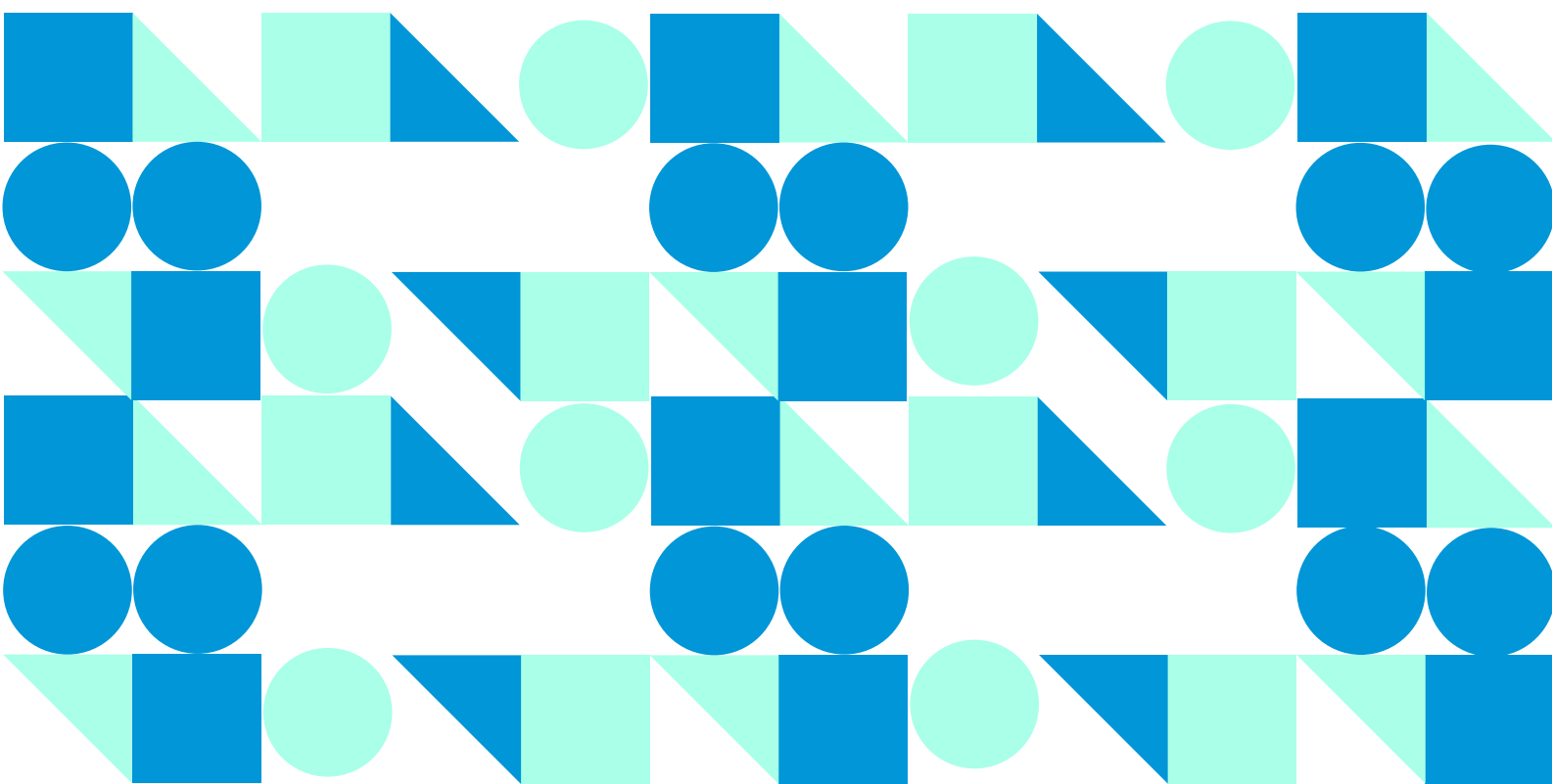




Research paper

Shaping the future of lifelong learning: policy scenarios for 2040

Transparency and transferability
of learning outcomes





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Please cite this publication as:

Cedefop. (2026). *Shaping the future of lifelong learning: policy scenarios for 2040.*

Transparency and transferability of learning outcomes. Cedefop research paper.

Publications Office of the European Union.

<http://data.europa.eu/doi/10.2801/7473761>

A great deal of additional information on the European Union is available on the internet. It can be accessed through the Europa server (<http://europa.eu>).

Luxembourg: Publications Office of the European Union, 2026



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[PDF](#) ISBN 978-92-896-3932-3

ISSN 1831-5860

Doi:10.2801/7206784

TI-01-26-011-EN-N

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Foreword

The vision of a borderless European learning space – where people can move seamlessly between education and training systems, between institutions and providers and between Member States – remains an aspiration that is not yet fully achieved. Despite past and ongoing efforts through initiatives like the European education area in addition to work on qualifications frameworks, credit systems, quality assurance, validation of non-formal and informal learning, recognition of qualifications and others, several key challenges remain.

As we look forward, it is clear that the landscape of learning is undergoing a profound transformation. The need for lifelong and life-wide learning has never been more pressing, as technological, demographic and social changes continue to reshape the way we live, work and interact with one another. Promoting lifelong learning and recognising diverse learning experiences are central pillars of the EU's education and skills agenda, as clearly reaffirmed in the political guidelines for the 2024-2029 European Commission and the Union of Skills strategy launched in 2025.

Developing an effective and inclusive lifelong learning system requires promoting adaptable learning pathways and systems that enable individuals to enter, re-enter and build upon their learning at any stage, regardless of when or where it was obtained. Achieving this means addressing the persistent challenges of ensuring that learning outcomes are transferable and portable across different institutions, sectors and countries – and it does not come without risks. At the same time, greater flexibility and permeability in learning systems also comes with challenges and risks. The way forward and the balance between different aspects depend strongly on the choices and priorities set by policymakers.

Building on previous phases of research that traced the evolution of lifelong and life-wide learning since 2000, this research paper presents a set of alternative policy scenarios on lifelong learning towards 2040. The policy scenarios are designed to stimulate reflection on both the progress made and the limitations encountered in pursuing lifelong learning and explore potential pathways forward. They provide a basis for considering the different choices available to policymakers at the national and EU levels. By outlining possible future directions and their implications for learners and education and training providers, the scenarios aim to support informed discussions on the development of lifelong and life-wide learning.

Jürgen Siebel
Executive Director

Acknowledgements

This research paper was produced by Cedefop, Department of VET and qualifications, under the supervision of Loukas Zahilas, Head of Department until February 2025.

[Zelda Azzarà](#), Cedefop expert, with the support of [Vasileios Symeonidis](#), Cedefop expert, were responsible for the publication and research conducted under the Cedefop project 'Transparency and transferability of learning outcomes'.

Cedefop would like to acknowledge the Tavistock Institut Germany (TIG) and L'Istituto per la Ricerca Sociale (IRS) research team, who conducted a preliminary analysis and drafted their findings under the project team leader Kari Hadjivassiliou and the research team leader Giorgia Iacopini with the active involvement of Kerstin Jung.

The publication was peer-reviewed by Anastasia Pouliou and Carita Blomqvist, Cedefop experts.

Special thanks are also due to all those who actively participated in the Cedefop conference '[Making learning progression a reality: Policy scenarios towards 2040](#)' in February 2025, which discussed the project's findings.

Executive summary

Background

This final report is the last component of a major three-year-long Cedefop study entitled '[Ensuring transparency and facilitating transferability of learning outcomes: Analysing two decades of European and national initiatives](#)'. This report builds on the work undertaken in the preceding parts of the study, encapsulated in two recent Cedefop publications ⁽¹⁾, which (i) mapped and analysed European and national policy initiatives (2000–2020) aimed at improving the transparency and transferability of learning outcomes to support mobility and lifelong learning and (ii) explored the impact of these developments at the national level, examining what changed for individuals following lifelong learning policy developments from 2000 to 2020 (Cedefop, 2025). Using this work as the starting point, this final part of the study aimed to:

- (a) identify trends relevant to the transparency and transferability of learning outcomes that are expected to remain relevant in the future;
- (b) develop alternative scenarios for lifelong and life-wide learning policies towards 2040;
- (c) shed light on and analyse the implications of the different policy options for learners, providers and policymakers at the national and EU levels.

The five scenarios presented here consider both national responsibilities and the EU's supporting role in the governance of education and training. This respects the formal roles these actors have in line with the subsidiarity principle, where Member States hold primary responsibility for education and training, while the EU plays a supporting and complementary role. This approach aligns with the key findings from this study, which have shown that developments in the transparency and transferability of learning outcomes stem from the interplay between these two governance levels. By focusing on national-level scenarios while considering EU-level implications, the five scenarios address the needs of both levels and enable EU policymakers to explore EU-level policy options in relation to national development.

(1) The two publications related to the same research package are [Transparency and Transferability of Learning Outcomes: A 20-year journey](#) and [Lifelong Learning in 2000 and 2020 – What has changed for the individual citizen?](#)

Approach and methodology

The scenarios were developed based on a rigorous and comprehensive research process, which took a customised scenario-building approach based on path dependency, systems thinking, context sensitivity and design thinking. The scenario-building process unfolded over four interrelated tasks.

The first task was a quasi-systematic literature review of over 200 items of policy, academic and grey literature regarding past, current and future developments relating to EU- and national-level initiatives aimed at ensuring transparency and facilitating the transferability of learning outcomes. This work identified eight trends, which are described in Chapter 2 of this report. This task also included a set of expert interviews (with the study's quasi-Delphi panel of experts, described below) to test and develop the first iteration of findings.

A further task was to involve 33 EU- and national-level experts, representing a range of relevant stakeholders from the education and training and employment fields, working in European Commission directorates-general and agencies, European umbrella organisations (e.g. professional associations), national ministries, universities, research institutes and qualification bodies. Constructed as a quasi-Delphi panel, these experts were involved at key stages in this study to contribute to and feed back on work carried out.

The scenario development process comprised another task. The process unfolded in five steps: the identification of trends and social, technological, economic, environmental and political (STEEP) drivers; an online survey administered to the quasi-Delphi panel; the development of scenario axes and indicators; the development of the scenario narratives; and a further round of expert interviews.

The final task was a further round of validation undertaken through two half-day online workshops: one with eight EU-level experts from relevant European Commission directorates-general and agencies, the Council of Europe and umbrella organisations in education and training; and the other with 15 national-level experts in education and training, drawn from universities, foundations and qualification agencies. Based on the feedback gathered from these two validation workshops, the scenarios and their respective implications were revised and finalised.

Main findings and policy scenarios

The literature review and accompanying expert interviews identified eight high-level policy trends relating to the transparency and transferability of learning outcomes over the last 20 years. These are:

- (a) Trend 1: increased efforts to develop common quality assurance frameworks;
- (b) Trend 2: increased opportunities to transfer learning outcomes using credit systems;
- (c) Trend 3: more consistent and comparable overviews of all types, levels and learning outcomes of qualifications available to learners;
- (d) Trend 4: increased opportunities to validate learning outcomes and achieve full or partial qualifications based on a mixture of formal, informal and non-formal learning;
- (e) Trend 5: increased opportunities to store and build up a digital portfolio of learners' achievements, including qualifications, transcripts of records and other types of certificates of learning achievement;
- (f) Trend 6: increased portability of qualifications and learning outcomes across borders;
- (g) Trend 7: increased horizontal and vertical permeability of learning pathways via flexible access and broader curricula;
- (h) Trend 8: more tailored learning pathways.

These trends have contributed to reducing the separation between education and training pathways, while also expanding opportunities for learners to tailor their learning to their needs, interests and circumstances within a lifelong learning perspective.

Although the eight trends vary in terms of their past development and expected future growth, all are relevant for our scenario construction. Their relevance lies not only in their individual trajectories but in their ability to define the conditions under which transparency and transferability of learning outcomes evolve. Even trends facing slower or greater progress help identify the indicators that will differentiate one future scenario from another.

A range of factors have played a role in supporting progress across the trends. EU-level initiatives have supported reform and incentivised implementation, including through funding (e.g. Erasmus, Erasmus+ and the European Social Fund). Collaborative governance mechanisms, such as working groups, peer-learning activities and transnational networks, have provided valuable spaces for exchanging good practices and promoting alignment across countries. At the national level, the creation of dedicated national bodies has enhanced

implementation capacity, supported by legal foundations that ensure consistency and adoption. Importantly, progress in one trend can depend on developments in others. Many countries use national qualifications frameworks (NQFs) to support the transparency and therefore the recognition and portability of qualifications. Moreover, the importance the European qualifications framework gave to validation is reflected in many national frameworks that have established links between National qualifications frameworks (NQFs) and validation processes.

A recurring barrier is the fragmentation of education and training systems, most notably the long-standing divide between higher education and vocational education and training (VET). While some countries have sought to bridge this gap through coordinated governance, higher education and VET often remain separate, with quality assurance and credit transfer mechanisms confined to their own subsystems. Fragmentation is reinforced by the uneven adoption of reforms across countries, with varying scope of NQFs, underdeveloped credit transfer in VET, persistent challenges in validation and diverse quality assurance practices. Institutional autonomy adds another layer of complexity, as resistance to change can slow implementation, for example in recognising non-formal or informal learning, introducing flexible admissions or advancing modularisation.

Across the identified trends, contradictory dynamics also emerge. These go beyond structural and implementation-related challenges and relate to opposing forces that coexist and that could shape how the trends unfold when shaped by diverging responses, preferences and priorities. For instance, although major milestones like the Lisbon Recognition Convention have laid important foundations, differences in adoption, interpretation and application, influenced by national legal frameworks and institutional autonomy, could result in divergent approaches: a move towards more uniform implementation, or reliance on or preference for bilateral or regional arrangements. The creation of a European digital infrastructure for storing and sharing learning achievements (Trend 5) raises a similar dynamic. Besides technical issues or differences in digital maturity, cultural hesitations in some countries have created resistance, making future progress uncertain. The expansion of NQFs brings to light tensions related to the flexibility and adaptation (e.g. to market needs) deemed preferable. Considering such dynamics is useful, as they indicate choices that will further influence which challenges and barriers are resolved and which persist.

Looking ahead, all eight trends remain relevant to the evolution of lifelong and life-wide learning systems towards 2040 and therefore to the construction of alternative scenarios. Validation (Trend 4), digital portfolios (Trend 5), portability of qualifications (Trend 6) and individualised learning pathways (Trend 8) are trends expected to gain particular importance, driven by key STEEP drivers (shrinking

labour force, rapid technological developments, international competition for talent, the importance of agile skills development, faster pace of changes in jobs and tasks). While others are not expected to grow as strongly, reflecting substantial investment over the past two decades, areas of uncertainty or particular implementation challenges, they remain central. Quality assurance (Trend 1) and qualifications frameworks (Trend 3) have shaped major reforms over the past two decades and remain essential for ensuring trust, consistency and comparability within and between subsystems and countries. Credit systems (Trend 2) and flexible admissions (Trend 7) remain important for permeability. Trends, as well as key findings from previous studies (Cedefop, 2020, among others), which show increased permeability and flexibility of education and training as a key change over the last few years, allowed us to create the two scenario axes (permeability and flexibility) and 11 indicators that, when given different values, collectively create different scenarios that fall into different quadrants of our 2 × 2 scenario matrix. The definition of these different values is grounded in the patterns of change observed as a result of the literature review as well as the logic derived from combining permeability and flexibility variables.

The resultant five scenarios are designed as exploratory tools, allowing policymakers to think about the implications of different policy choices.

- (a) Scenario 1: Flex Max represents high levels of both flexibility and permeability. By 2040, Member States will have created a highly adaptable and integrated learning system, allowing learners seamless movement across education and training systems and countries.
- (b) Scenario 2: Rigid Islands reflects a scenario with low levels of both flexibility and permeability. Education and training in 2040 are characterised by highly structured pathways, focused on standardisation and stability, with minimal opportunities for personalisation and learner mobility.
- (c) Scenario 3: Fragmented Flexibility illustrates a scenario with high flexibility but low permeability. In 2040, learning pathways are flexible (offering a variety of learning options), but movement between subsystems or borders is limited.
- (d) Scenario 4: Rigid but Internationally Connected describes a scenario with low flexibility and moderate permeability. Education and training systems in 2040 are characterised by structured education pathways; mobility within the same subsystem is possible (including across borders), although transitions across subsystems are limited.
- (e) Scenario 5: Gated Communities is a scenario with moderate flexibility and permeability. In 2040, learner needs are taken into account through greater flexibility of provision. Cross-border mobility is less prioritised, as efforts are

focused on strengthening mobility within subsystems and across them nationally.

Each scenario has different implications for learners, education and training providers, and policymakers. However, given the different roles that these key stakeholders play in the learning ecosystem, the focus of implications is different for each group. The implications for policymakers focus more on policy choices in line with the internal – and distinct – logic of each scenario. Meanwhile, the implications for learners and education and training providers who are affected by these policy choices focus more on the benefits and challenges each group faces under each scenario.

Concluding remarks and implications for further work

The five scenarios were purposefully designed to be non-normative so that they could serve as tools for discussion and exploration at the national and EU levels in relation to policy choices and their implications. Numerous rounds of validation and engagement with relevant audiences consistently confirmed their validity and ability to spark rich discussions. Nevertheless, following experts' discussions, a range of possible further developments of these scenarios can be envisaged and usage explored.

The scenarios are valuable in bringing together diverse developments across sectors and countries. Their system-wide perspective inevitably involves some generalisation and simplification; future work could add more nuance and explore sectoral specificities in more detail. This might include also expanding the range of implications for learners' groups or to additional stakeholders (e.g. employers, social partners, non-governmental organisations or guidance services, teachers/trainers). Delving deeper into the type of coordination between stakeholders at different governance levels depending on the scenarios might also be beneficial. Future work could also address the veracity, reliability and quality of online and AI resources to support permeability and flexibility. Finally, using the back casting foresight methodology – as part of a more normative approach to future thinking – can help plan the steps needed to achieve a specific, desirable future scenario ⁽²⁾.

⁽²⁾ Back casting is a foresight technique that starts by defining a desirable future outcome and then works backwards to identify the necessary steps to achieve that outcome.

CHAPTER 1.

Introduction

This report is the last component of a three-year-long Cedefop study entitled ‘Ensuring transparency and facilitating transferability of learning outcomes: analysing two decades of European and national initiatives’. This study sought to:

- (a) examine the extent to which national and European policies, together with the shift towards learning-outcomes-based approaches over the past 20 years, have contributed to more flexible education, training and learning, supporting lifelong and life-wide learning;
- (b) provide an overview of policy developments at the European and national levels, together with the interconnections between all subsystems of education and training (i.e. school, higher, vocational and adult education), the employment sector (the world of work) and other relevant areas, by going beyond the analysis of single and separate initiatives; and
- (c) provide insights into the consistency, sustainability and (combined) impact of policies on the transparency and transferability of individual learning outcomes, along with details of still-existing barriers.

Within these three objectives, the aims of this study were to develop a set of scenarios on lifelong and life-wide learning towards 2040 and analyse the implications of these different policy options. In doing so, it drew on key findings of two previous reports published as part of this project.

The first report (Cedefop, 2024b) mapped and analysed European and national policy initiatives (2000–2020) aimed at improving the transparency and transferability of learning outcomes to support mobility and lifelong learning. It provided systemic analysis of the initiatives’ objectives, orientation and synergies, and highlighted several areas of impact, including the shift towards learning outcomes; the increased visibility of non-formal and informal learning; growing convergence across policy initiatives and Member States, increasing commitment to transparency, comparability and the recognition of qualifications; and the need to promote permeable education and training systems with flexible learning pathways. The second report (Cedefop, 2025) focused on the impact of these developments at the individual learner level, examining what has changed for individuals following lifelong learning policy developments from 2000 to 2020.

Building on these foundations and based on a suite of research activities described in the next sections, this study developed five alternative scenarios for lifelong and life-wide learning policies towards 2040 alongside associated

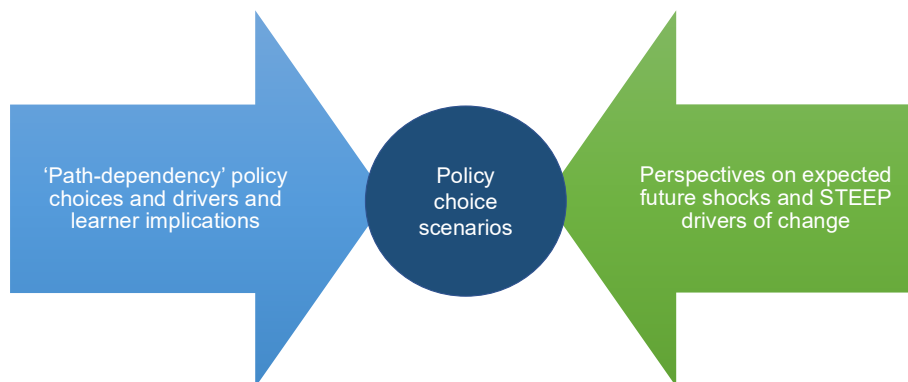
implications for learners, education and training providers, and European and national policymakers. Reflecting the interrelated nature of EU and national policymaking in this domain, these scenarios and their implications combine (rather than separate) EU and national governance levels.

1.1. Overarching approach

The focal question for the scenario building was defined as follows: given past and current policy developments and likely social, technological, economic, environmental and political (STEEP) drivers, what future policy choices are available at the European and national levels in relation to the transferability and transparency of learning outcomes? How will these choices influence the lifelong learning and life-wide learning experiences of individuals?

To create these policy choices, we followed key criteria of a scenario-building approach and adapted this to the specific characteristics of the education and training sector. This involved combining path-dependency thinking with an exploration of anticipated future developments, including STEEP factors as structural drivers of change. This approach is visualised in Figure 1.

Figure 1. **Combined methodological approach**



Source: Study team.

1.1.1. Scenario development approach

We set out to create exploratory rather than normative scenarios to provide policymakers and relevant stakeholders with the best basis for discussions on possible scopes of action. In line with this aim, the scenarios needed to be plausible (they must fall within the limits of what might conceivably happen); structurally different (they should not be so close to one another that they become

simply variations of a base case); internally consistent (the combination of logical planning assumptions behind a scenario must not have any inbuilt inconsistency that could undermine the credibility of the scenario); useful for decision-making (each scenario, and all scenarios if they constitute a set, should offer specific insights into the future, which will effectively contribute to decision-making regarding policy choices); and challenging to conventional wisdom about the future.

1.1.2. Path dependency

The most significant adaptation made to established scenario-building methodology was to take a path-dependent approach. While scenario-building methodology normally uses STEEP drivers as key factors around which scenarios are built, we started from past trends. Essentially, we assumed that past developments in education and training policies at the EU and national levels are likely to influence the future choices policymakers will make in the period up to 2040. This is because education and training systems (and associated ecosystems) have developed over time and are embedded within distinctive types of skills formation systems, labour markets, industrial relations, economic structures, institutional frameworks, learning provision make-up and delivery mechanisms, qualification systems and training traditions. This creates a powerful context for future policy choices that needs to feature in the process and outcomes of scenario-building.

To operationalise this approach, we drew on Gáspár's (2011) work on path dependency and path creation. Taking a temporal perspective (short, medium and long terms), this model assumes that path-dependency dynamics decrease over time, with path creation (i.e. scope for decision-making) growing in influence as time passes (in particular, over the long term). In practice, adopting this path-dependent approach meant:

- (a) identifying past key trends at the EU and national levels during 2000–2020 relating to the transparency and transferability of learning outcomes;
- (b) analysing the extent to which these are projected to continue, be modified or amended by new trends and potentially change in the medium term (2020–2030) to long term (2030–2040), also considering, wherever possible, countries' different starting positions in relation to each trend;
- (c) analysing the role of STEEP drivers in shaping past and future trends; and
- (d) framing our scenario-related fieldwork (described in the next section) to explore not only experts' views on the way trends have developed over the last 20 years but also their predictions on expected and potentially emerging new trends from around the late 2020s onwards.

1.1.3. Systems thinking

Further, our work was informed by systems thinking. We recognised that, in European education and training policies, systems and sectors do not operate in a vacuum but interact with a host of stakeholders regarding a range of other policy areas. Thus, in addition to exploring likely developments within the learning ecosystem, research activities underpinning the scenario work and the scenarios themselves, we also considered, where relevant, the world of employment and paid particular attention to three key stakeholder groups: learners, education and training providers, and policymakers. The aim was to capture different interests and needs and feed these into the scenarios and the discussion on implications. Practically, taking a systems approach meant:

- (a) ensuring that the stakeholders contributing to the study reflect different parts of the education and training system as well as closely related policy areas;
- (b) paying attention to the barriers to lifelong learning (transparency and transferability of learning outcomes) experienced by learners; and
- (c) in the thematic analysis of past and future developments, paying attention to education and training developments as well as labour market needs.

1.1.4. Context sensitivity

In addition to examining past developments, our scenario-building efforts closely considered national policy trends in the chosen case-study Member States. This approach recognised that the varied education and training systems across Member States could lead to differing historical patterns and potential futures. In practice, this involved:

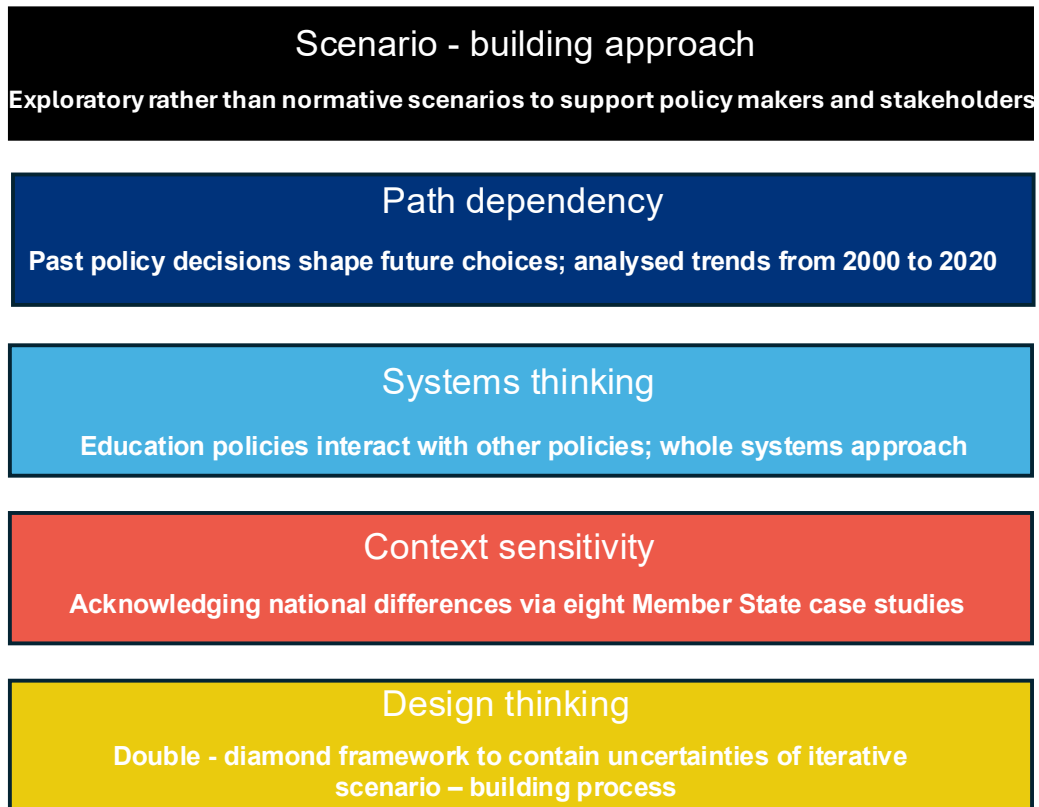
- (a) choosing a set of eight case-study Member States for an analysis of national-level trends and likely future developments (Germany, Ireland, France, Italy, the Netherlands, Poland, Romania and Finland);
- (b) ensuring that stakeholders/experts included in the research to build the scenarios also represented these eight Member States.

1.1.5. Design thinking

Finally, we applied design thinking to the process of building our scenarios, specifically the highly iterative double-diamond approach (discovering, defining, developing, delivering) (Design Council, 2024). This was to offer a containing framework to what was envisaged to be an innovative and collaborative process by structuring the scenario-building process into two connected diamond-shaped loops (loop 1: discover, define; loop 2: develop, deliver). Considering the iterative and co-creative nature of scenario development work, the double-diamond structure was thought to help highlight the uncertainties of this process while increasing confidence in a methodologically sound process and final results. The

next section presents the methodology of the scenario-building process in greater detail.

Figure 2. **Scenarios development – overarching approach**



Source: Study team.

1.2. Methodological implementation

The scenario-building process was implemented by means of four distinct yet interrelated research tasks, each including several research methods. These are shown in Table 1 and are discussed in greater detail in the following sections.

Table 1. **Tasks and associated research methods**

Task	Research methods
Task 1: Literature review	Quasi-systematic literature review
Task 2: Quasi-Delphi panel	Exploratory telephone discussions Online survey Semi-structured telephone interviews
Task 3: Scenario development	Co-creation workshops Bottom-up clustering Construction of scenario axes and indicators and development of scenario narratives
Task 4: Scenario validation	Quasi-Delphi panel validation Two online validation workshops (at the EU and national levels)

1.2.1. Task 1: literature review

To establish the existing knowledge base for the scenario work, the main goal was to compile evidence of past trends in policy choices that have shaped European education and training systems over the past 20 years and their anticipated development in the medium to longer term, up to 2040. To this end, we carried out a quasi-systematic literature review (Assis Rodrigues et al., 2013; Magalhães Magdaleno et al., 2012) of around 200 items in the following categories:

- (a) research carried out as part of this project, focusing on developments at the EU, national and learner levels (Cedefop, 2025) to identify key trends at the EU and national levels between 2000–2020 as well as associated enabling factors, barriers and STEEP drivers;
- (b) other research reports, academic reviews and commentaries not reviewed as part of these assignments that provided insights into other relevant trends and how current trends might evolve or continue in the future;
- (c) EU- and national-level policy documents and strategies to explore emerging relevant policy choices in relation to increasing the transparency and transferability of learning outcomes; and
- (d) road mapping and future scenario studies in relation to general education (GE), vocational education and training (VET), higher education (HE), adult education (AE) or education in general to explore future predicted trends or changes.

Table 2. Literature review questions

<p>Overarching research question</p>	<ul style="list-style-type: none"> • What are the key trends in policy choices regarding education and training systems at the EU and national levels over the last 20 years regarding the transferability and transparency of learning outcomes? To what extent and how are these reflected in medium-term policy initiatives and futures thinking about education and training?
<p>Subordinate research questions</p>	<ul style="list-style-type: none"> • What are the STEEP drivers (needs) that influence past and future policy choices? How do these vary over time and in different contexts? • What key benefits and challenges/barriers for learners and education and training systems have resulted from past policy choices? How do these vary in different education and training contexts and for different learner groups? • What new relevant trends seem to be emerging, and what are the underpinning STEEP drivers? • What contradictory dynamics can we identify? What could the implications for policy choices be going forward, at the European and national levels? • What can we learn about the outcomes achieved by national policies to date and the conditions/factors that can contribute to an outcome?

Source: Study team.

This review was complemented by consultations with members of the quasi-Delphi panel (described in the next section) and internal co-creation workshops within the study team. These activities expanded the initial set of 5 trends to 22, incorporating broader national developments, and they were later refined into 8 key trends representing developments at both the EU and national levels regarding the transparency and transferability of learning outcomes. In parallel, 19 drivers likely to influence these trends were identified from the policy literature and grouped into five STEEP categories: social, technological, economic, environmental and political (Chesterman & Neely, 2021; UK Government Office for Science, 2017). Both the trends and STEEP drivers were validated by the quasi-Delphi panel, which also contributed insights on national-level developments. An analysis of each trend’s historical evolution and anticipated trajectory to 2040 is presented in Chapter 2.

1.2.2. Task 2: quasi-Delphi panel

To ensure that the scenario-building process was grounded in diverse and expert insights, we established a quasi-Delphi panel, whose role was to provide

systematic feedback on key outputs from the study over three rounds of consultation. The panel was composed of 33 experts, identified by the study team. Reflecting the systemic design of this study, we included informants from the EU/transnational (14) and national (18) levels, from different backgrounds and with different expertise, who could provide insights into lifelong and life-wide learning from different education and training sectors. This included relevant stakeholders from the education and training and employment fields, working in the European Commission and its agencies, European umbrella organisations (e.g. the European University Association and the European Association for the Education of Adults (EAEA)), national ministries, universities, research institutes and qualification bodies ⁽³⁾. Table 3 illustrates the focus of each round of expert consultation.

Table 3. Quasi-Delphi panel consultation rounds

Quasi-Delphi panel consultation	Focus
Round 1: Exploratory interviews	<ul style="list-style-type: none"> • Test, refine and validate the initial EU- and national-level trends identified in Task 1. • Gather insights into the relevance and strength of these trends and how they might evolve in the medium and longer terms. • Identify additional relevant trends. • Gather views on potential 'disruptive' developments that could significantly impact the trajectory of the identified trends.

⁽³⁾ The members of the quasi-Delphi panel included members from the National Institute for Public Policy Analysis (IT), Bertelsmann Stiftung (DE), Conservatoire National des Arts et Métiers (FR), Dansk Industri (EU), the European Association for the Education of Adults (EAEA) (EU), the Educational Research Institute (PL), Vocational college Esedu/EfVET – European Forum of Technical and Vocational Education and Training (EU and FI), the European Training Foundation (EU), the European Centre for the Development of Vocational Training (Cedefop) (EU) (current and former members), European Commission: Directorate-General for Education, Youth, Sport and Culture (EU), European Commission: Directorate-General for Employment, Social Affairs and Inclusion (EU), the European University Association (EU), France compétences (FR), Gdańsk University of Technology (PL), the German Confederation of Trade Unions (DE), the National Institute for Public Policy Analysis (IT), the Irish Universities Association (IE), the Ministry of Education and Culture (FI), the Ministry of Education, Culture and Science (NL), the Netherlands Organisation for Internationalisation in Education (NL), the Polytechnic University of Bucharest (RO), Quality and Qualifications Ireland (IE), the Cooperation Organisation for Vocational Education, Training and the Labour Market (NL), the Finnish Institute for Educational Research (FI), the University of Dortmund (DE), the Federal Institute for Vocational Education and Training (DE) (former member) and Vilnius Business School (EU).

Quasi-Delphi panel consultation	Focus
Round 2: Online survey	<ul style="list-style-type: none"> • Test the relevance and validity of the finalised eight trends. • Gather perceptions on whether they would continue to grow stronger or weaker over the next 15–20 years. • Identify the dominant STEEP drivers that would influence these trends in the future, and explore the potential of the EU's role in influencing key trends.
Round 3: Telephone interviews	<ul style="list-style-type: none"> • Validate the scenarios, and explore country variations.

Source: Study team.

The quasi-Delphi panel approach enabled individual expert engagement, reducing the risk of dominant voices and supporting in-depth consideration of complex issues. It also fostered mutual exchange between researchers and experts through iterative feedback across consultation rounds ⁽⁴⁾. Each round was analysed using a topic guide and was used to progressively refine the trends.

Round 1 (exploratory interviews) informed the first revision of the trends, particularly regarding national developments, key enablers, barriers and future directions. Round 2, conducted through an online survey, focused on the final eight trends and 19 STEEP drivers. Experts rated the trends' past and future strengths, the EU's influence and the importance of each STEEP driver up to 2040. These results were synthesised into a smaller set of composite variables, which formed the basis for the scenario axes (see next section). Round 3 focused on the five draft scenarios. Experts received the scenario narratives (as short vignettes) and indicators in advance to prepare for consultation. During the interviews, they were asked whether the scenarios were credible, if any changes were needed, which scenario was most desirable and likely by 2040, and about key STEEP drivers, enabling conditions and the EU's role. All experts found the scenarios coherent, internally consistent and supported by relevant indicators.

1.2.3. Task 3: scenario development: axes, indicators, narratives

Building on the finalised trends and STEEP drivers, the scenario development process began with the construction of two scenario axes. These were derived from analysis and triangulation of all the data collected and were guided by four considerations: the relevance of all eight trends, applicability across lifelong and

⁽⁴⁾ It is noteworthy that there was no attrition among the participants. The number of responses varied slightly between the rounds because a couple of experts could not take part in an interview or complete the survey. Nevertheless, all experts took part in at least two consultation rounds, with the majority taking part in all three, maintaining the consistency of the consultation process.

life-wide learning contexts, the need to reflect contrasting future pathways and the influence of key drivers identified by the quasi-Delphi panel.

The two variables selected for the axes were permeability and flexibility, forming a 2 × 2 matrix as the basis for scenario development (see Chapter 3). This was supported by a set of 11 indicators, aligned with the axes and grounded in the trend analysis (see Chapter 2). Together, these elements led to the formulation of five scenarios, which were then validated through the final round of consultations with the quasi-Delphi panel.

Initially, the aim was to develop both EU-level and national-level scenarios. However, it became evident that meaningful distinctions between the two were difficult, given that, in most cases, Member States hold the main responsibility for education and training policies, while the EU plays a complementary role. Given this, the scenarios were anchored at the national level, with the EU's role integrated into the broader narrative.

The scenario axes – permeability and flexibility – reflect aspects primarily shaped by national policies and institutions, such as access to learning provision, learning content, assessment and qualifications frameworks. Nevertheless, these developments take place within a broader EU policy framework that promotes transparency and transferability and that is supported by policy tools such as the EQF, Europass and European skills, competences, qualifications and occupations (ESCO) and by key legal instruments, such as the Professional Qualifications Directive. Financial support to Member States through programmes like Erasmus+, the European Social Fund and, more recently, the recovery and resilience facility has further reinforced this agenda.

This dual focus allowed the scenarios to reflect the interaction between EU-level support and national-level implementation, offering a more realistic and evidence-based perspective. The scenarios can serve as a tool for exploring plausible futures for both EU and national policymaking. Insights into the EU's potential role in these national-level futures were further elaborated during expert consultations and validation workshops in late 2024, with key findings integrated throughout this report.

1.2.4. Task 4: scenario validation workshops

The five scenarios, together with a preliminary set of implications for learners, education and training providers, and policymakers (at both the EU and national levels), were validated via two online interactive workshops with a wider pool of EU

and national-level experts from most of the eight case study Member States ⁽⁵⁾. The aims of the workshops were twofold: to further enrich the scenario narratives and, in particular, to expand and add nuance to their implications. The workshops were also an opportunity to rate and discuss the desirability and plausibility of the scenarios, as well as the role of the EU in each of them.

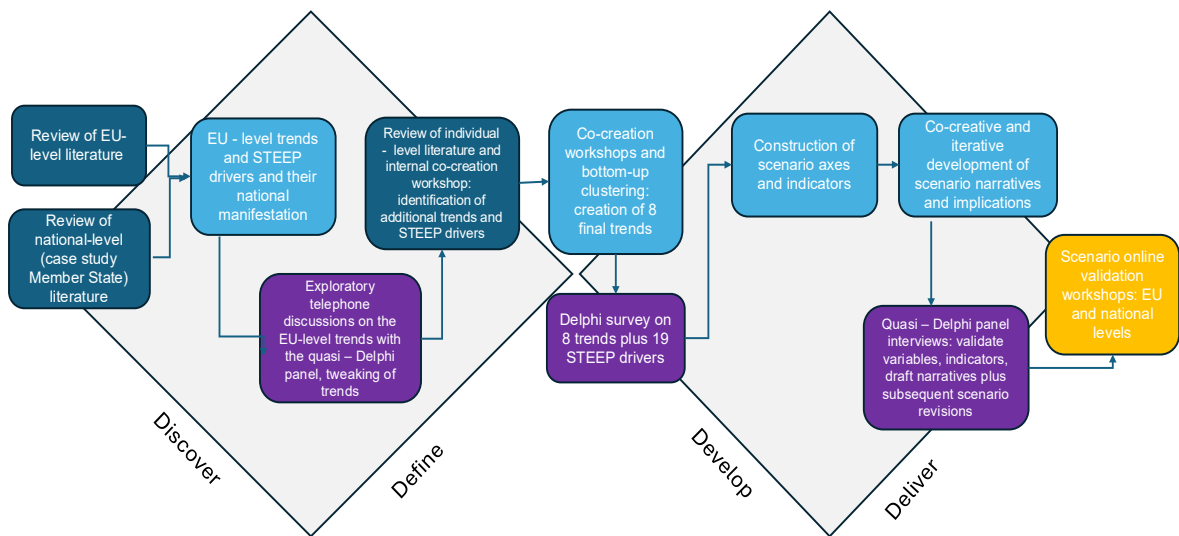
Prior to the workshops, experts were sent a background note outlining the five scenarios together with their implications. The first workshop focused on EU-level perspectives. The second workshop centred on national experts' perspectives, with participants discussing the scenarios' relevance and implications based on their Member States' specific contexts, the maturity of their education and training systems, and their trajectories. In both workshops, participants evaluated the scenarios for their desirability and plausibility, offering insights to enrich their narratives and implications.

Feedback from these workshops and from the quasi-Delphi panel informed revisions to the scenario narratives and their implications. For example, enhancements included greater emphasis on digitalisation and AI, in relation to the recognition of qualifications, assessment and the changing nature of learning provision and delivery through the expansion of online and blended learning.

The validated and finalised scenarios are presented in Chapter 4.

⁽⁵⁾ Participants in the EU validation workshops included members from the following organisations: Council of Europe, European Commission, European Association for the Applied Sciences in Higher Education, European Training Foundation, Joint Research Centre, Lifelong Learning Platform, European Association of Institutes for Vocational Training and Vrije Universiteit Brussel. Participants in the national validation workshops included members from the following organisations: Bertelsmann Stiftung (DE), Centre for Vocational Education (NL), University of Verona (IT), ESCP Business School (FR), Finnish Institute for Educational Research (FI), France compétences (FR), National Agency for Education (FI), National Centre for Education Policy and Evaluation (RO), National Coordination Point for the National Qualifications Framework (NL), Netherlands Organisation for Internationalisation in Education (NL), Quality and Qualifications Ireland (IE), University of Jyväskylä (FI), Technische Universität, Dortmund (DE), University of Bucharest (RO) and University of Hamburg (DE).

Figure 3. Scenario-building process



Source: Study team.

1.3. Scenario-related limitations

Although scenarios are a useful tool for strategic planning, they are not devoid of limitations. For example, scenarios are intended not to accurately predict the future but to alert policymakers to different possible policy trends and the implications of these, for example for policies (and/or transparency and transferability tools), learners and various types of stakeholders, including the EU. The implications are not expected to manifest exactly in the form described, but particular aspects of them are likely to become influential or dominant across lifelong learning and life-wide learning systems. The developed scenarios acknowledge that such systems are path dependent and will reflect and build on the past to varying degrees. As such, they are intended to be used as exploratory tools for policymakers to think about the implications of different policy choices, which are, in turn, informed by the past. During the quasi-Delphi panel consultations and the two validation workshops, it emerged that some scenarios are likely to be more plausible and/or desirable than others.

Although we adopted an evidence-based approach to constructing the scenarios, the foresight exercise also included the application of expert judgement and interpretation of the data (e.g. through the quasi-Delphi panel and the two validation workshops). Given the reliance of the scenario-building method on expert input and feedback, our scenarios are, to some extent, subject to the

specific analysis and viewpoints of the experts involved. Alternative interpretations of the likelihood and implications of each scenario are also possible. However, this is inherent in the nature of foresight exercises, which are explorative and interpretative rather than conclusive in nature. To address this potential limitation as much as possible, we relied heavily on the triangulation of different data sources used wherever possible to ensure that the emerging interpretations of the scenarios did not contradict empirically established trends and drivers that informed our scenarios.

Moreover, we ensured that the size of our quasi-Delphi panel was large enough to allow us to gather as wide a range of expert views as possible. The panel's attrition rate was negligible, which also enhanced the validity of its use as a foresight method. Moreover, targeting our two validation workshops at external experts not involved in the development of the scenarios allowed for the critical interrogation and validation of our scenarios.

1.4. Report structure

The rest of the report is structured as follows. Chapter 2 discusses past trends and their drivers, and future developments related to the transparency and transferability of learning outcomes, that served as key building blocks for the scenarios. Drawing on these findings, Chapter 3 develops the building blocks for the scenarios (scenario matrix and indicators) and discusses how they were derived. Chapter 4 presents the five scenarios (leading up to 2040) for policies that promote lifelong and life-wide learning through a learning-outcomes-based approach, while Chapter 5 focuses on the implications of these scenarios for learners, education and training providers, and policymakers. Finally, Chapter 6 offers several scenario-related aspects for further consideration.

CHAPTER 2.

Trends and drivers related to the transparency and transferability of learning outcomes

2.1. Introduction

This chapter provides the empirical basis for the five lifelong and life-wide learning scenarios presented in Chapter 4. It draws on an extensive review of EU and national policy developments and translates the scenario-building approach into practice. The approach combines the path dependency of education and training systems ('outside in') with a forward-looking perspective, examining possible medium- to long-term developments and the STEEP drivers influencing them.

To support this, over 200 sources were reviewed, focusing on past and anticipated developments in the transparency and transferability of lifelong learning. The analysis was guided by the following central research questions: What have been the key trends in policy choices on education and training systems in the EU and nationally over the last 20 years regarding the transferability and transparency of learning outcomes? How and to what extent are these trends reflected in medium-term policy initiatives and in education and training futures thinking?

2.1.1. Identifying key trends: the 'inside-out' path-dependent aspect of building scenarios

This chapter builds on the substantial work carried out by the other studies that form part of this (wider) project. First, this work mapped EU-level and Member States' policies to promote the transparency and transferability of learning outcomes over a 20-year period (2000–2020), providing a macro-level, systemic understanding of their objectives, orientation, consistency (internal and external) and impacts (Cedefop, 2024b). Key findings pointed to significant developments, in five thematic areas:

- (a) a shift towards learning outcomes and learner-centred systems,
- (b) increased attention to learning acquired outside formal settings, giving more visibility to and reinforcing the role of non-formal and informal learning in skills acquisition and recognition,

- (c) growing convergence across policy initiatives and countries, driven by increased synergies between EU initiatives, mutual learning and greater alignment between EU and national strategies,
- (d) increased commitment to transparency, comparability and recognition of qualifications across subsystems and levels of education and training,
- (e) greater awareness of the need to promote more flexible learning pathways.

These findings were complemented by an investigation into their impact at the individual learner level. By examining the opportunities and barriers that learners face when transferring learning outcomes, it was found that the transformations highlighted above have been particularly evident in three key transitions over the past two decades: within and between formal education and training sectors; between formal and non-formal and informal learning; and across borders (Cedefop, 2025).

A core set of tools and initiatives at both the EU and national levels played a tangible role in advancing the transparency and transferability of learning outcomes. Their introduction can therefore be seen as a concrete expression of a trend (i.e. a shift or emerging pattern) in policy choices in this domain. Based on the evidence gathered, eight such trends were identified and subsequently validated via three rounds of consultations with the quasi-Delphi panel. These are:

- (a) increased efforts to create common quality assurance frameworks;
- (b) increased opportunities to transfer learning outcomes using credit systems;
- (c) more consistent and comparable overviews of all types, levels and learning outcomes of qualifications available to learners;
- (d) increased opportunities to validate learning outcomes and achieve full or partial qualifications based on a mixture of formal, informal and non-formal learning;
- (e) increased opportunities to store and build up a digital portfolio of learners' achievements, including qualifications, transcripts of records and other types of certificates of learning achievement;
- (f) increased portability of qualifications and learning outcomes across borders;
- (g) increased horizontal and vertical permeability of learning pathways via flexible access and broader curricula;
- (h) more tailored learning pathways.

A further key conclusion from this work is that these developments influence the convergence or separation between education and training pathways as well as opportunities for learners to tailor their learning to their needs, interests and circumstances. These shifts can be understood as two interlinked dimensions of change:

- (a) permeability, which refers to system-level developments and the extent to which education and training systems facilitate movement across systems, providers, institutions, levels and borders, and
- (b) flexibility, which reflects the increasing adaptability of learning pathways at the individual level, allowing learners greater choice in how, when and where they learn.

These two dimensions reflect the most significant structural shifts since the 1990s, becoming central to European education and training systems and shaping policies aimed at improving the transparency, portability and recognition of learning outcomes. The trends above, which reflect the concrete policy tools and initiatives that have actively supported these changes, therefore provide the foundation for our scenario axes, as they capture both the structural evolution of education and training systems (permeability) and the increasing emphasis on personalised and adaptive learning opportunities (flexibility).

2.1.2. 'Outside-in': the relevance of STEEP drivers

These eight trends in their past formation and anticipated future development will be discussed in the subsequent sections. In line with established scenario-building methodology, the STEEP drivers that were and will be significant in shaping developments were included in the research activities underpinning this discussion. Our review of EU-level and national documents on past and future trends revealed a total of 19 STEEP drivers seen as shaping their development to a greater or lesser extent. These are presented in Table 4.

Not all these drivers, however, are likely to be equally impactful in the future. When asked about their expected importance by 2040, for example, members of our quasi-Delphi panel rated these trends as follows:

- (a) the top six trends expected to influence future developments, with an average of 23 out of 33 panel members rating these trends as expected to be influential in future to a (very) great extent, were:
 - (i) shrinking labour force;
 - (ii) rapid technological developments;
 - (iii) international competition for talent
 - (iv) the importance of agile skills development;
 - (v) faster pace of change in jobs and tasks;
 - (vi) increasing need for digital skills;
- (b) the five drivers expected to be the least impactful by 2040, ranked as likely to be influential to a (very) great extent by an average of 10 panel members, were:
 - (i) labour market polarisation;

- (ii) fitting participation in education and training around work and family;
- (iii) increasing need for green skills;
- (iv) polarised politics, populism and nationalism;
- (v) autonomy and decentralisation of decision-making;
- (c) a middle group of eight drivers, ranked by an average of 18 quasi-Delphi member panels as likely to be influential to a (very) great extent, were:
 - (i) adapting learning pathways to frequent job changes;
 - (ii) the importance of vocational and professional skills;
 - (iii) migration flows;
 - (iv) increased use of AI in education and training;
 - (v) increased use of online learning and ICT in education and training;
 - (vi) emphasis on transversal skills;
 - (vii) socioeconomic disparities;
 - (viii) the influence of the business sector on education and training.

Table 4. **Nineteen STEEP drivers**

Social and environmental	Political and technological	Economic
<ul style="list-style-type: none"> Increasing migration flows within and into the EU Persistent socioeconomic disparities, amplified by increased costs of living Shrinking labour force linked to demographic change and ageing populations Increased demand from learners to fit participation in education or training around other work and family responsibilities Increased need for individuals to adapt their own learning pathways to the need for more frequent career and job changes Increasing need for green skills because of the green transition 	<ul style="list-style-type: none"> Increasingly polarised politics, populism and nationalism, fostering, for example, anti-migrant sentiments Increasing emphasis on autonomy and decentralisation in decision-making with regard to education and training policies Increased business-sector influence on education and training Rapid technological developments, reshaping lots of jobs Increase in the use of AI in education and training Increased use of online learning and ICT for learning purposes Increasing need for digital skills as a result of the digital transition 	<ul style="list-style-type: none"> Increasing emphasis on transversal skills, social and emotional skills as well as key competences Increased importance of vocational and professional skills Increasing labour market polarisation between the demand for a high-skilled workforce and the growth of the gig economy requiring low levels of skills and qualifications Increasing international competition for talent, especially in view of growing skills and labour shortages and shrinking domestic workforces Rising importance of agile skills development and utilisation in the workplace in line with the fast pace of technological change Increasingly faster pace of changes in jobs and tasks and greater need for adaptation by the working population

Source: Study team.

2.1.3. The remainder of this chapter

The remainder of this chapter discusses each of the eight trends named above in turn, presenting evidence relating to their past and future relevance. The discussion focuses on outcomes achieved, and related barriers, enablers and STEEP drivers. Implications for future scenarios are discussed at the end of each section and at the end of this chapter.

2.2. Trend 1: towards common quality assurance frameworks

This trend refers to the development of common quality assurance frameworks, guidelines and standards to promote, among other things, the transparency and comparability of qualifications (based on learning outcomes). It refers to the way quality assurance initiatives in HE and VET across the EU – such as the European Association for Quality Assurance in Higher Education (ENQA), the *Standards and Guidelines for Quality Assurance in the European Higher Education Area* and the European quality assurance reference framework for vocational education and training (EQAVET) – have helped to increase transparency as well as trust in systems and in the content of qualifications. At the national level, this has translated into the creation of specialised bodies to oversee quality assurance processes and/or common frameworks, setting out requirements and steps for quality assurance, and the increased adoption of standardised assessment tools and methodologies to evaluate learning outcomes and ensure alignment with established standards and guidelines.

The study's quasi-Delphi panel ranked this trend as the second most significant development of the past 20 years (preceded by Trend 3). This is set to remain valid in the medium- to longer-term future. Looking ahead to 2040, the quasi-Delphi panel members consistently highlighted quality assurance as important for all other trends and emphasised its continued importance for supporting trust in education systems and qualifications. At the same time, only a minority of panel members (8 out of 33) thought this was a trend that the EU could play a significant role in influencing to a (very) great extent (e.g. by strengthening existing tools or facilitating mutual trust and cooperation), while 13 felt that the EU could influence it only to a limited extent or not at all.

Quality assurance has been fundamental in shaping education and training systems across the EU, playing a central role in both the Bologna (1999) and Copenhagen (2002) processes. EU-led initiatives have promoted efforts and convergence in the quality assurance of education and training across countries, allowing for greater trust in and recognition of qualifications (Cedefop, 2024b;

European Commission, 2019b; ICF GHK, 2013). Peer learning and cross-country cooperation have supported trust building, and the integration of quality assurance within national qualifications frameworks (NQFs) and recognition frameworks has reinforced the mutual recognition of qualifications. These developments have collectively strengthened the comparability and credibility of qualifications, supporting learner mobility and lifelong learning. In fact, it is important to underline that quality assurance, like other policy areas examined in this study, is not an isolated policy area but part of broader efforts to improve the transparency and transferability of learning outcomes. Although the different trends are analysed separately, they are deeply interconnected and often act as enablers of one another. For instance, without strong quality assurance mechanisms, initiatives in credit transfer (Trend 2), validation (Trend 4), recognition (Trend 6) and flexible learning pathways (Trend 8) risk losing credibility and trust, limiting their effectiveness in promoting learner mobility and learning outcomes recognition.

A key path dependency has been created by the separate historical development of quality assurance systems for HE and VET at the EU level, which have largely operated independently. Indeed, the trajectory of quality assurance developments has diverged across education and training subsystems. However, at the national level, the picture is mixed. For instance, every Member State examined in this study has implemented quality assurance mechanisms in HE and VET to improve the quality of learning programmes, qualifications and education and training providers. However, although quality assurance has operated independently, at the national level there are examples of bridging the two subsystems. Some countries, for example Ireland, Poland and Romania, have integrated quality assurance across VET and HE through a single structure, while others, such as France and the Netherlands, have retained separate quality assurance systems for HE and VET but have introduced mechanisms to facilitate coordination and alignment across subsystems.

Most Member States, however, continue to apply different quality assurance processes in HE and VET, and quality assurance remains unevenly implemented across Member States and subsystems (Cedefop, 2024b, European Commission, 2014, 2019b; EQAVET, 2023). The degree to which learning outcomes are explicitly embedded in quality assurance frameworks also varies (European Commission. Directorate-General for Education, Youth, Sport and Culture et al., 2018). In VET, the greater diversity of providers and the less consolidated institutional practices, especially in continuing vocational education and training (CVET), have posed additional challenges. Low institutional capacity and limited resources can challenge the implementation of robust quality assurance measures, particularly in less regulated environments (European Commission.

Directorate-General for Education, Youth, Sport and Culture et al., 2018, ETF, 2015). Moreover, the quality assurance of non-formal and informal learning remains underdeveloped, limiting the credibility and transferability of skills acquired outside formal education (ENQA Working Group, 2017).

Looking ahead, quality assurance will need to adapt to a rapidly changing education and training environment. Future developments are likely to focus and be challenged on adapting quality assurance frameworks to new learning formats (e.g. micro-credentials, digital learning, transnational education) and settings (formal and non-formal) where ensuring consistency or common understanding in standards across providers and countries will be crucial to promoting trust in these new credentials. Quality assurance mechanisms for non-formal and informal learning are another area of focus, as alternative forms of education (e.g. work-based learning, online platforms, employer-led training) expand. Ensuring that these learning pathways are subject to clear and consistent quality assurance processes will be critical for their wider acceptance. Similarly, the rise of online and blended learning, increased competition, transnational education, continuing education (including lifelong learning provision and bridging courses as discussed in Trend 7) necessitate robust mechanisms to ensure that learning outcomes meet consistent standards across diverse contexts and providers.

This is confirmed by the plethora of EU-level initiatives launched in the first half of the 2020s. Emphasis on strengthening the quality assurance and transparency of micro-credentials issued by diverse providers can be seen in the Council of the European Union Recommendation on a European approach to micro-credentials (Council of the European Union, 2022a) as well as work in the European higher education area context where projects such as 'Microcredentials linked to the Bologna key commitments' (ENQA, 2020) and, more recently, 'Quality assurance fit for the future' (ENQA, 2024) explore how quality assurance standards and guidelines in HE may need to be adapted to address evolving quality assurance challenges in light of emerging educational developments, such as online learning and the quality assurance of micro-credentials offered by non-higher education institutions (HEIs) and in informal and non-formal learning settings (ENQA, 2022). Ensuring that quality assurance supports the recognition of qualifications is key for building trust and transparency. Additional examples of its relevance include the 2022 Council Recommendation on building bridges for effective European HE cooperation, which re-emphasised the value of quality assurance in HE, particularly in view of the increased cross-border learner mobility across countries and collaboration in teaching and learning (Council of the European Union, 2022a). Crucially, a European quality assurance and recognition system is one of six strategic European education area (EEA) initiatives set to be

adopted by 2025 (European Commission, 2024b) to ensure that quality assurance and recognition arrangements across the EU are fit for purpose in an evolving HE landscape (European Commission, 2022c, 2024b). In addition, the *Standards and guidelines for quality assurance in the European higher education area*, the core reference document for quality assurance in European HE, will be updated, presented to the Bologna Follow-up Group by 2026 and adopted at the 2027 ministerial conference (ENQA, 2024).

Quality assurance efforts are expected to intensify in VET too. The 2020 VET Recommendation and the Osnabrück Declaration place strong emphasis on resilience and excellence through quality assurance, a focus confirmed by Cedefop monitoring showing that 15 Member States plan to further develop their national quality assurance systems (Cedefop, 2023b). Priorities include strengthening quality assurance for qualifications and providers, including in CVET/adult learning, work-based learning, apprenticeships and VET as well as for validation (Kostakis, 2023). Recent EQAVET reports and surveys further suggest that VET quality assurance will continue to evolve, with increasing attention to provider self-assessment, data-driven decision-making and the gradual extension of quality assurance coverage from initial vocational education and training (IVET) to CVET and work-based learning (EQAVET, 2023a; 2023b).

Overall, quality assurance developments will be confronted with the emerging challenges connected to new learning models and settings. The future of quality assurance will depend on its ability to ensure consistent standards and maintain transparency and trust, while adapting to further increased flexibility in learning, tied to increasing demand for up/reskilling and technological advancements. The fundamental role of quality assurance means that it needs to be considered in future scenarios, in particular, the extent to which quality assurance standards, processes and tools are coordinated within and between education subsystems and countries, influencing the level of trust and portability of learning outcomes and contribute to shaping lifelong learning systems.

2.3. **Trend 2: increased opportunities to transfer learning outcomes using credit systems**

This trend relates to the way tools developed across the EU or within particular countries have expanded opportunities for learners to accumulate credit points based on learning outcomes and transfer them between different providers, institutions and contexts within or across countries. It is closely related to the increased modularisation of learning whereby credit systems attach credits to

components (e.g. modules, courses, placements) of study programmes that, for examples, learners can choose (as opposed to opting for the full programme).

While the European credit transfer and accumulation system (ECTS) was considered a major achievement in HE, attempts to develop a similar tool for VET (the European credit system for vocational education and training, ECVET) faced resistance and limited adoption. Nevertheless, both initiatives had an impact in improving the flexibility and transparency of learning provision. The quasi-Delphi panel did not rate this trend as particularly strong in the past or likely to grow strongly in the future. However, experts saw it as one of the top four trends where EU action could shape the trajectory – especially in supporting modularisation, permeability across subsystems and mobility across borders.

Credit systems can be an important tool for improving the permeability of education and training systems, allowing learners to accumulate and transfer their learning outcomes more flexibly. However, the extent to which this has been achieved varies between education subsystems and Member States, highlighting different trajectories of this trend in different systems. Noticeably, the ECTS has been a key EU-level tool in HE, supporting student mobility across Member States and the recognition of study periods abroad. Used in numerous Member States across the European higher education area, ECTS implementation is supported by laws, regulations and guidelines. ECVET struggled to gain widespread adoption and was formally repealed in the 2020 VET Council Recommendation, though its principles remain embedded in VET policy (Council of the European Union, 2020a). ECVET is considered to have promoted outcome-based modularisation in VET (Auzinger & Luomi-Messerer, 2021; Cedefop 2024b, 2025).

EU-level tools and instruments pertaining to credits have put HE and VET on different trajectories, leading to relatively high within-sector permeability in HE, low within-sector permeability (transferability) within VET and few opportunities to transfer credits between sectors between countries. One of the reasons is that the Bologna and Copenhagen processes have largely developed in parallel (rather than in a more integrated way), which has meant that many of their tools, including ECVET and ECTS, have not been effective in increasing the 'structural permeability' between HE and VET (Cedefop, 2024b).

As a result, credit transfer is generally confined within specific subsystems, restricting opportunities for learners to move between different parts of the education and training system and between Member States. Previous analysis (Cedefop, 2024b) has also shown that this fissure in the use of credit accumulation and transfer tools in education and training subsystems is largely mirrored at the Member State level. Among our case study Member States, Finland stands out as the only one able to implement credit accumulation and transfer initiatives across

education subsystems, enabling more seamless educational pathways. Other Member States have functioning credit systems in HE only (e.g. the Netherlands and Poland), while a third group have developed national mechanisms to increase permeability in VET (e.g. the French *bloc de competence* in line with EQAVET principles or the German *Teilqualifikationen* – partial qualifications) without necessarily making much provision for movement between these subsystems.

Beyond system fragmentation and/or cultural attachment to the integrity of provision within a subsystem, institutional autonomy and the degree to which education providers trust credits awarded by other institutions also influence whether credit transfer is possible or effectively implemented. Variation in credit-related policies and practices, including between HEIs, contributes to the reluctance to recognise and accept credits gained in other contexts. Owing to low interinstitutional trust and high reputational competition, HEIs may not necessarily have faith in the quality of other institutions' provision and may therefore be reluctant to recognise learning and credits awarded elsewhere (Pollard et al., 2017). In fact, even within the same subsystem, the inconsistent application of credit systems across institutions limits portability, creating barriers for learners seeking to use accumulated credits across providers.

Since its inception in 2009, ECVET has been bedevilled by several challenges, including negative perceptions and a degree of resistance among some Member States and, crucially, a lack of support for ECVET credit points (European Commission, 2019b). Given this, ECVET had limited success in the use of the latter to transfer assessed learning outcomes and, despite its original aim, it did not lead to the development of a European credit system for VET (European Commission, 2019b). For the ECTS, there is a persistent lack of full and consistent implementation of credit transfer and recognition procedures (European Commission, EACEA & Eurydice, 2018, 2024; Structural Reform Working Group, 2014; Sursock, 2015). Indeed, despite efforts like the ECTS, credit transfer and recognition mechanisms between institutions and across borders still present barriers (Council of the European Union, 2022a). Implementing modularisation requires significant restructuring and rethinking of programme design, assessment methods and administrative processes. In that regard, some educational institutions may be hesitant to invest resources and effort in adopting a modular approach, particularly if they perceive it as disrupting established practices. Linked to this is often a lack of coordination and collaboration among key stakeholders.

Looking ahead to the future, credit systems will remain an important factor in shaping permeability, but their future trajectory remains uncertain given the dearth of evidence speaking to concrete initiatives aimed at bridging the HE–VET gap (hence our quasi-Delphi panel's assessment of the likely persistence of the

variable use of credit systems in the medium term). Moreover, as the demand for flexible, modular learning is expected to continue, the impact of credit systems will depend on the extent to which existing mechanisms (e.g. ECTS) are fully implemented and adapted to non-traditional qualifications and new learning formats, such as micro-credentials.

While the future relevance of ECTS in HE is reinforced by various initiatives, its continued usefulness will ultimately depend on its capacity to adapt. The 2024 Council Recommendation *Europe on the Move* (Council of the European Union, 2024) acknowledges both a wider range of learning mobility formats/modalities, including short-term and/or virtual or blended mobility, and several associated challenges. It invited the Commission to produce by 2025 a study on opportunities, challenges and impacts of balanced mobility (including credit and degree mobility) in the EU and invited Member States to ensure full ECTS implementation. The 2022 Council Recommendation on a European approach to micro-credentials welcomed adapting the ECTS user guide to integrate this type of learning and recommended that Member States should describe micro-credentials in terms of the notional workload needed to achieve the learning outcomes using the ECTS system, wherever possible, as a mandatory principle. Ongoing dialogue focuses on how ECTS can be most effectively applied and implemented in practice.

According to the panel's collective (aggregate) view, except for HE, where credits systems such as ECTS are now well established, the trend towards using credit systems to transfer learning outcomes has been quite weak across the EU and is unlikely to develop significantly over the coming years. At the EU level, there is currently little concrete evidence to suggest that at least in the medium term the silos of education and training subsystems in terms of credit transfer will be resolved (hence the assessment of our quasi-Delphi panel). According to a number of quasi-Delphi panel experts, some countries (e.g. Ireland and the Netherlands) are considering the introduction of credit systems across VET and HE. In this context, the forthcoming revision of the ECTS user guide could be an opportunity to promote more permeability between sectors, though its relevance will ultimately hinge on how it is taken up in practice. Some panel experts also felt that the revamping of the Europass portal and the introduction of European digital credentials could further enhance the use of ECTS. However, others thought that other tools were needed to accommodate the continuing growth of more modular approaches across different sectors, Member States and different types of learning (including online learning), with ECTS not having enough flexibility for this.

In sum, at both the EU and Member State levels, the extent to which future credit accumulation and transfer initiatives either maintain or bridge the division

between HE and VET will influence the extent of permeability of Europe's education and training system.

2.4. **Trend 3: more consistent and comparable overviews of all types, levels and learning outcomes of qualifications**

This trend refers to the development and increased use of tools and registers that provide a comprehensive and comparable overview of all types, levels and learning outcomes of qualifications, including partial qualifications, micro-credentials and those acquired outside formal education and training systems. It reflects how Member States have been progressively developing and using NQFs and national qualifications databases or registers (increasingly connected to Europass) to make all types of qualifications more visible, consistent and comparable, while strengthening transparency regarding the learning outcomes these qualifications entail (EQF-Europass project group, 2024).

The quasi-Delphi panel identified this as the strongest trend over the past two decades (followed by Trend 1 – quality assurance), recognising its role in laying the foundation for greater consistency and transparency in qualifications across Europe. The majority of the panel (18 out of 33) expected the trend to continue, albeit at a slower pace, given that much of the groundwork has been completed. This trend was also identified (by 19 out of 33) as the top of four (including Trends 2, 4 and 3) where the EU could play an influencing role going forward, supporting cooperation, dialogue and the sharing of best practices between Member States and providing incentives to support implementation, including through funding.

The EQF, adopted in 2008, has been pivotal in creating a common reference framework for supporting understanding and the comparability of qualifications across Europe. The 2017 revision (Council of the European Union, 2017) provided a clear mandate to promote cooperation regarding international qualifications and with non-EU-country frameworks. The revision also reinforced the use of learning outcomes and strengthened links to validation, quality assurance and credit systems. The Europass portal was relaunched as the official portal of the EQF, making it possible to connect NQF databases and registers through the European learning model (ELM) (Europass, n.d.-a). More recently, European digital credentials have added digital portability to qualifications. The stakeholders interviewed for this study as well as evaluations (European Commission, 2018,

2024a) confirm the EQF impact in several key areas. Notably, it has been a catalyst for the establishment and expansion of NQFs.

At the national level, most Member States have developed and progressively expanded their NQFs, initially covering formal qualifications from IVET, CVET, HE, GE and AE and increasingly incorporating qualifications from private providers, employers and international bodies (Cedefop, 2024a). Many frameworks are now linked to the validation of non-formal and informal learning and have broadened their level descriptors to include transversal competences (Cedefop, 2024b). Several countries have also developed qualifications registers or databases linked to their NQFs, making information on learning outcomes, levels and progression pathways more accessible. In Member States such as Ireland, France and the Netherlands, strong legal frameworks and early emphasis on learning outcomes supported smooth implementation, while Poland's creation of the Integrated Qualifications System Stakeholders Council ensured coordinated development (Cedefop, ETF & UNESCO, 2023). These developments have supported learners' access to and transitions between education and work and contributed to stronger cooperation between education and labour market stakeholders.

Despite considerable progress, several challenges persist and continue to shape the development and impact of this trend. First, the coverage of NQFs remains uneven. Not all types and levels of formal qualifications are covered, and, as of 2023, 16 EQF Member States still excluded qualifications awarded outside formal education, limiting comparability and usability of such qualifications for mobility or career progression (European Commission, 2024a). Second, learning outcome descriptions vary in clarity and compatibility, making it difficult to compare and recognise qualifications across different institutions, sectors and borders. Many national registers still lack learning-outcomes-based descriptions or EQF/NQF levels and are not interoperable or multilingual (Cedefop, 2024b). These technical and structural gaps limit their functionality and accessibility and more broadly reflect the diversity of how national databases and registers have developed. Third, awareness and understanding of NQFs among key stakeholders, such as guidance practitioners, employers and learners, remain low, even in countries with mature systems (Cedefop, 2024a). Limited awareness constrains the use of NQFs for recognising skills and planning learning or career pathways.

Finally, implementation trajectories have been shaped by national contexts and governance structures; Member States with decentralised systems (e.g. Italy) face greater challenges in coordinating actors and building trust. Member States with strong legal bases (e.g. Ireland and France) saw more consistent adoption, pointing to the relevance of institutional anchoring.

Although many quasi-Delphi panel members noted that the pace of expansion may slow, as much of the foundational work has already been completed, they consistently emphasised that this trend will remain highly relevant in the coming decades. Rather than large-scale structural reforms, the trend's evolution is expected to be shaped by gradual yet significant shifts that reflect wider transformations in education, labour markets and technology.

In the years ahead, NQFs are likely to be challenged by the need to become more inclusive, accommodating partial qualifications, modules, micro-credentials and international or sectoral awards alongside traditional full qualifications. This reflects both the growing demand for flexible, bite-sized learning opportunities and the need to make diverse types of learning visible and comparable. According to the 2023 Cedefop European inventory of NQFs, this drive towards inclusiveness is now among the most widespread national priorities (Cedefop, 2023a, 2024a). Several countries are already taking steps in this direction: Romania is building a unified qualifications register consolidating sectoral databases; Italy's qualifications atlas aims to bring together regional VET qualifications and incorporate non-formal and international ones; and Ireland has introduced new routes for private, professional and international awarding bodies to have their qualifications included in the NQF. Such changes suggest that the boundary between formal and non-formal learning may continue to blur, with frameworks possibly offering a more comprehensive reflection of the actual landscape of learning taking place. Similarly, NQFs are likely to be expected to play a stronger role in the validation of non-formal and informal learning.

At the same time, the role of NQFs and the EQF in supporting the recognition of qualifications and skills, particularly of non-EU nationals, is likely to expand. The 2023 Commission Recommendation (European Commission, 2023a) called for comparing non-EU-country qualifications frameworks to the EQF.

Digitalisation is expected to be another major force shaping this trend. The rollout of European digital credentials marks an important step, allowing individuals to store, share and authenticate their learning achievements (Europass, n.d.-b). By 2040, digital credentials are likely to become the standard means of issuing and verifying qualifications, making them more portable, trusted and user-friendly. Several experts thought that the use of AI may act as a catalyst for increased transparency and comparability of qualifications and increasing links with labour market developments. Some Member States are already experimenting with advanced technologies: Finland is piloting AI tools to analyse and compare learning outcomes with labour market needs, and several experts suggested that combining AI with ESCO could make it possible to automatically map evolving skills demands against the content of qualifications. These developments point to

a more dynamic and data-driven ecosystem, where frameworks are continuously updated to remain aligned with fast-changing labour market realities.

Yet this expansion and diversification will also bring new pressures to safeguard trust and quality. As frameworks open to a wider range of qualifications and awarding bodies, ensuring that they meet consistent and transparent quality standards will become increasingly critical (as also noted in Trend 1). Experts interviewed for this study expressed concerns about how to ensure the quality of emerging credentials, such as micro-credentials, and some even speculated that the growing internationalisation and modularisation of learning could eventually lead to calls for a global qualifications framework to preserve comparability. This underscores the delicate balance that frameworks will need to strike: remaining flexible and responsive without undermining their credibility or fragmenting into disconnected parts.

These changes are likely to be supported and shaped by broader EU policy agendas. The EEA, for example, is expected to promote stronger quality assurance, the widespread use of digital credentials and deeper transnational cooperation between HEIs, including the pooling of courses, data and infrastructure (Council of the European Union, 2021; European Commission, 2020f). Such measures could reinforce the interoperability of national systems and support their ongoing adaptation to new learning forms and social needs.

Looking ahead to 2040, future developments may point towards more comprehensive, digital and interconnected frameworks able to capture and communicate an increasingly diverse landscape of learning. The extent of these frameworks' contribution to transparency, comparability and mobility, however, will depend on the extent to which they are successfully embedded in national systems and manage to reflect the full range of learning achievements and outcomes needed to support the permeability of Europe's education and training systems in a context of rapid technological and labour market change.

2.5. **Trend 4: increased opportunities to validate learning outcomes**

This trend refers to the increasing use of validation tools and approaches allowing learners to receive credits or exemptions towards full or partial qualifications for learning outcomes achieved through formal, non-formal and informal contexts, including work-based learning, volunteering and self-directed activities, such as travel.

While our quasi-Delphi panel did not view this as one of the strongest trends of the past two decades, it was nonetheless ranked among the four expected to

gain the most significance in the future. Experts described validation as a policy area whose full potential has yet to be realised and which is likely to grow as education and training systems become more flexible and modular. Several quasi-Delphi panel members (13 out of 33) also considered that the EU could influence this trend to a (very) great extent, for instance by setting strategic frameworks, benchmarking Member States' performance, supporting peer learning and experimentation, building capacity and providing targeted funding. This indicates a shared perception that validation will be an essential enabler of future learning systems rather than a legacy of past reforms.

Over the past two decades, validation of non-formal and informal learning has gradually moved from the periphery to the mainstream of European education and training policies. Initially framed mainly as a means to increase the flexibility of formal education and training systems by opening qualifications to learning acquired elsewhere (Cedefop, 2024b; Villalba & Bjørnåvold, 2017), its role expanded significantly in the aftermath of the 2008 financial crisis. At a time marked by rising unemployment, marginalisation and social exclusion, validation came to be seen as a mechanism for supporting career redirection, the reintegration of disadvantaged groups and the upskilling/reskilling of unemployed individuals (Villalba & Bjørnåvold, 2017).

Over the last 20 years, a series of initiatives has progressively embedded validation into the broader European learning outcomes architecture (Cedefop, 2024b). The 2012 Council Recommendation on the validation of non-formal and informal learning (Council of the European Union, 2012) marked a turning point by establishing learning outcomes as the 'currency' of validation across the EU (Cedefop, 2024b). Validation has also been integrated into other key instruments, including the EQF and ECTS (Council of the European Union, 2017; European Parliament & Council of the European Union, 2009). European tools such as Youthpass and Europass support the documentation of non-formal and informal learning, while Europass digital credentials open new possibilities for how these achievements are documented and shared (Europass, n.d.-b; European Commission, 2020a, 2020g).

Important national developments have taken place, supported by these EU-level actions. The number of Member States with formal validation arrangements grew from 20 in 2010 to 27 in 2023 (Cedefop, 2024b), with the greatest impact seen in those that were less developed in 2012 (European Commission, 2020d). Over the past decade, many Member States have shifted from scattered project-based initiatives to comprehensive frameworks embedded in legislation or strategies, often including quality assurance processes (though these remain inconsistent between sectors) (Cedefop, 2024b). For example, measures outlined

in Member States' upskilling pathways implementation plans and progress reports are closely related to the establishment of validation arrangements, in line with the 2012 Recommendation (Council of the European Union, 2012). Validation has increasingly been integrated into national lifelong learning and skills strategies, supported by collaboration between education and labour market actors (Luomi-Messerer, 2024).

Yet, despite this progress, persistent challenges continue to shape the development and impact of validation systems. One key issue is the uneven scope of existing arrangements. Only a small number of Member States – in our case studies, notably France and Ireland – have comprehensive systems covering all education subsystems. Most focus primarily on CVET, followed by HE, AE and IVET, with parallel systems running in labour market contexts (Cedefop, 2024b; European Commission, 2020d). System fragmentation stems from the diversity of validation context and sectors, the high number of actors involved with limited cooperation and weak links between policies (notably labour market initiatives) (Villalba & Bjørnåvold, 2017). In GE and HE, recognition of non-formal and informal learning remains limited, reflecting the strong emphasis on traditional academic routes. In addition, the involvement of labour market and third-sector stakeholders is often modest. Even where validation systems are formally in place, they are not always accessible or widely used. Procedures are frequently complex, resource-intensive and demanding for candidates, contributing to low uptake and high dropout rates. Disadvantaged groups, such as low-skilled adults, migrants and refugees, who stand to benefit most from validation, often face additional barriers and receive limited targeted support (Cedefop, 2017a; European Commission, 2020e).

Looking ahead to 2040, several converging developments suggest that validation is likely to become more central as European education and training systems evolve. The 2021 Council resolution on a strategic framework for European cooperation in education and training (Council of the European Union, 2021) explicitly links validation to the vision of making lifelong learning and mobility a reality for all, highlighting the need for more flexible and learner-centred systems. Other policy documents (Council of the European Union, 2020a; European Commission, 2020a, 2020d) call for learner-centred approaches to help citizens acquire transversal competences, such as critical thinking, creativity and civic engagement, often developed outside formal settings (EAEA, 2019). This reflects a wider shift towards recognising diverse learning pathways and the increasing blurring of boundaries between formal and non-formal learning.

As modularisation, micro-credentials and digital learning proliferate, the demand for robust validation mechanisms will grow steadily. Digitalisation will

accelerate this shift. The rapid growth of massive open online courses and other online learning platforms (Bettiol et al., 2022) is already expanding opportunities for self-directed learning, which in turn creates pressure for validation systems to recognise such learning. However, this also raises fundamental questions about who should validate these outcomes and what standards should apply, at a time when validation systems remain uneven (EAEA, 2019; European Commission, 2020d; OECD & ILO, 2018; International Commission on the Futures of Education, 2021). Some Member States are responding with reforms: France's 2022 reform of *validation des acquis de l'expérience* aims to simplify procedures and increase uptake to 100 000 candidates annually (Centre Inffo, 2022), while Romania has introduced regulations to strengthen the certification of learning outcomes from non-formal and informal settings (Romania. Ministry of Education, 2019). Similar reforms are under way elsewhere. Germany and Poland have embedded validation in their national skills strategies up until 2030 (Poland. Ministry of Education, 2020; Germany. Federal Ministry for Education and Research, n.d.), Finland tasked a national committee with reporting on the developments and gaps around relevant validation processes by 2024, and several Member States are experimenting with new sectoral approaches – for example, Ireland's and Finland's recognition of prior learning projects in HE, the Netherlands' work on micro-credentials, Romania's credit system for adult learning and France's efforts to better link VET and HE pathways. The introduction of individual learning accounts is also expected to reinforce this trend by providing every adult with a financial entitlement to training, backed by access to guidance and validation (EQF Advisory Group, 2023; European Commission, 2021a, 2021c).

Overall, these developments indicate a growing policy commitment to validation, yet achieving widespread implementation requires overcoming entrenched institutional and systemic barriers. The extent to which this is addressed by Member States is likely to shape the extent to which validation contributes to the permeability of European education and training systems in the future.

2.6. Trend 5: increased opportunities to store and build up a digital portfolio of learning achievements

This trend relates to the development of tools, platforms and initiatives designed to support learners to better capture, document and maintain comprehensive digital records of their learning achievements and share these with employers,

education providers, qualifications authorities and other stakeholders for validation, recognition or access purposes. It can concern formal and non-formal learning outcomes related to the achievement of full or partial qualifications as well as other activities completed, and this is why such portfolios are considered to support the permeability of education and training.

This is a relatively new trend, driven by a combination of advancements in digital technologies, the digitalisation of the educational and training landscape and the growing importance of agile skills development. While this trend is still in the process of maturing, the experts consulted for this study identified it as the most likely to become dominant in the run-up to 2040 and one that the EU can influence to a (very) great extent (e.g. by strengthening existing tools like ESCO, Europass, ELM, communicating about and promoting digital tools, reinforcing the legislative framework or offering funding).

Since 2018, EU-level initiatives have been putting in place the key building blocks for a European digital infrastructure to capture, store and share learning outcomes. This includes the launch of the Europass portal in 2020, which enables learners to create an e-profile, store digital credentials and share their achievements with employers and organisations. This is supported by work on the European digital credentials infrastructure – a framework for issuing, sharing and verifying digitally signed credentials. ESCO is the European taxonomy for skills, competences and occupations, and it is used by the Europass platform and tools to support transparency and interoperability (Cedefop, 2024b). At the same time, the European professional card, the first fully online EU-wide procedure for recognising qualifications, significantly speeds up the recognition process for five professions by issuing electronic certificates following an online recognition procedure⁽⁶⁾. It also provides information on which diplomas are automatically recognised.

Member States have been working on their own tools and systems to digitalise learning outcomes. There are significant variations in how advanced these are, depending on a country's degree of digital transition and maturity. Italy, the Netherlands and Finland, for example, have started to put in place systems to digitally store learning achievements (e.g. the Finnish KOSKI database and Italy's workers' electronic booklet). In France, beyond recording learning achievements, the French Mon Compte Formation website allows learners to access funding for their personal/professional development linked to their individual learning account (*compte personnel de formation*). Both the Netherlands and Poland are piloting

⁽⁶⁾ The five professions are general care nurses, physiotherapists, pharmacists, real estate agents and mountain guides.

digital badges to certify learners' knowledge and skills, including micro-credentials, and to validate non-formal and informal learning.

While there is work to be done to enable learners to have at their disposal a set of tools to make their achievements more transparent and transferable, there are a raft of other factors that can act as facilitating or hindering factors. For example, a recurring challenge relates to interoperability and take-up issues across countries. Take-up of digital tools by learners and institutions is often low, and, in some cases, piloting is restricted to micro-credentials. A 2025 study (CEPIS, 2025) showed that Member States were not ready to issue digital skills certificates, and highlighted three sets of barriers: insufficient demand from stakeholders across the education and training ecosystem (employers and providers); operational challenges (e.g. technical requirements or accreditation of certification providers); and the cost of implementation (outweighing the current potential benefits). As the recent 2024 evaluation of Europass pointed out (Europass, 2024), there is a clear need to both complete the work on the digital credentials infrastructure and leverage the European digital credentials standards to support Member States in their digital transformation of credentials as well as ensure interoperability between national credential platforms at the EU level. There are challenges linked to the varying degree of adoption and use of digital tools depending on a country's stage of digital transition, including the level of digital skills among the population, integration of digital technology, quality of digital infrastructure and connectivity.

Technological advances are likely to drive this trend. According to the European Commission (and discussed in Trends 4 and 8), the coming 10 years are also likely to see a continued growth and expansion of the use of innovative teaching and training methodologies, including individualised approaches and those based on digital technologies to develop industry-relevant skills and competences. Indeed, the 2020 European digital education action plan (European Commission, 2020b) calls for digital technology to be harnessed further to facilitate the provision of flexible, accessible learning opportunities, including for adult learners and professionals, helping them to reskill, upskill or change careers.

Beyond this, UNESCO (2018, p. 19) predicts:

In the future, advances in natural language, virtual reality and augmented reality could expand AI's usefulness in automatically assessing other types of skill including transferable skills and job-specific skills. AI can be also used to automatically access, process and compare credentials at a large scale.

Indeed, some experts who contributed to this study thought that the use of AI may act as a catalyst for increased transparency and comparability of qualifications, for example through its use with ESCO, or by allowing for more

automated scanning of the link between learning outcomes and skills needs in the labour market.

Blockchain is another technology likely to advance the use of digital tools for recording learners' achievements (UNESCO, 2018), allowing citizens to 'gain digital control of their educational credentials, significantly reducing verification costs and improving trust in documents' authenticity' (European Commission, 2021b, 3rd paragraph). Examples include the European blockchain service infrastructure, which aims at making digital credentials more secure and trustworthy (European Commission, 2021b).

Overall, the major paradigm shift that digital credentialing represents in the way learning achievements are recorded (and stored) is set to continue and even accelerate in the next few years, as part of the ongoing digital transformation of economies and societies and advancements in the development of the ELM (Europass, 2023). The trajectory of this trend appears currently relatively wide open. What is clear, however, is that issues like comprehensiveness, interoperability and security will significantly affect the efficacy with which such tools can support the flexibility and permeability of education and training systems.

2.7. **Trend 6: increased portability of qualifications and learning outcomes across borders**

This trend concerns the increased portability of qualifications (be they academic, vocational or professional) and their learning outcomes through easier recognition of qualifications. Recognition has been a sustained EU priority for more than two decades, prompting reforms aimed at facilitating, rationalising, simplifying and expediting procedures.

The quasi-Delphi panel members ranked this as the third strongest trend of the past 20 years and among the four most likely to grow in importance, highlighting its continued relevance. Just over half of the quasi-Delphi panel members thought that the EU could influence this trend to a (very) great extent, for example by enhancing existing instruments and supporting implementation, sustaining EU-wide and cross-sectoral cooperation and increasing awareness. Future developments are expected to scale up automatic recognition, focus more on the recognition of non-EU-country qualifications and leverage digital tools.

A number of European and international instruments underpins this trajectory. The Lisbon Recognition Convention (UNESCO & Council of Europe, 1997) has provided legally binding principles for the recognition of HE qualifications and periods of study abroad, to which all Member States (as well as some non-EU countries) adhere. Within EU law, the Professional Qualifications Directive

(2005/36/EC, revised by Directive 2013/55/EC) (European Parliament & Council of the European Union, 2005, 2013) governs mutual recognition for regulated professions, while the 2018 Council Recommendation promotes automatic mutual recognition of HE qualifications and upper-secondary learning periods abroad (European Commission, 2018). These developments have been reinforced by EU transparency tools such as the EQF/NQFs, ECTS/ECVET, Europass and quality assurance initiatives. Recognition procedures for non-EU nationals have recently gained prominence, driven by migration flows, skills shortages and demographic change. An example was also the development of the EU skills profile tool for non-EU nationals (European Commission, 2022a).

Overall, these developments have progressively enabled qualifications and learning outcomes to travel more smoothly across Member States and supported clearer routes to recognition for non-EU nationals.

Member States have progressively embedded the Lisbon Recognition Convention principles and EU recommendations in law and practice. The number of national systems specifying all main Lisbon Recognition Convention principles in legislation rose markedly between 2015 and 2020 (European Commission, EACEA & Eurydice, 2020; Tecilazić Goršić, 2019). National academic recognition information centres have increasingly provided guidance and support for learners navigating the recognition process, even though final decisions typically rest with institutions or competent authorities. Following the 2018 Recommendation, more countries adopted legislation for automatic recognition of HE qualifications (European Commission, 2023b). Regional agreements complement EU-wide measures; for example, there has been automatic recognition in Benelux since 2015, which was extended in 2021 with a Benelux–Baltic bi-regional treaty; and the Nordic (Reykjavík) Declaration, revised in 2022, supports automatic recognition among Denmark, Finland and Sweden ⁽⁷⁾. On the user side, information and guidance services and online portals (including Europass) have expanded, while Erasmus+ has supported a steady rise in international mobility in HE and, from a lower base, in VET (Cedefop, 2025).

Despite converging aims, instruments differ in legal basis (international law, EU hard law and EU soft law) and have created distinct pathways for academic, vocational and professional recognition. This diversity, combined with significant institutional and national autonomy, generates legal and administrative complexity and a variable geometry of arrangements. For HE institutions, autonomy over admission, uneven implementation of the Lisbon Recognition Convention, differences in degree structure/content can undermine transparency, consistency

(7) [Benelux–Baltic bi-regional treaty](#) and [Nordic \(Reykjavík\) Declaration](#).

and fairness (European Commission, EACEA & Eurydice, 2018; Lisbon Recognition Convention Committee, 2019).

Recognition of qualifications giving access to regulated professions remains largely input-based, limiting alignment with broader EU outcome-oriented policy. In addition, implementation is uneven. Practical barriers also exist, such as language obstacles; limited, fragmented information about systems, labour markets, procedures and support; and insufficient finance for mobility, especially for disadvantaged learners, often compounded by limited portability of grants and loans (European Commission, EACEA & Eurydice, 2023).

Looking ahead, the trend is expected to strengthen as policy, technology and labour market pressures converge. Recent policy documents highlighted several developments related to this trend. At the EU level, mobility is being deepened through transnational HE cooperation, namely the expansion of European university alliances, working towards a legal statute for alliances; the development of a joint European degree to streamline recognition of transnational learning; and scaling the European student card and the European student identifier to enable seamless access across institutions (European Commission, 2022b; Council of the European Union, 2021). Beyond HE, joint VET programmes and qualifications are gaining ground, while cross-border schemes for those not in employment, education or training (NEETs) point to more flexible, horizontal mobility in other sectors (Council of the European Union, 2020b).

Member States are also adapting in response to demographic change and skills shortages. Germany's debates on skills shortages, Ireland's broad participation in university alliances (O'Shea, 2022) and the Netherlands' integrated system for issuing recognition statements illustrate different national routes to widen access to employment and further study by accelerating decisions on the recognition of secondary, VET and higher education qualifications for individuals integrating into society. In the Netherlands, steadily increasing numbers of recognition statements – estimated at 6 000 to 7 000 annually – indicate growing demand, particularly for higher education and secondary qualifications (and 20% for VET), although recent political shifts may affect this trend. Across the EU, recognition of non-EU qualifications is moving up the agenda in light of ageing populations and the green and digital transitions; this is exemplified by the EU's skills and talent mobility package (15 November 2023), which proposes an EU talent pool, simpler recognition routes and a learning mobility framework to prioritise mobility across curricula (BusinessEurope, 2019; European Commission, 2023d).

Digitalisation will act as both a catalyst and a test. E-learning platforms, virtual and hybrid mobility, and digital credentialling are expected to streamline processes

and expand participation (European Commission, 2020a; 2023d), while sustainability concerns add momentum to virtual mobility options (Leek & Rojek, 2022). As more micro-credentials, shorter programmes and transnational modules enter the ecosystem, recognition systems may evolve to combine input-based traditions with outcome-based comparability, leveraging the EQF/NQFs, credit systems and quality assurance to preserve trust. Futures work in VET envisages more intra-EU mobility and closer alignment of national systems via codesigned, EU-validated programmes and mutual recognition, potentially with greater EU-level funding (Cedefop, 2020). In HE, cross-border provision is likely to expand beyond the EU, with 'glocal' universities operating global campuses and regional innovation hubs, and AE tapping into global open-access ecosystems (Allen et al., 2017; KPMG, 2020; Spruijt, 2017; International Commission on the Futures of Education, 2021).

Recognition will continue to be shaped by both constraints and opportunities. Limited cooperation between institutions, decentralised practices and systems, and the uneven application of learning-outcomes principles may reduce the role of recognition in promoting permeability. Political currents, such as rising right-wing populism, could tilt some Member States towards more protectionist postures, reducing the role of joint initiatives and mobility. Taken together, a plausible trajectory towards 2040 is a more interconnected yet still plural landscape: automatic recognition could expand via regional and EU frameworks; digital credentials and shared identifiers may reduce friction; targeted pathways for non-EU nationals may address labour shortages; and stronger synergies with the EQF/NQFs, credit systems and quality assurance could anchor trust. As qualifications become more diverse and the demand for international mobility increases, how policymakers respond to persistent challenges – legal and administrative complexity, institutional autonomy, input-based professional regimes, financing and information gaps – will determine the influence of recognition developments on permeability.

2.8. **Trend 7: increasing the permeability of learning pathways through flexible admissions and broader curricula**

This trend relates to changes in the horizontal and vertical permeability of learning pathways. As discussed in previous sections, driven by STEEP factors, such as a need for agile skills development, migration flows, rapid technological developments and a faster pace of changes in jobs and tasks, several EU-level

tools have been developed. These tools aim to increase the transparency and transferability of learning outcomes by encouraging more open learning pathways, making the pathways more permeable vertically (i.e. allowing learners to progress from lower to higher qualifications levels) or horizontally (i.e. allowing learners to change learning pathways and move across academic and vocational streams).

In the online survey, only six of the quasi-Delphi panel experts thought that this trend had grown stronger to a great or very great extent over the last 20 years, and almost two thirds expected it to grow stronger over the next 10–15 years ‘to a very limited extent’ or at most ‘to some extent’. Nevertheless, in follow-up conversations, it became clear that this is still an important trend for developing future scenarios, as low permeability/impermeability may usefully describe several of the scenarios.

EU and national policy developments over the past 20 years have sought to address barriers affecting the permeability of education and training systems. At the beginning of the century, formal education and training pathways were largely separated and parallel, with rigid curricula and limited exchanges (Cedefop, 2025). Thanks to credit systems, particularly the ECTS, learners can now transfer credits for learning outcomes between HEIs and Member States (see Section 2.3, Trend 2), while initiatives on the mutual recognition of qualifications have facilitated portability of credentials across borders and institutions (see Section 2.7, Trend 6). Initiatives such as the EQF/NQFs are considered to have brought together different actors and provisions, and, in almost all our case study Member States, they are considered to support individuals’ access to and transitions from education (see Section 2.4, Trend 3).

Hand in hand with these developments, at the national level there has been a trend to ease transitions between VET and GE. This has included easing admission requirements for upper secondary GE; higher VET and HE and strengthening recognition of prior learning (e.g. in Germany, France, Romania and Finland), including the development of specific mechanisms allowing students to change tracks in IVET and upper secondary GE (e.g. in Germany and Italy); developing hybrid programmes combining VET and GE curricula to create double VET and GE degrees, easing access to HE (e.g. in Ireland and Finland); developing bridging programmes/classes adapting curricula in IVET to meet the admission requirements of HEI (e.g. in Germany, France, Italy, the Netherlands and Poland) (Cedefop, 2025).

Along similar lines, the broadening of curricula, driven by changing labour market needs, has loosened the separation of formal education and training pathways via a blurring of boundaries between GE, especially upper secondary education, VET and HE (Cedefop, 2012, 2022a, 2023b, 2025). Countries across

the EU are increasingly offering new vocationally or professionally oriented higher-level qualifications as part of HE degree programmes (professional HE) as well as outside HE (higher VET) (Cedefop, 2024b). On a related note, several case study Member States (France, Italy, the Netherlands, Poland and Finland) reflect the ongoing trend of increasingly blurred boundaries between IVET and CVET (Cedefop, 2017b, 2023c, 2025).

However, judging by this study's case study Member States, the ongoing move towards more horizontal and vertical permeability is uneven and faces considerable implementation challenges, with learning pathways in some cases still proving rather inflexible. These are embedded in specific national education and training systems, which have developed over time and are highly diverse (Cedefop, 2012; EAEA, 2024; Hun & Chea, 2020). Moreover, the structure and underlying philosophy of each subsystem is quite distinct and reflected in, for example, the respective educational traditions, curriculum design and content, the focus of learning and skills provision, teaching methods, learning approaches, access requirements and types of qualifications awarded (Cedefop, 2012; Spöttl, 2013). For example, HE is structurally relatively less heterogeneous than VET, which is a much more dispersed and fragmented sector, comprising a plethora of different providers. Moreover, even institutions within the same subsystem can have quite different access requirements and admission policies. Lack of mutual trust between institutions either across or within subsystems can also be an inhibiting factor, as can the use of different and incompatible approaches to quality assurance and accreditation (Cedefop, 2024b, EURASHE, 2017).

Looking ahead, the quest for improved permeability between education subsystems is set to continue. As highlighted by Cedefop's analysis of national priorities in VET, one of the main policy priorities in the majority (16) of Member States – including Germany, France, Italy, the Netherlands and Finland – was the need to improve, by 2030, the permeability between initial and continuing VET, general and vocational pathways, and academic and professional HE (Cedefop, 2023b). Emphasis on increased permeability between HE and VET can also be expected through an expansion of VET provision at EQF levels 5 to 8, which will break down some of the barriers within HE.

Considering that flexible access requirements can be seen as the key factor making vertical and horizontal permeability a reality for learners, the degree to which these exist and are fully implemented can be seen as a relevant indicator of how permeable an education and training system is.

2.9. Trend 8: more tailored learning pathways

This trend refers to the provision of increasingly flexible and more individualised learning pathways. Over the last 20 years, there has been an increased emphasis on more personalised learning pathways, enabling individuals to customise their learning experiences according to their needs, interests and circumstances (Cedefop, 2015a, 2019, 2025).

The quasi-Delphi panel identified this trend as among the strongest of the past two decades and expected it to strengthen further (alongside Trend 5), an acceleration also envisaged by future-oriented literature, driven by factors like climate change, sustainability and digital transition. Specifically, out of 33 expert respondents, 17 felt that in the next 10–20 years this trend will grow stronger to ‘a great extent’ and two to a ‘very great extent’.

Providing learners with flexible and personalised learning pathways has increasingly been the focus of policy efforts at both the EU and national levels. This shift has been encouraged by the increased focus on learning outcomes, and, as discussed in Trend 2, ECVET and ECTS have encouraged greater modularisation of qualifications. The breaking down of training programmes into units or modules has increasingly provided the learner with the possibility of choosing courses and to engage in education and training at their own pace and time, enabling individuals to acquire new skills incrementally (Cedefop, 2015a, 2019). Recent initiatives, such as micro-credentials (Cedefop, 2022a; Council of the European Union, 2022a), have further strengthened this trend, and the validation of non-formal and informal learning has supported individualised and more flexible learning pathways (Cedefop, 2009; 2015b; 2021b; Council of the European Union, 2012). This shift is driven by the growing need for lifelong learning, reskilling and upskilling in response to technological change and evolving labour markets (Cedefop, 2015b; Council of the European Union, 2021, Panitsidou et al., 2012).

Modular learning opportunities and flexible curricula are seen as allowing for agile and responsive learning content that adapts to evolving industry and professional needs (OECD, 2020). This stands in contrast to prescriptive, standardised, one-size-fits-all curricula (e.g. in terms of subjects, concepts, themes, topics, and associated competences/skills and contexts) with little scope to tailor learners’ needs, interests and abilities (e.g. in terms of pace and learning style) (OECD, 2024; Zhao et al., 2023). Flexible curricula can be beneficial for vulnerable groups, including those lacking basic skills such as literacy, numeracy and soft skills (OECD, 2021). In fact, providing occupational skills in the narrow sense is not enough, as transversal skills like critical thinking, teamwork, problem-solving and learning how to learn are increasingly important and hard to automate, and should be embedded in curricula (Cedefop, 2023b; European Commission,

2024c; Lassébie & Quintini, 2022; OECD, 2023). At the national level, several countries (including Denmark, France, Lithuania, the Netherlands, Norway, Finland and parts of the United Kingdom) have developed a competence-based qualification structure, in which learners can complete a qualification by combining different forms of learning regardless of where and how competences have been acquired. Finland is at the forefront of developing individualised and modular learning pathways across all education and training subsystems.

The emergence of micro-credentials has further expanded flexibility by offering short, targeted learning experiences that respond to evolving labour market needs, though their integration into existing frameworks remains uneven. The increasing development of e-learning platforms by universities, commercial organisations and other providers (Council of the European Union, 2021; European Commission, 2019a), offering accessible and flexible learning opportunities, is also likely to support this trend in the future (Bettioli et al., 2022). Technological advancements are reshaping teaching and assessment methodologies, with the introduction of blended and distance learning, virtual reality, extended reality and AI-driven education tools. As has been argued, flexible assessment approaches can both enhance learner motivation by supporting greater autonomy and better align learning and assessment in personalised learning contexts and approaches (Cedefop, 2022b, 2022c, 2023b; Kessels et al., 2024). Indeed, research has shown that flexible assessment in terms of providing learners with greater choice in how and on what they are assessed can enhance their motivation and reinforce their engagement in learning (Cowan, 2023). At the same time, greater learner choice regarding types and forms of assessment – and even closer engagement in the assessment process – is seen as one dimension of learning flexibility (El Galad et al., 2024; Li & Wong, 2018; Müller et al., 2023; Naidu, 2017).

However, the expansion of personalised learning approaches has not been without challenges or resistance. Modularisation, for example, raises concerns about maintaining the integrity and consistency of full traditional qualifications. Some stakeholders argue that overly fragmented learning pathways could undermine the holistic nature of education, prioritising short-term skills acquisition over comprehensive competences development. This shift is seen by some as reflecting a neoliberal fetishisation of student choice that prioritises market-driven responsiveness over pedagogical coherence and structured learning (French, 2015). In addition, the experts interviewed as part of this study observed that, in some countries, the use of small units of learning (including partial qualifications and micro-credentials) is more welcomed by employers than by social partners as a way of addressing skills shortages without the need for significant pay increases

linked with achieving full higher-level qualifications. Some also questioned whether such approaches are suitable for all types of learners and whether access to them may be restricted to those who can afford to pay for them or whose employers are willing to fund them – excluding socioeconomically disadvantaged groups and those working for small businesses with the most need for upskilling or reskilling. The expansion of learning providers and pathways, while offering more opportunities, also makes it harder for individuals to navigate their options effectively, raising concerns about equity, transparency and quality assurance.

Looking forward, digitalisation, digital learning platforms to personalise learning pathways and AI are expected to play a growing role and develop in connection with individual learning accounts. Recent initiatives targeting 2025 and beyond emphasise flexibility and modularisation in education to meet challenges connected to climate change, digital transition and so on (Council of the European Union, 2022a; European Commission, 2022b). For instance, the 2020 vision for achieving the EEA by 2025 highlights the importance of inclusive lifelong learning strategies to allow early leavers to return to education and to facilitate access to HE and VET programmes to support individuals to acquire or update skills necessary for future jobs (European Commission, 2020f).

Several policy documents comment on the way the growing proliferation of alternative online learning approaches can be expected to increase the flexibility of learning over the next 5–10 years. The Council resolution on a strategic framework for European cooperation in education and training towards the EEA and beyond (2021–2030) (Council of the European Union, 2021), for example, called for ‘Innovations in learning pathways, new educational approaches, including individual approaches, and in learning environments in all education and training institutions, including higher education institutions, as well as in workplace and community settings’ to increase access to lifelong learning. Similarly, the Osnabrück Declaration (Council of the European Union, 2020b) called for ‘the development of open source and digital learning environments [to] make education for sustainable development more accessible in and outside of education and training settings, whether in schools, companies or at home’. This also echoes the 2020 VET Recommendation, which called for VET programmes to be delivered through:

an appropriate mix of open, digital and participative learning environments, including learning conducive workplaces [that] are supported by state-of-the-art and accessible infrastructure, equipment and technology, and versatile pedagogies and tools, for example ICT based simulators, virtual and augmented reality which increase the accessibility and efficiency of training

provision, including for small enterprises (Council of the European Union, 2020a).

The text above highlights useful aspects to consider for future scenarios, namely the extent of personalisation in terms of choice of modules that allow learners to attain qualifications incrementally and the growing diversity of learning provision, with new providers, formats and delivery mechanisms – in terms of teaching and assessment practices – that may expand access to education and training and be more aligned to labour market demands and individual needs. All these aspects can influence the flexibility of learning.

2.10. Concluding remarks

In this chapter, we presented the knowledge base for the five alternative scenarios for lifelong and life-wide learning moving forwards towards 2040. Building on the findings identified in the previous parts of the study, and through a comprehensive literature and document review, supplemented by expert interviews and an online survey of our quasi-Delphi panel members, we identified eight key trends that have shaped the transparency and transferability of the learning outcomes between 2000 and 2020. These influence the extent to which there is convergence or separation between education and training pathways, while also expanding opportunities for learners to tailor their learning to their needs, interests and circumstances.

Following a path-dependency approach to constructing scenarios (see Chapter 1), we started from past developments at the EU and national levels and provided an overview of how these trends may continue to evolve, supporting the conceptualisation of alternative scenarios looking towards 2040. The first overarching conclusion is that, while the trends will not all evolve in the same way or at the same speed, all of them are relevant to building scenarios looking towards 2040, given that all of them have been identified as relevant to the future development of lifelong and life-wide learning and the transparency and transferability of learning outcomes. While each trend reflects distinct developments, there are commonalities in the outcomes they have achieved, the factors that have facilitated their success and the challenges they continue to face.

Several factors have consistently enabled and accelerated progress across these trends. EU initiatives – and often funding, such as Erasmus+ and the European Social Fund – have themselves been enablers, creating frameworks that have supported reforms and encouraged national-level implementation. Collaborative governance arrangements through working groups, peer learning and networks serve as platforms for sharing best practices and ensuring

coherence across Member States. At the national level, effective coordination among key stakeholders – including policymakers, education and training providers, and employers – has been critical. The establishment of dedicated national agencies or coordination bodies (e.g. quality assurance agencies and national academic recognition information centres) provide governance capacity to implement these tools, supporting the practical implementation of European frameworks at the national and provider/institutional levels, often alongside a solid legal basis to further support consistency and widespread adoption.

Progress in one trend can depend on developments in others, and, in turn, weak progress in one area can affect progress in others. At the national level, synergies between initiatives and tools have played a crucial role in supporting implementation. In some countries, governance structures have helped align quality assurance, credit transfer and recognition processes, for example by reducing institutional fragmentation.

Across all eight trends, there are common challenges. A recurring theme is the fragmentation within and between education and training subsystems, a feature that has shaped the developments of several trends. Notably, a key path dependency has been created by the historical separation between HE and VET, which has created distinct trajectories for the implementation of policy tools and initiatives. In many countries, these subsystems continue to operate independently. Indeed, findings from the previous parts of this study highlight that synergies between policy tools and initiatives are generally stronger within the same education and training subsystem, particularly in HE.

Examples include the way quality assurance systems have evolved independently for HE and VET. At the national level, some countries have bridged the divide, enabled, for example, by governance structures. However, in many cases, HE and VET quality assurance systems remain separate. Similarly, EU-level tools and instruments related to credit systems put HE and VET on different trajectories. Nationally, some countries have expanded their systems to cover HE and VET, but, overall, credit transfer is generally confined to specific subsystems (and largely in HE). These subsystem-specific patterns and trajectories are important to consider, as they highlight key remaining challenges in making European education and training systems permeable.

Closely linked to system fragmentation is the uneven implementation and use of key policy tools and initiatives. As reflected across the eight trends, adoption has varied significantly across countries, subsystems and institutions, in terms of both speed and depth. These differences are also shaped by countries' points of departure and by the specific characteristics of their education and training systems.

For example, while NQFs (Trend 3) have been widely adopted and are expanding, the extent to which they capture all types of learning, including non-formal and informal learning, varies significantly. Similarly, credit transfer systems (Trend 2) are underutilised, especially in VET. Validation of learning from non-formal and informal settings (Trend 4) also remains a significant challenge, despite receiving growing attention. While validation mechanisms have been introduced in many countries, the extent to which validation has been fully implemented varies across Member States and education subsystems, reflecting different trajectories, with a minority of countries having integrated validation comprehensively and others applying validation selectively, often within specific subsystems. Despite progress, quality assurance also remains unevenly implemented across Member States and subsystems. Inconsistencies still present in the use of learning outcomes hinder comparability and transferability. Institutional autonomy can further influence uneven implementation and contribute to system fragmentation. This is because initiatives can face pushback or slow uptake at the provider/institutional level. For example, in terms of recognition, the diverse legal basis and significant national and institutional autonomy over implementation have fragmented the system where different regional, EU-level and international arrangements coexist. Opening up admissions (Trend 7) or accepting credits (Trend 2) from other types of providers is a change that can meet internal resistance or bureaucratic hurdles. HEIs in particular may be hesitant to fully trust qualifications that include non-formal or informal learning (Trend 4), as they seek to uphold standards. This leads to variability in how learning achievements are recognised across institutions and countries. Similarly, resistance towards modularisation (Trend 8) remains strong in some countries, where concerns about the perceived dilution of qualifications can slow the adoption of flexible, competences-based education models. Overall, this means that, even within the same subsystem, tools and approaches may be inconsistently applied.

Whether these barriers are addressed or whether they continue to shape future developments will play a role in the future trajectory of transparency and transferability mechanisms and therefore in defining the alternative futures that will be explored in the following chapter.

While the trends presented in this chapter reflect broad progress in enhancing the transparency and transferability of learning outcomes, they also reveal contradictory dynamics. These relate to opposing forces that coexist and that could shape how the trends unfold when shaped by diverging responses. In contrast to challenges of implementation, contradictory dynamics reflect the different choices, preferences or priorities of actors at different levels, signalling how different futures might emerge. For example, work on NQFs reveals inherent tensions between

expansion and consistency/stability, and between flexibility and adaptation (e.g. to market needs). Moving forward, different countries may pursue varied approaches, with some favouring the comprehensive inclusion of all qualifications and others prioritising stability and consistency over rapid expansion.

Understanding these dynamics as well as ongoing challenges is helpful for devising alternative future scenarios, as they indicate where policy decisions and institutional choices could push developments in different directions and lead to different outcomes and, therefore, different futures.

Moreover, as the analysis in the preceding sections has shown, four of the trends are expected to gain importance in the future, according to our quasi-Delphi panel. These trends are validation (Trend 4), digital portfolios (Trend 5), portability of learning and credentials (Trend 6) and flexible and individualised learning pathways (Trend 8). As we have argued in the analysis of future developments, some of these are intrinsically linked. For example, validation becomes more important as the system becomes more flexible and as digital tools offer more opportunities to record learning outcomes. The portability of qualifications can also be further eased by using digital tools.

These trends are very closely linked with the demands on learners and the education and training system by the top five STEEP drivers likely to influence education and training policies by 2040 (an ageing and shrinking labour force, rapid technological development, international competition for talent, the importance of agile skills development and the faster pace of changes in jobs and tasks), further supporting the likely importance of these trends going forward. At the same time, the analysis in the preceding sections has highlighted some significant historically grown fragmentations in these trends (e.g. between Member States, between institutions and between and within subsystems), leading to unevenness in how consistently and comprehensively existing tools are applied. This opens space for stakeholders to respond differently to these STEEP drivers and for these trends to follow different trajectories.

The remaining four trends are not expected to grow substantially stronger by 2040, according to our quasi-Delphi panel of experts. These are quality assurance (Trend 1), credit systems (Trend 2), comparable overviews of learning outcomes (Trend 3) and increased permeability by means of admissions criteria (Trend 7). This forecast may reflect their maturity – as they have received sustained attention and substantial focus over the past 20 years, significantly shaping policy developments and reforms – or be because implementation is particularly uneven or challenging.

However, this does not mean that they are unimportant. Without adapting quality assurance, for example, all the above high-importance trends will function

in a less effective way (as will comparability, Trend 3). Moreover, without further developing credit systems, the accumulation of learning outcomes might be compromised. While quality assurance (Trend 1) is a recurring theme in various EU-level initiatives, highlighting recognition of its ongoing importance, the future trajectory of credit systems (e.g. in VET or AE, Trend 2) appears less certain. Against the backdrop of significant fissures between (and sometimes within) subsystems, institutions and Member States, this opens potential for tension in the system (e.g. where quality assurance adaptations lag behind other trends), which could impact the trajectory of transparency and transferability of learning outcomes.

Drawing on the information presented in this chapter, the next chapter defines the other two scenario building blocks, namely the scenario axes and the related indicators.

CHAPTER 3.

Defining scenario building blocks: axes and indicators

Drawing on the information presented in Chapter 2 and the methodological approach to building the scenarios, this chapter uses the analytical work carried out in Chapter 2 to:

- (a) define the axes for the scenarios – this requires the identification and definition of two variables, which, by intersecting, create four quadrants relating to different futures;
- (b) identify and define a number of indicators and their values that, when put together coherently, create the backbone of the scenarios, which are then fleshed out by creating a coherent narrative around them.

The next sections analyse the information presented in the previous chapter with the above requirements in mind.

3.1. The scenario axes

As mentioned at the beginning of Chapter 2, one of the key conclusions from this project's previous studies was that the interaction of previous EU and national developments in the transparency and transferability of learning outcomes has contributed to reducing the separation between education and training pathways, while also expanding opportunities for learners to tailor their learning to their needs, interests and circumstances. As has been argued elsewhere (Cedefop, 2025), this has supported the flexibility and permeability of Europe's education and training systems as dominant themes since the 1990s.

- (a) 'Permeability refers to the capacity of education and training systems to support learners to move between different educational levels, sectors or systems (e.g. from vocational education to higher education, or between different countries' education and training systems). It emphasises the interconnection between various learning pathways and the seamless recognition of qualifications and learning outcomes' (Cedefop, 2025, p. 12). In short, it refers to system-level developments and the extent to which education and training systems facilitate movement across providers, sectors, levels and borders.

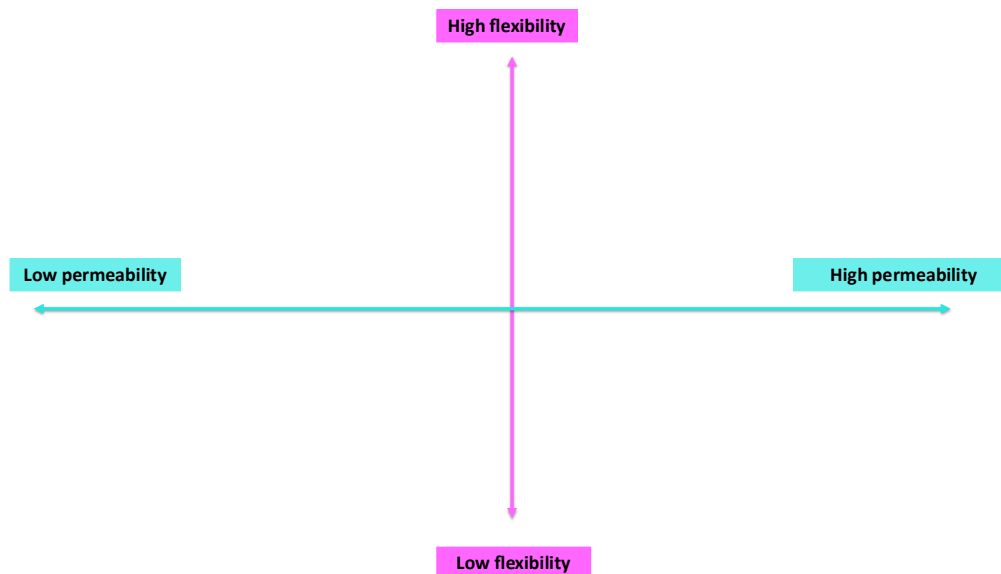
(b) 'Flexibility refers to learners' ability to shape their learning paths in alignment with their needs, aspirations and circumstances. It reflects the range of options available in learning formats, content and assessment that support them to continue learning throughout their lives according to their evolving personal and professional goals' (Cedefop, 2025, p. 12). In short, it allows learners greater choice in how, when and where they learn.

These two dimensions align with the key requirements for scenario building (see the methodology discussion in Chapter 1). Most notably, the two dimensions are broad enough to allow different scenarios to emerge and be applicable across diverse contexts, allowing for the exploration of future trajectories (magnification). They represent distinct dimensions of education and training systems, ensuring that the scenarios developed along these axes are structurally different (differentiated) yet provide a framework grounded in system-level (permeability) and individual-level (flexibility) interconnections identified across the eight trends, thus enabling the scenarios to remain internally coherent (consistency). Both concepts are closely tied to the transparency and transferability of learning outcomes, reflecting an increasing policy emphasis on lifelong learning, and hence speak to the focal question of our scenario-building work (relevance). To this end, EU and national measures aimed at enhancing transparency and transferability have contributed, albeit unevenly across countries and subsystems, to the development of more flexible and permeable learning pathways within formal education and training (magnification).

For these reasons, flexibility and permeability make rigorous and effective axes for the scenarios. Combining them creates a 2×2 scenario matrix (see Figure 4), involving two variable pairs around which to build the scenarios:

- (a) flexibility versus low flexibility (or high to low flexibility);
- (b) permeability versus low permeability (or high to low permeability).

Figure 4. **Scenario matrix**



Source: Study team.

3.2. The scenario indicators

Based on the matrix illustrated in Figure 4, the scenarios are built by combining several variables with the identified axes to create the distinct scenarios. This requires the identification of indicators that are different yet have consistency between them so that they can work together and with the permeability and flexibility axes to present plausible alternative stories of the future. The metaphor of indicators is used to be able to operationalise / define more closely what we mean by the flexibility and permeability axes.

Considering the path-dependent and evidence-based approach used to build the scenarios, the indicators needed to be grounded in the research conducted to construct these distinct and alternative futures. Analysing our discussion of the eight trends in Chapter 2, it is evident that, in terms of substance and outcomes, the eight trends can be assigned to either the permeability or the flexibility axis, suggesting it is analytically plausible to use the trends in combination with these axes to build the scenarios.

The trends that relate to the permeability axis are:

- (a) Trend 1: towards common quality assurance frameworks in HE and VET;

- (b) Trend 2: increased opportunities to transfer learning outcomes between different education and training providers or sectors within or across countries using credit systems;
- (c) Trend 3: more consistent and comparable overviews of all types, levels and learning outcomes of qualifications available to learners;
- (d) Trend 4: increased opportunities to validate formal, non-formal and informal learning outcomes;
- (e) Trend 5: increased opportunities to store and build up a digital portfolio of learning achievements, including qualifications, transcripts of records and other types of certificates of learning achievement;
- (f) Trend 6: increased portability of qualifications and learning outcomes across borders;
- (g) Trend 7: increased horizontal and vertical permeability of learning pathways, via flexible admissions and broader curricula.
The final trend, Trend 8, relates to the flexibility axis:
- (h) Trend 8: more tailored learning pathways.

Assuming that each of the trends discussed in Chapter 2 remains valid in the future and can be mapped onto the scenario axes, it follows that the indicators, which underpin the scenario narratives, should be linked to the trends. Although one trend is associated with the axis of flexibility, four indicators were identified and used for building the scenarios. Given the broad scope of this trend, this was unpacked into complementary aspects to better capture its multifaceted nature. Table 5 shows the links between trends, key conclusions on past and future trend trajectories with the developed indicators and their 'neutral' definition. As this illustrates, the scenario indicators have been crafted to encapsulate the key components of the trend in a qualitative measure (or set of measures), the value of which can go up or down, depending on the type of scenario.

Table 5. **Linking trends and key conclusions with indicators and their values**

Trend	Chapter 2 key conclusions	Indicator	Indicator definition
1. Towards common quality assurance frameworks	A lack of strong quality assurance mechanisms negatively affects trust in the education and training system. Coordinating quality assurance arrangements across education subsystems and countries is therefore critical for a more flexible and permeable education and training system.	Coordination of quality assurance standards, processes and tools	The extent to which quality assurance standards, processes and tools are coordinated within and between education subsystems to standardise practices
2. Increased opportunities to transfer learning outcomes via credit systems	Credit systems have largely operated within subsystem silos where inconsistencies remain. The extent to which future credit accumulation and transfer initiatives either maintain or bridge the division between HE and VET will determine the extent of permeability within Europe's education and training system.	Credit transfer	The extent to which compatible credit accumulation and transfer systems exist and are used
3. More consistent and comparable overview of learning outcomes through the development of NQFs	Comparability of learning outcomes is central to permeability.	Comparability	The extent to which NQFs and qualifications registers provide comprehensive coverage of all types of qualifications (e.g. full, partial and micro-credentials), with clear and compatible descriptions of qualifications' learning outcomes and documented pathways or bridges between qualifications at different levels and across education and training subsystems
4. Increased opportunities to validate learning outcomes	Implementation of validation varies between countries and education subsystems, but there is growing policy commitment in the future. This will require overcoming entrenched institutional and systemic barriers.	Systems and processes to validate non-formal and informal learning	The existence of systems and processes to validate learning from formal, non-formal and informal settings to achieve partial or full qualifications; the degree to which these are compatible within and between countries and education subsystems

Trend	Chapter 2 key conclusions	Indicator	Indicator definition
5. Digital portfolios of learners' achievements	A suite of interoperable, secure and trustworthy EU-level digital tools is developing, but is less advanced at Member State level. The increased use of such tools becomes more likely. The precise trajectory of this trend appears uncertain.	Digital tools to record learning outcomes	The extent to which an interoperable and robust digital tool exists to record and share learning outcomes across education subsystems and countries
6. Portability of qualifications and learning credentials	A variable geometry of recognition arrangements exists. This pattern is likely to evolve differently depending on how recognition arrangements respond to social, economic and digital pressures.	Recognition	The extent to which qualifications are recognised across countries (enabling cross-border mobility and learning progression)
7. Increasing permeability of learning	Access requirements are a key factor making vertical and horizontal permeability a reality for learners.	Access opportunities between subsystems	The degree of flexibility in access requirements and the availability of mechanisms supporting learner transitions between education subsystems
8. More tailored learning pathways	Modular and credit-based systems allow learners to build qualifications incrementally.	Personalisation	The extent to which learning is tailored to learners' individual needs through a choice of modules or units when working towards qualifications
	Learning content is aligning with labour market and social needs.	Learning content	The extent to which learning content is responsive to evolving labour market and individual needs
	Assessment methods, including those using AI, contribute to more flexible learning experiences.	Assessment	The extent to which more non-traditional, flexible and continuous assessment methods, including online tools and AI projects, are used to encourage formative learning
	New providers, formats and delivery mechanisms expand access to education and training.	Learning provision	The extent to which learning is provided by a variety of learning providers and in different learning formats

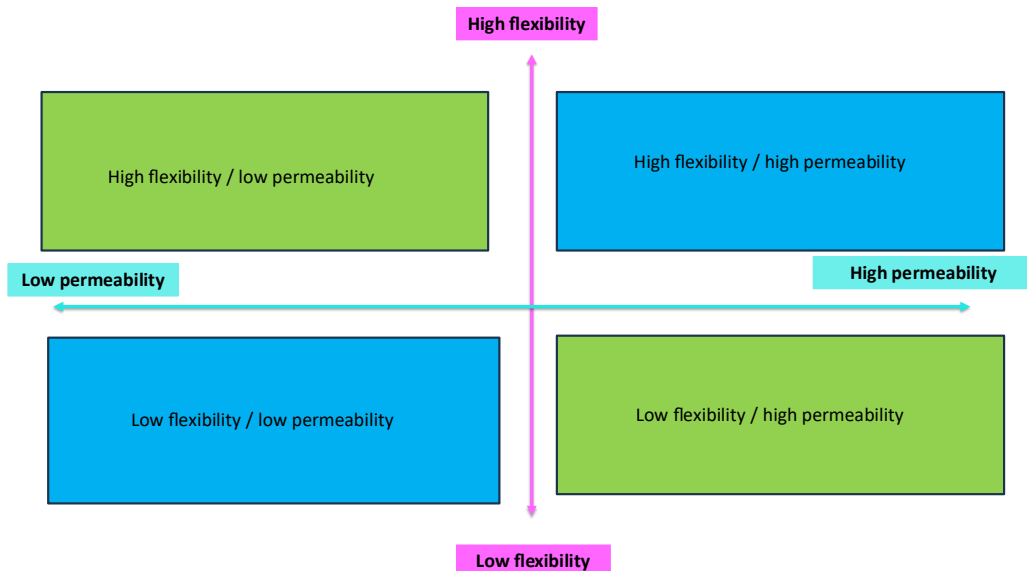
Source: Study team.

3.3. Defining indicator values

As Figure 4 shows, combining the flexibility and permeability axes leads to a 2 × 2 matrix, which, in principle, allows for the creation of (at least) four different types of scenarios: high flexibility / high permeability; low flexibility / low permeability; low flexibility / high permeability; and high flexibility / low permeability (see Figure 5). This means, however, that for each quadrant the indicators presented above need to be defined differently so that together they create a set of internally coherent yet differentiated scenarios that speaks to the value of the axis variables.

For example, in the high permeability and high flexibility quadrant, the definition of all indicators shifts to collectively create a scenario where European education and training systems are both highly permeable and highly flexible. This means stakeholders (most notably policymakers, providers and institutions) will have taken steps to support seamless movement across education and training systems. For example, credit transfer will operate across HE and VET, learners will be able to build individualised qualifications (e.g. by stacking learning modules and micro-credentials) and the quality assurance system will span different education and training subsystems and be aligned across countries.

Figure 5. Theoretical scenario types



Source: Study team.

In the low permeability and low flexibility quadrant, there is fragmentation across different education and training subsystems. Providers and institutions, for example, operate in isolation. Developments such as digital credentials, micro-credentials and diversification of providers are at an early stage. In this context, learners have fewer opportunities to personalise their learning or to progress vertically and horizontally within or across systems and countries.

Two additional quadrants combine low and high values of permeability and flexibility. One combines low permeability with high flexibility, meaning that, while learning is adaptable and personalised, there are structural barriers. Fragmentation between subsystems, uneven uptake of tools – such as validation, credit systems and quality assurance – and variable institutional practices hinder system-level coherence. Learners benefit from an expanded range of learning options from formal and non-formal providers, with flexibility indicators reaching their highest levels. However, progression remains difficult, as learners struggle to translate their achievements into recognised qualifications or to move across subsystems, such as from VET to HE, or even between providers within the same subsystem.

In the other quadrant, the values are reversed, with high permeability and low flexibility. However, this specific configuration was ruled out, as high permeability typically presupposes some degree of flexibility. A system built entirely on standardised and rigid learning pathways would not support mobility between subsystems. This quadrant was therefore adjusted to reflect a more plausible combination of low flexibility and moderate permeability. Here, learner choice is limited, curricula are standardised and formal provision dominates, resulting in low flexibility. At the same time, some permeability is present, as system actors such as policymakers and providers may prioritise alignment of elements like quality assurance and credit systems within and between formal subsystems, though movement between them remains limited.

This adjustment also led to the development of a fifth scenario, based on moderate permeability and moderate flexibility. It reflects a system where international mobility and cross-border recognition remain limited, but strategic efforts are focused on improving permeability across domestic formal subsystems. These efforts may also support gradual increases in flexibility, although international recognition mechanisms are not a priority. The full definition of indicator values is provided in the annex. The resulting scenarios are presented in Chapter 4.

3.4. The relevance and importance of STEEP drivers

Throughout Chapter 2, we refer to STEEP drivers as the broad factors shaping the context in which system actors and stakeholders develop tools and instruments supporting the transparency and transferability of learning outcomes. Analysis and consultations with the quasi-Delphi panel of experts revealed that, out of the 19 STEEP drivers initially identified, 8 were particularly relevant for scenario development. These drivers appeared frequently in the trends analysis and were assessed by panel members as especially influential for the future.

One key driver is the growing international competition for talent, intensified by widespread labour and skills shortages and shrinking domestic workforces. Across the EU-27, declining birth rates are not offsetting population ageing, and Europe's working-age population is projected to fall by 4% by the end of the 2020s (McKinsey Global Institute, 2020). This trend underscores the importance of increasing labour market participation among older adults and mobilising inactive groups, particularly women, people with disabilities, individuals from lower socioeconomic backgrounds, refugees and ethnic minorities. Lifelong learning, especially through upskilling and reskilling, will become increasingly important, along with efforts to reduce barriers to adult learning for marginalised populations. As the talent pool narrows, international competition for skilled individuals is expected to intensify.

This is closely linked to the social driver of migration into the EU. As of January 2022, 8.5% of EU residents were born outside the EU (European Commission, 2023c), and this share is expected to grow owing to demographic trends both within the EU and in neighbouring regions, particularly Africa. In this context, the validation of skills and non-formal or informal learning, as well as the recognition of non-EU-country qualifications, offers a dual opportunity: supporting migrant integration and addressing skills shortages in the EU.

Another major driver is the digital transition, which is reshaping millions of jobs across Europe. Some roles are at risk of automation, others are being transformed, and entirely new jobs are emerging. Combined with the green transition, this is accelerating changes in job content and skills requirements. As a result, workers will need to update their skills more frequently, while education and training systems must become more responsive. Employers increasingly call for training that is developed in collaboration with industry, focuses on practical skills, responds flexibly to labour market needs, integrates workplace delivery and is short in duration (Pouliou, 2022).

Against this backdrop, it is widely acknowledged that Europeans need to update their knowledge, skills and competences more rapidly than in the past. Agile, just-in-time and shorter learning opportunities – such as micro-credentials –

are seen as relevant to supporting upskilling and reskilling and expanding lifelong learning provision (Council of the European Union, 2022b). Digital skills are particularly in demand: jobs projected to grow are those requiring such skills (European Commission, 2022d), yet only 54% of EU citizens aged 16 to 74 possess basic digital competences (Eurostat, 2022), and the gap between the supply of and demand for ICT professionals is expected to widen.

The digital transition is also reshaping education and training provision itself. New technologies are creating novel ways to deliver and accredit learning, including online formats. AI is increasingly used to support lifelong learning through tools such as AI-powered learning assistants, exploratory learning environments and personalised learning platforms based on adaptive user models. AI-enabled dialogue-based tutoring systems, for example, simulate tutor–learner interactions to personalise support and pacing.

Together, these STEEP drivers shape the broader environment in which national education and training decisions are made. Where relevant, they have been integrated into the scenario indicators. How Member States respond to these and other drivers will strongly influence the trajectory of education and training systems in the years to come. The following chapter presents a set of scenarios illustrating the possible outcomes of such policy choices.

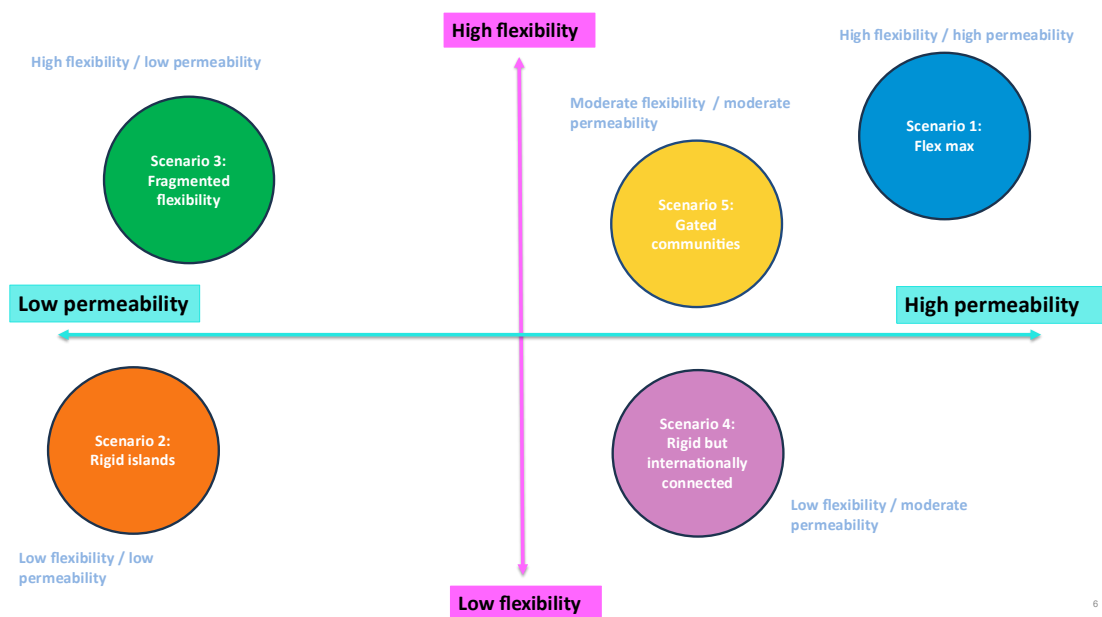
CHAPTER 4.

Five scenarios for policies on lifelong and life-wide learning towards 2040

In this section, we present the five scenarios that were developed as part of this study.

- (a) Scenario 1. Flex Max represents high levels of both flexibility and permeability. By 2040, Member States have created a highly adaptable and integrated learning system, allowing learners seamless movement across education and training systems and countries.
- (b) Scenario 2. Rigid Islands reflects a scenario with low levels of both flexibility and permeability. Education and training in 2040 are characterised by highly structured pathways, focused on standardisation and stability, with minimal opportunities for personalisation and learner mobility.
- (c) Scenario 3. Fragmented Flexibility illustrates a scenario with high flexibility but low permeability. In 2040, learning pathways are flexible (offering a variety of offers), but movement between subsystems or borders is limited.
- (d) Scenario 4. Rigid but Internationally Connected describes a scenario with low flexibility and moderate permeability. Education and training systems in 2040 are characterised by structured education pathways; mobility within the same subsystem is possible (including across borders), although transitions across subsystems are limited.
- (e) Scenario 5. Gated Communities is a scenario with moderate flexibility and permeability. In 2040, learner needs are taken into account through greater flexibility of provision. Cross-border mobility is less prioritised, as efforts are focused on strengthening mobility within subsystems and across them nationally.

Figure 6. Five policy scenarios for lifelong and life-wide learning for 2040



Source: Study team.

In addition to the scenario limitation mentioned in Chapter 1, several assumptions underpin the scenarios.

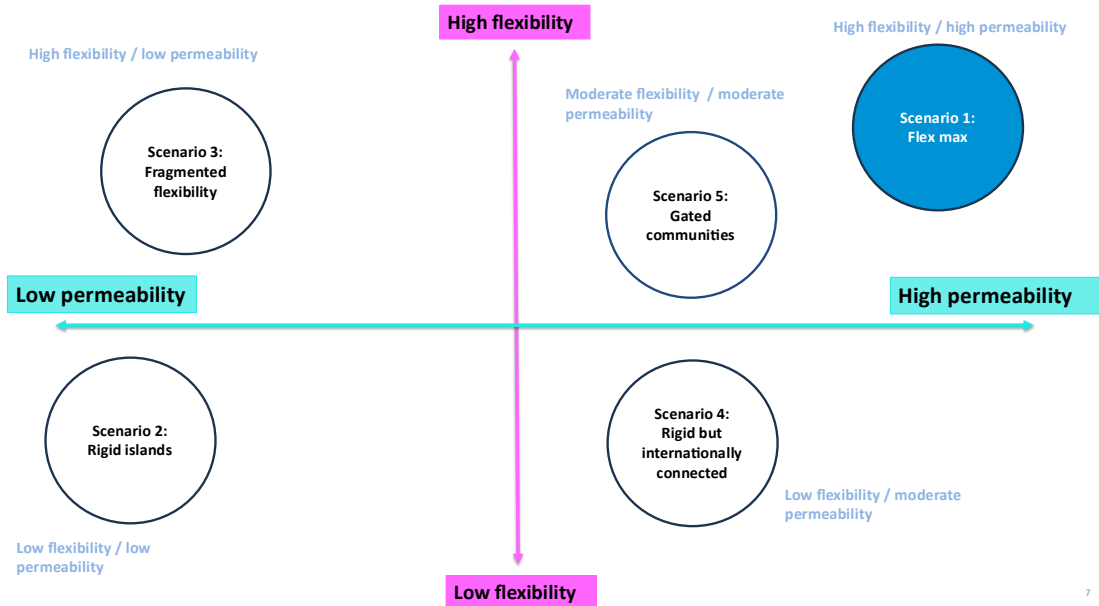
- The stability of the European political system at all governance levels was assumed, with the current status quo essentially continuing until 2040.
- As noted above, a path-dependency approach to scenario development was adopted. This means that the future direction of travel and the future choices that will be made by policymakers up to 2040 will, to an extent, be influenced by past developments in education and training systems.
- 'Black swan' events (e.g. the COVID-19 pandemic) have the power to significantly alter trajectories but are essentially unpredictable so have not been explicitly factored into the scenarios.

The five scenarios are each presented next.

4.1. Scenario 1: Flex Max

Flex Max represents high levels of both flexibility and permeability. By 2040, Member States will have created a highly adaptable and integrated learning ecosystem, supporting personalised learning paths and learners' seamless movement within and between countries.

Figure 7. **Flex Max: position on matrix**



Source: Study team.

Box 1. Flex Max scenario narrative

By 2040, Member States have developed a seamless learning ecosystem that supports personalised learning paths within and between countries. Rapid technological developments and the faster pace of change in jobs and tasks are met by on-demand learning opportunities provided by a mixture of formal and non-formal learning providers, including international providers, employers and non-governmental organisations (NGOs). Learners – irrespective of age, educational attainment and employment status – have access to flexible, responsive and adaptive learning content, provided by a mix of formal and non-formal providers, who use a wide variety of practical and flexible learning formats, such as online, practice-based, case-based, project and work-based learning, personalised learning platforms and adaptive courses.

Learners have access to a wide choice of units, modules or micro-credentials and can stack these to build partial or full qualifications based on achieved learning outcomes across subsystems and countries. This is matched by a more extensive use of more non-traditional, flexible and continuous methods to assess learning outcomes to encourage formative learning. This includes online tools, AI, projects or work-based learning. AI is also used to recognise skills and qualifications developed or achieved across diverse learning environments, by comparing learning outcomes (skills, knowledge and competences), against agreed terminological standards and to store, verify and manage digital credentials.

Qualifications frameworks and qualifications registers have broad coverage, documenting all types of full and partial qualifications (from formal and non-formal providers). Associated learning outcomes are described in accessible, clear and

comparable formats, including across countries. Qualifications frameworks also clearly illustrate pathways and bridges between qualifications at different levels and between learning subsystems (e.g. VET, HE, AE and GE).

Compatible systems across countries and subsystems to validate learning from formal, non-formal and informal settings allow learners to move fluidly between formal education, workplace training, community learning, self-directed study and informal learning opportunities within and between countries to achieve full or partial qualifications. This is further supported by non-restrictive access and admissions requirements between education and training subsystems, the existence of bridging courses/programmes and second-chance education initiatives. In addition, a widely used robust and interoperable EU digital tool enables learners to keep a record of their achieved learning outcomes whenever and wherever these were achieved and to use them to access further learning opportunities or employment across sectors and countries.

International competition for talent has pushed Member States to create widely recognised and easily transferable qualifications, allowing for smoother transitions across employment sectors, education and training subsystems and borders. This is further supported by compatible approaches across subsystems, institutions and Member States to credit accumulation and transfer. Comprehensive recognition procedures cover all qualifications, both formal and non-formal, and are recognised across countries and education and training subsystems.

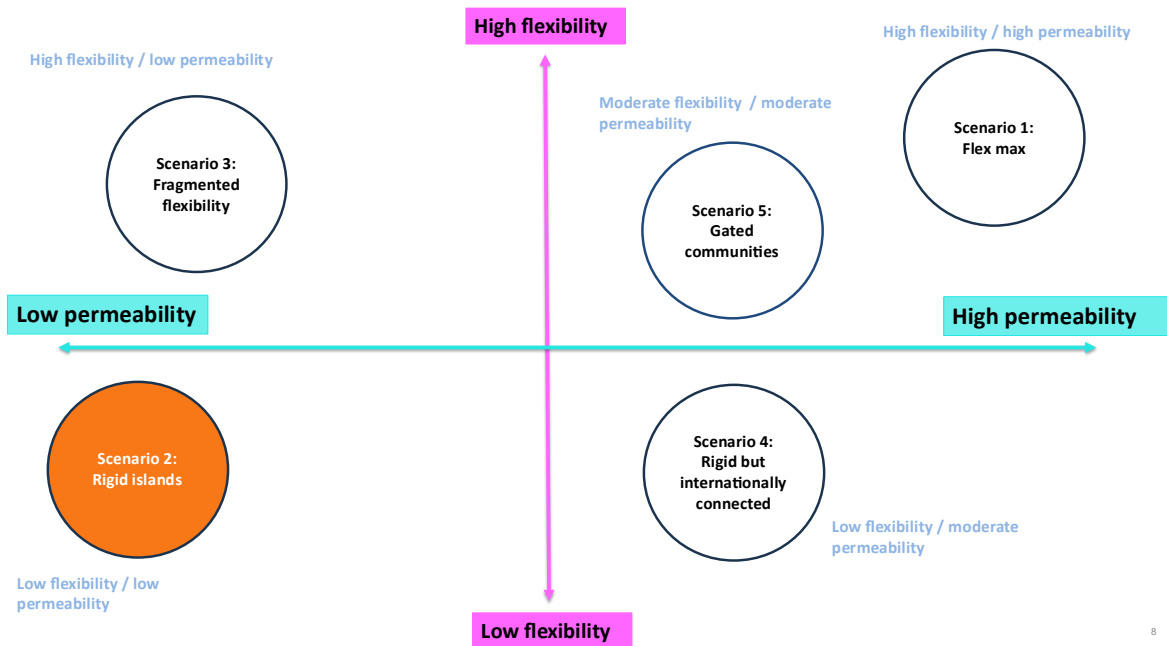
There is a high level of coordination of quality assurance standards, processes and tools within and between education subsystems and countries, resulting in high levels of transparency and trust in qualifications achieved from all types of providers.

Source: Study team.

4.2. Scenario 2: Rigid Islands

Rigid Islands reflects a scenario with low levels of both flexibility and permeability. Education and training in 2040 are characterised by comprehensive and highly structured pathways, focused on standardisation and stability, with minimal opportunities for personalisation and learner mobility.

Figure 8. **Rigid Islands: position on matrix**



Source: Study team.

Box 2. Rigid Islands scenario narrative

Education and training in 2040 are characterised by straightforward, comprehensive and standardised learning pathways, with limited opportunities for personalised and flexible learning.

In the face of rapid technological developments and a faster pace of change in jobs and tasks, countries opt to maintain long-established systems, recognising that these continue to meet current needs. Learners mostly achieve qualifications with highly trusted public formal providers, such as schools, universities or colleges, following a linear, structured pathway. Most learning is classroom-based, and use of online or other alternative learning formats is limited. Most assessments take place at the end of a fixed duration of learning based on standardised course components, with limited use of less traditional, flexible and continuous assessment methods.

Learning content is standardised and focused on established curricula. Consistency and stability are prioritised over rapid responsiveness to evolving labour market demands and individual needs. More flexible approaches (e.g. micro-credentials and customised learning approaches) are mainly offered within subsectors of the labour market to fill particular skills gaps in the face of international competition for talent. Some of these are delivered by non-formal learning providers, such as large employers or international providers, but they are not widely recognised by other providers. Educational institutions, workplaces and other learning environments frequently operate independently with minimal coordination.

There is minimal coordination of quality assurance standards, processes and tools, which is largely focused on formal provision within specific education subsystems

(e.g. VET, HE, AE and GE) within a country. Moreover, there are differences in how these are applied among providers and institutions within the same subsystem, leading to variability in implementation. In addition, they do not cover non-formal and informal learning. Access opportunities for learners to move between education and training subsystems are also limited, with minimal mechanisms to support transitions between them (e.g. through admission requirements or bridging programmes). Given the limited modularisation, there is no need to develop compatible credit accumulation and transfer systems. Where they exist, they are at an early stage, with each subsystem having its own system that may be inconsistently applied across providers and institutions. There is no interoperable and robust digital tool used across institutions, sectors or countries to record, share or compare learning outcomes.

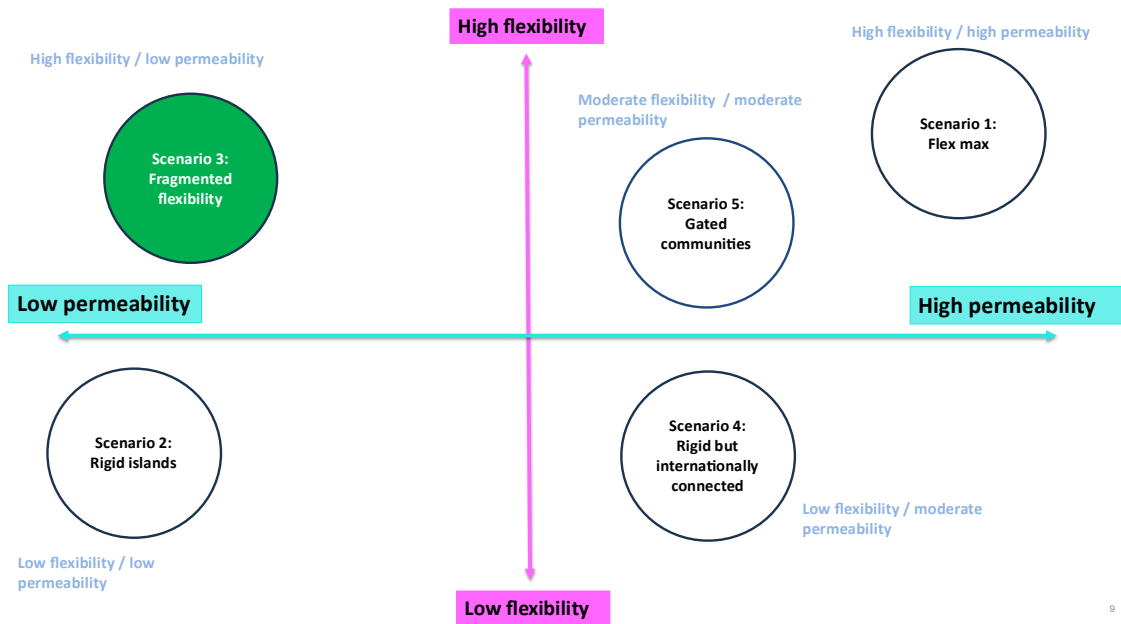
Systems and processes to validate non-formal and informal learning lack compatibility across subsystems and countries. Recognition procedures across countries are very limited, only applying to specific sectors, qualifications or learners, with little systemic alignment or cross-border compatibility. NQFs and qualifications registers include formal and full qualifications from formal providers with associated learning outcomes descriptions. However, there is no common approach, and each provider, subsystem and country describes them differently. Progression opportunities are restricted to predefined pathways within individual sectors, and NQFs do not display bridges between qualifications across sectors or levels. The use of AI to recognise skills and qualifications developed or achieved is restricted to providers or subsystems.

Source: Study team.

4.3. Scenario 3: Fragmented Flexibility

Fragmented Flexibility illustrates a scenario with high flexibility but low permeability. In 2040, education and training subsystems provide personalised, adaptable learning experiences but operate largely separately, and movement between subsystems or borders is limited.

Figure 9. **Fragmented Flexibility: position on matrix**



Source: Study team.

Box 3. **Fragmented Flexibility scenario narrative**

In 2040, education and training subsystems provide personalised and adaptable learning experiences but operate largely separately.

The shrinking labour force, faster pace of change in jobs and tasks, and rapid technological developments have prompted a variety of flexible learning options to emerge, including online courses and micro-credentials. Learning content is responsive to evolving labour market and individual needs, leading to greater hybridisation of curricula in education and training subsystems.

AI learning applications, such as personalised learning platforms or adaptive courses, and digital tools as well as credit accumulation and transfer systems exist; however, their actual use is quite limited, typically to putting the learning together and storing information of past achievements. Given the limited cooperation (and permeability) between subsystems, it is not possible to combine learning to customise the learner journey. On the other hand, learners have access to a wide range of formal and non-formal providers (including international providers, employers, NGOs and others) and partial or full qualifications. However, this is predominantly only possible with institutions and providers associated with the same education and training subsystem.

Learners can achieve qualifications flexibly, via the extensive assessment of learning outcomes that encourages formative learning through the use of non-traditional, flexible and continuous assessment methods, including online tools, AI, projects or work-based learning. This is supported by the existence of an overarching framework

for quality assurance standards, processes and tools within education and training subsystems. At the same time, institutions and providers apply these inconsistently. Moving between different education subsystems (e.g. from VET to HE) and countries is challenging due to restrictive admission requirements and limited bridging programs and very limited coordination on quality assurance between subsystems and Member States. Validation arrangements are fragmented within and between education subsystems, institutions and countries. While NQFs and qualifications registers contain a mixture of formal and non-formal qualifications from both traditional and non-traditional providers, there are inconsistent approaches to describing qualifications' learning outcomes, and NQFs are not used to show pathways or bridges and progression options between qualifications.

AI is increasingly used to recognise skills and qualifications developed or achieved across providers, by comparing learning outcomes, skills descriptions and competences to agreed standards and to store, verify and manage digital credentials. However, this is mainly only possible with institutions and providers associated with the same education and training subsystem. Further, recognition procedures across countries often only apply to particular learning sectors, qualifications or types of learners, with little systemic alignment or cross-border compatibility. International cooperation on the development of core profiles across qualifications or subsystems is absent or limited to bilateral cooperations.

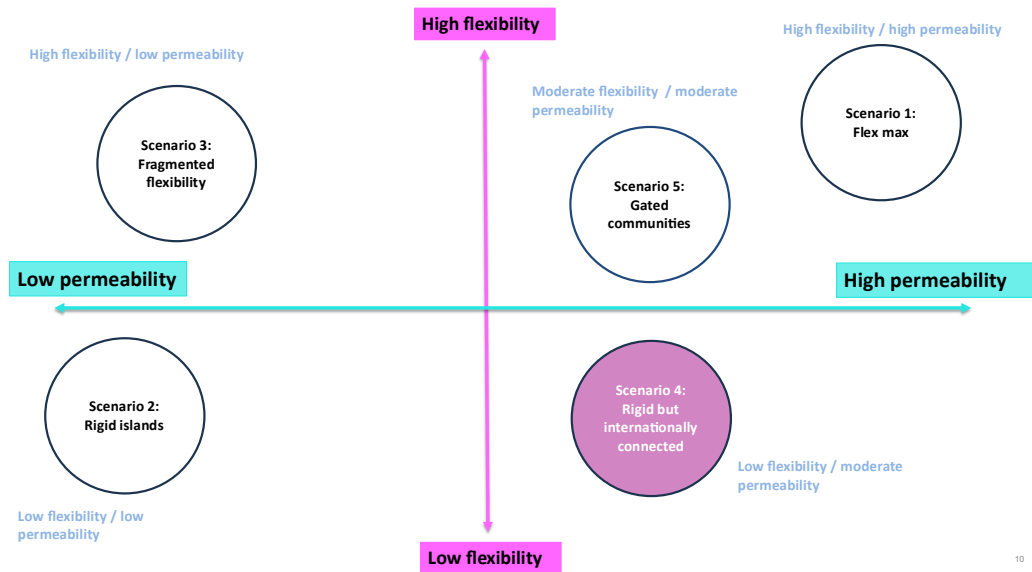
Cross-national and cross-sectoral credit accumulation and transfer systems that are compatible across countries and education and training subsystems are either not developed or at an early stage and are not a political priority.

Source: Study team.

4.4. Scenario 4: Rigid but Internationally Connected

Rigid but Internationally Connected describes a scenario with low flexibility and moderate permeability. In 2040, learning pathways are structured and standardised, offering learners little or no room to customise learning to their needs. However, this scenario offers transferability of learning across borders for the same subsystem.

Figure 10. **Rigid but Internationally Connected: position on matrix**



Source: Study team.

Box 4. Rigid but Internationally Connected scenario narrative

In 2040, learning pathways are structured and standardised, offering learners little or no room to choose modules or units and hence customise learning to their needs. However, there is permeability within education and training sectors, including across borders for the same subsystem.

Learners primarily use formal providers, such as schools, universities and colleges, with non-formal providers only filling in particular gaps in the education and training landscape to meet evolving labour market needs and a faster pace of change in jobs and tasks. This provision is often paid for by employers or individuals with the resources to do so.

Most learning is classroom-based, with limited use of online or other alternative learning approaches. Learning content is standardised and focuses on established curricula delivered largely through traditional methods, although supplemented in some cases with online learning and assessment tools. Advanced AI learning applications, such as personalised learning platforms or adaptive courses, are limited and used only within particular subsystems or on specific courses that may also use AI to recognise skills and qualifications.

Learners, therefore, progress along structured, linear pathways, with qualifications awarded based on standardised assessments conducted at the end of a fixed period of study, facilitating the recognition and transferability of formal qualifications across countries within the same subsystem. This is further supported by the coordination of quality assurance standards, processes and tools of learning provision among traditional providers within education subsystems at the national level. These efforts

also extend across borders for the same subsystem, supporting the international recognition of formal qualifications. However, there are limited established systems for qualifications awarded by non-traditional providers (e.g. employers). Similarly, the coordination of quality assurance between subsystems and countries is patchy.

Movement between providers within particular education and training subsystems is therefore generally possible, nationally and internationally. However, the scope for mobility and progression between education and training subsystems (e.g. VET, HE, AE and GE) is limited. For example, compatible credit systems exist, which enable learners to accumulate credits to achieve qualifications, but this is only possible within individual subsystems allowing transfer of credits between providers (e.g. from one HEI to another). Within the same subsystem, this is also possible across countries. However, these systems are not fully developed across subsystems. There are also restrictive access and admission requirements. In addition, while recognition procedures that facilitate international mobility are well developed for specific subsystems and across formal qualifications, this is less so for non-formal or emerging credentials.

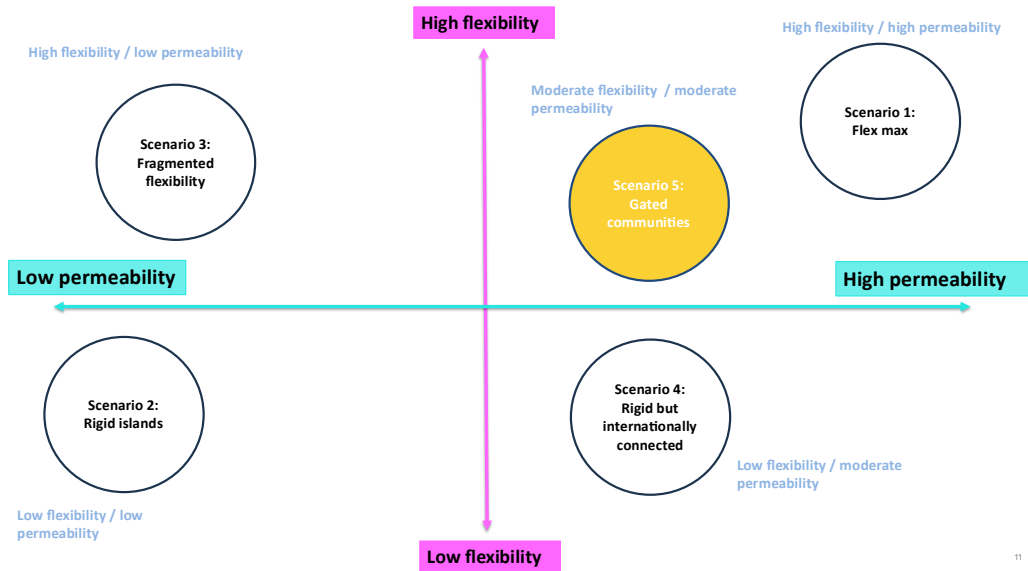
Similarly, there are compatible systems to validate learning from formal, non-formal and informal settings; however, these systems are more widely adopted in some countries and in particular education subsystems than others. Learners have access to an interoperable digital tool to keep a record of formal, non-formal and informal learning outcomes whenever and wherever these were achieved. This is compatible within education and training subsystems, with coordination also across countries for the same subsystem. However, interoperability with other education and training subsystems or for integrating learning outside formal systems is limited. NQFs and qualifications registers provide details of most types of full and partial qualifications and associated learning outcomes in clear, accessible and comparable formats. They also show links and bridges between qualifications and how learners can progress to the next level within the same learning sector. However, qualifications from non-formal providers are often not included.

Source: Study team.

4.5. Scenario 5: Gated Communities

Gated Communities refers to a scenario with moderate flexibility and moderate permeability. In 2040, most Member States offer flexible learning pathways from various providers. Cross-border mobility is less prioritised, as efforts are focused on strengthening mobility within subsystems and across them (VET, HE, AE, GE) nationally.

Figure 11. **Gated Communities: position on matrix**



Source: Study team.

Box 5. **Gated Communities scenario narrative**

By 2040, rapid technological developments and a shrinking labour force have encouraged most Member States to allow learners to achieve full or partial qualifications flexibly by completing units, modules or micro-credentials from different education and training providers and programmes within a subsystem in a country and (though to a lesser extent) across subsystems (e.g. VET, HE, AE and GE) and countries.

Formal education providers, such as schools, universities and colleges, are responsible for most of the learning provision, although non-formal providers (e.g. international providers, employers and NGOs) play an increasing role in supporting flexibility and the personalisation of learning. While much provision remains classroom-based, some learners also have access to learning in flexible and practical ways, using online, practice-based, case-based, project and work-based learning, which is responsive to individual learner needs and evolving national labour market needs. Curriculum flexibility offers opportunities for providers to design and apply different forms of assessment, using AI and other online tools that support learning in a more flexible way. At the same time, the uptake of such opportunities is not uniform across countries and subsystems.

Systems and processes to validate non-formal and informal learning to achieve full or partial qualifications exist, although these operate primarily within education subsystems (and therefore are only partially compatible). Efforts to align these

systems and processes nationally are emerging. Similarly, learners also have access to a digital tool to keep a record of formal, non-formal and informal learning outcomes whenever and wherever these were achieved, but interoperability across subsystems (and administrative/governance levels) and robustness is limited. AI is increasingly used to recognise skills and qualifications developed or achieved across some learning environments, by comparing learning outcomes, skills descriptions and competences to agreed standards and to store, verify and manage digital credentials. Movement between providers within particular education and training subsystems is generally possible. This is also supported by the existence of compatible credit systems that are used to support the transfer of credits between institutions within the same subsystem (e.g. from one vocational provider to another). However, cross-border recognition is limited, reflecting a focus on strengthening pathways within and between subsystems at the national level. In addition, the inclusion of non-formal achievements or emerging credentials is also limited.

While the scope for mobility and progression between learning subsystems is more challenging, some opportunities for credit transfer across subsystems exist, facilitated by some cooperation between formal providers across subsystems.

However, the use of compatible credit systems to support subsystem transitions is not widespread. Similarly, mechanisms such as admissions and bridging solutions to support learner mobility and progression are emerging, although their implementation and accessibility are uneven / not widespread across subsystems and institutions.

NQFs and qualifications registers provide details of most types of full and partial qualifications offered by both traditional and non-traditional national providers as well as the associated learning outcomes in clear, accessible and comparable formats. Although these illustrate bridges between qualifications at different levels mainly within subsystems, they include some connections with qualifications from other subsystems.

There is coordination of quality assurance standards, processes and tools of learning provision by traditional providers within an educational subsystem. There is also increasing cooperation to align quality assurance across subsystems. However, this is very limited for non-formal providers, learning formats and assessment methods as well as across countries.

Source: Study team.

CHAPTER 5.

Scenario implications for key stakeholder groups

This chapter provides an overview of the implications for key stakeholder groups (learners, education and training providers, and policymakers) explored as part of each scenario. The focus of implications is slightly different between learners and education and training providers on the one hand and policymakers on the other. In relation to the latter, our discussion focuses more on policy choices and indicative trade-offs. As learners and education and training providers are normally the recipients of policy choices, our discussion focuses on the benefits and drawbacks/challenges that they face in each scenario.

5.1. Implications for learners

5.1.1. Scenario 1: Flex Max

In Scenario 1 Flex Max (high flexibility / high permeability), learners benefit from increased flexibility and personalisation, allowing them to tailor their educational journeys to suit their needs and interests. Learners have access to both formal and non-formal learning opportunities and can easily switch among different learning sectors and gain credentials that are recognised across borders. This adaptability is crucial in a fast-evolving labour market, helping learners stay relevant by continually updating their skills. Flexible learning pathways allow learners to gradually have their skills and knowledge certified towards a qualification, such as full or partial qualifications or micro-credentials (for short-term learning experiences), depending on their specific needs and preferences. Personalised and flexible learning approaches can significantly improve learner satisfaction and attainment and encourage ongoing active engagement with (lifelong) learning. Access to a wider and more flexible range of course offerings (with different time frame formats) can increase participation in learning. Validation of informal learning will allow a wide range of life experiences and skills to be recognised, improve job prospects and enable more fluid career transitions.

However, with a variety of options available, learners may find it challenging to understand how different micro-credentials and modular courses fit into a broader qualification or career pathway and will require greater guidance and support to manage their own decisions about what their learning needs are in

support of their career or educational goals. Overall, learners must be well informed and supported to be able to navigate flexible learning provision effectively. Those from vulnerable groups, such as the low-skilled, may lack the necessary skills and confidence to do so, impacting social mobility and social segregation. In addition, on-demand learning will need to be supported by digital infrastructure. While this expands learning opportunities, digital literacy and access disparities could limit participation for some learners (e.g. low-skilled and/or low-income learners).

In addition, an expansion of learning providers and flexible learning opportunities also raises the need for learners to understand the quality of learning offers available. A scenario like Flex Max relies on collaboration between a wide and diverse range of providers, from formal institutions, such as universities, to non-formal providers. However, variability in practices, contexts or capacities of learning providers, coupled with a lack of links to a formal, rigid and well-defined curriculum structures (e.g. as regards non-formal learning programmes) can lead to uneven (and lower) quality of provisions, poor learning content and suboptimal learner outcomes. Learners may encounter higher- and lower-quality offers, or even misleading ones, leaving them unsure about which to trust or what is best suited to their specific needs and goals.

Finally, while increased flexibility and personalisation by means of modularisation and small learning units does not inherently exclude or deprioritise transversal skills, a Flex Max scenario risks inadvertently overemphasising occupational skills aligned with immediate labour market demands, neglecting broader competences and skills, such as citizenship, intercultural understanding or empathy.

5.1.2. Scenario 2: Rigid Islands

Almost the opposite indications are demonstrated in Scenario 2 Rigid Islands (low flexibility / low permeability). Here, learners benefit from a highly structured and stable learning environment. With classroom-based and standardised education, there is a clear and predictable path for achieving qualifications, which reduces the complexity learners need to navigate and lowers the demand for extensive guidance services compared with the more flexible scenarios. Since learning outcomes are institution- and sector-specific, there is also less need for a unified credit transfer system, consequently simplifying administrative processes. Learners, especially from disadvantaged groups (e.g. the low-skilled) find the clarity and stability of the system reassuring and relatively easy to engage with. Therefore, compared with high-flexibility scenarios, the likelihood of certain groups

of learners being left behind or excluded from educational opportunities may be lower.

Learning is predominantly provided by formal but highly trusted public institutions, which provides learners with confidence and assurance about the quality and credibility of their qualifications. The emphasis on traditional full qualifications managed by such providers may also more easily allow and promote qualifications that are holistic in nature, covering and balancing occupational and broader skills and competences.

At the same time, highly structured and fixed learning pathways restrict opportunities to tailor learning pathways to individual needs, and this can reduce learners' ability to switch career paths or reskill as job demands evolve. Learners may find themselves largely bound to their initial educational choices, even if they later reassess their suitability. The limited development or consistent use of compatible credit systems (or their use within subsystems only) can affect the ease of credit transfer and the recognition of diverse learning experiences across providers, sectors and borders. Learning mobility is limited, as institution-specific outcomes are often non-transferable, limiting learners' ability to pursue diverse pathways. Non-formal and informal learning experiences are less likely to gain recognition, leaving many learners unable to fully capitalise on diverse learning experiences, including across borders.

5.1.3. Scenario 3: Fragmented Flexibility

Scenario 3 Fragmented Flexibility (high flexibility / low permeability), from the learner's point of view, gives opportunities for flexible learning but within particular subsystems only. This means that it provides richer opportunities for flexible learning than Scenario 2 Rigid Islands. However, compared with Scenario 1 Flex Max, the transfer of small units of learning predominantly happens between providers and institutions from the same subsystem. Therefore, learners face challenges from cross-sectorial and cross-national perspectives. For example, the lack of cross-national and cross-sectoral credit transfer systems prevents learners from smoothly transitioning between providers or countries. Without standardised digital tools for tracking formal, non-formal and informal learning outcomes, there are no seamless pathways where all forms of learning are recognised and valued.

Even so, learners in this scenario benefit from customised and flexible learning options within a particular subsystem of education (e.g. VET or HE), including micro-credentials and online courses, allowing them to shape their educational journeys based on personal and professional needs. This adaptability helps learners respond to evolving labour market demands, enabling them to continually update their skills. Further, learning content offered by providers in

different education and training subsystems is responsive to evolving labour market and individual needs, as institutions within subsystems make decisions based on need and demand. This makes it easier for learners to access diverse content that is relevant across industries and allows them to tailor their education to specific career paths and/or personal development goals in many cases. It might also lead to education offers of different subsystems de facto overlapping more.

However, in this scenario, learners face mobility challenges when trying to move among different subsystems and countries. For example, transitioning from VET to HE or moving between countries is difficult owing to restrictive admission requirements, lack of bridging programmes, incompatible credit systems and inconsistent validation of non-formal and informal learning approaches even within subsystems. This means that challenges of recognition and credit transfer mechanisms within and between sectors can lead many to duplicate efforts and retrain, resulting in inefficiencies and frustrations. Moreover, in this scenario learner mobility, for example across borders, is significantly hindered. The absence of compatible validation mechanisms limits the permeability of non-formal and informal contexts into formal education systems, further hindering learners' ability to transition seamlessly across subsystems.

In addition, while NQFs and qualifications registers include a mix of formal and non-formal qualifications, their different approaches to describing learning outcomes hinder transparency and comparability, making it harder for learners to understand how their qualifications align with other systems. This lack of clarity further obstructs learners' ability to transfer credits and build on previous learning experiences across providers, sectors and borders. Moreover, this hinders learners' ability to make informed decisions about their qualifications and identify clear progression routes. Owing to a lack of compatibility of cross-national and cross-sectoral credit accumulation, transfer systems and digital tools, learners may often need to duplicate efforts and retrain in different environments.

5.1.4. Scenario 4: Rigid but Internationally Connected

Scenario 4 Rigid but Connected (low flexibility / moderate permeability) addresses (to some extent) the fragmentation of education and training (compared with Scenario 2 Rigid Islands and Scenario 3 Fragmented Flexibility) by reducing barriers to mobility mainly within subsystems and across countries for the same subsystem. However, in this scenario, opportunities for personalised learning, progression between subsystems and the integration of informal and non-formal learning are limited.

Here, similarly to Scenario 2 Rigid Islands, learners benefit from structured and predictable educational pathways, which provide stability and a clear

progression within formal education and training sectors. They face fewer decisions around curriculum choices, reducing the need to navigate complex, multiprovider learning pathways. In addition, learners may benefit from the recognition of certain types of qualifications from the same subsystem across countries. This enables international mobility, particularly within formal sectors.

However, as mentioned before, learners have limited ability to personalise their learning paths. While they can accumulate credits within particular subsystems, such as HE or VET, moving between subsystems (e.g. from VET to HE) can still be challenging owing to restrictive access requirements. For instance, a learner may be able to transfer credits from one university to another in a different Member State but may find it challenging to transition from vocational training to a university programme in the same country, limiting options for those who want to switch fields or upskill beyond their original learning pathway. The benefit of international mobility is therefore counterbalanced by limited mobility across sectors within the same country.

Moreover, non-formal learning opportunities remain largely inaccessible for many learners and, in a system that prioritises formal and structured learning, might not be valued by learners and employers. These opportunities, often provided by international or employer-based platforms, fill specific skills gaps but are generally paid for by employers or individuals who can afford them. This creates inequalities in access to lifelong learning and skills development, particularly for those who cannot finance additional learning outside formal education. For learners who prefer more practical or hands-on approaches, the lack of customisation in traditional learning methods may result in disengagement, reducing motivation and participation in lifelong learning.

5.1.5. Scenario 5: Gated Communities

In Scenario 5 Gated Communities (moderate flexibility / moderate permeability), individual learner needs are taken into account more than in Scenario 4 Rigid but Internationally Connected, offering more possibilities for flexible learning. This is complemented by efforts to enhance permeability within and between subsystems within national borders. However, international cooperation for international mobility is overall less prominent and emphasised.

In this scenario, learners benefit from increased (albeit still moderate) flexibility in their educational pathways, enabling them to combine units, modules or micro-credentials from the same and, to some extent, different education subsystems, such as VET, HE, AE and GE, where coordinated credit accumulation, validation, admission and/or other permeability solutions are being developed. This modular approach allows learners to tailor their education to their

individual needs and career goals, offering greater adaptability for balancing education with work or personal responsibilities. In addition, national digital tools that document learning from formal, non-formal and informal sources help learners have their diverse experiences valued and, in many cases, recognised.

At the same time, validation systems are often underdeveloped or incompatible across sectors within a country, which can, in turn, hinder learner progression. While some learners gain access to flexible and practical learning methods, such as online, project-based and work-based formats, a significant amount of provision remains classroom-based, limiting the reach of more dynamic and responsive learning formats.

Learners can move relatively freely within a specific formal subsystem, such as from one VET provider to another. In addition, the development of coordinated credit accumulation, validation and admission solutions signals emerging efforts to support transitions between subsystems. However, these are not yet widespread, which therefore still limits learners' ability to fully advance their careers or shift fields. National efforts to strengthen alignment and collaboration across subsystems is counterbalanced by less emphasis placed on international cooperation on recognition systems.

5.2. Implications for education and training providers

5.2.1. Scenario 1: Flex Max

In Scenario 1 Flex Max (high flexibility / high permeability), education and training providers are faced with increased demand for personalised learning offers and the need to adapt to more flexible, learner-centric models. They increasingly rely on technologies like AI, virtual reality and augmented reality to deliver personalised learning experiences, enabling learners to engage in education any time, anywhere. This enables providers to reach a wider audience. The curriculum / learning content is flexible (as opposed to rigid) and allows providers to identify and break into new markets as they adapt their provision to rapidly changing labour market and individual needs. This, in turn, results in quite blurred boundaries between the different education and training subsystems: GE, VET, HE and AE. Such curriculum flexibility in response to evolving labour market needs also means that those who complete relevant programmes offered by training providers are more likely to find employment quickly, which can enhance the providers' reputation both among learners and employers. Indeed, this may also present providers with business development opportunities involving employers.

Moreover, in this scenario, public funding can be linked to the programme participants' destinations after training (e.g. through HE or VET graduate tracking), ensuring that the providers' curricula align with labour market requirements; this can be critical for the viability and growth of education and training providers. Regarding providers, in supporting fully flexible and permeable learning pathways that cater for the needs and preferences of all learners, this scenario involves the full gamut of formal and non-formal as well as public and private training providers.

However, offering such diverse options also raises administrative and operational complexities, as providers would need to manage a wider variety of courses, credentials and learner pathways within and between countries. As noted in the previous section, collaboration between a wide range of providers, such as formal institutions (e.g. universities or colleges) and diverse non-formal education and training providers (e.g. companies, corporations, NGOs or online platforms) is also key.

Indeed, in a Flex Max scenario, different providers must collaborate on quality assurance to ensure the credibility and trust of their learning offers, making them more readily accepted by other providers. This will help providers keep pace with industry needs and deliver skills-based, on-demand education. At the same time, the increased need for collaboration requires significant resource investment. Providers may need to increase spending to develop and maintain guidance services, rapidly adapt to learning demand, conduct quality assurance processes for new learning formats and invest in technology. However, the question of who funds these investments affects the accessibility and sustainability of these services.

Moreover, a highly flexible system with numerous providers – both public and private – introduces a competitive dynamic. While competition can support innovation, drive improvements in quality and prevent a small number of institutions from dominating, this same dynamic can pose challenges for smaller providers, who may struggle to compete with larger, more established ones. Increased competition for public funding may add to the challenge, as larger providers/institutions with more resources at their disposal may be better positioned to secure funding, leaving smaller providers at a disadvantage. This could undermine the inclusivity and diversity potential of a highly flexible learning ecosystem.

5.2.2. Scenario 2: Rigid Islands

Scenario 2 Rigid Islands (low flexibility / low permeability) focuses on standardisation and structured learning pathways; however, the lack of agility reduces, or even eliminates, the system's capacity to adapt to the evolving needs

of the labour market in line with rapid technological developments. This can create a gap between education and training providers and labour market needs.

In this scenario, public education and training providers predominate and operate within a stable framework. There is minimum cooperation among training providers, for example around quality assurance standards. Where there are minimum quality assurance standards, they focus on standardised curricula and linear pathways. Providers also benefit from lower requirements to innovate and adapt to more flexible, learner-centric models, as the standardised approach reduces pressure, time and costs that may be required to keep up with rapid changes in labour market demands.

However, the reliance on traditional classroom settings and minimal use of common digital infrastructure constrains providers' ability to offer flexible or technology-driven learning options, limiting opportunities to support on-demand learning or respond swiftly to labour market changes. Non-formal learning providers may struggle to gain recognition or trust for the learning and qualifications they produce, as these are often not a part of a unified quality assurance framework. This is compounded by the absence of compatible credit systems and of systems and processes to validate non-formal and informal learning. Rigid boundaries between formal and non-formal education hinder the smooth validation of learning and recognition of certificates.

The very limited cross-sector collaboration and exchanges, for example on quality assurance, can limit innovation and leave the system unresponsive to new challenges, restricting providers' capacity to evolve in line with technological advancements and emerging educational needs. Pedagogy, curriculum content and delivery and so on are stringently prescribed potentially hindering the agility and effectiveness of learning provision, including the introduction of learner-centred pedagogies. There are rigid entry and exam requirements and/or rigid standards for programmes, which also discourage transfer between programmes and institutions, the recognition of prior learning and the implementation of flexible delivery modes.

5.2.3. Scenario 3: Fragmented Flexibility

Scenario 3 Fragmented Flexibility (high flexibility / low permeability) fosters the creation of more diverse learning pathways; however, similarly to Scenario 2 Rigid Islands, low permeability results in lower levels of exchange and collaboration among different actors and therefore fewer horizontal and vertical learner transitions.

In this scenario, education and training providers, ranging from traditional institutions to employers and community organisations, face increased demand for

personalised and flexible learning experiences. While this greater focus on flexible learning provision introduces administrative and operational complexities, these are more manageable than in Scenario 1 Flex Max (high flexibility / high permeability), as opportunities for flexible learning paths occur primarily within individual subsystems.

However, the lack of cooperation, for example on quality assurance, across sectors makes it challenging to ensure that their qualifications are recognised or trusted in other sectors or countries. Providers' efforts in promoting flexibility remain siloed within their respective sectors, and cross-sector credibility is difficult to muster. For example, a micro-credential gained through a non-traditional provider may not be fully recognised by formal institutions owing to varying standards and validation policies. The limited effective coordination among providers on quality assurance approaches also influences the trust in qualifications achieved in the same education and training sector. Minimal coordination with other providers limits the potential for collaboration, making it difficult to support learners who wish to build cohesive learning pathways. Restrictive admission requirements, together with highly variable validation of non-formal and informal learning approaches within and between countries and learning sectors, further hinder learner progression and mobility.

In addition, education and training providers face challenges because of the lack of cross-national and cross-sectoral credit transfer systems. These can relate to the extent to which institutions have put in place systems and processes to make credit transfer an integral part of admission and enrolment; variable institutional willingness to accept credit from elsewhere; lack of incentives for institutions to accept credit; and differences in the articulation of credit arrangements around the level of learning outcomes between institutions.

5.2.4. Scenario 4: Rigid but Internationally Connected

Scenario 4 Rigid but Internationally Connected (low flexibility / moderate permeability) allows education and training providers to avoid some of the impacts described as negative for learning providers in Scenario 3 Fragmented Flexibility. However, in this scenario, the limited interconnected collaboration among different education subsystems and learning providers remains, although mobility within the same subsystem, also across countries, is supported. Indeed, this scenario is characterised by a high degree of international, cross-border collaboration but within the same subsystem, such as HE.

On the positive side, for formal education and training providers, the structured system offers consistency and trust in the qualifications they deliver. Schools, universities and colleges adhere to standardised curricula and assessment

methods, which ensure that their qualifications are recognised across countries. As in Scenario 2 Rigid Islands, this facilitates high levels of trust in formal qualifications, facilitating learners' transitions between institutions within the same subsystem as well as learner mobility across borders. The greater international collaboration and cooperation within particular subsystems that this scenario entails also provide welcome opportunities for providers – at both the subsystem and provider/institutional levels – to explore new and/or innovative practices, methodologies and so on (e.g. for validation or credit transfer or teaching approaches); share experiences; exchange good practices; learn from each other; develop and/or cooperate on joint projects, including through accessing EU funding; and better integrate technological solutions, such as digital tools.

However, such international/EU-wide knowledge sharing and cooperation take place only across similar institutions and within particular subsystems, such as HE or VET. Although this does facilitate cross-border communication and collaboration as regards the same types of qualifications, it tends to target the same type of learners, such as mobile/international HE or VET students. In doing so, there is a risk of promulgating educational segregation by particular subsystems not only within but also between countries by focusing on particular types of students instead of opening up to a wider range of learners who may not be their usual target groups, for example students from disadvantaged backgrounds, who also tend to lack the necessary financial and social capital that is sometimes required for learner mobility, and non-traditional learners, such as those with low levels of skills.

Moreover, this rigidity also limits innovation in education delivery. Providers operate within a set framework that reduces opportunities for experimentation with more flexible formats like micro-credentials, modular learning or project-based assessments. While there are systems for credit accumulation and transfer within subsystems, the limited ability to transfer credits between sectors means that providers cannot fully meet the diverse needs of learners, who may want to transition between VET and HE or other sectors. Limited cooperation on quality assurance arrangements with non-traditional providers (e.g. employers offering work-related training) has an impact on flexibility. While formal providers, mainly associated with the same education and training subsystems, collaborate effectively on approaches, ensuring trust in traditional qualifications, non-traditional providers are excluded from these systems, hindering their ability to offer qualifications that are valued and widely recognised.

5.2.5. Scenario 5: Gated Communities

In Scenario 5 Gated Communities (moderate flexibility / moderate permeability), formal education and training providers, such as schools, universities and colleges who are responsible for most of the learning provision, face increased demand for modular and flexible qualifications. This supports them in offering a variety of learning formats that cater to diverse learner needs, from traditional classroom instruction to online and practice-based learning. This shift requires providers to collaborate on quality assurance to ensure trust in the qualifications offered across various subsystems. There is effective collaboration among learning providers in each subsystem of education, which results in high levels of trust in qualifications achieved in a particular learning subsystem. At the same time, there is also a degree of collaboration and trust among subsystems, which allows for some learner progression across learning subsystems.

However, limited progression pathways between sectors still pose challenges. Providers must navigate complex systems of credit accumulation and credit transfer, which are in place within subsystems but are not fully integrated across them. This affects providers' ability to offer fully integrated pathways that meet the needs of learners aiming to transition between different education and training sectors. Further, international providers offering targeted, work-related courses compete with traditional providers. These international courses, often funded by employers or individuals, are seen as more directly aligned with labour market needs, potentially attracting learners away from formal institutions.

5.3. Implications for policymakers

5.3.1. Scenario 1: Flex Max

In Scenario 1 Flex Max (high flexibility / high permeability), EU and national policymakers play a key role in making qualifications and systems across the EU both more transparent and trusted. This allows for easy comparison and transfer of learning outcomes. To this end, they work to ensure that NQFs are fully open so that they describe all types and levels of qualifications – awarded both in all education and training subsystems and outside formal learning – and ensure links with the validation of non-formal and informal learning. Policymakers also ensure that comprehensive national qualifications databases/registers – which are key to making NQFs both visible and accessible to end users – are built and maintained, covering all qualifications from all education and training subsystems (i.e. those offered in formal education and training, those developed in the private education and training subsystem, international qualifications, partial qualifications and

micro-credentials). This, in turn, helps make learning progression paths and the degree of comparability of (all) qualifications more visible nationally and internationally. By increasing both the coverage and the data quality of national qualifications databases so that these shift from just being a trusted reference source with official information about qualifications to becoming a comprehensive point of reference on qualifications for different purposes, policymakers actively seek to maximise both the flexibility and the permeability of their respective learning ecosystems.

Looking further afield, policymakers in all 27 Member States ensure that national qualifications databases/registers are fully interoperable in line with European standards and structure their data on qualifications using common formats, such as the ELM and European guidelines for writing learning outcomes, and work to develop or strengthen common terminology (e.g. using ESCO terms) to record information on occupations, qualifications and learning outcomes within their national databases. These efforts collectively support interoperability between the systems and facilitate information exchange across the EU.

In promoting maximum flexibility of learning and permeability of education and training subsystems, policymakers from Member States develop compatible approaches to credit transfer and accumulation by ensuring that credits and learning outcomes are described consistently and are recognised across borders and education subsystems. Such credit systems enable learners to have their learning outcomes acknowledged and used towards a qualification, irrespective of when and where these were achieved – across different institutions, learning contexts (e.g. education, work or leisure), subsystems, countries and points in one's life. Policymakers (and key policy actors) at both the system/policy and provider/institutional levels support the consistent implementation of credit systems across subsystems. They also ensure that credits can be awarded through validation.

Policymakers vigorously pursue a number of policies that promote flexible learning pathways, such as modularised learning opportunities, and a broader approach to curriculum design across subsystems. As a result of this broadening and hybridisation of curricula in GE and VET, general and vocational (and occupation-specific) content now also encompasses, to a much greater extent, transversal skills and more general subjects (as opposed to only narrowly defined content). In a similar vein, policymakers encourage differentiated instruction in line with the learners' needs and interests, together with the development of personalised learning. As mentioned above, policymakers support the introduction of modular/credit-based curricula, which, in turn, underpin modularised learning

pathways and allow learner movement/progression between different education and training subsystems, most notably between GE and VET, and VET and HE.

On a related note, policymakers support more flexible approaches to assessment, allowing learners to accumulate smaller parts of qualifications, including micro-credentials, which are assessed separately and can also be stacked up towards a full qualification. Indeed, they have developed clear principles for the accreditation, provision, assessment and awarding of micro-credentials at the national level, which, in turn, aligns with the European approach to micro-credentials. Policymakers support the use of a wide range of forms of assessment, including increasingly contextual, real-life situational assessments and digital forms of assessment (e-assessment), such as computer-adaptive assessments, e-portfolios and virtual reality and/or augmented reality assessments to evaluate one's skills and competences via digital tools.

They also encourage publicly funded education and training providers to offer part-time or evening learning opportunities for greater flexibility of learning provision and provide financial incentives for providers to develop online, hybrid or blended learning opportunities for on-demand skills.

In this scenario, policymakers expand the use of instruments, such as individual learning accounts, which support flexible learning systems by providing individuals with increased funding and access to learning programmes. On a related note, in order to help learners record and manage their learning achievements/qualifications, knowledge and skill sets and plan their further learning and career trajectory, policymakers ensure that they have in place national digital tools that are compatible across education and training subsystems and countries, and/or that they support the use of the EU digital tools (e.g. the Europass digital tools). In doing so, they ensure that information systems are interoperable and/or develop secure interactive online platforms where one can obtain details of individual qualifications and see how they relate to each other within and between countries. These can also provide information about learning opportunities, for example across subsystems or within and between countries, thus further supporting learner progression.

However, to protect learners' personal data and privacy as well as to ensure fair access to education, it is essential that policymakers take all the necessary steps to effectively regulate digital learning tools and AI-based education systems, especially in view of their widespread use and potential for misuse. In order to foster a compatible approach across subsystems and countries, policymakers draw on a number of European regulations, strategies, policies and guidelines such as the *Ethical guidelines on the use of AI and data in teaching and learning for educators* or the EU Artificial Intelligence Act.

By designing and implementing inclusive policies for lifelong learning – in line with the first principle of the European Pillar of Social Rights – policymakers help address the diverse needs of a changing population and respond to rapid technological shifts. In that regard, individual learning accounts allow individuals – both those in employment and the unemployed – to accumulate and use training entitlements over their lifetimes, while instruments such as micro-credentials support learners in improving their skill sets flexibly through shorter learning experiences, in a quick response to emerging skills gaps. Moreover, policymakers work to ensure that no one is left behind in terms of their knowledge and skills, especially in the face of the ongoing green and digital transitions, which require regular, if not constant, upskilling/reskilling. This, in turn, means that policymakers make a concerted effort to reach out to and (re)engage in lifelong learning all segments of the population, including vulnerable groups, such as early school leavers / NEETs, those with low skills levels, unemployed/inactive people, older adults/workers and those with a migrant background. For example, targeted outreach activities combined with individualised and intensive support and guidance, together with bridging courses and/or second-chance education programmes, can all help such groups (re)engage in education and training.

In a similar vein, effective systems/procedures for recognising prior learning (validation) and flexible policies on admission to formal learning provision can also support inclusive lifelong learning policies. To this end, policymakers ensure that validation procedures allow learners to access all types of learning provision, including formal education and training programmes, while most (if not all) qualifications can be awarded (in full) through validation. At the same time, they ensure that the approach(es) to validation is/are compatible across subsystems and countries. In doing so, they ensure that validation supports lifelong (and life-wide) learning by allowing individuals to transfer and accumulate learning over time and across institutions, subsystems and countries.

Policymakers – at both the system/policy and provider/institutional levels – promote flexible admission rules and procedures across education and training subsystems. They introduce measures such as bridging programmes and mechanisms aimed at easing transitions between the different learning subsystems (e.g. between VET and GE), which, in turn, allow learners to change educational tracks across institutions, subsystems and countries.

In an effort to promote learners' progression/transitions across subsystems and borders, policymakers (and key policy actors) – at both the system/policy and provider/institutional levels – ensure that procedures are in place whereby recognition of all types and levels of qualifications across countries is possible. To this end, in this scenario, policymakers reflect on strengths and weakness of the

different approaches in order to develop a common methodology to recognise all types of qualifications. Moreover, where relevant, automatic recognition systems are in place and are widely used, allowing learners from one country to be considered for entry to a programme of further study at the next level in another – in line with the 2018 Recommendation on automatic recognition.

The above also highlight the vital importance of mutual trust and confidence both within and between institutions, subsystems and countries, not least through transparent, robust and compatible approaches to quality assurance. To this end, policymakers commit to stimulating and creating the conditions for developing collaborative and compatible quality assurance frameworks across education and training subsystems and countries, including by fostering strong cooperation at both the system/policy and provider/institutional levels. This, in turn, will result in greater trust and transparency across subsystems and countries, thus allowing for flexible learning progression either within a country or across countries. Governance arrangements, such as single coordination bodies, cross-sectoral steering committees, joint meetings and conferences involving policymakers/representatives from GE, HE, VET and AE, help break down barriers between subsystems, promote close cooperation and support the flexible transition/progression of learners.

Policymakers at both the national and EU levels must make decisions about funding models regarding funding/resource allocation for guidance services, digital infrastructure and quality assurance systems, for example, including robust quality assurance processes as regards the ongoing opening up of NQFs to non-formal and informal qualifications. In addition, aligning educational offers with labour market needs helps maintain economic competitiveness, but these partnerships will need to balance individual, public, national and industry interests. Flexible learning pathways need to be supported by appropriate information and guidance services that can advise learners on the best learning pathways to meet their requirements and aspirations. This, in turn, requires much greater policy emphasis on lifelong guidance.

In this scenario, policymakers are also faced with a number of challenges. Starting with the last point, policymakers need to invest in lifelong guidance and effective outreach activities to identify and engage non-traditional learners / learners from disadvantaged backgrounds much more than is usually the case. This is likely to require substantive investment, which is, however, necessary in order to support learners – especially those from vulnerable groups such as low-skilled people and early school leavers – to effectively navigate the complex education and training landscape and make informed choices throughout their lives.

On another note, although the ongoing opening up of NQFs to non-formal and informal qualifications contributes to greater transparency and comparability of qualification systems, it must be accompanied with robust quality assurance processes as regards such qualifications, in order to improve the transferability of learning outcomes across education and training subsystems and across countries. This, again, requires close and effective collaboration and coordination between all relevant actors both within and between subsystems and countries as well as institutions, which can be a key challenge.

5.3.2. Scenario 2: Rigid Islands

In Scenario 2 Rigid Islands (low flexibility / low permeability), the development of qualifications and a qualifications framework are informed by the specific national policy context and education and training system (as well as the labour market, albeit to a lesser extent). There is little or no interest in strengthening compatibility with other countries' qualifications frameworks. In some cases, there are separate qualifications frameworks (or subframeworks), and credit transfer systems, when they exist, are linked to specific subsystems (e.g. GE, VET and HE). Policymakers focus only on formal qualifications from traditional and trusted providers, which they know and regulate, and this provides clarity and consistency to the system. To this end, NQFs include only formal qualifications and do not display any bridges between them. At the same time, in order to support NQF implementation and use, by also making them more visible and accessible to end users such as learners, learning providers and employers, policymakers maintain many qualifications databases/registers, typically linked to specific education and training subsystems, which again do not show any links or bridges. Developments connected to NQFs and validation are generally separate, with the latter showing diversity in terms of approach within and between countries and subsystems.

Clear boundaries exist between formal and non-formal learning and providers, with some forms of cooperation existing mainly between providers and institutions belonging to the same education and training subsectors. Credit systems in academic education and VET are developed according to different logics (e.g. in terms of credit points being based on learning outcomes as opposed to study duration), and compatibility is not pursued. Within individual subsystems, institutions apply their own approaches to credit transfer and the validation of non-formal and informal learning, which are not automatically embedded in admission and enrolment procedures.

Education and training subsystems operate largely in parallel, with learning policies managed separately across subsystems throughout the policy cycle (design, implementation and evaluation), a structure that is considered to ensure

greater efficiency within each subsystem. Policymakers prefer not to invest in strong cooperation/coordination or discussions between the different education and training subsystems either in their own country or across borders. This approach is considered to allow policymakers and providers to tailor strategies and processes to the specific needs of their own subsystem. For example, while there may be an overarching quality assurance framework in place, implementation may differ, reflecting the diversity of practices across subsystems and in some cases even institutions and providers.

National policymakers exercise full control over the content of the education and training system, with often little or no coordination and collaboration with other countries, at either the system/policy level or the provider/institutional subsystem level. Where they opt for such cooperation, this tends to take place in specific education and training subsystems or for specific qualifications (e.g. HE or VET). Policymakers' oversight of formal education and training providers ensures strict adherence to quality assurance processes and standards and fosters confidence in all relevant parties, namely learners, providers and employers.

Cross-border cooperation across education and training subsystems is organised in such a way that recognition procedures between countries generally apply to particular subsystems or qualifications, most commonly in HE. National practices focus on the recognition of formal qualifications for access or admission purposes to the next level of learning.

Learner progression is shaped by defined and detailed admission and access requirements, both between subsystems of education and training and across institutions. This reflects policymakers' choice to maintain a clear separation between subsystems and encourage learners to continue along the path they have chosen, favouring a clear, linear and standardised progression route. Formal learning is prioritised, and non-formal provision is used on a more targeted basis, typically to address specific skills needs.

On a related note, policymakers focus on providing learners with traditional, highly structured/standardised and, often, one-size-fits-all learning pathways. These typically lead to specific predefined qualifications and well-defined outcomes for learners in terms of jobs and learning progression. In a similar vein, educational policy favours a traditional approach to assessment, with evaluation of learning taking place at regular and set times. In doing so, assessment does not form part of a personalised gradual learning process but takes the form of summative assessment at the end of the academic year. Assessment, which is primarily carried out by the teacher/educator, tends to be quantitative and emphasise knowledge retention.

On the subject of learning content, in this case, the instructional curriculum defined by policymakers and delivered by teachers is set and standardised, with little differentiation or personalisation. This ensures that all learners are exposed to the same teaching/learning approach at the same pace.

By favouring a standard and state-defined curriculum, policymakers seek to guarantee universality and comparability of learning experiences across the system. As for the place, pace and method of teaching, the policymakers privilege traditional forms or modalities of delivery, such as the classroom, a predetermined/set pace and teacher-led direct instruction.

Policymakers promote the use of national and institutional digital tools for learners to describe and document their skills, qualifications and experience, with an emphasis on formal qualifications. These digital tools are designed primarily for national or institutional purposes, operate within their own subsystem and have limited connections to European-level tools, such as Europass. Investment in developing common standards and terminology to support the interoperability of information on skills and qualifications is very limited. Interoperability can also be affected by a country's degree of digital transition and maturity, including alignment with the European digital credential infrastructure, which, in this case, is low.

By opting for such highly structured and standardised learning provision in this scenario, policymakers take a number of risks. For example, the use of rigid and standardised curricula often fails to accommodate learners' different learning styles, abilities and needs, which, in turn, can lead to educational disengagement (e.g. early school leaving or lack of adult participation in learning) and widen educational inequalities. Moreover, such standardised learning content struggles to keep pace with and effectively respond to the rapidly changing labour market needs, for example as a result of the ongoing digital and green transitions of economies and societies. Not only can this adversely affect learners' employability and professional development but it can also aggravate skills mismatches, detrimentally affecting productivity, competitiveness and growth at the company, regional and national levels.

5.3.3. Scenario 3: Fragmented Flexibility

Scenario 3 Fragmented Flexibility (high flexibility / low permeability) presents a context of well-developed flexibility but limited permeability between subsystems of education and/or borders. In promoting learning flexibility, policymakers ensure that the NQF includes all types of qualifications and that there are sufficient financial incentives for flexible learning pathways (e.g. financial support for learners, especially those from disadvantaged groups, including through individual learning accounts). In supporting greater flexibility in learning, policymakers

encourage, including through appropriate strategies and funding, the broadening of learning provision, so learners have access to a wide range of providers that goes well beyond formal educational institutions to encompass employers, sectoral bodies, community organisations and other types of non-formal providers.

However, such broadening of provision, which offers scope for more flexible learning pathways, is associated with specific subsystems rather than being across subsystems. To this end, learners can tailor and customise their learning journey in line with their personal and professional needs within a particular subsystem of education (e.g. VET or HE). They can work towards all types of qualifications, including micro-credentials and/or partial qualifications, and access a wide range of online courses. However, policymakers/actors – at the system/policy and provider/institutional levels – pursue restrictive admission policies and do not prioritise the development of bridging programmes or joint courses between subsystems, such as VET and HE.

As a result, a learner can progress, albeit not easily, within a particular education and training subsystem and across its institutions and providers. Indeed, policymakers support the use of modules and credit accumulation and transfer systems in particular education and training subsystems, but this is not developed or pursued across subsystems. That said, in the pursuit of greater flexibility of learning content, in the way curricula are designed, policymakers push for responsiveness to labour market and social challenges and more flexible forms of assessment, with a greater focus on formative assessment.

Regarding assessment, policymakers have encouraged the development of digital tools that allow learners to track and validate their learning outcomes from formal, non-formal and informal settings. However, these tools are used within particular subsystems of education, and there is limited interest in and focus on extending their functionality across subsystems and countries, thus limiting the scope for transferability of learners' achievements. Indeed, where these tools do exist, they are primarily used for recording and storing learners' achievements as opposed to supporting learner transition/progression, which is further hindered by limited cooperation (permeability) across subsystems. Along similar lines, validation arrangements promoted by policymakers are subsystem-specific to promote tailored approaches, although this results in variable approaches across the learning ecosystem. Moreover, validation arrangements may not exist in all subsystems (AE, CVET, HE, IVET or GE), and they may cover only some qualifications. Even within a single subsystem, institutions and providers may adopt diverse practices, reflecting institutional autonomy and flexibility in how validation is approached.

Regarding the recognition of qualifications across countries, when this exists, it is focused on specific types of learning/qualifications in specific subsystems (e.g. HE) and for certain learner groups (e.g. graduates, highly skilled migrants or ICT professionals). This may be linked to a country's industrial and skills policy or country-specific labour and skills shortages that need to be addressed.

Overall, although the focus is on flexibility of learning, this political priority is shaped and distributed differently/unevenly across subsystems, which operate independently. Policy actors set their own priorities, apply their own perspectives and govern their respective education and training sectors according to their specific logics and objectives. Progression is primarily facilitated within rather than across subsystems. In fact, each subsystem develops and manages its policies and processes separately. This decentralised organisation is considered to support targeted innovation within subsystems to respond to local needs.

Integration and compatibility across education and training systems, both within and between countries, remain varied. While NQFs and qualifications registers aim to include both traditional and non-traditional qualifications, differences in how learning outcomes are described affect the extent to which they promote transparency and transferability across subsectors. In some cases, qualifications databases or registers are linked to specific education and training subsystems, rather than forming an overarching, comprehensive register covering all types and levels of qualifications. This approach supports progression within individual subsystems.

Cooperation across education and training subsystems, for example in areas such as quality assurance and validation, takes place to differing extents. As a result, systems operate with strong internal coherence within subsystems, while transparency and trust are primarily established at the subsystem level rather than across the broader system or between countries.

5.3.4. Scenario 4: Rigid but Internationally Connected

In Scenario 4 Rigid but Internationally Connected (low flexibility / moderate permeability), policymakers prioritise international cooperation on the same education and training subsystem differently from Scenario 5 Gated Communities, where the focus is on facilitating transitions within and between subsystems within borders. However, the scope for personalising learning is limited, as the policy focus is on structured and standardised learning content and pathways. For example, policymakers prioritise standardised curricula, which provide clarity, set common core standards and clear expectations for learners and offer a predictable framework that facilitates the transparency and comparability of learning across countries. However, such curricula do not offer much scope for learning flexibility

and tailoring in line with the specific needs of learners. Moreover, the rigidity of the system also creates challenges relating to the need to address the gaps between (rapidly evolving) labour market needs and rather standardised/rigid education and training systems. This is because the standardisation of curricula often lags behind technological advancements and industry/economic changes, leaving learners unprepared for future jobs, for example in relation to the ongoing green and digital transitions.

Likewise, policymakers favour uniformity and standardisation in assessment practices, making it easier to evaluate learner performance and progress across different countries. At the same time, standardised assessment practices make it easier for policymakers to compare the performance of educational institutions, regions and countries. Not surprisingly in this scenario, policymakers primarily support and fund formal learning providers, while non-formal education providers play a rather residual and complementary role in addressing specific gaps in provision.

On a related note, while NQFs and qualifications databases/registers provide accessible information on formal qualifications, the exclusion of non-traditional qualifications from these frameworks limits the recognition of skills gained outside formal education (and the associated transferability). In this case, policymakers do not focus on integrating non-traditional providers into quality assurance systems.

Even so, standardised recognition procedures for formal qualifications support the recognition of such qualifications across countries. That said, restrictive access/admission policies between education and training subsystems and/or educational institutions, either within a country or across borders, prevent totally seamless transitions and progression for learners. This is because they limit permeability across subsystems, such as VET and HE, constraining fluid pathways for those aiming to upskill, change careers and/or pursue personal development goals. Policymakers have invested in the development of digital tools to support the portability of learning, but their use is focused on formal qualifications.

On a different but related note, although policymakers have developed compatible systems to validate learning from formal, non-formal and informal settings within and between countries. However, these are not implemented in a uniform and widespread way; they are more widely used in some countries and within particular subsystems of education and training. Despite the adoption of consistent approaches to validation, its use is rather limited and specifically targeted (e.g. involving specific groups of learners, such as those with low skills levels).

Given the emphasis on international mobility, policymakers promote consistent approaches to credit transfer across countries within the same

subsystem, largely for formal qualifications. Compatible credit systems within the same country that support transitions across subsystems are less developed. For example, the relevant learner trajectories between institutions that form part of the same subsystem are quite set and predictable, including when coupled with international mobility.

In supporting greater permeability within education and training subsystems – both within and between countries – policymakers promote cooperation in relation to issues such as recognition, quality assurance or credit systems that (as indicated above) remain predominantly focused within the same subsystem. Moreover, the fact that such cooperation primarily involves only formal training providers (and formal qualifications) means that there is relatively low trust and confidence in the training offered by non-traditional providers, such as employers and community organisations, and in non-traditional qualifications, such as micro-credentials and/or those obtained outside formal education. This, in turn, limits the scope for flexible learning pathways and for learner progression between different types and levels of learning provision.

5.3.5. Scenario 5: Gated Communities

In Scenario 5 Gated Communities (moderate flexibility / moderate permeability), policymakers promote a partly flexible education systems, allowing learners to achieve full or partial qualifications through modular approaches across various sectors. This increased flexibility goes hand in hand with moderate permeability, reflected in efforts to improve transitions both within and between subsystems, particularly within national borders.

Although policymakers have opened up the NQFs to qualifications awarded outside formal education and training, these still do not include all types and levels of qualifications. Thus, NQFs provide an overview and serve as a reference point for comparing most – but not all – qualifications. Policymakers also ensure that there are interconnections between qualifications databases/registers, although these are not always visible across subsystems. Instead, they mainly show interconnections between qualifications in the same subsystem. There are efforts to develop compatible descriptions of qualifications and their learning outcomes to support greater comparability across subsystems, but these are not implemented systematically. Indeed, despite efforts to have similar descriptions of qualifications, the fact that policymakers still adopt different approaches in that regard limits their comparability across subsystems.

Despite policymakers wishing to enable learners to tailor their learning to their specific needs and interests as well as to transfer and build on all types of their learning – formal, non-formal or informal – this is not widespread across all

subsystems. For example, although policymakers have made efforts to open learning provision to a wider range of providers, including employers, sectoral bodies, social partners and community organisations, this is not applicable across all subsystems. This, in turn, limits the availability of flexible learning options.

Likewise, although policymakers generally support the modularisation, opening up and flexibility of curricula, including a strong combination of general, vocational and transversal skills, leading to less clearly separated curricula between subsystems, this blurring of curricula is neither uniformly nor consistently applied across subsystems. On a related note, policymakers encourage the use of non-traditional, flexible and continuous assessment methods, but such methods are not always applied consistently across subsystems.

On the topic of assessment and its results, a national compatible digital tool allows learners to keep a record of formal, non-formal and informal learning outcomes whenever and wherever these were achieved. However, the acceptance and use of this digital tool tend to vary between subsystems and, especially, borders, and there are limited links to other relevant digital tools available at the EU level, such as Europass.

In an effort to promote more flexible and permeable learning systems, policymakers have introduced some measures that facilitate access between education and training subsystems, such as bridging programmes and flexible admission requirements. However, these are targeted at specific groups of learners (e.g. IVET learners so that they can access HE) and/or specific subsystems (e.g. between VET and HE).

Policymakers have set up a national validation system for learning from formal, non-formal and informal settings that can be used to achieve partial or full qualifications. In doing so, they also encourage similar approaches towards validation and some compatibility across education and training subsystems and countries.

In addition, although policymakers support the use of credit accumulation and transfer systems across subsystems, the acceptance and use of such systems are highly variable across subsystems, with HE first having the greatest take-up and VET the second greatest. In a similar vein, policymakers support a move towards more flexible education systems, allowing learners to achieve full or partial qualifications through modular approaches across various education and training subsystems.

On a different note, although policymakers support cross-border recognition of qualifications, this tends to be more widely used in specific education and training subsystems, usually HE. Overall, efforts to strengthen the transparency and comparability of qualifications and qualifications frameworks and the

development of compatible credit systems across countries to ensure cross-border recognition remains limited. This is owing to the emphasis placed on supporting and strengthening cooperation and mechanisms to improve transitions within and between education and training subsystems nationally, with cross-border recognition being less prioritised overall.

Policymakers encourage cooperation between education and training subsystems as regards areas such as quality assurance, with growing efforts to align practices within and between subsystems nationally. However, this is patchy and irregular, which, in turn, reduces the scope for trust and transparency in the learning ecosystem. For example, policymakers foster strong coordination among formal or traditional providers within and between education and training subsystems within a country in relation to the development of compatible quality assurance approaches, procedures, standards and tools, but they tend to be less robust in demanding such coordination from non-traditional providers, including those engaged in the provision of non-formal learning. In doing so, policymakers run the risk of disparities in learning quality disproportionately affecting non-traditional, vulnerable and/or marginalised learners, who are more likely to access and benefit from non-formal education (e.g. for upskilling or reskilling purposes, including basic skills training).

5.4. Implications for the EU

As mentioned earlier, the EU plays a supporting and complementary role in relation to education and training across the EU. Depending on the specific scenario, the extent and type of its role will vary; however, as highlighted by both our quasi-Delphi panel (as part of the online survey and the second round of expert interviews) and the two scenario validation workshops, the main areas of EU work in supporting Member States in their policy choice(s) in the future could be as follows.

First, the EU could continue and even intensify its support for continuous cooperation and coordination between Member States, including through the open method of cooperation within the strategic framework for European cooperation in education and training.

Closely linked to this is the EU-facilitated peer review activities, which promote the exchange of information and ideas between Member States, thus fostering peer learning and the transfer of knowledge that can inform national (and regional/sectoral) practices. Here the transfer of learning – for example, as regards good practice in flexible learning pathways – can take various forms, ranging from awareness raising to adaptation or replication, each of which has different

implications for the transfer of knowledge. Here the role of EU funding, such as Erasmus+, has been and will continue to be critical, for example in supporting policy experimentation and innovation through transnational projects in areas such as micro-credentials, joint VET qualifications and/or modules, and the ethical and effective use of generative AI systems in education and training.

However, EU support for cooperation and peer learning among Member States, which has historically tended to be at the sectoral/subsystem level, should in future have a much stronger cross-sectoral focus in the spirit of further breaking down barriers and silos between different education and training subsystems and promoting greater integration of learning pathways. This will require integrative action, starting from the EU institutions themselves. For example, the directorates-general for Education, Youth, Sport and Culture, for Employment, Social Affairs and Inclusion and for Internal Market, Industry, Entrepreneurship and SMEs – each of which either oversees or is involved in different parts of education and training systems – could work more closely together in relation to the recognition of academic, vocational and professional qualifications across the EU.

Promoting closer country cooperation aside, the EU could also more effectively promote the use of its wide array of policies and tools – some legally binding, others not – to further underpin national efforts towards creating more flexible learning pathways. For example, the EU could more strongly encourage Member States to structure their learning- and qualifications-related data in line with the ELM – a common multilingual data model – and to use ESCO when describing related skills and occupations to ensure that data are comparable. On a related note, it could also support wider use of the EU's qualifications dataset register, the ELM and ESCO by all Member States to link national databases and make them interoperable to fully achieve an EU-wide shared understanding between different systems for all types of qualifications and competences. Further, the EU could further enhance the awareness, accessibility, usability and user-friendliness of current tools such as Europass and European digital credentials. For example, Europass could be expanded so that not only formal but also non-formal and partial qualifications as well as other learning achievements, including those gained through validation, can be consistently and effectively recorded.

In view of the intensifying international competition for talent and the persistent EU-wide labour and skills shortages, the EU could also further develop procedures aimed at comparing the EQF with non-EU countries' qualifications frameworks, especially in the context of neighbourhood-funded projects and linked to talent partnerships. Regarding the EQF itself, the EU could also seek to create closer and more explicit links between this framework and the Professional Qualifications Directive.

On a different note, EU action could focus on offering support to Member States in the form of technical assistance (e.g. technical support instruments), including in terms of developing policies and tools promoting transparency and transferability, such as NQFs and validation arrangements. However, the type and extent of such support – as well as the other forms of support mentioned above – will vary depending on both the specific scenario and national context within which it will be implemented. For example, in the Flex Max scenario, the EU may provide support, including funding (e.g. from the European Social Fund), to a Member State in relation to developing effective lifelong guidance services, which are especially vital in that scenario, as learners have to navigate the complex education and training landscape and make learning choices largely by themselves.

5.5. Summary of implications

This chapter outlined the key implications for the main stakeholder groups considered in this study, namely learners, education and training providers, and policymakers, which are summarised in Table 6 and Table 7. For learners and providers, the analysis focused on the distinct opportunities and challenges they may face across the five future scenarios. For national policymakers, it highlighted the range of policy approaches that could be adopted and the varying role of European-level cooperation.

From a learner's perspective, more flexible scenarios tend to better address individual needs and interests, creating wider opportunities for diverse learning paths and lifelong learning. However, successful delivery of the more flexible scenarios depends on systemic factors: the capacity of education systems and providers to collaborate on the integration of learner pathways, qualifications and experiences, and to ensure sufficient support, particularly for vulnerable groups. Less flexible scenarios, by contrast, offer greater stability and predictability, as the limited range of learning options and providers reduces uncertainty and complexity about what to choose and whom to trust.

For education and training providers, more flexible scenarios encourage innovation, adaptation and digitalisation, but they also entail a heavier administrative and managerial burden in designing personalised courses and pathways. Challenges around delivery and quality assurance are more pronounced in such contexts. Conversely, less permeable and flexible scenarios make it easier to safeguard quality and build trust among providers, particularly formal providers, though they do not strengthen responsiveness to labour market shifts, social change or evolving learner preferences.

When it comes to implications for policymakers, the perspective differs from that of learners or providers. Unlike learners and education providers, policymakers are not recipients of change but active shapers of systems' directions. At the national level, their choices define the policy approach. Highly flexible scenarios are associated with policies that promote diversity and innovation, support modular learning, open up space for non-traditional providers and place value on non-formal and informal learning. Less flexible scenarios, in contrast, emphasise stability and trust, prioritising formal providers and linear, clearly defined learning pathways. High-permeability scenarios call for cooperation among actors, common frameworks, shared standards and integrated governance, while low-permeability scenarios favour centralised control and strong sectoral boundaries, and show limited interest in external cooperation.

Depending on the diverse national directions the scenarios represent, the scope and focus of EU cooperation also varies. In scenarios where international cooperation is prioritised (e.g. Flex Max and Rigid but Internationally Connected), the EU needs to intensify its coordinating and enabling role. EU cooperation is essential to enable international cross-sectoral cooperation, development or scaling of common and/or compatible frameworks. In more inward-looking or fragmented scenarios (Rigid Islands, Fragmented Flexibility and Gated Communities), the EU plays a more limited or indirect role, preserving cooperation across countries through targeted support, with cooperation focused on data sharing, benchmarking and voluntary alignment rather than deeper integration.

Table 6. Scenarios' benefits and drawbacks for learners and providers

	Flex Max		Rigid Islands		Fragmented Flexibility		Rigid but Internationally Connected		Gated Communities	
	Benefits	Drawbacks	Benefits	Drawbacks	Benefits	Drawbacks	Benefits	Drawbacks	Benefits	Drawbacks
Learners	Modular learning paths give access to a wide range of tailored opportunities; all learning is recognised, supporting smoother learning and career transitions.	Navigating many options, judging their quality and finding guidance can be overwhelming. Transversal skills may receive less attention.	Following predictable and trusted pathways provides clarity and reduces complexity and the need for support services.	Standardised pathways limit opportunities to tailor learning, change direction or receive recognition for learning outside the formal track.	Tailored learning is possible within subsystems, giving some control over pathways and providing opportunities for reskilling.	Transitions across subsystems and borders are limited, leading to duplicated efforts, retraining, inefficiencies and frustration.	Structured and predictable progression, including across countries, ensures stability and trust and reduces complexity.	Tailored learning is limited. Non-formal learning and sectors' mobility is deprioritised. Progression is tied to initial choices.	Modules and units of learning can be accumulated within and, to some extent, across national subsystems.	Recognition of learning outside formal and national systems is limited, restricting transitions between sectors and countries.
Providers	Autonomy to innovate and respond to labour market needs creates opportunities for development and new market entry in a diverse landscape not dominated by a few institutions and providers.	Offering adaptable learning raises complexity and requires resources. Increased competition and pressure for public funding can pose risks to smaller providers.	Developing linear and standardised pathways reduces pressure, time and costs. Stable, low-pressure environments support long-term planning.	Limited autonomy and agility reduce capacity to adapt, risking gaps between skills supply and demand. Non-formal providers struggle to gain recognition and trust.	Local autonomy enables innovative, personalised and modular learning paths to address community needs and local labour market demands.	Limited cooperation reduces trust and recognition, causing duplication and low scalability. Not all providers' education is recognised.	Structured and standardised programmes foster trust and cooperation with international counterparts in the same system, for example through joint programmes.	The exclusion of less traditional providers and focus on traditional learners restricts ability to reach non-traditional groups.	Expanding national provision with coordinated modular offers across domestic actors leads to complementarity and synergies.	Weak international cooperation limits peer learning, joint projects and attraction of international learners.

Table 7. **Policymakers' choices and approaches across the scenarios**

Flex Max	Rigid Islands	Fragmented Flexibility	Rigid but Internationally Connected	Gated Communities
<p>Push for a diverse ecosystem with different providers and forms of certifying learning, with little interest in sharp subsystem divisions. Modularisation is pursued with vigour, and cooperation across national and international actors is prioritised, with investment in interoperable infrastructure, common frameworks and inclusive policies for integrated governance connecting subsystems, providers and countries.</p>	<p>Support strong centralised control, which guarantees stable and homogeneous systems with clearly defined responsibilities. Each subsystem operates under its own rules and traditions, reinforcing stability and sectoral identity. Priority is given to formal sectors and comprehensive qualifications. The focus is on national priorities; international cooperation is not a priority.</p>	<p>Promote modularisation and a diverse ecosystem of credentials and providers. Coordination and cooperation across actors at different levels is not prioritised, with providers and sectors acting independently. Differences between subsystems, regions and providers are regarded as useful for addressing local needs effectively, and decentralised innovation is pursued.</p>	<p>Encourage stable and coherent systems with clear responsibilities. Priority is given to full formal qualifications, while non-traditional learning and providers play a residual role. No investment is made in common governance mechanisms for wider cooperation. Cooperation is sought in formal learning with trusted international counterparts, focusing on compatibility, not convergence.</p>	<p>Allow room for new forms of learning and certifying achievements, involving non-traditional national providers. Investments are made in promoting cooperation mainly among formal actors, though not exclusively, in order to coordinate the national learning offer and create synergies. International cooperation is not a priority.</p>

CHAPTER 6.

Future directions: expanding and deepening the scenario development

This section presents insights into future directions for scenario development work that can build and expand upon the five scenarios discussed in this report. The five scenarios, developed through numerous rounds of validation and engagement with a relevant audience, were consistently found to spark rich discussions around key topics. Feedback from the quasi-Delphi panel of experts and validation workshop participants highlighted several areas where the scenarios could be further elaborated on to add depth and nuance. This may involve focusing on specific subsystems of education and training or on particular groups of learners, thereby enriching the discussion while adopting a more targeted and differentiated approach.

First, the scope of the scenarios focused more on the learning ecosystem as a whole rather than possible future trajectories of specific subsystems within the education and training system. It may well be the case that different scenarios apply to different education and training subsystems. In addition, the system-wide approach inevitably involves some generalisation and simplification; future work could add more nuance and explore sectoral specificities in more details. Future scenario exercises can delve deeper into specific subsystems of education and training (as, for example, is the case with Cedefop's Future of VET scenarios or the Directorate-General for Education, Youth, Sport and Culture's *Scenarios for the future of school education in the EU*) while maintaining links to other forms of learning. A more normative approach could also be adopted to explore the steps required to achieve particular desirable futures.

Another aspect meriting further exploration relates to multilevel governance – local, regional, national, sectoral and European – in the field of education and training and the links between them. Questions of coordination and collaboration across governance levels, and the tensions that sometimes arise between policy design and implementation, deserve closer examination. Governance issues are particularly relevant in scenarios that encourage permeability, where diverse providers and learning formats require structures that enable coordination without constraining innovation.

Funding is another area for further investigation; future work could examine the resources required in different scenarios, the balance between public and private contributions, and the long-term implications for equity and sustainability.

Although this report focused on three stakeholder groups – learners, education and training providers, and policymakers – the learning ecosystem also encompasses many other actors, including employers, social partners, NGOs and guidance services. Future foresight studies could therefore expand the analysis to consider the perspectives and roles of these stakeholders in greater depth. Even the three stakeholder groups at the centre of this report should not be treated as homogeneous. Learners, for example, include pupils in GE and VET, workers, unemployed people, inactive people and the highly skilled. Non-traditional, disadvantaged or marginalised groups, such as those from low socioeconomic backgrounds, early school leavers, NEETs, those with low skill levels or those with migrant or minority backgrounds, face different opportunities and challenges in more flexible and permeable systems. Similarly, age, employment status, stage of career and other characteristics may shape how different learners experience the scenarios.

Education and training providers are equally diverse, ranging from schools, universities, VET institutions and AE centres to NGOs and community-based organisations. Future scenarios could explore the differences between public and private provision, and how market-driven versus publicly funded orientations affect access, quality and the content of provision. The growing role of employers as learning agents and workplaces as learning hubs also merits attention, particularly regarding the balance between firm-specific (often unaccredited) training and broader, transferable training that enhances employability.

The rise of online learning and AI represents another key dimension for future exploration. Issues of trustworthiness, reliability and the quality of learning content and credentials are increasingly important, given the rapid growth of massive open online courses, online platforms and AI-enabled learning solutions. While AI-generated content offers the potential to personalise and expand learning, it also raises ethical and technical concerns, including around bias, privacy and accuracy. Closely linked is the evolving role of teachers and trainers. AI-driven tools such as intelligent tutoring systems, conversational agents and personalised learning environments are already reshaping teaching and training. This requires educators to adapt to new pedagogies, strengthen their digital competences and shift from the traditional role of knowledge transmitter to that of facilitator, coach or mentor. Addressing these changes is critical, especially against the backdrop of widespread teacher shortages across Europe.

More broadly, the role of digitalisation can be further explored not only in relation to promoting flexibility in the provision of the learning offer (what learning is offered, how and by whom), but also in terms of its potential influence on the connections between information from different policy developments, institutions,

sectors and countries – and how these connections may, in turn, affect the permeability of learning systems.

Finally, the current study applied an exploratory approach, deliberately avoiding a normative stance on which scenarios are preferable or prescriptive roadmaps towards achieving them. Applying participatory back casting methodologies in future scenario work would add significant value. Back casting is particularly suited to complex contexts characterised by multiple actors and interrelationships, such as lifelong learning. It enables stakeholders to articulate desirable future visions and to connect them to the present through specific roadmaps and action plans. Such approaches could mobilise the active engagement of all relevant stakeholders not only in shaping alternative scenarios but also in defining the concrete steps, roles and responsibilities required to realise them.

Glossary

Concept	Definition
Education and training policy	<p>Structured set of principles (e.g. the right to education and training, universal access, non-discrimination and inclusiveness, and equal opportunities), legislative, regulatory or administrative provisions, strategies and activities that define and govern the objectives and priorities for the operation and development of an education and training system at the regional, national or international level, including:</p> <ul style="list-style-type: none"> (a) anticipation of skills needs; (b) strategic development; (c) lifelong guidance; (d) resources (human and financial) and infrastructure; (e) building capacity of teaching and support staff; (f) definition of curricula and programmes; (g) lifelong access to education and training (inclusion of groups at risk); (h) pedagogical approaches; (i) pedagogical, social or financial support for learners (e.g. an individualised approach to low/high achievers); (j) quality assurance, including accreditation of programmes and providers; and (k) assessment, validation and certification of learning outcomes.
Education and training systems	<p>Set of interrelated:</p> <ul style="list-style-type: none"> (a) institutions and structures (governments, public and private social partners, education and training providers, and lifelong guidance bodies); (b) policies and provisions (laws and regulations, standards, objectives, operating modes, curricula and programmes, methods and approaches); (c) activities (IVET and CVET, lifelong guidance); and (d) resources (human, educational, material and financial) required by a society to develop, improve and keep up to date the knowledge, skills and competences of its population.
Focal question	The aims of the scenario exercise and the spatial and temporal boundaries.
Indicators	The extreme ends of each variable pair (e.g. low–high). Scenarios are developed based on these variables and may cover all or only some of the indicators (or some of them only to some extent). It may not be realistic (or particularly relevant) to describe a scenario that corresponds with all these indicators, or it may be possible to identify more than one scenario that corresponds with some of the indicators in each of the four quadrants.
Lifelong learning	Any learning activity undertaken throughout life, in a formal, non-formal or informal setting, that results in improving knowledge, know-how, skills, competences and qualifications for personal, social or professional reasons.
Life-wide learning	Learning, be it formal, non-formal or informal, that takes place across the full range of life activities (personal, social or professional) and at any stage of life. It is a dimension of lifelong learning.

Concept	Definition
Path dependency	Generally, the idea that events occurring at an earlier point in time affect events occurring at a later point in time. In the strict sense, path dependency means there are contingent events in history that create institutional patterns with deterministic properties.
Policy choices	The ability of policymakers, and concrete steps taken by them, to formulate and introduce changes to the education and training system in terms of strategic initiatives and changes in practice in a way that aims to achieve a particular high-level policy objective.
Policy initiatives	Various policy instruments, such as projects, policy frameworks, recommendations, directives, funding streams and policy experimentation programmes or policy tools that initiated or supported the development of particular policy objectives in relation to learning-outcomes-based approaches.
Scenarios	‘Stories’ or ‘narratives’ that describe possible future developments/directions of a particular policy area or theme. They are intended not to accurately predict the future but to alert policymakers to different possible policy trends and the implications of these, for example for policies (and/or transparency and transferability tools), learners and different types of stakeholders, including the EU. They are not expected to manifest exactly in the form described, but particular aspects of them are likely to become influential or dominant across lifelong learning and life-wide-learning systems. The scenarios acknowledge that such systems are path dependent and will reflect and build on the past to varying degrees. They are intended to be used as exploratory tools for policymakers to think about the implications of different policy choices.
STEEP drivers	Factors that shape the knowledge, skills and competence requirements of society and the labour market. In the context of this study, we consider STEEP drivers as influencing but not determining education and training policy choices aimed to promote lifelong/life-wide learning through the transferability and transparency of learning outcomes.
Trends	<p>Changes over the last 20 years directly linked to policy tools or initiatives aimed at increasing the transparency and transferability of learning outcomes. By ‘linked’ we mean that any such trend can be seen as:</p> <ul style="list-style-type: none"> (a) the direct result of the introduction of one or more transparency and transferability tool(s) or initiative(s) (e.g. the introduction of the EQF and/or ECTS, the 2012 Recommendation on validation or the Erasmus+ programme); (b) being based on a learning-outcomes approach or methodology; and (c) leading to increased transparency and transferability of learning outcomes. <p>A change may be positive or negative (or even neutral) in the short term; trends describe the general direction of change over a particular period (in our case, 20 years).</p>

Concept	Definition
Variables	In the context of our study, terms or concepts that can be seen as relevant to changes with regard to lifelong learning and life-wide learning and the transparency and transferability of learning outcomes up until 2040, but around which there is some uncertainty or tension over the exact nature, extent or direction of such change. Thus, each variable has two opposing poles (e.g. high/low or big/small), which form a variable pair. These may describe either two extreme ends of a scale or two points on a continuum. These are used to construct the scenario axes and the scenario quadrants. In our study, based on a review of the evidence from previous project phases and the relevant literature, as well as the results of the quasi-Delphi panel consultation, the two variables used for the scenario axes were (i) flexibility of learning and (ii) permeability of the education and training system.

Sources: Project team; Cedefop. (2024). [Terminology of European education and training policy. A selection of 430 terms: 3rd edition](#); Gáspár, T. (2011). [Path dependency and path Creation in a Strategic Perspective](#), *Journal of Futures Studies*, June 2011, 15:4; [European Foresight Platform: Scenario Method](#).

Abbreviations

AE	adult education
CVET	continuing vocational education and training
EAEA	European Adult Education Association
ECTS	European credit transfer and accumulation system
ECVET	European credit system for vocational education and training
EEA	European education area
ELM	European learning model
ENQA	European Association for Quality Assurance in Higher Education
EQAVET	European quality assurance reference framework for vocational education and training
EQF	European qualifications framework
ESCO	European skills, competences, qualifications and occupations
GE	general education
HE	higher education
HEI	higher education institution
IVET	initial vocational education and training
NEET	not in employment, education or training
NGO	non-governmental organisation
NQF	national qualifications framework
STEEP	social, technological, economic, environmental and political
VET	vocational education and training

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Annex. Scenario indicator table

Scenario indicator	Flex Max High flexibility and high permeability	Rigid Islands Low flexibility and low permeability	Fragmented Flex High flexibility and low permeability	Rigid but Internationally Connected Low flexibility and moderate permeability	Gated Communities Moderate flexibility and moderate permeability
Permeability					
Quality assurance					
The extent to which quality assurance standards, processes and tools are coordinated within and between education and training subsystems to standardise practices.	There is a high level of coordination of quality assurance standards, processes and tools within and between education and training subsystems and countries.	There is limited coordination of quality assurance standards, processes and tools, largely focused on traditional provision, with an education and training subsystem within a country, while not covering non-formal and informal learning.	Coordination of quality assurance standards, processes and tools focuses on particular education and training subsystems but is very limited between subsystems and Member States.	Quality assurance standards are coordinated within education and training subsystems and nationally, and there is some cross-country collaboration; however, there is limited coordination across subsystems (within and between Member States) and for qualifications offered by non-traditional providers.	Quality assurance standards, processes and tools are coordinated by traditional providers within subsystems and, to some extent, across subsystems within a country.

Credit transfer					
The extent to which compatible credit accumulation and transfer systems exist and are used.	Compatible credit systems and approaches exist and are used to accumulate credit across subsystems, institutions and countries.	Compatible credit systems do not exist (they are not needed because of limited modularisation). Where they exist, they are incompatible, with each subsystem having its own credit system that may be inconsistently applied across providers and institutions.	Compatible credit systems are either not developed or at an early stage and are not a priority. There are different approaches between institutions.	Compatible credit systems exist and are used mainly within specific subsystems (e.g. between institutions in the same subsystem), within and between countries, for some qualifications. Compatible credit systems that support transitions across subsystems are less developed.	Compatible credit systems exist and are used primarily within specific subsystems (e.g. between institutions in the same subsystem) at the national level. Some opportunities for credit transfer across subsystems exist, but their acceptance and use vary. There is limited use of credit systems across countries.
Comparability					
The extent to which NQFs and qualifications registers provide comprehensive coverage of all types of qualifications (e.g. full, partial and micro-credentials), with clear and compatible descriptions of qualifications' learning outcomes and documented pathways or bridges between qualifications at different levels and across education and training subsystems.	<p>NQFs and qualifications registers document all types of qualifications (e.g. full, partial and micro-credentials) from both traditional and non-traditional providers.</p> <p>Associated learning outcomes are described in clear, accessible and comparable formats.</p> <p>NQFs clearly illustrate pathways and bridges between qualifications at different levels and across subsystems.</p>	<p>NQFs and qualifications registers are restricted to formal and full qualifications from traditional providers.</p> <p>There are inconsistent approaches between subsystems and providers in describing associated learning outcomes.</p> <p>NQFs illustrate minimal or no pathways or bridges between qualifications across subsystems or levels.</p>	<p>NQFs and qualifications registers include a mixture of formal and non-formal, full and partial qualifications from both traditional and non-traditional providers.</p> <p>There are inconsistent approaches between subsystems in describing associated learning outcomes, affecting their clarity and accessibility.</p> <p>NQFs do not illustrate pathways or bridges between qualifications.</p>	<p>NQFs and qualifications registers include most types of full and partial qualifications offered by formal providers; qualifications from non-traditional providers are often excluded.</p> <p>Associated learning outcomes are described in clear, accessible and comparable formats.</p> <p>NQFs illustrate pathways and bridges between qualifications and how learners can progress to the next level within the same subsystem.</p>	<p>NQFs and qualifications registers include most types of full and partial qualifications offered by both traditional and non-traditional providers.</p> <p>Associated learning outcomes are described in clear, accessible and comparable formats.</p> <p>NQFs illustrate pathways and bridges between qualifications at different levels, primarily within subsystems, with some connections with qualifications from other subsystems.</p>

Systems and processes to validate non-formal and informal learning					
The existence of systems and processes to validate learning from formal, non-formal and informal settings to achieve partial or full qualifications; the degree to which these are compatible within and between countries and education subsystems.	There are established systems and processes, compatible within and between countries and education subsystems, to validate learning from formal, non-formal and informal settings to achieve partial or full qualifications.	Systems and processes to validate non-formal and informal learning to achieve full or partial qualifications exist to a limited extent. The systems that exist lack compatibility across subsystems and countries (there are also differences between institutions and providers in the same subsystem).	Systems and processes to validate non-formal and informal learning to achieve full or partial qualifications exist to a limited extent. The systems that exist lack compatibility across subsystems and countries (with differences also across institutions and providers in the same subsystem).	There are compatible systems to validate learning from formal, non-formal and informal settings in some countries and in particular education subsystems.	Systems and processes to validate non-formal and informal learning to achieve full or partial qualifications exist but are only partially compatible. There are emerging efforts to align these systems and processes nationally across (formal) subsystems and not cross-country cooperation.
Digital tools to record learning outcomes					
The extent to which an interoperable and robust digital tool exists to record and share learning outcomes across educational subsystems and countries.	Learners have access to a robust and interoperable digital tool to keep a record of formal, non-formal and informal learning outcomes whenever and wherever these were achieved and to share their achievements with potential employers or learning providers.	Learners have limited or no access to an interoperable and robust digital tool to record and share learning outcomes.	Learners have limited or no access to an interoperable and robust digital tool to record and share learning outcomes. Where they exist, digital tools are specific to a particular subsystem.	Learners have access to an interoperable digital tool to keep a record of formal, non-formal and informal learning outcomes whenever and wherever these were achieved, but interoperability exists within subsystems and across countries for that subsystem; robustness is limited.	Learners have access to a digital tool to keep a record of formal, non-formal and informal learning outcomes whenever and wherever these were achieved; interoperability exists between providers/institutions within the same subsystem, with some cooperation with other (mostly formal) subsystems. Limited interoperability with other countries.

Recognition					
The extent to which qualifications are recognised across countries and subsystems (enabling cross-border mobility and learning progression).	Comprehensive recognition procedures cover all qualifications, both formal and non-formal, that are recognised across countries and education and training subsystems at both the system/policy and provider/institutional levels.	Recognition across countries is very limited, applied to specific subsystems, qualifications or learners, with little systemic alignment or cross-border compatibility.	Recognition across countries is very limited, applied to specific subsystems, qualifications or learners, with little systemic alignment or cross-border compatibility.	Recognition procedures across countries are well developed primarily within specific subsystems (e.g. HE or VET) and across formal qualifications, with limited inclusion of non-formal or emerging credentials.	Recognition procedures across countries are not well developed (as the focus is on strengthening alignment and collaboration within and between subsystems at the national level).
Access opportunities between subsystems					
The degree of flexibility in access requirements and the availability of mechanisms supporting learner transitions between educational subsystems.	There are non-restrictive access and admission requirements between education and training subsystems.	Access is very restricted: opportunities for learners to move between different subsystems (and institutions) are limited by, for example, restrictive admission requirements and limited bridging programmes.	Access is very restricted: opportunities for learners to move between subsystems are limited by, for example, restrictive admission requirements and limited availability of bridging programmes.	Learners can move between providers within particular education and training subsystems, within and between countries; the scope for mobility and progression between subsystems is often still limited because of restrictive access and admission requirements.	Learners are generally able to move between providers within particular education and training subsystems. Emerging admission and bridging solutions enable some opportunities for progression between subsystems exist, although their implementation and accessibility are uneven / not widespread across subsystems.

Flexibility					
Personalisation					
The extent to which learning is tailored to learners' individual needs via a choice of modules or units when working towards qualifications.	Learners have access to a wide choice of stackable units, modules or micro-credentials that can lead to partial or full qualifications based on achieved learning outcomes.	Learners have limited or no choice of units or modules when working towards qualifications.	Learners have access to a wide choice of stackable units, modules or micro-credentials within a subsystem that can lead to partial or full qualifications based on achieved learning outcomes.	Learners have limited or no choice of units or modules when working towards qualifications.	Learners have access to a wide choice of stackable units, modules or micro-credentials and, to a limited extent, across subsystems, which can lead to partial or full qualifications based on the achieved learning outcomes.
Learning content					
The extent to which learning content is responsive to evolving labour market and individual needs.	Learning content is flexible, responsive and adaptive to evolving labour market and individual needs.	Learning content is standardised, based on established curricula, with limited rapid responsiveness to evolving labour market and individual needs.	Learning content relating to specific subsystem is flexible and responsive to evolving labour market and individual needs.	Learning content is standardised, based on established curricula, with limited rapid responsiveness to evolving labour market and individual needs.	Learning content is broadly responsive to evolving labour market and individual needs, albeit not to the same degree across subsystems.

Assessment					
<p>The extent to which more non-traditional, flexible and continuous assessment methods, including online tools, AI and/or projects, are used to encourage formative learning.</p>	<p>Extensive use is made of more non-traditional, flexible and continuous assessment methods, including online tools, AI, projects or work-based learning, to encourage formative learning.</p>	<p>Learners mostly achieve qualifications in a more linear way, with most assessments taking place at the end of a fixed duration of learning.</p> <p>Limited use of less traditional, flexible and continuous assessment methods (e.g. only used within particular subsectors or courses), such as online tools, AI, projects or work-based learning.</p>	<p>Extensive use is made of less traditional, flexible and continuous assessment methods, including online tools, AI, projects or work-based learning, to encourage formative learning within a specific subsystem.</p>	<p>Learners mostly achieve qualifications linearly, with most assessments taking place at the end of a fixed duration of learning.</p> <p>There is limited use of AI learning applications, such as personalised learning platforms or adaptive courses (e.g. used only within particular subsystems or courses).</p>	<p>Some use is made of less non-traditional, flexible and continuous assessment methods, including AI, projects or work-based learning to encourage formative learning.</p> <p>There is inconsistent use of such assessment methods across subsystems.</p>

Learning provision					
<p>The extent to which learning is provided by a variety of learning providers and learning formats.</p>	<p>Learning is provided by a mixture of formal and non-formal providers, including international providers, employers and NGOs.</p> <p>Learners have access to learning in flexible and practical ways, using online, practice-based, case-based, project and work-based learning.</p>	<p>Learners use mainly formal providers, such as schools, universities and colleges.</p> <p>Non-formal providers only fill in particular gaps in the education and training landscape.</p> <p>Most learning is classroom-based with limited use of online or other alternative learning formats.</p>	<p>Learning within a subsystem is provided by a mixture of formal and non-formal providers, including international providers, employers and NGOs.</p> <p>Learners within a subsystem have access to learning in flexible and practical ways, using online, practice-based, case-based, project and work-based learning.</p>	<p>Learners use mainly formal providers such as schools, universities and colleges – including in other countries.</p> <p>Non-formal providers only fill in particular gaps in the education and training landscape.</p> <p>Most learning is classroom-based with limited use of online or other alternative learning formats.</p>	<p>Learning is provided mostly by formal providers, such as schools, universities, colleges, but there is an increased role for non-formal providers, including international providers, employers and NGOs, to support flexibility and the personalisation of learning.</p> <p>Most learning is classroom-based.</p> <p>Some learners have access to learning in flexible and practical ways, using online, practice-based, case-based, project and work-based learning.</p>

Shaping the future of lifelong learning: policy scenarios for 2040

Transparency and transferability of learning outcomes

This publication presents a set of five alternative policy scenarios for the future of lifelong learning in Europe.

These scenarios were developed based on earlier research phases that analysed the evolution of lifelong learning regarding the transparency and transferability of learning outcomes over the past 20 years, combined with an assessment of key social, technological, economic, environmental and political factors. They range from futures prioritising greater learning flexibility and system permeability to those emphasising stability and predictability in education and training.

Each scenario is accompanied by reflections on its possible implications for learners as well as education and training providers and the policy choices at both the national and European levels. The aim is to stimulate dialogue on progress and limitations in lifelong learning and to support informed decision-making on future directions.



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Publications Office
of the European Union

