upskilling for European labour markets in transition.

The twin transition (defined as the coexistence and interplay of the green and digital transitions) has enormous impacts on European labour markets. Because the green and digital transformations can feed into, facilitate, or hinder each other, it has been difficult to predict how labour markets will absorb and respond to changes and disruptions in employment conditions, skill needs, and job availability and mobility. Other ongoing global challenges and macro-economic events, like the COVID-19 pandemic, also contribute to a profound reshaping of labour markets in Europe. New sectors emerge, and existing sectors need to adapt and transform. New skills need to be developed or need to be transferred from other industries. Regions and sectors need to narrow labour market and skill mismatches to minimise the costs and to maximise the benefits of job destruction and job creation processes.

Different sectors and regions are affected in varying ways and intensities, either by green or digital transitions, or the combined impact of the twin transition. This unequal distribution of job creation and destruction processes may favour or leave behind places, sectors, and socio-economic groups and may threaten social cohesion and inclusion. The institutional and policy context needs to become more flexible and responsive to cope with ongoing transformations and narrow labour market mismatches. Tailored and cost-effective policies and programmes for reskilling and upskilling, in particular for the most vulnerable and left-behind socio-demographic groups and places, need to be developed together with policy makers, VET providers, unions, public authorities, and other decision makers.

Funded by Horizon Europe, the European Union's Framework Programme for Research and Innovation, SkillResilience4EU will introduce a novel conceptual framework to describe and understand the impacts of the twin transition on European labour markets and will investigate the complex mechanisms, dynamics, and challenges that regions and institutions undergo by exploring selected sectors (tourism, food, transport, agriculture, and energy). The project will develop a management tool for policy makers to support them in managing labour markets in transition, with recommendations for policy scenarios. SkillResilience4EU will also map and evaluate educational and training programmes for upskilling and re-skilling, and will deliver recommendations and practical resources to support individuals and employers with a specific focus on career guidance and development.

To achieve this ambition, the SkillResilience4EU consortium unites higher educational institutions (Western Norway University of Applied Sciences, Utrecht University, London School of Economics, University of Warsaw, University of Natural Resources and Life Sciences in Vienna, University of Crete, North-Western Switzerland University of Applied Sciences) one vocational training institute (BFI), one private training organization (Simplon.co) and a local public authority (Municipality of Platanias). The partners cover a whole range of expertise: economic geography, innovation studies, regional development, sustainability transitions, qualitative research, institutional research, policy research, labour and behavioural economics, education, arts and design, social inclusion, VET, and lifelong learning. Coordinated by Western Norway University of Applied Sciences, the project was launched on 1st January 2025 and will run for 3 years.