WAYS TO THE FUTURE? UNIVERSITY LIFELONG LEARNING FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT

This thematic paper looks at the potential roles that university lifelong learning can play in supporting education for sustainable development. It first provides an overview about the conceptualisations on education for sustainable development, the green deal and green transition as well as green skills. Based on this systematisation, the paper then explores how university lifelong learning can contribute to developing the skills needed for strengthening sustainable development.

INTRODUCTION

Our planet's resources will soon be exhausted. Climate change, environmental destruction, as well as conflict, poverty and hunger, and inequalities and social instability are all evidence of the multiple facets of the unsustainable world we live in (United Nations, 2023). The message is quite clear: "The survival of our societies and our shared planet depends on a more sustainable world" (ibid.) And hence with it, the future itself is at stake. Developing a "blueprint for our common future" (ibid.) requires an envisioning of futures, innovation and cooperation with multiple actors, inter- and transdisciplinary approaches and education.

When it comes to the role that university lifelong learning could play in sustainable development, there are at least two central features that stand out, as Walburga Freitag (2024) argues: On the one hand, university lifelong learning is characterised *per se* by responsiveness to its environment. On the other hand, many of its offers are developed in cooperation with actors external to the university, taking social questions and challenges as points of departure. Hence, university lifelong learning programmes often act as a gateway to society and as a testing zone for innovation (Pellert, 2019). Cendon, Schulte and Mörth describe its potential for envisioning futures in the following way: "It [university continuing education] experiments with new forms and formats of teaching and learning, anticipates new developments and approaches that are not (yet) addressed by study programmes, engages with topics that are not (yet) the focus of research agendas, and offers interdisciplinary or even transdisciplinary perspectives that are not (yet) discernible from the point of view of single disciplines" (2021, p. 17).

This article tries to systematise, in a first step, how sustainability and green skills have been conceptualised within the European context. In a second step, it explores the ways in which university lifelong learning can contribute to developing the skills needed for strengthening sustainable development.

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SETTING THE SCENE

Within the European context, sustainability, framed as one of “the Grand Challenges of our time” (*Lund Declaration*, 2009, p. 1), dates back to the Lund Declaration during the Swedish presidency in 2009 and then led subsequently to the European funding of research (Freitag, 2024, p. 11). While the focus of the *Grand Challenges* is primarily on processes that are addressed within the scientific and research system, the engagement with sustainability with a focus on education, the labour market and society as whole begins later. This later engagement is inspired by the agenda setting of the United Nations on Education for Sustainable Development and its 2030 Agenda for Sustainable Development. The 2030 Agenda was announced at the UN conference 'Transforming our world: the 2030 Agenda' in New York in 2015. It was preceded and framed by the “United Nations Decade of Education for Sustainable Development (DESD)” (2005-2014), which had already stated a central focus on the role of education (Combes, 2005; Mulà and Tilbury, 2009):

“Sustainable development is basically about learning. It is a process that develops awareness, knowledge, and understanding of the environment and critical thinking skills. It is about respecting, valuing, and preserving the achievements of past generations. The socialization patterns of past centuries taught us to live unsustainably, thereby creating the social and environmental problems we must now address. We have to learn our way out of the dilemma. We have to learn to live sustainably” (Combes, 2005, p. 215).

Conceptually, the 2030 Agenda builds on the three dimensions of sustainable development that were already an essential part of the DESD (Combes, 2005): the economic, the social and the environmental dimension (UNESCO, 2015, p. 7). As a plan, it is set for *people, planet* and *prosperity,* supporting *peace* and building on a global *partnership*, enhanced by multi-stakeholder partnerships. These five pillars were later expanded by *place* as a sixth pillar, highlighting cities as central places of living (UNESCO, 2016, p. 14; Schreiber-Barsch and Mauch, 2019, p. 517). In its broad approach “[t]he 2030 Agenda for Sustainable Development unites global development and environmental goals in one framework” (UNESCO, 2016, p. 5).

The 2030 Agenda is operationalised through a normative framework comprising 17 Sustainable Development Goals (SDGs). Each goal is concretised by sub-goals or target indicators; there are 169 in total (UNESCO, 2015, p. 5). The SDGs are formulations of global political goals with which a transformation to sustainable development is to be achieved at global level by 2030. The 2030 Agenda and its goals are not a binding treaty: however, with its universal claim they “involve the entire world, developed and developing countries alike” (UNESCO, 2015, p. 7), they are built on international law and represent a sort of social contract of the global community (Messner, 2018, p. 179 in Freitag 2024, 13). It is acknowledged that each country sets its own targets, “taking into account national circumstances” (UNESCO, 2015, p. 16) and uses “different approaches, visions, models and tools […] to achieve sustainable development” (UNESCO, 2015, p. 17).

LIFELONG LEARNING AND SUSTAINABLE DEVELOPMENT

The first explicit connection between lifelong learning and sustainable development was articulated in the revised European Reference Framework on Key Competences for Lifelong Learning in 2018 (European Commission, 2018). With reference to UNESCO, Education for Sustainable Development is understood as an essential component of quality education (European Commission, 2018). Particularly SDG 4, “Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (UNESCO, 2015, p. 21) is reflected in the framework, as it is understood as a key enabler of all other SDGs (European

Commission, 2018, p. C189/3). Furthermore, the target 4.7 of SDG 4 is taken as the central basis, emphasising the need that '[b]y 2030, […] all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development' (UNESCO, 2015, p. 20).

In addition to the link to UNESCO's 2030 Agenda, there is also particular emphasis on the principles that the key competences should apply to education over the entire lifespan (from early childhood education to higher education), as well as including all learning spheres (especially non-formal learning) (European Commission, 2018, p. C189/3).

Eight key competences form the basis for the framework, albeit modified from its first version from 2006 (European Commission, 2018). They include: (1) literacy competence, (2) multilingual competence, (3) mathematical competence and competence in science, technology and engineering (4) digital competence, (5) personal, social and learning to learn competence, (6) citizenship competence, (7) entrepreneurship competence and (8) cultural awareness and expression competence (European Commission, 2019a).

A closer look into the key competences (that encompass knowledge, skills and attitudes) shows that sustainability is mentioned explicitly in three key competences: in mathematical competence and competence in science, technology and engineering; in citizenship competence; and in entrepreneurship competence. Within mathematical competence in science, technology and engineering – a twofold competence – sustainability is closely linked to science and to attitudes: "Competence includes an attitude of critical appreciation and curiosity, a concern for ethical issues and support for both safety and environmental sustainability, in particular as regards scientific and technological progress in relation to oneself, family, community, and global issues" (European Commission, 2019a, p. 9). In citizenship competence, sustainability can be found in knowledge, including "an awareness of the aims, values and policies of social and political movements, as well as of sustainable systems, in particular climate and demographic change at the global level and their underlying causes" (European Commission, 2019a, p. 12). Skills within this competence include "the ability to engage effectively with others in common or public interest, including the sustainable development of society" (ibid.) and attitudes include, among other things, "support for […] sustainable lifestyles, […] and to take responsibility for the environment" (ibid.). Entrepreneurship competence it comprised of awareness "of ethical principles and challenges of sustainable development and […] self-awareness of their own strengths and weaknesses" (ibid.).

In summary, the Key Competences Framework provided the first introduction of education for sustainable development as a central backbone of lifelong learning within Europe. Nevertheless, sustainability remains a mostly underlying and partly invisible principle, acknowledged as mainstreaming of the SDGs and enlarging some of the key competences as knowledge, skills and attitudes.

GREEN SKILLS FOR A GREEN TRANSITION

In December 2019, the European Commission presented the *European Green Deal* as a growth strategy that intends to make Europe the first climate-neutral continent by 2050. In the press release the Commission stated: "The Green Deal should act as a roadmap for making the EU's economy sustainable by turning climate and environmental challenges into opportunities across all policy areas and making the transition just and inclusive for all" (European Commission, 2019b, p. 1). In the years following, the strategy has been operationalised differently, focussing on the need for new skills for the green transition,

making the enhancement of green and digital skills on all levels the third pillar of the Green Deal Industrial Plan (European Commission, 2023, p. 14f.).

Based on the definition of the Inter-Agency Group on Technical and Vocational Education and Training from 2022, *Green skills* or *skills for the green transition* can be technical skills or transversal skills. They "include skills and competences but also knowledge, abilities, values and attitudes needed to live, work and act in resource-efficient and sustainable economies and societies" (European Centre for the Development of Vocational Training, 2022, p. 5). *Technical skills* are needed "to adapt or implement standards, processes, services, products and technologies to protect ecosystems and biodiversity, and to reduce energy, materials and water consumption" (ibid). They can be either occupation-specific or cross-sectoral (ibid.). *Transversal skills* are "linked to sustainable thinking and acting, relevant to work (in all economic sectors and occupations) and life" (ibid.). Alternative terms for transversal skills are *sustainability competences*, *life skills*, *soft skills* or *core skills* (ibid.).

While the mainstreaming of green skills as transversal skills is a joint effort of all sectors and spans all life-phases, in some areas there is a specific urgency for green skills as technical skills (European Commission, 2024, p. 9), especially with the goal of making Europe climate-neutral by 2050. These areas include extractive industries such as coal mining, construction (for retrofitting housing and constructing the infrastructure for new energy sources), waste management and recycling (including the circular economy), transport (e.g., introducing electric vehicles) and agriculture (dealing with structural impacts based on climate change) (European Commission, 2024, p. 9). For these areas, different types of green skills are needed that range between different levels of qualification. As regards construction, for instance, skills are needed to work with environmentally friendly materials and techniques or heating engineering skills that concern mostly electricians, plumbers, joiners, roofers and plasterers. In addition, knowledge of these skills is also relevant for architects, urban and regional planners and designers for conceptualising construction. This knowledge also applies to new forms of project management and site supervision skills, as well as specific skills linked to retrofitting (European Commission, 2024, p. 10). As these examples show, skills requirements are closely linked to the needs of different sectors, industries and regions. Therefore, regional and local actors know best which skills and, hence, which education is needed. What follows is that skills development needs to be carried out at both the regional and local levels, using different cross-sectoral partnerships (European Commission, 2024, p. 11). Of particular relevance within this context are issues such as the implementation of skills anticipation and how envisioning of skills for a greener future can be undertaken so as to prepare industries and sectors in good time, hence providing future-oriented and purpose-fit educational offers on different levels (CEDEFOP and UNESCO-UNEVOC, 2025).

ENVISIONING AND POSITIONING: GREEN COMPETENCES

The council recommendation on learning for the green transition and sustainable development states that "education, training and investment strategies should aim at an inclusive green and an inclusive digital transition to ensure resilience and prosperity in the future" (Council of the European Union, 2022a, p. 2). On the one hand, this recommendation establishes the link between the digital and green transitions, and on the other hand, it links future-orientation to sustainability (Cendon and Schütz, 2025). While green technical skills focus on "sustainability-oriented professional competence" (European Centre for the Development of Vocational Training and Organisation for Economic Cooperation and Development, 2022, p. 25), the focus on transversal skills links more specifically to attitudes and values as *sustainability competences*. The conceptualisation of *sustainability competences* takes place within the development of the European Competence Framework for Sustainability, the GreenComp, one of the political measures of the Green Deal. Like other competence frameworks, the GreenComp was developed through a participatory

process with experts and stakeholders in the fields of lifelong learning and sustainability. Within the framework, s*ustainability* is defined very broadly as '[...] prioritising the needs of all life forms and of the planet by ensuring that human activity does not exceed planetary boundaries' (Bianchi, Pisiotis and Cabrera, 2022, p. 12). *Sustainability competence*, therefore, 'empowers learners to embody sustainability values, and embrace complex systems, in order to take or request action that restores and maintains ecosystem health and enhances justice, generating visions for sustainable futures' (Bianchi, Pisiotis and Cabrera, 2022, p. 12). Finally, the authors stress a *sustainability mindset* that needs to be developed from early on. They state: "Learning for environmental sustainability aims to nurture a sustainability mindset from childhood to adulthood with the understanding that humans are part of and depend on nature. Learners are equipped with knowledge, skills and attitudes that help them become agents of change and contribute individually and collectively to shaping futures within planetary boundaries" (Bianchi, Pisiotis and Cabrera, 2022, p. 13).

As a competence framework, the GreenComp consists of four competence areas, into which twelve competences are organised. They form the building blocks for an overall sustainability competence (Bianchi, Pisiotis and Cabrera, 2022, p. 14). Throughout the framework, connections are made to relevant SDGs.

The competence area *embodying sustainability values* focusses on reflection and challenging one´s "own personal values and world-views in terms of unsustainability, and sustainability values and world-views. This area advocates equity and justice for current and future generations, while supporting the view that humans are a part of nature" (Bianchi, Pisiotis and Cabrera, 2022, p. 17). It includes the competences (1) valuing sustainability, (2) supporting fairness and (3) promoting nature (Bianchi, Pisiotis and Cabrera, 2022, pp. 17–19).

Embracing complexity in sustainability, as a second competence area, focusses on the interconnectedness and interlinkage of environmental challenges to economy and society and hence shows the dependency on "our planet which has limited resources and boundaries" (Bianchi, Pisiotis and Cabrera, 2022, p. 19) It includes (1) systems thinking, (2) critical thinking and (3) problem framing.

Envisioning sustainable futures, as a third competence area, focusses on enabling "learners to visualise alternative future scenarios and identify actions to achieve a sustainable future" (Bianchi, Pisiotis and Cabrera, 2022, p. 23). On the one hand, this involves acting creatively and innovatively and thinking out of the box, and on the other, critically thinking through the visualised or imagined and translating it into something feasible. Three competences are attributed to this area: (1) futures literacy, (2) adaptability and (3) exploratory thinking (Bianchi, Pisiotis and Cabrera, 2022, pp. 23–25).

Finally, *acting for sustainability* focusses on taking action for shaping sustainable futures, both at an individual and collective level. While this competence area is about acting, it also includes the demand for action of those responsible. The competences (1) political agency, (2) collective action and (3) individual initiative are included in this area (Bianchi, Pisiotis and Cabrera, 2022, pp. 25–28).

UNIVERSITY LIFELONG LEARNING FOR A SUSTAINABLE FUTURE

In view of the European framings and the different approaches, necessities and rhythms for the green transition, university lifelong learning can take up education for sustainable development in different ways. These includes transformations at the intersection of the economy, society and environmental factors.

With respect to supporting *green skills* for the green transition, both as technical and as transversal skills, and about training professionals with the aim of up- and reskilling (inter-) disciplinary knowledge and specialised research serve as complementary backbones in these forms of sustainable education. Strong links and partnerships at the local level with different professional contexts are prerequisites for developing and implementing small, customised programmes (e.g., as microcredentials) that add new knowledge, new insights and new methods for professionals in different fields.

While the first approach builds mostly on providing content and on the *what,* a second approach could focus on the *how,* on methods or methodologies. This requires that university lifelong learning occupy an interdisciplinary or even transdisciplinary perspective that builds on partnerships between different actors focussing on joint problems. This approach is more strongly connected to e*mbracing complexity in sustainability*, the second competence area of the GreenComp. The framing of problems through different perspectives and lenses, led by reflexivity and social accountability, discerns new ways of knowledge production and understanding – commonly understood as *mode 2* knowledge production (Gibbons *et al.*, 1994; Nowotny, Scott and Gibbons, 2001) or even knowledge production in mode 3 (Carayannis and Campbell, 2019), as these approaches help address the complex challenges of sustainable development by fostering partnerships, integrating diverse knowledge and promoting innovative solutions.

The focus on *what for,* or *why,* can be connected to the competence area of *envisioning sustainable futures* within the GreenComp. Here, university lifelong learning can facilitate future methodologies and participatory processes to envision futures and to develop a common goal. Formats such as future workshops or design thinking methodologies could be used – both as future-oriented methods in developing UCE offers with focus on sustainability and as formats within ESD offers – that focus on the need to imagine futures (Damhof, 2021) and the ability to discover and reinvent existing assumptions (Miller, 2010, p. 27). In turn, these could help to shape the present in a different and more future-oriented way.

While the first two approaches are more concerned with UCE programmes for professionals and are built on economic necessities, the third approach builds more strongly on the voices of individuals or collectives and *may* provide room for developing new frameworks and visions for sustainable futures as well as for *acting for sustainability*. With this potential of taking an emancipatory approach that links to both the local climate and to nature, university lifelong learning *as* sustainability – echoing Silke Schreiber-Barsch and Werner Mauch (2019) – could become significant by “forging partnership dialogue on equal terms and in a responsive way, distinct from purely competence-related conceptions, pursuing instrumental approaches” (Schreiber-Barsch and Mauch, 2019, p. 529).

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