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Working Group on Schools, Sub-group on Education for Environmental Sustainability

Learning for Sustainability: Key Questions for organising & designing curricula

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Contact: Deirdre Hodson

E-mail: EAC-UNITE-B2@ec.europa.eu

European Commission
B-1049 Brussels

Learning for Sustainability:

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Table of Contents

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1. Introduction

The EU Working Group on Learning for Sustainability is currently exploring how policy action can assist in the development and introduction of school curricula and appropriate pedagogies to improve opportunities for learning for sustainability in Europe's schools. This paper brings forward input on how learning for environmental sustainability can be strengthened by policy actions to develop a framework and relevant resources and capabilities across the Member States. It also summarises some of the key challenges that need to be addressed for any LfS curriculum activity to have an impact. The paper, to be discussed by the working group at its meeting on 15-16 September 2022, considers i) the challenges of curriculum work in the LfS space and what lessons may be taken from examples of well-regarded practice in this area; and ii) sets out some key considerations relating to the specification, resourcing, and capacity-building necessary to develop this area of curriculum practice. It closes with a consideration of the main policy barriers and opportunities for those involved in shaping, designing, and introducing LfS curriculum policy. The purpose of this paper is to encourage better understanding of the challenges of curriculum action in an area of policy work where countries vary considerably in readiness and current practice.

2. Curricula and learning for sustainability: context and challenges

The *European Green Deal* and achieving the *European Education Area by 2025* both foreground the importance of developing the competences needed to live and act in a more sustainable way. To date, the key strategic initiatives to support learning for sustainability include the *Council Recommendation on learning for the green transition and sustainable development* (EU 2022) and the related development of *GreenComp, the European Sustainability Competence Framework* (Bianchi, Pisiotis,& Cabrera Giraldez, 2022) – described as '…a catalyst to promote learning on environmental sustainability in the European Union'.

The recently adopted Council Recommendation demonstrates the commitment of Member States to learning for sustainability and creates a stronger political foundation for cooperation in the area, while fully respecting the power and policy prerogatives of Member States in the field of education and training.

Several of the features set out in the Council Recommendation (EU 2022) relate directly to curriculum action within Europe's school systems. These address the topline objective of the policy initiative:

> Learners of all ages need opportunities to develop the knowledge, skills and attitudes to live more susainably, embrace healthier lifestyles and contribute – both individually and collectively – to the green transition[1]

Important curriculum expectations flow from this objective. These include: that effective learning for sustainability starts from early childhood education and care; it requires a lifelong learning approach; it needs to be learner-centred, engaging, positive and based on real-life experiences; it should involve young people in meaningful ways that build sustainability competences; and should be founded on strong policies[2].

[1] See https://education.ec.europa.eu/focus-topics/green-education/learning-for-the-green-transition

[2] Ibid.

Vision and focus

The curriculum expectations noted above also provide a useful summary of the challenges of planning for and supporting curriculum work in the LfS space. They point directly to the complexity of the challenge long recognised by commentators such as Rosalyn McKeown that any form of curriculum development relating to sustainability should fundamentally *help schools and communities develop a process for creating locally relevant and culturally appropriate education*[3].

More recently, these complexities have been well described by Pinar (2019) who argues that addressing these wider challenges needs to fully recognise the influences and implications of a complex array of social, structural and individual actions and forms of enactment on curriculum action. These layers are necessary when considering the curriculum itself. As outlined by Pinar (2019, p. 15):

> *The school curriculum communicates what we choose to remember about our past, what we believe about the present, what we hope for the future. Because the curriculum is symbolic, its study requires situating curriculum historically, socially and autobiographically.*

These three situations referenced by Pinar acknowledge the social structures that influence the curriculum, the personal agency exerted by actors within the educational sphere and the temporal change that exerts direct and indirect influences on curriculum. For policy work on LfS to be effective, it must engage the range of social and political structures and expectations that exert an influence on the curriculum development processes and must do so at all sites of curriculum making. (See APPENDIX 1.)

The practical task ahead

The range of implementation practices evident across countries is significant. Similarly, on a continuum from long-standing engagement to early-stage work there is considerable diversity concerning concepts and practices relating to curricula for sustainability. Some countries – such as Norway – have opted for a strategy on sustainability education that encompasses all school subjects and extends far beyond the classroom. Essentially, the entire curriculum has been reoriented to address sustainability (OECD 2015). Others – such as Ireland – have taken more of an add-on approach and opted instead to introduce new subject areas under headings such as *Education for Sustainable Development* (NCCA 2021). In this approach cross-curricular links are acknowledged but the emphasis is on a more traditional specification of content. Also, this strategy sets out in an assessable form the key skills, understanding and knowledge that students are expected to gain from such a programme.

In short, a wide range of school curricula related to educating for sustainability is already evident across Europe. These vary in terms of depth, breadth, focus, and stage of development. Willingness to engage in sustainability activity at school level will likely be less of an issue than ensuring that the capacity exists to do so well: this is at the heart of the policy challenge.

[3] See http://www.esdtoolkit.org/about.htm

3. Specification & resourcing: the curriculum design and development process

A curriculum is a 'complicated conversation' (Pinar 2019), the central question of which is *What knowledge has the most worth?* This question plays out in education provision not only as content but also as structures and vision for the future. Curricula reflect and embed educational traditions and values. In Europe there are two broad education traditions that shape school curricula and the mission of schools: the competencies based curriculum tradition, which increasingly dominates EU discourse and predominates in English-speaking countries globally (Westbury 2000; Deng 2018; Tahirsylaj 2019) and the *Didaktik-/Bildung*-based education tradition, which predominates in Germanic and Nordic Europe (Westbury 2000; Tahirsylaj, Niebert, & Duschl 2015, Deng 2018).

The competency-based curriculum

In the competencies *curriculum* tradition, central importance is placed on the idea of valid frameworks that shape curriculum proposals and actions — both to define the learning mission itself and to help specify the training needs of the educators who deliver programmes. Werler & Tahirsylaj (2022) observe that this tradition developed in English-speaking countries in Europe, North America and Oceania. They argue that its conceptualisation positions it as an institution-oriented tradition in which institutions such as schools rather than individual agents (such as teachers or learners) play the determining role and that it is methods-focused —by which they mean paying attention to instructional practices framed around the content of teaching —and that it is evaluation-intensive "…highlighting the importance placed on both students' and institutions' performance, primarily through students' test scores"(p.156).

The hegemonic nature of this model has long been recognised (Shulman 1987) and its tendency to gloss over conceptual differences in curricular practices and programmes between countries, regions and cultures can be problematic. Nevertheless, the competencies curriculum tradition has grown in strength and support in international discourse on curriculum since 2000 – due in no small part to the influence of supranational organisations such as the OECD and World Bank. More recent developments have also broadened the original narrow constructions of competence beyond 'the knowledge worth knowing' to include the skills, competencies, values and attitudes to enact that knowledge – as in the EU *GreenComp* framework. However, as Tahirsylaj & Sundberg (2020) note, there is still 'unfinished business in critically engaging with framing and defining competences for the twenty-first century'(p.131), their causes, impact and consequences for schooling and learning internationally, as well as how competency based education is recontextualised within specific national contexts.

The *Didaktik-/Bildung*-based tradition

In the *Didaktik-/Bildung*-based tradition, education is conceived as a triadic relationship between the curricular content, the teacher, and the learner (Hopmann & Riquarts, 2000). In countries that work within this tradition, there is a central emphasis on autonomy and responsibility – both for learner and educator. Schooling tends to be teacher-oriented with teachers enjoying considerable professional autonomy and responsibility; it is content-focused, meaning the content rather than the methods drives teaching and learning processes in the classroom; and it relies on the concept of *Bildung*, which is a theorisation of individuals' development through 10 formal schooling in order that they become independent and capable of using reason on their own in their decision making (Werler & Tahirsylaj 2022). This *Didaktik* tradition is very different to the view of instruction characterised by an institution-led knowledge transmission model which views students as passive receivers of knowledge (Nie & Lau, 2010). Furthermore, the *Didaktik- / Bildung*-based tradition looks at the aims, the contents and the methods of schooling (teaching) from a macro perspective (Werler & Tahirsylaj, 2022). This tradition takes its starting point

in a national curriculum and then asks how to transform and reproduce the respective knowledge within the culture(s) of the nation/region. This echoes Hopmann (2007) who points out that the purpose of teaching and schooling in Didaktik culture is to transport knowledge from society to a learner. In this way, the aim of education programmes is to enable learners to experience teaching and learning situations that "unfold various learning processes that link the student`s self with the world" (p.156).

Interestingly, the *Didaktik-/Bildung*-based tradition has remained central to curriculum planning and development in Nordic and Germanic countries, but remains relatively unknown outside of that space.

A framework to assist policy development

The work of Margaret Archer (1995, 1998, 2002) offers a useful framework to assist with the design and organisation of policy in support of learning for sustainability. Archer wrote extensively in the critical realist tradition of education research and many others have since built on her ideas to offer insights into changing the cultural mindset even though it resists change. Archer describes this as *morphogenesis* which, along with its opposite – *morphostasis*, helps understand the nature of change in the modern world. From this tradition, a series of central ideas and concerns emerge that may be particularly useful here:

- **A concern for culture**. As noted above, the education and curriculum traditions of a country / region can vary greatly and it is necessary always to be sensitive to this when planning and devising curricula. Not doing so may mean missing an opportunity to engage the full range of possibilities for promoting LfS as a meaningful development.

- **A concern for the structural**. Structures for addressing curriculum change are not homogeneous – there are significant variations relating to curriculum governance across the EU. Many of these emerge from the dominant curriculum tradition – for instance, some base curriculum activity on a view of educating that emphasises rationalised, managerial framework, others take a more democratised approach, which emphasises the holistic development of the learner – created through the relationship of learner, content and teacher. Other variations relate to more operational issues and practices such as which ministry or division leads on which aspect of education activity. Clarifying these variations can help with European level actions on Learning for Sustainability.

- **A concern for the material.** This involves responding to the need to provide the range of resources necessary to support the technical enactment of curricula in a systematic way. Separating the 'material' from the 'structural' aspects of curriculum contexts can be helpful in countering what Woolner, Thomas & Tiplady, L. (2018, p.225) have described as the "… theoretical incoherence in running together elements such as classroom furnishings which are unproblematically embodied in space and time with less tangible structures" such as staffing arrangements and available expertise. The financial aspect is likely to be crucial in both, of course. In addition, it is 11 necessary to pay attention to the physical environment in which the curriculum will be engaged and how this might encourage or constrain its impact as well as to the capacity of the teachers and schools to provide the types of engagement that LfS requires. There are implications here for policy action on the curriculum specification, system resourcing, and capacity-building necessary to achieve the goals of the LfS initiative. These include directly supporting schools and teachers through the identification of high-quality materials and the pedagogies that aid the process of transformational learning relevant to the Green agenda.

The usefulness of such conceptions in undertaking policy implementation and change is well summed up by Priestley and Miller (2012):

> *For change to be sustained, it is necessary to address the wider social, cultural and policy environment within which teachers operate, and to look more closely at how this interacts with the dynamics of the classroom and school environments in which the curriculum enactments are carried out.* (p. 114)

For the WG LfS, there are useful insights in all of this concerning how to move forward on policy action in a way that strikes a strong balance between challenging schools and teachers to engage in the changes required and providing the type of timely support and assistance that will encourage the levels of *within-school* activities necessary for the LfS initiative to succeed.

4. LfS curriculum practice from around the world: insights

Examples of different and interesting ways to engage LfS within the school curriculum are presented in this section. These are taken from four settings that are generally considered to be at the fore in terms of curriculum provision for sustainability within their formal education primary and secondary systems and, in some cases, beyond. These reflect a variety of approaches to sustainability in the curriculum – from diffusion to quasisubject – and exemplify varying levels of policy maturity as well as a range of supporting actions to strengthen implementation. As individual cases and when taken together, these descriptions offer valuable insights into how sustainability can be incorporated across the phases of compulsory years education. All four have in common that they engage with sustainability in their curricula either as a cross-curricular aspect or a formal learning objective of some type, and have a history of supporting schools in doing so in ways from which others can learn.

New Zealand

The vision for teaching and learning for sustainability in New Zealand is embedded in three documents: the Environmental Education for Sustainability Strategy and Action Plan 2017-2021 (New Zealand Department of Conservation, 2017); the Te Whāriki – a unique early-years education framework first published in 1996 that has shaped the distinct approach to learning in Aotearoa/New Zealand's early childhood curriculum ever since; and The New Zealand Curriculum Document (2015) which states succinctly what each learning area in Yrs 1 – 13 is about and how it is structured. This includes Education for Sustainability (EfS), as it is termed in the specification, or Environmental Education for Sustainability (EEfS), as it is termed in the related national education strategy and action plan.

The vision driving EfS / EEfS in this context is that 'all New Zealanders value a connection to their environment by actively working together for a sustainable future' (p.7). The curriculum is designed around this ideal and aims to ensure that young people are equipped with the understanding, skills and motivation needed to address New Zealand's environmental challenges, and to learn how to take action to tackle the sustainability challenges they face locally and globally. This is expressed in term of core values such as 'ecological sustainability, which includes care for the environment' (p.10). The curriculum is therefore an articulation of the critical role education plays in strengthening the ability of individuals and communities to positively influence the environment and the society in which they live and to make reasoned choices, and take action to transform how they live and work. The specific ways in which these values find expression in an individual school is intended to be 'guided by dialogue between the school and its community and should be evident in the school's philosophy, structures, curriculum, classrooms, and relationships' (p.12).

Themes and content relating to sustainability are integrated into the curricula across all phases. This is principally thematic and characterised by an absence of compulsory core curriculum requirements. At lower secondary, EfS is taught across all subjects areas or integrated within the teaching of subjects and taught by all teachers. At upper-secondary, it is 14 additionally incorporated within qualification specifications for individual subjects such as geography, biochemistry, education for sustainability, agriculture, and horticulture. The intention is to provide learning for sustainability at a general level for those who choose this option but also to make available enhanced specialist versions for those who wish to study the area as part of their NCEA programme – New Zealand's upper secondary school leaving qualification.

In summary: The New Zealand Curriculum (2015) and the Te Whāriki – Aotearoa/New Zealand's early childhood curriculum set the direction for teaching and learning in New Zealand schools – including that of sustainability. But these act as frameworks rather than specifications or detailed plans (p.37). This means that while every school curriculum must be clearly aligned with the intent of the curriculum documents, schools have considerable flexibility when deciding on the detail and approach. In this, they can draw on a wide range of ideas, resources, and models made available through both the Ministry of Education and the Department of Conservation[4]. As the New Zealand Curriculum (2015) states:

> Curriculum is designed and interpreted in a three-stage process: as the national curriculum, the school curriculum, and the classroom curriculum. The national curriculum provides the framework and common direction for schools, regardless of type, size, or location. It gives schools the scope, flexibility, and authority they need to design and shape their curriculum so that teaching and learning is meaningful and beneficial to their particular communities of students. In turn, the design of each school's curriculum should allow teachers the scope to make interpretations in response to the particular needs, interests, and talents of individuals and groups of students in their classes. (p.37)

Scotland

The thinking behind Scotland's strategy and practice regarding education for sustainability is well captured by the opening statement on the Education Scotland website[5]:

> Learning for Sustainability is an entitlement for all learners within Scotland's curriculum. It weaves together global citizenship, sustainable development education, and outdoor learning to enable learners, educators, schools and their wider communities to build a socially-just, sustainable and equitable society. It supports the development of knowledge, skills and values at the heart of the curriculum's four capacities, helping to nurture learners as responsible citizens and effective contributors.

This has its basis in the report from the *One Planet Schools Working Group* (2012) and Vision 2030+: *Concluding report from the Learning for Sustainability National Implementation Group* (2016). The vision embodied by this statement incorporates the UN's three key pillars of sustainable development – the environmental, economic and social – as outlined in Scotland's National Performance Framework, and also connects to Scotland's climate change targets and commitment to become a Net Zero Nation by 2045. The emphasis placed on equity and 15 social justice in Vision 2030+ is notable, as is establishing learning for sustainability as an entitlement for all learners with an expectation placed on all teachers and schools to service this:

[4] See for example the resources available here: https://nzcurriculum.tki.org.nz/Curriculum-resources/Education-for-sustainability

[5] See https://www.education.gov.scot/education-scotland/scottish-education-system/policy-for-scottish-education/policy-drivers/learning-for-sustainability/#

> Every learner receives their entitlement to learning for sustainability, every practitioner demonstrates LfS in their practice and every school and setting has a coherent whole school and community approach to LfS. (p.23)

This vision was confirmed in Education Scotland's Learning for Sustainability Action Plan (2019) which added the requirement for all school buildings, grounds and policies to support LfS. Coupled with the earlier publication of *How Good is Our School* (4e)? (2015), a strategic framework now exists that affirms the centrality of LfS to the curriculum and to school self-evaluation and self-improvement. The enactment of so ambitious a policy agenda is of course not without its problems. For instance, Christie et al (2019) report disassociations among teachers regarding LfS, primarily because '…practical and logistical barriers hampering full enactment, such as limited professional development, and lack of protected time and space to cultivate meaningful interdisciplinary learning' (p.50) have yet to be addressed adequately. Nonetheless, policy actions such as the embedding of LfS in the *General Teaching Council for Scotland* (GTCS) Professional Standards can be expected over time to have an impact on this issue. Scotland's *Curriculum for Excellence* (CfE) (2019) is designed to help learners gain the knowledge, skills and attributes needed for life in the 21st century. It centres on what are described as 'four fundamental capacities': Successful learners; Confident individuals; Responsible citizens; and Effective contributors. Within the Scottish school curriculum, LfS is viewed as integral to these four capacities. It is included in the Statements of Experiences and Outcomes of certain individual curriculum areas (e.g health and wellbeing, science, social studies, and technologies) and is additionally viewed as a cross-curricular theme which is intended to be developed and integrated throughout learning over all phases and stages of schooling. At senior phase, which takes place from S4 to S6 in schools and includes ages 16 to 18 in or out of school, some *National Qualifications* in individual subjects incorporate subject specific requirements for LfS – such as qualifications in environmental science and design & technology. In this way, LfS within the senior phase curriculum looks to develop learners' skills and competencies to develop the confidence to communicate their own stance on social, political, historical and environmental issues, to express opinions and make decisions on social, moral, ethical, economic and environmental issues. Within the earlier, general phase, the emphasis is more on thematic and cross-curricular engagement with LfS and it is seen to sit alongside literacy, numeracy, health and wellbeing, and digital literacy as a means of provide the breadth and depth of education to develop flexible and adaptable young people with the knowledge and skills they will need to thrive now and in the future. In both phases, the curriculum seeks to provide opportunities for learners to engage creatively and innovatively with issues of sustainability, to search for solutions to problems once identified and to take informed action – in a socially, ethically and environmentally responsible way to address the issue of concern. 16 Expectations for further progress in LfS and sustainability education in general within the Scottish school system are based on a number of clearly stated targets outlined in the Vision 2030+ document, including:

- All practitioners have understanding of the role of LfS within CfE [Curriculum for Excellence] and have a deep personal commitment to LfS principles.

- Every establishment or setting to have at least one practitioner with accreditation in LfS with a significant proportion of these having accreditation at Masters level.

- LfS approaches are embedded in all relevant professional learning programmes which also align to the Scottish Attainment Challenge and National Improvement Framework. (p.8)

Denmark

Denmark has a long established history of taking a multi-dimensional and action-oriented approach to environmental education (Rolls et al 2015). National strategy in Denmark in relation to education for sustainable development has its origins in a cooperation project between the Danish National Commission for UNESCO and the Danish Ministry of

Education ahead of the United Nations Decade of Education for Sustainable Development, 2005-2014 (Danish Ministry of Education, 2009). The goal for this strategy is threefold:

- To ensure that knowledge for education for sustainable development is disseminated and utilized in practice at all educational levels in the formal education system, and also to engage in special efforts vis à vis the non-formal learning environments and also – where possible – the informal learning environments.

- To strengthen the population's understanding, engagement and knowledge regarding the concept of sustainable development that simultaneously incorporates the interrelationship between economic, social, political and cultural elements, thereby ensuring qualified general debate on the subject.

- To coordinate a series of Danish educational initiatives that ensures cohesion and synergy in relation to both time and content. (p.11) Essentially, the Ministry's vision for Danish ESD is science-led with an emphasis on changing actions and behaviours. This sees democratic decisions and personal responsibility / engagement as the key drivers with a version of the UN's Brundtland Principle (1987) at its heart:

> The desired economic growth should ideally not damage the opportunities for growth of future generations or other continents. (p.12)

A characteristic of the Danish approach is the level to which its vision seeks to incorporate UNESCO's Sustainable Development Goals – which are viewed as 'all fundamental', and what Vogh & Leth (2022) describe as 'the ability to discuss the fourth pillar of sustainable development: culture' (p.305). The Danish National Strategy echoes this and sets the goal of introducing sustainable development in all relevant curricula in basic 17 education in ways that make meaningful links between natural and social sciences and humanities (p.3). This promotes the idea of offering 'knowledge for sustainable development' – as noted above – and incorporates the interrelationship between economic, social, political and cultural elements (p.11), in line with the UN SDG rationale promoted in Transforming our world: the *2030 Agenda for Sustainable Development* (2015). This confirms Denmark's focus on sustainability education being futures- and action-oriented, so that teaching and learning enables young people to take informed action and achieve the goal set out in the UN SDGs.

Two documents translate much of this strategic vision into curriculum practice: for Early years education, *The strengthened pedagogical curriculum: Framework and content* (2018) and for compulsory primary and secondary education, the *Fælles mål* – the Common Goals Document which lays out subject objectives and underlying skills and knowledge areas, as well as indicative competences, skills and knowledge expectations. Sustainability education features centrally in both. Within ECEC provision, sustainability education is a designated theme among six others and covers nature, outdoor life and natural phenomena/science, very much in a *Bildung* tradition. Within compulsory years provision, sustainability is addressed within the requirements for individual subjects, including social studies, sciences, nature/technology, and geography and in sciences, social studies and geography in the subsequent senior secondary phase. The emphasis on sustainability education throughout the compulsory years of schooling is on addressing the concept of sustainability from a scientific as well as societal, humanistic and democratic perspective (MoE 2009, p.14). This focus on teaching through Danish culture and traditions is intended to give the learner a richer understanding of other countries and cultures, and to contribute to their understanding of how we interaction with nature and humanity's responsibilities in a fragile world.

Ontario, Canada

The Canadian Constitution assigns education responsibilities to both the federal and provincial governments. It is however the Provinces that largely determine the direction, priorities and implementation of school policy and curricula. Ontario is the second largest

province in Canada and is the location of the nation's capital city, Ottawa, and its largest city, Toronto, which is also Ontario's provincial capital.

The broad aim of environmental education policy within the province is to teach environmental literacy and enhance the development of more environmentally responsible practices, and to help students acquire the knowledge, skills, perspectives and practices to become active, engaged and responsible citizens. This is steered by two related documents on environment education provision and curriculum: *Shaping our schools, shaping our future: Environmental education in Ontario schools* (The Bondar Report) (OMoE, 2007) and *Acting Today, Shaping Tomorrow*: a policy framework for environmental Education in Ontario schools (OMoE, 2009).

The Ontario position on educating for sustainability is well captured in a vision statement contained in both documents:

> Ontario's education system will prepare students with the knowledge, skills, perspectives, and practices they need to be environmentally responsible citizens. Students will understand our fundamental connections to each other and to the world around us through our relationship to food, water, energy, air, and land, and our interaction with all living things. The education system will provide opportunities within the classroom and the community for students to engage in actions that deepen this understanding. (2007, p.6: 2009, p3)

As part of its response to the *UN Decade of Education for Sustainable Development* (2005–2014), the Ontario government made a commitment that environmental education, as defined in *Shaping Our Schools, Shaping Our Future*, would become part of every child's learning and that responsible environmental practices would be fostered across the education system of the province. The policy framework contained in *Acting Today, Shaping Tomorrow* lays out the goals, strategies and actions through which this would be achieved and the mechanisms by which progress would be measured.

As evident in the vision statement above, the curricular focus rests on building learners' capability and on the social contexts in which their learning will be relevant. It emphasises particularly the need for curricula to provide 'education about the environment, for the environment, and in the environment' in ways that offer 'rich and active experience' to the learner (OMoE 2009, p.4). Much of this comes directly from the Bondar Report which argues that curriculum policy should clearly state what students should know and be able to do, as well as the perspectives they need to consider as responsible citizens in a changing world (OMoE 2007, p.5). The curriculum framework published in *Acting Today, Shaping Tomorrow* centres on supporting this by emphasising and advising how schools and teachers can work towards this. The location of educating for sustainability as an integral and age-appropriate activity central to the curriculum affirms this: while environmental education rests on 'a foundation of knowledge from both science and social studies/geography' (OMoE 2007, p.5), this knowledge is to be applied across the curriculum 'through strands, topics, and expectations, and will be recognized as a provincial priority' (ibid). To achieve this range, teachers will draw on 'effective learning strategies – including inquiry, problem solving, critical thinking, and assessing alternatives' (OMoE 2007, p.4) that are seen as a means to 'engage students personally in their own learning, connect them to the world they live in, and give them the systems thinking and futures thinking they will need to become discerning, active citizens' (ibid).

Within the strategic framework for curriculum action, a set of goals and strategies for how learning for sustainability will be structured is presented along with a listing of actions in support of this at the ministry, school board (district), and school level (OMoE 2009, pps.11-21). These actions are clustered around three headings: Teaching and Learning, Student Engagement and Community Connections, and Environmental Leadership. The listing is detailed and roles and responsibilities in relation to providing the curriculum and supporting its enactment are outlined. These include key 19 enablers that can encourage uptake – such as provision for teaching and learning materials and professional

development, along with an emphasis on particular issues to do with inclusion, such as attention to the 'teachings of diverse communities, including First Nation, Métis, and Inuit peoples, and to principles of responsible citizenship' (OMoE 2009, p.12).

As recommended in the Bondar Report, a section of the strategy document addresses the challenges of measuring progress and impact. This is intended to ensure that 'The goals and content of and approaches taken to environmental education in Ontario will likewise be subject to cyclical review, to ensure that they remain dynamic and relevant in a changing world' (OMoE 2007, p.5). It is approached by providing examples of 'welldesigned' indicators that are linked to the goals, strategies, and actions of the policy framework (OMoE 2009, p.22). The intention is that such indicators are used at the various stages of curriculum implementation 'to assist with planning and measuring progress and to help the ministry, school board, and school leaders keep in mind a variety of considerations that are key to successful implementation' (OMoE 2009, p.22).

Some commonalities of experience and practice from across the four settings

A number of aspects related to the interdependence of humankind and the environment and of the existential challenge we now face regarding Earth's life forms and ecosystems appear as curriculum issues across each of the settings reviewed above. These reflect the reach of UN sensibility in regards the core issues and possibilities of educating for sustainability and sustainable development. Most can be traced back to the original Brundtland Report definition of sustainable as *development that meets the needs of the present without jeopardising the ability of future generations to meet their own needs* (United Nations, 1987). Within curricula in the case settings, these are commonly articulated in terms of care and respect for both the environment and humanity within that environment, and reflect aspects of national and/ or regional strategy towards nature and biodiversity. The harm being done to delicate ecological balances locally and globally features frequently in curricula across the settings – with most emphasizing the need to educate for actions that go beyond the individual to the collective and have an eco-social nature. Indeed, some of the case settings frame this unambiguously as concern for equity and social justice as well as for ecology and environment.

A second common aspect across the case settings reflects an increasing focus on skills and competences for sustainability – and the challenge of meaningfully evaluating learning in this area. As sustainability becomes increasingly aligned with SDG4 across the case settings we see more emphasis on issues such as active participation, social responsibility, a local / national/ global perspectives and citizenship. LfS is coming to include concerns for '*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 2020). Pedagogies and *Didaktik*- / *Bildung*-based stances across the case settings emphasise meaningful learning as a prelude to meaningful evaluation / assessment; this includes various mixes 20 of collaborative task-based learning, group work, student-led inquiry, peer learning, service activity such as decision making at school council and community level, and so on. Nevertheless, there is a significant challenge evident in all of the setting concerning capturing in some meaningful manner the learning that is taking place. The response to this challenge varies: what they have in common is a tendency to place sustainability within core content areas linked to attainment targets for individual subjects / cross-curriculum themes integrated within the school provision. These then become the focus of assessment or evaluation in some sense. Interestingly, none of the settings would appear yet to have fully resolved this challenge.

A third aspect of common practice concerns recognising the complex nature of LfS curriculum development and the need for policy makers and leaders at various points in the education system to engage with this systematically. We see commonalities across the case settings in the ways LfS curricula are specified, in the systems used to resource

the teaching and learning experiences – through providing relevant, honest and challenging materials, and in the teacher capacity building to providing the support and assistance to the within-school activities necessary for an LfS initiative to succeed. We also see various actions to place sustainability within teacher professional standards, and to make provision for far-reaching teacher professional development opportunities; embedding whole-school approaches – including by supporting participation in national and international teacher learning networks, specific pedagogical initiatives and training programmes. The objective in each setting for such activity is to develop teachers' capabilities to provide for their students – at whatever level of compulsory schooling – a suitably transformative, futures-oriented and action-centred education for sustainability.

5. Policy challenges and opportunities

A number of key issues have emerged over time relating to why policy barriers form when a major initiative is planned. These need to be considered carefully when organising and designing curricula. Three would seem particularly relevant for policy work in the area of learning for sustainability:

Potential barriers

These relate to aspects of the cultural, structural and material challenges of initiating successful curriculum action.

Firstly, there is a need for **clarity on the roles and responsibilities** of all involved at all levels in the initiative – from the ministries and agencies to the schools[6]. Lack of change and relative curriculum stasis at the school level is inevitably a result of the lack of agency experienced by the actors most immediately concerned and of shortcomings in the structures and material provision to support the required change. In order to be agentic, **underlying values and principles must be identified and negotiated** depending on the dominant education traditions of the country concerned: what works well in a competency-based system may not work so well in a *Didaktik-/ Bildung*-based tradition. A lack of clarity over locally-appropriate specification, advice or implementation can lead to conflicting messaging. There is a need for each member state within its priorities and resources to map out how best to build up and engage local capabilities. Enabling structures – such as those that provide training and access to new pedagogical approaches – and appropriate material provision to fund and support LfS widely within the schools system need also to be a policy priority.

Secondly, there is a need for any LfS initiative to be **both comprehensive and inclusive**. Too often in the past, initiatives in the area of 'environmental education' and 'sustainability' ran into difficulties because they are perceived to overburden certain sections of the school curriculum and to ignore others. Writing about the junior secondary level, McGarr and Lynch (2021) note 'STEM subjects in particular have been targeted as pertinent areas to best promote sustainability through curriculum development initiatives' (p.994). Similarly, as Meadows (2022) notes while the discipline of Geography has "a distinct advantage in developing a more holistic understanding of global environmental challenges in that it reaches across all the sciences (including social sciences and humanities)" (p.88) it is not always given the prominence it deserves when curricular action is proposed for sustainability education. On the primary and early years education side, it can easily be assumed that the setting and natural flexibility of primary curricula offer an advantage in terms of curriculum opportunity. However, this may not always be the case. Recent research by Furu & Heilala (2021) suggests that that there is **great variability in terms of extent and depth in how sustainability work is carried out in such settings** and that,

[6] See Appendix 1.

in general, social-cultural issues are addressed at greater depth than ecological and economic ones. The main challenge here would seem to be about falling short in terms of engaging in an equitable way the strengths and limitations that are in-build to any education system. The policy barrier to be addressed concerns balancing expectations for meaningful engagement with LfS across the school years and ensuring that the **appropriate structural and material for sustainability work across the system** are in place to allow this. It is difficult to see how a LfS initiative on the scale required can succeed unless these gaps and discrepancies are addressed.

Thirdly, there is a specific challenge concerning the **need to monitor and assess the effectiveness and impacts** of policy action relating to LfS. Lynch (2022) describes this *activity as measuring policy performance*. The power of this approach is self-evident and considerable value is given to such measurement within the *science for policy* method. As Neicu et al (2020) observe:

> More and more researchers close to the policy environment are following a codesign strategy, meaning that research projects are codesigned with policy stakeholders and beneficiaries. (p.155)

However, measuring policy performance is not without its challenges and codesigned projects are not often the modality chosen for policy evaluation and measurement. **Measurement models and ex-post 'outcome analyses'** tend to predominate and their overt focus on datafication can be problematic. Lynch (2022) draws attention to the potential for embedded bias that emphasises retrospect and quantification. Additionally, as Lingard (2020) notes "…we can only ever have 'evidence-informed' and 'research-informed' policy because all policy is an admixture of facts (research), politics (discourses, values, ideologies) and professional knowledges, a position readily apparent in respect of ESE [environmental and sustainability education] and broader climate policy" (p.498). The challenge for LfS curriculum enactment and policy performance measurement is to **identify / agree structured frameworks for the systematic evaluation of a wider range of impacts** to match those being proposed under the LfS initiative. In short, policy performance measurement for LfS must find a balance between what can be described as policy action for curriculum and formative policy action on curriculum – both of which potentially can have long-term impact, affecting the assumptive worlds of policy makers and the practice of teachers throughout Europe. The main barrier to doing so rests in the more conservative and long-held policy style of some countries (Cairney, 2021). As Tosun, Galanti, & Howlett (2022) argue, however, this can be altered and often it is due to strategic considerations that these change either in an attempt to improve policy performance or meet a pressing priority identified at the leadership level. In any case, regardless of the overarching education traditions of a state, **trust among all involved** built on policy proposals that are culturally appropriate, educationally strong and supported by the necessary resources and material provision to ensure implementation success would be the ideal. **A steady and reliable feedback loop to all participants would be a significant step here.**

Opportunities

The WG LfS is well positioned to identify strong curricular policy and practice on education for sustainability from across Europe given the range of its membership and the variety of cultural and institutional perspectives the group brings. It is equally well placed to deliberate on the challenges that rethinking the LfS curriculum bring forward and to share the results of these deliberations more widely.

Well-designed curricula provide meaningful experience for learners which foster a more holistic understanding of the multiple aspects of environmental sustainability. Advancing

this agenda moves us towards the ultimate aim of the WG LfS activity – realising a vision of Europe focused on Sustainable Development Goal 4, and specifically on target 4.7 (UNESCO, 2020, p. 14):

By 2030, ensure that 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 24 a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.

Achieving the benefits and potential of curricula led by this vision will require school curricula – across the schooling years – opened up to allow for new ways of learning and teaching in otherwise tightly planned school systems. Likewise, teachers and school leaders need to be supported in how to work with a reshaped curriculum.

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ANNEXES

Appendix 1: Sites of curriculum making

Site of activity	Examples of activity	Examples of actors
Supra	Transnational curricular discourse generation, policy borrowing and lending; policy learning	OECD; World Bank; UNESCO; EU
Macro	Development of curriculum policy frameworks; legislation to establish agencies and infrastructure	National governments; curriculum agencies
Meso	Production of guidance; leadership of and support for curriculum making; production of resources	National governments; curriculum agencies; district authorities; textbook publishers; curriculum brokers; subject-area counsellors
Micro	School-level curriculum making; programme design; lesson-planning	Principals; senior leaders; middle leaders; teachers
Nano	Curriculum making in classrooms and other learning spaces; pedagogic interactions; curriculum events	Teachers; students

Priestley et al., 2021, p.13

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