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Circular Economy in Fibrous Composites and Technical Textiles Through the Use of Virtual Laboratories

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Recommendations for policy makers

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Content

1. EXECUTIVE SUMMARY

This report titled “Recommendations for policy makers” provides a comprehensive information about the recommendations for policy makers that highlight how a high-quality, innovative and learner-centred e-learning course (Project Result 1 -[PR1]) offered by partner HEIs of Circutex Programme can be enhanced through the flexibility that micro-credentials can offer. This project outcome is in line with the timeline set by the EU Commission, according to which by 2023 it intends to integrate micro-credentials in national qualifications frameworks and progressively adapt national qualifications frameworks where needed. The recommendations address national NARICs, national authorities and also other stakeholders at EU level.

The recommendations take into account the processes followed and results from Circutex project and provide input to the key building blocks of a European approach to micro-credentials. Leader of this task is University of West Attica (UNIWA), but all partners participated.

2. INTRODUCTION

This report provides a more comprehensive analysis of evidence-based policy recommendations and initiatives aimed at improving the design, issuance, and recognition of micro-credentials. Following an examination of the importance of facilitating policy frameworks, regulations, and legislation, efforts were made to report linked open data pertaining to micro-credentials so that it is comprehensible, comparable, and accessible. In addition, policy recommendations and skill descriptors that promote the adoption of digital technologies are elaborated. 'Recognition networks' for credit exchange agreements can be enhanced and rendered more equitable and transparent by adhering to international conventions, which are founded upon a bedrock of trust.

It has been prepared as part of the CICRUTEX project (Erasmus+) partner countries including Greece, Spain, Lithuania and Romania. It is based on European Union policies, on documents prepared by European Training Foundation (ETF)[1] and European Commission[2], in-depth analysis of selected international practices.

[1] Giunipero, R., 2023. GUIDE TO DESIGN, ISSUE AND RECOGNISE MICRO-CREDENTIALS, European Training Foundation. Italy. Retrieved from https://policycommons.net/artifacts/4810855/guide-to-design-issue-and-recognise-micro-credentials/5647373/ on 20 Dec 2023. CID: 20.500.12592/gwh874.

[2] https://education.ec.europa.eu/education-levels/higher-education/micro-credentials

3. ESTABLISH FACILITATING FRAMEWORKS AND LEGISLATION

When considering the use of micro-credentials for employment or learning, policymakers and decision-makers must confront the issue of trustworthiness regarding their recognition value, even when presented in a formal learning environment. Placing trust in the worth of a micro-credential presents a challenge. While it is common knowledge that a master's degree indicates greater preparation than a bachelor's degree, it is impossible to determine whether an Udacity Nanodegree provides superior or equivalent preparation to an edX Professional Certificate or a Coursera Specialisation[3].

Decision-makers and policymakers must consult structurally with all stakeholders regarding the development of facilitating frameworks, regulations, or legislation to integrate micro-credentials into existing learning and employment (human resources) systems in order to establish confidence in these credentials.

Possible examples include:

1. An appropriate policy initiative at the national or system level that aims to establish a universally accepted definition of micro-credentials, standardised components for their description, and guidelines for their creation, distribution, and authentication.
2. A policy initiative at the country or system level to incorporate micro-credentials into the National Qualifications Framework, if applicable, and consultation with all stakeholders regarding its creation in cases where none currently exists.
3. An appropriate policy initiative at the national or systemic level that facilitates the recognition of prior learning, such as granting individuals the ability to request validation and credit-rating for formal, non-formal, or informal skills they have previously acquired, with the intention of obtaining recognition for employment or E&T opportunities.

Regarding the first policy initiative, the 'Australian National Microcredentials Framework' (NMF)[4] is an instance of a facilitating framework for micro-credentials that extends beyond the European Union. The framework establishes, among other things, a national definition for micro-credentials, unifying principles for micro-credentials, and minimum standard and critical information requirements.

Aspects comparable to the EU Council Recommendation consist of evaluation requirements, stated learning outcomes, burden, level, and application of quality assurance standards. In the absence of quality assurance standards, a statement of quality

[3] Pickard, Laurie. “Analysis of 450 MOOC-Based Microcredentials Reveals Many Options But Little Consistency.” The Report, 18 July 2018, https://www.classcentral.com/report/moocs-microcredentials-analysis-2018 . Accessed: December 2023.

[4] https://www.education.gov.au/higher-education-publications/resources/national-microcredentials-framework. Accessed: December 2023.

is mandatory. Furthermore, in cases where the credential is recognized, the Australian NMF stipulates criteria for ensuring that the design of micro-credentials is consistent with industry specifications and skill descriptors.

Concerning the second policy initiative, specific country instances in which micro-credentials were incorporated into national qualifications frameworks are detailed in ETF report[1] (chapter 4), such as Ireland, New Zealand, Namibia and Georgia. The recognition of micro-credentials is facilitated in environments where qualification frameworks are established and verifiers are able to evaluate an applicant's micro-credentials against established competency frameworks, including but not limited to National Qualifications Frameworks (NQFs). However, micro-credentials have not yet been incorporated into the majority of education and training systems[5].

Concerning the third policy initiative, policy initiatives may also enable Recognition of Prior Learning (RPL) procedures to facilitate recognition of micro-credentials, such as credit recognition, in which an evaluator assesses the learner's record of learning in order to award credit towards a qualification or programme, or by enabling procedures to validate and certify prior learning in the form of a micro-credential, such as in the case of Kazakhstan and Tunisia. The Scottish Qualifications Authority (SQA), for instance, is formally incorporating training provided by companies and professional organisations onto the Scottish Credit and Qualifications Framework (SCQF), the national framework for qualifications in Scotland, in order to improve the quality of such offerings. The SCQF level, which signifies the time required to complete the training, and the level of difficulty are reflected in the rewards that providers of such training may subsequently bestow upon their employees who complete the training (SQA, n.d.). The Academic Credit Bank System (ACBS) is a central agency in South Korea that formally evaluates applications from non-formal education institutions to become ACBS-accredited institutions, as opposed to issuing the credits themselves. This accreditation would empower providers of non-formal education to grant credit to their students, which could be accumulated towards the completion of a degree (ACBS, n.d.).

[5] Nuffic. Practitioner's Guide for Recognition of e-Learning: Introducing a Step-Bystep Approach towards academic recognition of Stand-Alone e-Learning. 2019, https://www.nuffic.nl/sites/default/files/2020-08/practitioners-guide-for-recognition-of-e-learning.pdf . Accessed: December 2023.

4. ALLOCATE RESOURCES TOWARDS ACCESSIBLE TECHNOLOGY FOR CREDENTIAL AUTHENTICATION

Both educational institutions and employers invest considerable effort in verifying the assertions presented in credentials. The utilisation of openly accessible technology presents the potential to eliminate this labour altogether, thereby streamlining and expediting the process of micro-credential recognition and facilitating the widespread adoption of this practice.

To expedite this, policymakers and decision-makers should prioritise the following actions[1]:

1. Provide incentives for credential issuers to exclusively issue verifiable digital credentials (e.g., digitally signed PDFs or European Digital Credentials) and discourage the use of alternative formats.
2. Advocate for reputable credential databases and collaborate with issuers and recognition authorities to ensure that their credentials are accessible via these databases. For example, the National Student Clearinghouse registers 97% of credentials issued by postsecondary institutions in the United States. This enables any interested party to conduct credential verification from a single source.
3. Provide verification bodies with incentives to uphold and disseminate databases containing finalised recognitions. The maintenance of such a database enables the utilisation of checks performed on one credential to provide information to those conducting checks on similar credentials. By disseminating information regarding the credentials' recognition, other institutions that acknowledge the credentials can gain valuable insights.

5. STRENGTHEN A COMMUNAL CLASSIFICATION OF SKILLS AND COMPETENCIES IN CREDENTIALS

Policy and decision-makers should incentivize credential issuers to make micro-credential skills transparent using a common taxonomy/classification developed by actors on both the credential supply and demand sides, in addition to encouraging awarding bodies to produce improved credentials.

Utilising Artificial Intelligence to extract skills data from natural text and utilising this information to gain a deeper understanding of an individual's learning achievements is a promising technological approach. The integration of these tools into applicant tracking systems, CV builders, and platforms is on the rise. Identifying authorities may also establish correspondences between desired skills, employment opportunities, and micro-credentials that instruct those skills.

An example of this principle in operation is the European Skills, Competencies, Occupations, and Qualifications (ESCO)[6]. ESCO is a 28-language compilation of a European classification of occupations, skills, competencies, and qualifications. It is also available in Icelandic, Norwegian, and Ukrainian. As of January 2023, it comprises a total of 3008 occupations, which include hierarchical relationships and mappings to the International Standard Classification of Occupations – ISCO. Additionally, it comprises 13,890 skills.

Another example is the Rich Skill Descriptors created by the Open Skills Network[7]. An employer can use this system to post a job vacancy that specifies the necessary skills and provides a hyperlink to a compilation of courses that offer instruction in those skills. This may be utilised to evaluate prospective employees based on their learning background or skill set, thereby expanding the possible avenues leading to an interview.

Employers, in addition to education and training institutions, have the ability to create application templates that promote the inclusion of skill descriptions by candidates, as opposed to exclusively relying on credentials and work experience details. This allows a person to describe their learning outcomes to a recognising body, even where the body has no prior knowledge of the micro-credential.

[6] https://esco.ec.europa.eu/en. Accessed on 24 November 2023.
[7] https://www.openskillsnetwork.org/rsd. Accessed on 28 November 2023.

6. DEVELOP OR PROMOTE REFERENCE DATABASES OF TRUSTED COURCES AND/OR PROVIDERS

A hallmark of recognition processes pertaining to employment, education, and training is the verifying body's emphasis on the reputation of the credential-issuing organisation and/or the micro-credential itself.

Three instruments may be utilised to evaluate such a reputation:

1. **Using databases of "trusted issuers**," one can locate and compile a list of institutions that satisfy a specific set of universally recognised quality standards. Lists of institutions that satisfy the criteria of quality assurance bodies that accredit establishments, professional associations, or ranking organisations may furnish such compilations.
2. **National or regional databases** of qualifications contain comprehensive lists of credentials that individuals seeking to verify the status of specific micro-credentials.
3. By furnishing information regarding which learning organisations or employers are receptive to different micro-credentials, **recognition databases** can function as a surrogate for a reputational score.

A database of external quality assurance results (DEQAR) has been established in Europe by the European Quality Assurance Register[8]. This database contains a listing of accredited programmes and HEIs in accordance with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESGs)[9]. It contains data pertaining to the majority of tertiary education establishments across the continent. Authorities or students in Europe who wish to verify the accreditation of a particular HEI that issues micro-credentials may utilise DEQAR, which compiles a list of accredited HEIs. An essential component of DEQAR is that its data is accessible to other computing systems through the use of application programming interfaces. As shown in Figure 1, this enables any recognising entity to directly integrate recognition tests into its systems. The provided screenshot illustrates the result of assessing a credential granted by an accredited establishment that is included in the DEQAR database and is undergoing evaluation for recognition via the Diplome platform, which is the inaugural blockchain-based qualification recognition system operated by CIMEA[10].

[8] https://www.eqar.eu/qa-results/search/. Accessed on 10 December 2023.

[9] Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). Brussels, Belgium, 2015, https://www.enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf . Accessed: December 2023.

[10] Finocchietti, Chiara. Integrating DEQAR in Automatic Recognition CONNECT Conference/12/2021. https://www.eqar.eu/assets/uploads/2021/12/DEQAR-CONNECT-conference_6Dec21-_CIMEA.pdf . Accessed: December 2023.

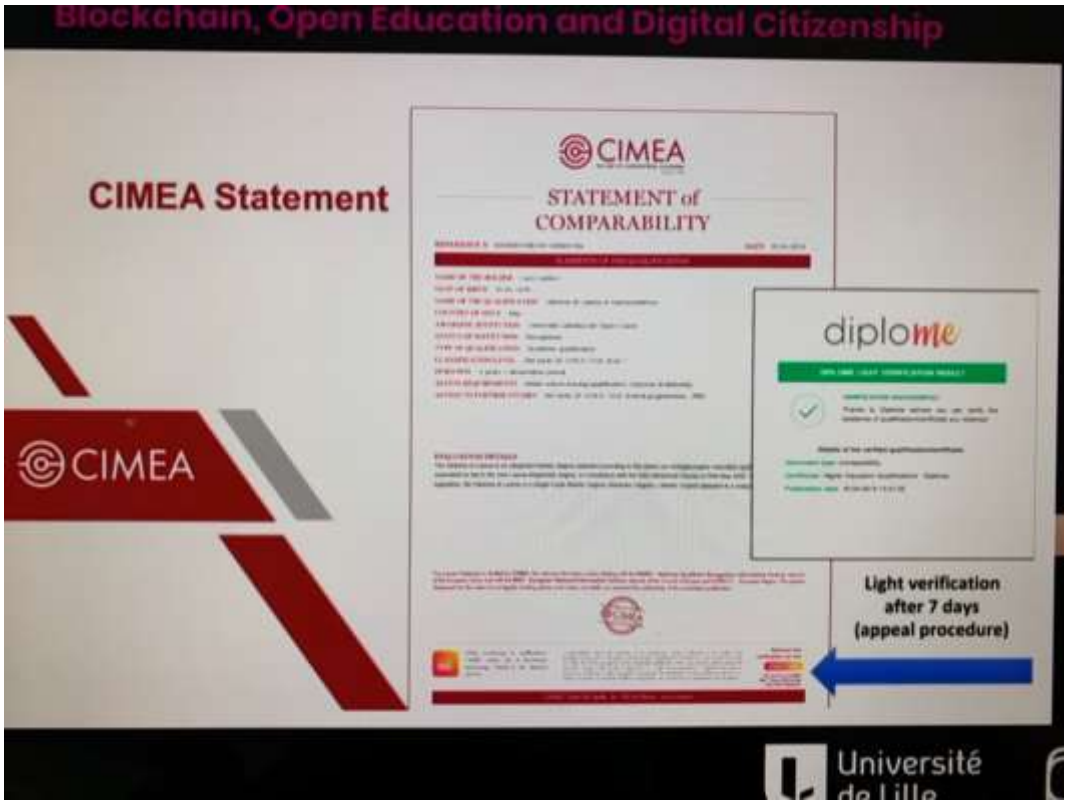

Fig. 1: *CIMEA's state of comparability (from University of Lille)*

Primarily prevalent in Europe, **national course catalogues** typically compile an exhaustive inventory of all available qualifications and educational prospects within a given country. They can be regarded as exemplary methods for consolidating reference databases pertaining to qualification offers. An aggregator of course data recorded in national qualification databases (including micro-credentials) is a component of the Europass42 platform. As a result, it serves as a comprehensive repository for reliable data pertaining to regional qualifications (Europass, n.d.). In order to facilitate the recognition of credentials (including micro-credentials) across Europe's periphery, the European Training Foundation is presently collaborating with neighbouring EU countries to establish a centralised portal for a network of national qualification databases.

7. IMPLEMENT CONVENTION ON THE PRINCIPLES OF INTERNATIONAL RECOGNITION

The UNESCO Global Convention on Higher Education (GRC) has only registered 21 states as parties, with only 15 having ratified the convention, a mere 15 states had ratified the GRC, bringing the total number of states that have ratified the convention to 21[11]. A nation grants students an inherent entitlement to recognition of their micro-credentials (i.e., qualifications and study periods) for the purpose of employment and admission to higher education by implementing the tenets of the convention. In order to achieve this, it also provides a set of guidelines for the implementation of internationally standardised processes and procedures. A state's signature on the convention signifies its dedication to establishing more equitable and streamlined processes for recognising access to higher education, which may involve endorsing flexible learning pathways. Ratifications in the respective regions are coordinated with the GRC through regional conventions such as the Lisbon Recognition Convention and the Revised Convention on the Recognition of Studies, Certificates, Diplomas, Degrees, and Other Academic Qualifications on Higher Education in African States (Addis Convention[12]).

[11] https://www.unesco.org/en/legal-affairs/global-convention-recognition-qualifications-concerning-higher-education?hub=66535. Accessed on December 2023.

[12] https://www.unesco.org/en/legal-affairs/revised-convention-recognition-studies-certificates-diplomas-degrees-and-other-academic#STATE_PARTIES. Accessed on December 2023.

8. CONCLUSION

In conclusion, the establishment of enabling frameworks, legislation and international cooperation is crucial to address the challenges and build confidence in the recognition value of micro-credentials in both learning and employment contexts. The recommendations to policy makers discussed include:

- working with stakeholders to develop frameworks and legislation to integrate micro-credentials into existing learning and employment systems. Examples described include the creation of a universally accepted definition, standardised components and guidelines for the creation, distribution and authentication of micro-credentials.
- prioritising the allocation of resources for credential authentication such as the use of accessible technology for credential authentication to accelerate the recognition process. Incentives for issuers to provide verifiable digital credentials and collaboration with accredited databases can improve the efficiency of micro-credential verification.
- incentivise the use of common taxonomies/classifications for micro-credential skills and competencies to improve transparency. The use of Artificial Intelligence to extract skills data and the incorporation of such systems can provide valuable information for employers and educational institutions.
- support and promote the creation of reliable issuer databases, national or regional qualification databases and recognition databases.
- consider establishing international agreements to ensure standardised recognition processes to facilitate a more equitable and streamlined approach to the recognition of micro-credentials on a global scale.

A collaborative and standardised approach at national and international level is therefore essential to overcome the challenges associated with micro-credential recognition, ensuring its value and credibility in both education and employment.