D3.1 AEQUALIS4TCLF

D3.1 - Report on Key Drivers of Change and Relevant Parameters for Green and Digital Skills Research in the TCLF Industry

Erasmus+ Blueprint

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EXECUTIVE SUMMARY

This initial deliverable for Work Package 3 of the AEQUALIS4TCLF project establishes a framework for a comprehensive skills assessment across the Textile, Clothing, Leather, and Footwear (TCLF) sectors in seven European countries. The report aims to identify key drivers of change that influence the demand for green and digital skills, with an emphasis on inclusivity and addressing discrimination.

Extensive desk-based research was conducted to compile and analyse existing data, identifying significant changes including technological advancements, demographic trends, and evolving sustainability and regulatory requirements. This research led to the creation of a document repository that captures existing challenges as well as new issues post-2019, such as the COVID-19 pandemic and geopolitical shifts.

The findings, while foundational, are preliminary and based on a limited dataset. They establish the basis for the subsequent field research phase, which will involve academia and industry stakeholders through surveys and focus groups. This next phase is critical for validating and potentially refining these findings to ensure robust and applicable recommendations for the TCLF sectors.

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1   INTRODUCTION

This document presents the initial deliverable for Work Package 3 (WP3), which aims to establish a foundational framework for a comprehensive skills assessment within the Textile, Clothing, Leather, and Footwear (TCLF) sector. The primary focus at this stage is on conducting desk-based research to identify key drivers of change that impact the demand for green and digital skills, emphasising inclusivity and addressing discrimination against migrants and women. This research encompasses seven targeted countries: Czechia, the Netherlands, Lithuania, Finland, Serbia, Croatia, and Slovenia, reflecting the geographical scope and diversity of the TCLF sector.

The TCLF sector is dynamic and expansive, providing essential products for numerous other sectors such as construction, automotive, medical, and agriculture. Known for its high-quality garments and comprising a mix of traditional family-owned enterprises and innovative start-ups, the industry is at a critical juncture where identifying future skill needs and addressing existing skills gaps are imperative for maintaining competitiveness and fostering innovation.

This deliverable's objective is to compile and analyse existing data and documentation from these countries, providing a systematic understanding of the current skills landscape and emerging needs. By identifying the main drivers of change through this desk research, the groundwork is prepared for the subsequent stages of the project, which include more dynamic field research and targeted analysis.

While this deliverable predominantly concentrates on the outcomes of desk-based research, it also sets the context for subsequent activities. The insights gained will inform the development of surveys and focus groups involving academia and industry stakeholders scheduled for later in the project timeline. These steps are crucial for validating and refining the findings and, ultimately, for developing robust recommendations for future skills strategies in the TCLF sector.

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2   METHODOLOGY

Work Package 3's main goal is to execute a comprehensive skills needs assessment and gap analysis to pinpoint the specific green and digital skills required by the TCLF industry across the European countries represented in the consortium. This work package involves a series of interconnected tasks, with the initial focus of this deliverable concentrated on the desk-based research phase.
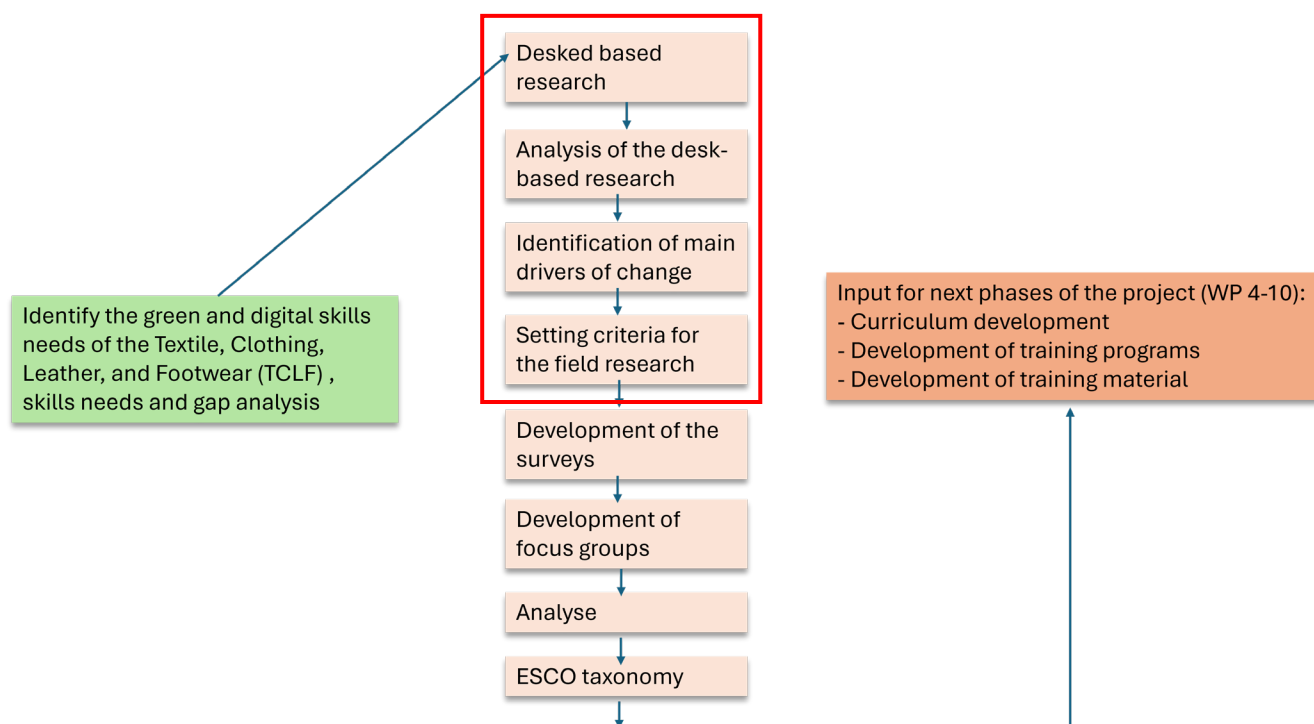
Figure 1 - Structure of the WP3, and main focus of D3.1

2.1   The desked based research

This critical first step involves consortium partners gathering and reviewing existing research, reports, and other documentation relevant to skills and future needs within the TCLF sector. The process employs a carefully designed repository structured around specific criteria to compile the data. This broad collection of records serves as the foundational element of the research, ensuring a robust base from which to analyse the current skills landscape and anticipate future requirements.

2.2   Analysis of the desk-based research

The assembled documents are thoroughly analysed to extract key terms and concepts related to skills and future needs. This analysis includes a comparative review with terms used in the precedent-setting Blueprint project, "Skills4Smart TCLF Industries" (2018-2022), thereby ensuring continuity in methodology and relevance in findings.

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2.3   Identification of main drivers of change

Utilizing the key terms identified during the analysis phase, a comprehensive list of the main drivers of change is compiled. This list is then cross-referenced with the drivers identified in the first Blueprint project to assess continuity and detect emerging trends. This step is crucial for understanding the evolving landscape of the TCLF sector and preparing for future challenges and opportunities.

2.4   Setting criteria for the field research

Insights derived from the desk-based research are used to set specific criteria for the next phase of the project—field research. This involves defining target groups for surveys and interviews, ensuring that subsequent data collection is sharply focused and relevant to identified needs.

2.5   Development of the surveys

Building on the outcomes of the desk-based research, surveys are meticulously crafted to delve deeper into the identified drivers of change and skills gaps. These surveys are designed to engage companies and academia, capturing a broad spectrum of perspectives within the consortium's geographical scope.

2.6   Development of focus groups

Focus groups are established based on the field-based research outcomes and consortium partners' supplementary inputs. These groups are selected to provide concrete insights into the drivers of change and skills gaps, facilitating detailed discussions and exchanges that enrich the research.

2.7   Analysis

The data collected from surveys and focus group interviews are analysed to draw substantive conclusions. This analysis plays a pivotal role in shaping the subsequent tasks within the project, providing actionable intelligence that informs strategic decisions.

2.8   ESCO taxonomy

Finally, recommendations for skill development, based on the ESCO taxonomy, are formulated. This step is important to accurately identify and categorise emerging green and digital skills crucial for the sector's adaptation and growth.

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3   DESK-BASED RESEARCH

This section delineates the foundational research activities conducted to gather preliminary insights into the evolving skills landscape of the TCLF sectors.

3.1   Purpose of the Desk-Based research

The primary aim of the desk-based research is to aggregate and analyse existing data on the TCLF sectors from diverse sources provided by the consortium partners. This phase establishes a baseline understanding of the industry's current skills landscape and pinpointing emerging trends that will influence future skill demands.

3.2   Repository setup

Modint has led the development of a structured document repository. The criteria for document inclusion are as follows:

Repository composition	
Document name	Title of the research or document
Source	Determine if it's a platform or document link
Date published	For relevance, documents should ideally not be older than 2020
Short description of the content of the research	Summarizes the content, facilitating comparison and relevance to skills
Relevance to which sector (T,C,L or F)	Specifies which of the TCLF subsectors (Textile, Clothing, Leather, or Footwear) the research pertains to
Type of data	Indicates whether the data is qualitative or quantitative
From which country	Country of origin from consortium partners
The link or the reference	Provides access to the full report or research

Table 1 - Criteria for the document repository

Partners were given instructions on how to fill in the repository and which types of research to focus on (e.g., open data sources at EU and national levels).

3.3   Repository results

All partners contributed to the repository, enriching it with national research reports and other pertinent information (the full repository details can be found in the Annex). The data accumulated from the

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partners were quantitative and qualitative, covering all four subsectors: textile, Leather, Footwear, and Clothing. The results are summarised in the table below, which shows the distribution and type of documents added to the repository by each consortium partner.
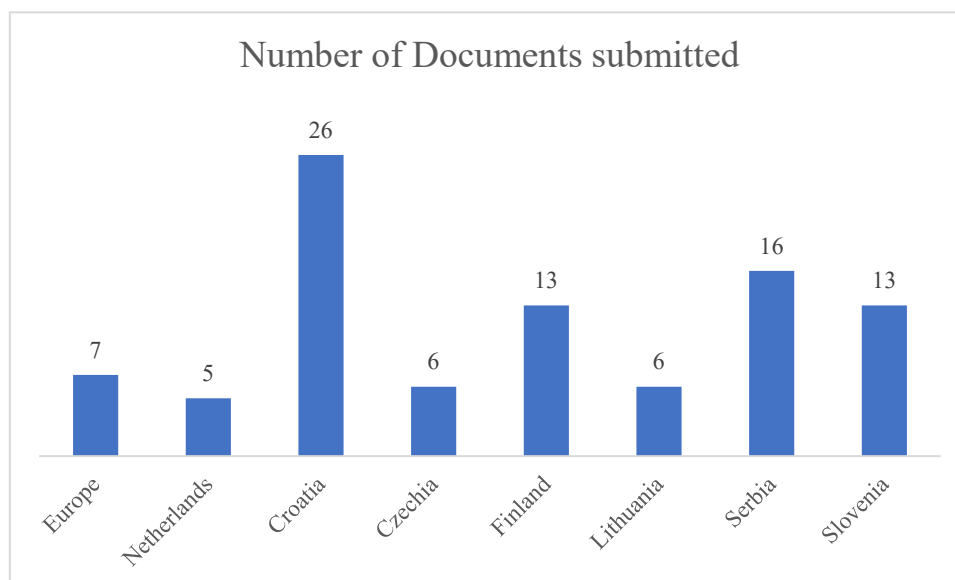

Table 2 - Number of documents submitted by country

Overview of documents by sector and data type			
Country	**Number of Documents**	**Sector Breakdown**	**Data Type**
Europe	7	L (4), TCLF (3)	Mixed (6), Quantitative (1)
Netherlands	5	C (1), TC (3), T (1)	Mixed (5)
Croatia	26	L (1), F (1), TC (1), TCLF (19)	Qualitative (5), Mixed (17)
Czechia	6	TC (3), TCLF (3)	Mixed (5), Qualitative (1)
Finland	13	TC (10), T (2), Other (1)	Mixed (10), Qualitative (3)
Lithuania	6	T (1), Other (5)	Mixed (6)
Serbia	16	TC (9), TCLF (6), Other (1)	Mixed (11), Qualitative (5)
Slovenia	13	T (1), TCLF (2), TC (8), Other (2)	Mixed (13)

Table 3 - Overview of research documents and links by country and sector

The initial phase of the desk-based research has effectively compiled a substantial array of both quantitative and qualitative documents from consortium partners, creating a comprehensive and diverse repository.

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4 KEY DRIVERS OF CHANGE

Modint, as task leader, conducted a thorough analysis of the documents and research available based on the data collated in the repository. This analysis involved reviewing the documents to identify and categorize relevant topics and questions associated with existing drivers of change identified in the Skills4Smart TCLF Industries 2030 project, as well as defining potential new drivers. The drivers of change used were:

	Drivers of change	Impact
1	Values and identities	Increasing consumer awareness about sustainability and ethical practices has transformed consumer expectations and purchasing behaviours. Additionally, the attractiveness of the TCLF sectors to younger generations is critical, as it affects the future labour force and the industry's ability to innovate and adapt.
2	Technological change, digitalisation, innovation	Rapid technological advancements, including automation, AI, and 3D printing, are reshaping production processes and the nature of jobs within the TCLF sectors. These changes require a workforce skilled in new technologies and processes to maintain competitive advantage.
3	Demographic changes	Ageing populations in many industrialized nations pose challenges for the TCLF sectors, including skill transmission and labour shortages. Diversity and inclusion also become increasingly important as companies seek to create inclusive workplaces that reflect their customer bases and societal values.
4	Sustainability and environment	There is a growing push towards sustainable and environmentally friendly manufacturing practices, driven by both consumer demand and regulatory pressures. This shift demands new skills in areas such as circular design, waste management, and sustainable material sourcing.
5	Globalism versus protectionism	The balance between globalism and protectionism affects the TCLF sectors, particularly in how companies navigate international trade, manage supply chains, and respond to global market dynamics. Skills in international trade, supply

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		chain management, and cultural competence are increasingly valuable.
6	Consumer demand	The rise of e-commerce and changing consumer expectations around product customization and delivery speed require the TCLF sectors to adapt quickly. Logistics, e-commerce, customer service, and data analysis skills are becoming crucial.
7	Regulation and governance	Changes in national and international regulations, including trade agreements and environmental laws, significantly impact the TCLF sectors. Companies must navigate these changes effectively, requiring skills in compliance, environmental law, and international business.
8	Education	Aligning educational offerings with industry needs is vital for preparing a skilled workforce. Ongoing education and training programs that are responsive to industry advancements and capable of upskilling workers as required are needed.
9	Crisis Response (e.g., COVID-19, Ukraine War, energy crisis) *New driver of change*	Recent global crises, such as the COVID-19 pandemic, the war in Ukraine, and energy shortages, have significantly tested the resilience and adaptability of the TCLF sectors. These events underscore the need for crisis management skills, adaptable supply chain strategies, and the ability to respond quickly to global market conditions and geopolitical stability shifts. Developing robust crisis response capabilities within the TCLF sectors is crucial to maintaining operations and safeguarding against future disruptions.

Table 4 - Drivers of change identified

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4.1 Analysis and trends from the repository data

The table below summarises the number of documents addressing each driver, illustrating the relative emphasis and emerging trends identified from the current research compared to the previous blueprint project.

Evolution in focus and depth of analysis for each driver of change from the previous blueprint to the current research			
Drivers of Change	**Current vs. previous Blueprint (No. of documents)**	**Insights from the previous Blueprint**	**Key trends and topics from current reports**
Values and Identities	3 (Previous: 20)	Emphasized European design quality and luxury market connectivity.	Increased focus on ethical and social business practices, growth in second-hand markets, and attracting youth to the sector.
Technological Change/ Digitalisation/ Innovation	23 (Previous: 17)	EU leadership in technical textile innovations.	Emphasis on digital skills, smart manufacturing, AI, 3D design, and the integration of sustainability in technological practices.
Demographic Changes	3 (Previous: 15)	Concerns about the ageing workforce and retaining tacit knowledge.	Challenges with an ageing workforce, recruitment issues, and diversity in the workplace.
Sustainability and Environment	21 (Previous: 14)	Focused on environmental credentials and consumer awareness.	Trends towards circular economy, sustainability practices, transparency in supply chains, carbon neutrality goals, and the use of bio-based and recycled materials.
Globalism vs. Protectionism	6 (Previous: 7)	Shifts in manufacturing locations due to	The impact of globalization on production, the need for resource efficiency, and the

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		economic and global factors.	skills required for managing international knowledge and job creation in Europe.
Consumer Demand	3 (Previous: 5)	Importance of meeting fast-changing consumer demands.	Changes in consumer behaviour towards more conscious consumption, the impact of e-commerce, and demand-driven production models.
Regulation and Governance	8 (Previous: 2)	Opened up to non-EU competition, new market possibilities.	Emerging regulations, CSR requirements, digital product passports, and managing liability risks along the supply chain.
Education	18 (Previous: 1)	General emphasis on improving education alignment with industry needs.	Modernisation of educational programs, upskilling the workforce, permanent education needs, and integration of responsibility and circular economy principles into qualifications.
Crisis Response (Ukraine War, COVID-19, Energy)	3 (Previous: 0)	Not applicable in the previous blueprint.	Rapid adaptation to crises like mask production during COVID-19, energy cost impacts due to the Ukraine war, and diversifying supply chains to enhance resilience.

Table 5 - Number of documents addressing each driver

The analysis of the repository data highlights four key drivers of change with significant documentation support, indicating a strong influence on current and future skills needs in the TCLF sectors:

- Technological Change/Digitalisation and Innovation
- Sustainability and Environment
- Regulation and Governance

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- Education

These areas are noted for their substantial impact on shaping the skills landscape, suggesting critical areas for skill gap analysis. However, it is important to note that these findings are derived from a relatively narrow dataset—primarily documents submitted for this initial research phase. While they provide valuable insights, the conclusions drawn are preliminary.

Given the dynamic nature of factors such as the pandemic, the energy crisis, and the ongoing conflict resulting from the war in Ukraine, there is a noted scarcity of extensive research in these areas. The relevance and impact of these crises on skills needs are anticipated to be significant, yet they are currently underrepresented in the dataset. This gap underscores the necessity for a cautious interpretation of the current findings and highlights the potential for future research phases, like field research, to either substantiate or adjust our understanding of these drivers.

Moreover, while the current analysis shows a decrease in the emphasis on values identities and demographic changes, this does not necessarily diminish their importance but rather reflects the specific focus of the submitted documents. The next phases of the project, particularly the field research, will provide a broader base of data and perspectives, which may reveal different emphases or new insights into all drivers of change.

Therefore, these preliminary findings provide a focused starting point for addressing skills gaps in the TCLF sectors. They set the stage for subsequent research activities, which will expand the scope of data and potentially introduce shifts in the perceived importance of various drivers of change. As the project progresses, it will be crucial to remain open to emerging trends and shifts that may arise from more comprehensive field research and broader stakeholder engagement.

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5 NEXT STEPS

As the project transitions from desk-based research to field research activities, establishing relevant criteria for selecting key industrial players and stakeholders to include in surveys and interviews becomes essential. These criteria are designed to capture a broad and diverse range of perspectives, ensuring that the research findings are comprehensive and representative of the TCLF sectors. Academia (VET/HE providers) and companies are specifically targeted as they are closest to the practical and operational realities of the industry.

Examples of criteria to be used in the survey include:

- **Company size:** Including small, medium, and large enterprises will provide a varied understanding of how different-sized companies navigate their specific skills challenges and training needs.

- **Geographic location**: Ensuring representation from all consortium partner countries is vital for capturing diverse economic, cultural, and regulatory impacts on skills development across the TCLF sectors.

- **Industry sector**: Focus will be placed on companies within the distinct subsectors of Textile, Clothing, Leather, and Footwear, as each faces unique challenges and opportunities in skills development.

- **Level of engagement in green and digital skills training and development**: Selecting entities that have shown commitment to green and digital initiatives, as well as those less engaged, will help identify both best practices and areas needing improvement.

- **Diversity in workforce representation**: Companies with diverse workforce practices will be included to assess how diversity and inclusion strategies impact skills development and organizational culture.

- **Innovation and technology adoption**: Including companies that are technological leaders, as well as those with traditional approaches, will offer insights into how innovation influences skills demands.

By applying these criteria, the project aims to engage various stakeholders who can provide comprehensive insights into the practical and evolving skills needs within the TCLF sectors. This strategic approach ensures that the subsequent analysis and recommendations are well-informed and closely aligned with the realities of industry and academia.

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6   CONCLUSION

This deliverable has successfully established a foundational framework for a comprehensive skills assessment within the Textile, Clothing, Leather, and Footwear (TCLF) sectors across seven targeted European countries. It aimed to identify key drivers of change that impact the demand for green and digital skills, with a particular focus on inclusivity and addressing challenges related to discrimination against migrants and women.

The methodology involved extensive desk-based research to compile and analyse existing data and documentation from the involved countries. This process provided a systematic understanding of the current skills landscape and highlighted emerging needs. Significant drivers of change, such as technological advancements, demographic shifts, sustainability requirements, and evolving regulatory landscapes, were identified, each shaping the future of work within the TCLF sectors.

A critical outcome of this phase was the creation of a document repository, which facilitated the identification of consistent themes and new challenges that arose post-2019, such as the COVID-19 pandemic and geopolitical tensions, including the war in Ukraine. This repository is instrumental in setting criteria for the subsequent field research phase, targeting academia and companies intricately linked to these sectors' operational realities. These stakeholders are vital for providing insights necessary for an accurate skills assessment.

While the findings from this initial phase are based on a preliminary analysis of a limited data set, they represent a crucial first step in understanding the evolving skills demands within the TCLF sectors. Acknowledging the preliminary nature of these findings, it is essential to continue this research through the field research phase. This next phase will expand the data pool through surveys and focus groups, aiming to provide a more comprehensive view that could validate or modify the initial observations.

The engagement with academia and companies will focus on capturing a broad spectrum of perspectives and experiences. This approach will enrich the quality and applicability of the findings, ensuring that subsequent analyses and recommendations are well-informed and closely aligned with the real-world demands of the TCLF sectors.

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7 ANNEXES

#	Document name	Source (Database/Platform)	Date Published	Description	Relevance to TCLF	Type of Data	Country	
1	Report on project results in TCLF at EU, national and regional level – A first snapshot	S4TCLF Blueprint Project	01/06/2022	The report includes a comprehensive analysis of best practices, documents and projects implemented at European, national and regional levels in TCLF. Having an overview of what exists in TCLF in terms of education and training services in Europe can favour cooperation, exchange of experiences, and learning from each other.	TCLF	Mixed	Europe	
2	The article "A new strategy for using lint-microfibers generated from clothes dryer as a sustainable source of renewable energy" Science of The Total Environment	Science of The Total Environment	25/03/2021	A team of scientists from Kaunas University of Technology and Lithuanian Energy Institute proposed a method to convert lint-microfibers found in clothes dryers into energy. They not only constructed a pilot pyrolysis plant but also developed a mathematical model to calculate possible economic and environmental outcomes of the technology. Researchers estimate that by converting lint microfibers produced by 1 million people, almost 14 tons of oil, 21.5 tons of gas and nearly 10 tons of char could be produced.	Textile	Mixed		https://www
3	Report Referencing the Lithuanian Qualificatons Framework to the European Qualifications Framework for Lifelong Learning and the Qualifications Framework of the European Higer Education Area	European Centre for the Development of Vocational Training	01/12/2023	Updating of national report "Referencing the Lithuanian Qualifications Framework to the European Qualifications Framework for Lifelong Learning and the Qualifications Framework of the European Higher Education Area" was coordinated by the Qualifications and VET Development Centre, which acts as a European Qualifications Framework National Coordination Point.	Other	Mixed	Lithuania	
4	Report. Vocational education and training in Europe. Lithuania	Cedefop ReferNet VET in Europe reports.	01/12/2016	This VET in Europe report is part of a series prepared by Cedefop's ReferNet network. VET in Europe reports provide an overview of national vocational education and training (VET) systems of the EU Member States, Iceland and Norway. The reports help to understand VET's main features and role within countries' overall education and training systems from a lifelong learning perspective, and VET's relevance to and interaction with the labour market	Other	Mixed	Lithuania	
5	Review. Vocational Educationand Training in Lithuana	Government Strategic Analysis Center	05/06/2020	The review prepared by the Government Strategic Analysis Center (STRATA) presents the information on vocational education and training (VET) developments in Lithuania in 2019. The analysis has been conducted by the following criteria: the success of VET for people, the success of VET in terms of lifelong learning, and the success of VET in implementing Lithuanian and European Union education policies.	Other	Mixed	Lithuania	https://strata.g
6	Summary Country Report on the Vocational Education and Training system	European Agency for Development in Special Needs Education		It also includes the Report on Vocational Education and Training (VET) for learners with Special Educational Needs (SEN)	Other	Mixed	Lithuania	
7	APPROVING THE DESCRIPTION OF THE LITHUANIAN QUALIFICATIONS FRAMEWORK	Qalifications and vocational education and training development centre	19/07/2019	What are levels of qualifications (the list provided)	Other	Mixed	Lithuania	https://w

To access the repository please click on the following link:

wp3 documents catalog.xlsx