

LEVERS FOR CHANGE: LEARNING FOR SUSTAINABILITY IN SCHOOL & COMMUNITY

AUTHORS

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LEVERS



The increasingly unsustainable ecological footprint of humanity is pushing the Earth dangerously close to its planetary boundaries, as increasing environmental degradation is mirrored by widening social inequalities. Education today needs to equip learners with the sustainability competences to challenge current systems, navigate complexity and uncertainty, and imagine radically different futures. To achieve this, learning for sustainability must be compulsory yet flexible, inclusive and lifelong. Building on GreenComp, the European reference framework for sustainability competences [1] as well as learnings from Open Schooling (OS) projects realised through the European Commission's Horizon 2020 framework programme, LEVERS is a Horizon Europe OS project focused on lifelong learning for climate justice.

Open schooling (OS) for science education has been funded by the European Commission since 2017 through the Science with and for Society (SwafS) programme of Horizon 2020. As described in 'Innovating European Education: Open Schooling as a Boost for Europe's Skills' [2], OS is an approach which aims to purposely connect the learning that happens in multiple contexts, beyond the confines of compulsory formal education and encompassing lifelong learning in family, community, workplace, informal and digital settings. It has been associated with positive outcomes including making science education more open, inclusive, and accountable, as well as fostering creative thinking and foresight [3]. OS involves learners as active global citizens, working on personally-consequential transdisciplinary challenges, and collaborating with a range of local societal actors such as museums and science centres, individuals and institutions active in research, innovation and industry, as well as community and civil society organisations. OS is also seen as a means to increase citizen engagement in green transition action.

In recent years, **Learning for Sustainability (LfS)** has become a key agenda item within the European Education Area. Sustainability, as defined in GreenComp, "means prioritising the needs of all life forms and of the planet by ensuring that human activity does not exceed planetary boundaries" (p.12). LfS then "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." (p. 13).

LfS in schools may be implemented through a competences curriculum model [4]. GreenComp states that "a **sustainability competence** 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" (p. 12). A set of twelve sustainability competences are outlined in GreenComp, under the four thematic clusters: embodying sustainability values, embracing complexity in sustainability, envisioning sustainable futures, and acting for sustainability (p. 14).

A number of different educational terms such as climate change education, environmental education, global citizenship education, education for sustainable development and development education share some common ground with LfS, in this document we utilise this term given the scope of GreenComp in terms of local and global action, considering lifelong learning in multiple settings, embracing complexity and futures thinking, and paying attention to the social as well as scientific, and non-human as well as human beings in the efforts towards planetary well-being for all.

EVIDENCE AND ANALYSIS

While OS has traditionally focused on innovating science education, in this policy brief, we identify key synergies between OS and LfS, and advocate for the utilisation of expertise developed over seven years of European Commission-supported OS projects, to further the integration of LfS into education and learning across Europe.

LEVERS has undertaken an assessment of policy directives and supporting measures in the area of LfS, along with a review of the policy recommendations generated by OS projects to identify synergies and common challenges.

LEARNING FOR SUSTAINABILITY: POLICY CONTEXT

According to the 2023 European Parliament briefing document *Learning for a Greener and More Sustainable Future*, [5] "action is needed in the education and training sector to **support the green transition and develop the sustainability competences of learners**". The author reports that "learning for sustainability is **not yet a systematic feature of education policy and practice across Europe**", and recommends that further efforts are made to cement the role of learning for sustainability within policy and practice in the EU.

The EC Staff Working Document (2022) was created in response to the adoption of the Recommendation on learning for the green transition and sustainable development by the Council of the European Union (EU) in June 2022. It outlines key needs for the widespread adoption of LfS in schools. The **complex and interdisciplinary nature** of learning for sustainability is identified as a challenge, as well as the need for **learner-centred pedagogies, new approaches to assessment, organisational change and community partnerships**. It also highlights the necessity for **whole-institution approaches**, in which sustainability is embedded

across all operations and processes, and identifies insufficient funding and institutional support as part of the challenges to the adoption of such approaches. This assertion is echoed by a number of reports generated by European Commission's Working Group Schools on Learning for Sustainability [6], as well as the 2024 Eurydice Report published by the European Education and Culture Executive Agency [7] which examines progress towards embedding LfS in 39 European education systems. The high-level findings of the Eurydice Report indicate that while most European countries integrate sustainability-related competences in the school curricula using various means, progress can still be made in embedding sustainability competences more extensively and in greater detail **across the whole curriculum**; in reinforcing **targeted support, guidance and training opportunities for teachers and school leaders**; or in **providing more financial and non-financial support for specific school activities**.

OPEN SCHOOLING: POLICY CONTEXT

Open schooling promotes cross-sectoral partnerships and collaborations to develop an open learning educational ecosystem. In the idealised OS landscape, disciplinary silos are broken down, and the aim of developing active global citizens is achieved through localised yet spatially and temporally distributed challenge-based transdisciplinary learning. Learners develop their agency and competences by tackling personally-meaningful challenges in schools and beyond, including in the home, in the community, and in their online worlds. According to a 2023 OS policy brief [8], OS is explicitly present in national policies in some countries such as Malta, Italy, and Germany, while in others, key OS principles such as collaboration, interdisciplinarity and 21st-century skills development are mentioned but OS is not yet featured.

OPEN SCHOOLING: POLICY CONTEXT

Notable features OS according to the completed and ongoing projects surveyed [9] include:

- Active, learner-centred pedagogies and participatory, challenge-based learning opportunities. Centrality of student voice and development of agency, and a focus on educator as facilitator of transformative learning.
- Whole-school approaches to collaboration with non-formal and informal learning organisations, as well as with professionals in other sectors (academia, government, industry, NGOs, arts and cultural sectors, etc.)
- Place-based learning and learning outside the classroom.
- Cross-curricular learning, and emphasis on inter- and transdisciplinarity. Funded projects have had a strong focus on science, but integrate other STEM disciplines, and frequently integrate the arts, humanities and social sciences to enhance learning.
- Use of co-design and co-creation approaches in various levels - e.g. to facilitate student project development, and to develop educator professional learning with educators as core contributors.
- Peer-to-peer learning opportunities for educators, including international exchanges as well as online networking and knowledge exchange.
- A maker, Do-It-Yourself (DIY) or Do-It-With-Others (DIWO) ethos, particularly when schools collaborate with educators from makerspaces, living labs, science centres and museums.
- Orientation to equity - focus on inclusive approaches, and commitment to openly accessible tools, educational resources, data, software and hardware where possible, ensuring low barriers to entry for schools into professional science and technology.

The policy recommendations generated by these pilot projects undertaking innovative approaches to science education are broadly in line with current challenges facing efforts to embed LfS in mainstream education. OS policy recommendations examined featured a number of common themes, including calls for:

- Clear national-level policies dedicated to STEM and STE(A)M education through open schooling;
- Integration of competence-oriented, transdisciplinary and cross-curricular open schooling within formal education curricula;
- Further investment in professional learning for educators;
- Further research to examine the impact of open schooling;
- Promotion and support for synergies and collaboration between relevant stakeholders including educators, parents, learners, local communities, academia, industry and civil society organisations;
- Involvement of students in the planning, implementing and evaluating of OS activities;
- Improved alignment between educational outcomes and industry needs;
- Strategic efforts to be directed towards inclusion and diversity in science education to promote equity and social justice.

The projects that have made these recommendations have a wide range of publications, resources, and networks of expert researchers and practitioners across Europe that can be a valuable resource to LfS educators and policymakers alike. This rich network can be accessed via the Open Schooling Together initiative [10], coordinated by [Ecsite, the European Network for Science Centres and Museums](#). Active OS projects in 2024 include [LEVERS](#), [STE\(A\)M Learning Ecologies](#) and [ICSE Science Factory](#), covering at least 21 countries in the European Education Area.



CHALLENGES

This section outlines a number of challenges relevant to both LfS and OS grouped around four key policy areas: policy making; education and training settings; educators; and community. This is followed by a set of recommendations, suggesting that the learnings from European Commission-funded OS projects offer key insights for making progress on embedding LfS within education systems.

POLICY:

- Centralised educational policies and curricula lead to a lack of autonomy for schools and teachers to be flexible with what is possible locally. While transdisciplinarity and cross-curricular approaches are frequently heralded as essential, there is a lack of clarity and support to embed these in practice.
- Lack of availability of and access to financial support: according to the Eurydice Report [7] which examined learning for sustainability in 39 European education systems, only a third of these provide financial support to schools for changes to small-scale infrastructure such as recycling or school gardens, or for field trips related to sustainability. The report also notes that even where available, this support is rarely granted automatically, indicating that schools need to apply for it, requiring expertise and capacity for developing competitive funding applications.

COMMUNITY:

- Lifelong learning through adult education and community action are recognised as valuable for sustainability, as well as for community wellbeing and social cohesion [11] - however, policies are fragmented, and sufficient mechanisms not in place to integrate lifelong informal and non-formal learning and community climate action with formal education.

EDUCATION & TRAINING SETTINGS:

Many policies and strategies for LfS as well as for OS suggest the importance of partnership and collaboration across formal, informal and non-formal learning environments, and collaboration between education and other sectors. However, a number of common challenges are identified:

- There is a lack of clarity on how collaboration should be structured, who should take responsibility for instigating and maintaining collaborations, and who sets success criteria to ensure mutually beneficial partnerships. The Working Group Schools on Learning for Sustainability mention the danger of these collaborations relying on a "single champion" - an approach which may allow a project to get off the ground, but which does not have long-term viability [12].
- There is variation in professional approaches, common understandings and ambitions across these settings, making collaboration difficult.
- Strategic policies, incentives, and measures to reinforce the benefits of interaction and cooperation of the formal, non-formal and informal educational settings & non-educational stakeholders are lacking.

EDUCATORS:

- Policies and frameworks exist for LfS and OS at European level, but mechanisms for embedding these in schools and classrooms, and monitoring their outcomes, are still lacking. According to the Eurydice Report (2024), less than a third of all education systems have established specific evaluation criteria related to examining outcomes of learning for sustainability.
- Supports are frequently directed towards the individual educator (e.g. via professional learning) rather than at collective levels (e.g., granting autonomy for groups of teachers to collaborate to embed innovative learnings, support for institutions to take whole-school transdisciplinary approaches, or for schools of different levels or in a geographic region to collaborate).

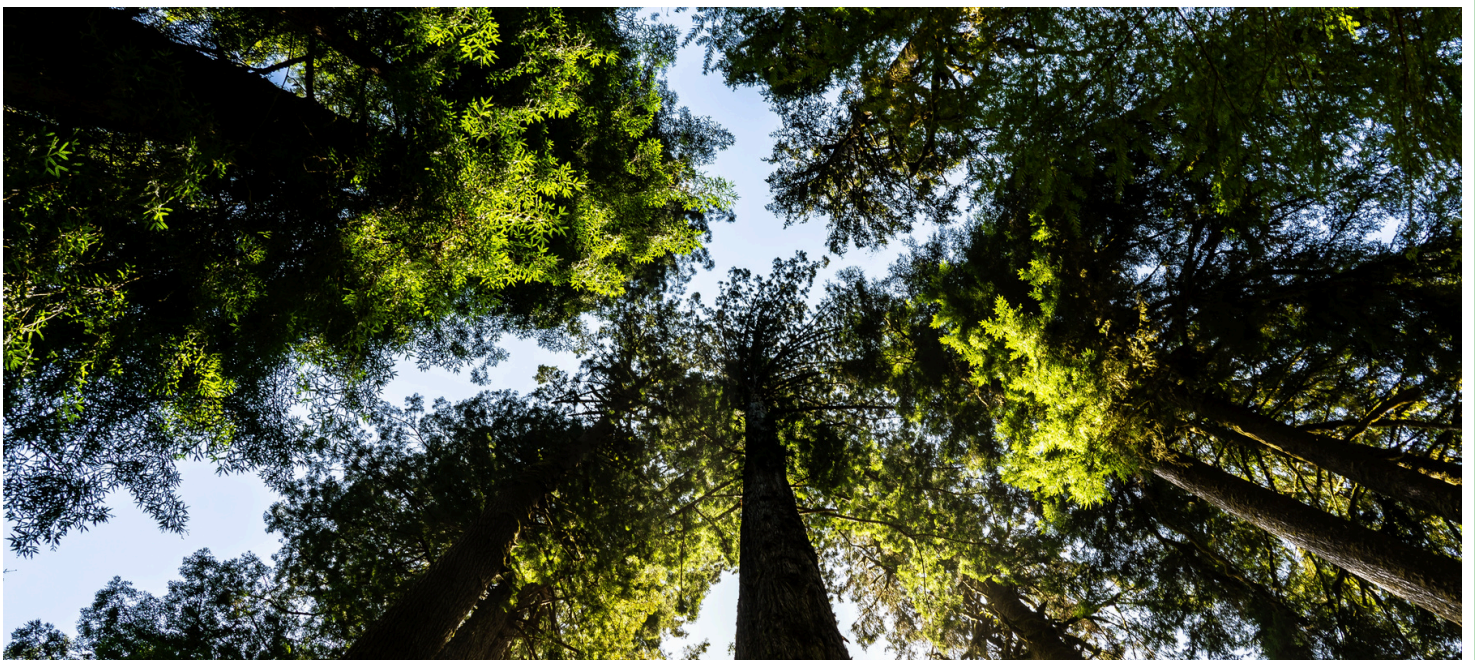


POLICY:

- Supports should be put in place to assist schools and educators to interpret ESD policies in line with local climate change and sustainable development policies, so that transformative action learning can be embedded in locally-relevant contexts.
- All local, regional and national policies related to climate change, biodiversity, and other sustainability actions should offer a mechanism for schools, educators and students to consult, challenge and participate.
- Schools must have non-selective access to resources to embed whole-school approaches to sustainability, and support to scale these to a meaningful level.
- Mechanisms should be in place to enable the resourcing of cross-sectoral partnerships - e.g. funding for schools and community groups to apply together to undertake climate action initiatives, and to access support and high-quality resources relevant to all learners.
- Embedding sustainability competences more extensively and in greater detail **across the whole curriculum**.

EDUCATION & TRAINING SETTINGS:

- Regional, national and European cross-sectoral networks of experts should be resourced to support schools and educators with the implementation of Learning for Sustainability policies utilising approaches developed through open schooling.
- School leaders should have autonomy to embed whole-school approaches to Learning for Sustainability, enabled, rather than inhibited by national policy. Teachers should have autonomy to work on sustainability challenges across subject disciplines through OS, with learner success measured in line with holistic sustainability competence development and contribution to a sustainable future rather than limiting standardised assessment focused on content mastery.
- Education and training settings should have access to the systematic provision of dedicated and appropriate sustainability and climate action coordinators, delegates or mentors, with expertise and understanding of school contexts, curricula and educational systems. Currently, such services are only available in 11 of the 39 education systems examined in the 2024 Eurydice Report [7].





EDUCATORS:

- Systematic and applied professional learning for educators at all levels on using open schooling methodologies to develop collaborative cross-sectoral, transdisciplinary, cross-curricular approaches to Learning for Sustainability. Such training should be developed in collaboration with a cross-sectoral range of experts, including researchers, educators, community leaders and youth.
- Professional learning should incorporate in-person and online green mobility exchanges, and should facilitate training opportunities for all staff (including executive, administrative, facilities teams, parents associations, and others) to engage with whole-school approaches to implement green principles and practices.
- Initial teacher education should include compulsory training on open schooling for sustainability and climate action for pre-service teachers at all educational levels and subject. Currently, initial teacher education in only six of the 39 countries examined in the Eurydice Report (2024) covers the cross-cutting objective 'develop partnerships to connect learners to the natural world, their local community and the global community'

COMMUNITY:

- Supports—such as the systematic provision of dedicated and appropriate sustainability and climate action coordinators, delegates or mentors, with expertise and understanding of community and school contexts—should be made available to integrate community-level climate action and educational settings. These supports should attend to the different policy drivers and motivations for those working in education and those active in community and voluntary work, to support the cultivation of meaningful long-term collaborative partnerships.

LEVERS: FUTURE WORK

Across nine distinct case studies in Europe, LEVERS investigates collaboration among a cross-sectoral range of education and community stakeholders as they co-create critical, place-based and action-oriented approaches to learning for sustainability. Through these nine regional learning ecosystems, LEVERS facilitates educator peer learning, as well as twinning between the locations to exchange experiences and practices.

Drawing on insights from these experimental case studies, and a range of examples and pedagogical approaches for school- and community-led climate action, the LEVERS Professional Learning Series for Climate Justice for Youth Educators and Adult Educators, launching 2025, will directly address the need for enhanced training opportunities for formal and non-formal educators to develop their capacity to implement cross-curricular, open schooling approaches to learning for sustainability.

In 2024 and 2025, LEVERS will host a number of national and international workshops and policy events related to climate action and learning for sustainability. Insights from these events, along with research findings from LEVERS regional climate actions, and feedback from educators involved in the professional learning series, will inform an evidence-based policy brief to be launched in February 2026.



LEVERS

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APPENDIX: HORIZON 2020/EUROPE OPEN SCHOOLING PROJECTS (2017 - PRESENT)

CONNECT: Inclusive open schooling through engaging and future-oriented science
DOI: [10.3030/872814](https://doi.org/10.3030/872814)

COSMOS: Creating Organisational Structures for Meaningful science education through Open Schooling for all
DOI: [10.3030/101005982](https://doi.org/10.3030/101005982)

Fedora: Future-oriented Science EDucation to enhance Responsibility and engagement in the society of Acceleration and uncertainty
DOI: [10.3030/872841](https://doi.org/10.3030/872841)

ICSE Science Factory
DOI: [10.3030/101093387](https://doi.org/10.3030/101093387)
Make it Open
DOI: [10.3030/872106](https://doi.org/10.3030/872106)

MOST: Meaningful Open Schooling Connects Schools To Communities
DOI: [10.3030/871155](https://doi.org/10.3030/871155)

MULTIPLIERS: Multiplayers' Partnerships To Ensure Meaningful Engagement With Science And Research
DOI: [10.3030/101006255](https://doi.org/10.3030/101006255)

OS Hub: Open Science Hub Network: Empowering Citizens through STEAM Education with Open Schooling
DOI: [10.3030/824581](https://doi.org/10.3030/824581)

OSOS: Open Schools for Open Societies
DOI: [10.3030/741572](https://doi.org/10.3030/741572)

OTTER: Outdoor Science Education for a Sustainable Future
DOI: [10.3030/101006482](https://doi.org/10.3030/101006482)

PAFSE: Partnerships for science education
DOI: [10.3030/101006468](https://doi.org/10.3030/101006468)

PHERECLOS: Partnerships for pathways to Higher Education and science engagement in Regional Clusters of Open Schooling
DOI: [10.3030/824630](https://doi.org/10.3030/824630)

PULCHRA: Science in the City: Building Participatory Urban Learning Community Hubs through Research and Activation
DOI: [10.3030/824466](https://doi.org/10.3030/824466)


RoadSTEAMer: Developing a STEAM Roadmap for Science Education in Horizon Europe
DOI: [10.3030/101058405](https://doi.org/10.3030/101058405)

SALL: Schools as Living Labs
DOI: [10.3030/871794](https://doi.org/10.3030/871794)

SEAS: Science education for action and engagement towards sustainability
DOI: [10.3030/824522](https://doi.org/10.3030/824522)

SENSE. The New European Roadmap to STEAM Education
DOI: [10.3030/101058507](https://doi.org/10.3030/101058507)

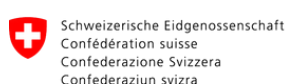
STE(A)M LEARNING ECOLOGIES (SLEs)
DOI: [10.3030/101094648](https://doi.org/10.3030/101094648)

Project Name:	LEVERS: Learning Ventures for Climate Justice	
Coordinator	School of Education, Trinity College Dublin, Ireland. Dr Mairéad Hurley, Assistant Professor in Science Education mairead.hurley@tcd.ie	
Consortium	Trinity College Dublin, School of Education (TCD), Ireland Centar Za Promociju Nauke (CPN), Serbia Center For Social Innovation Ltd (CSI), Cyprus European Association For The Education Of Adults (EAEA), Belgium Forth Together Cic (FOR), United Kingdom LATRA EE (LAT), Greece Onl'fait (OLF), Switzerland Expolab (SAC), Portugal Stickydot Srl (SD), Belgium University College London, Climate Action Unit (UCL), United Kingdom Zavod Za Kulturo, Umetnost In Izobrazevanje Kersnikova (Kersnikova), Slovenia	
Funding scheme	HORIZON-WIDERA-2022-ERA-01-70 - Open schooling for science education and a learning continuum for all HORIZON-Coordination and Support Action (CSA)	
Duration	March 2023 – February 2026 (36 months).	
Budget	EU contribution € 1 513 997,00	
Website	https://leversforclimate.eu/	
Email	LEVERS@tcd.ie	
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