

How ways to address the climate crisis are presented in UK national curricula

Comparisons, implications, and recommendations across the four nations

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This policy brief is intended as a resource for educational policymakers, exam boards, and practitioners wanting to understand how responding to climate change is currently presented to secondary school pupils in curricula across the four UK nations. Key findings include:

- Content about climate change is largely limited to Science and Geography curricula.
- What and how much pupils learn about responding to climate change is heavily dependent upon their at-16 exam choices and (in England) their schools' choice of exam board.
- The type of reform needed to address climate change presented in at-16 exam revision guides is incremental, with a focus on largely technical approaches; technological fixes are seen as the solution, while social or institutional change is hardly considered.
- Individuals are confined to a consumer role; the many other relevant roles they may occupy (e.g. citizen, professional) are not presented.

In light of these findings, UK national curricula should be revised to incorporate content about responding to climate change into a wider range of subjects. Content should also be expanded to present a wider range of possible solutions beyond technological (and supply-side) interventions, and reflect the full spectrum of actions and roles available to the public.

The Policy Context

The UK government has set an ambitious target of reaching net zero carbon by 2050. Supply-side actions enabled early interim targets to be met but meeting future targets will be more challenging. A key impediment is a lack of clear and cohesive public engagement strategy. In the context of the urgent need to empower and enable all in the UK to make and support green choices, this policy brief focuses on how responding to climate change is presented in curricula to secondary school pupils studying for at-16 exam examinations across the UK.

Educating young people about responding to climate change is important. First, it is a means of public engagement. Second, it provides a critical vehicle for empowering and skilling young people. Third, young people themselves report wanting to learn more about climate change, especially about effective and relevant ways of addressing it.

Devolution in the UK provides an ideal context in which to explore similarities and differences across the four nations that are broadly culturally and educationally similar.

Research Aims and Methods*

The aims of the research were twofold:

- To understand in which secondary subjects' curricula climate change content is included and whether there are differences across the four nations.
- To examine which discourses about responding to climate change are presented in at-16 exam revision guides and whether there are differences across the four nations.

Three types of documentation were sourced and analysed at content and discursive-thematic level. Searches were conducted in October and November 2022.

First, documents relating to current and incoming secondary curricula for each of the four nations were sourced. Taking direction from these, relevant programmes of study were acquired. These were used to identify where climate change content is included in at-16 assessments, and relevant course specifications then sourced. At-16 externally assessed examinations are not standardised across the UK, so these specifications and content in revision guides and workbooks allow for comparisons to be drawn. Lastly, content in the appropriate revision guides and workbooks were analysed thematically, with a focus on the discursive resources employed to infer responsibility for responding to climate change.

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Content in these revision guides reflects the course specifications produced by the six UK exam boards: WJEC (Wales), SQA (Scotland), CCEA (Northern Ireland), and AQA, Edexcel, and OCR (England). Two Scottish revision guides – Environmental Science and Engineering Science – were unavailable.

Climate Change Content Across Subjects

In which subjects is there content about climate change? Are there differences across the UK?

In England, Wales, and Northern Ireland, content about climate change is included in Geography and Science, although some changes are incoming. A new English Natural History GCSE is planned for commencement in 2025, although this will not be a compulsory subject. In Wales, a new curriculum that gives more autonomy to schools will be fully implemented by 2026. Climate change content will be mandatory in the Science and Technology and Humanities learning areas. In Scotland, climate change content at earlier secondary level is woven across subject areas, as part of the Learning for Sustainability theme. It is included in four non-mandatory subjects at-16 exam level. Detail is shown in Table 1 below.

Table 1: Overview of subjects/learning areas in which climate change content is or will be included

Nation/Level	Early secondary (aged c. 11-14)	At-16 examinations (aged c. 14-16)
England	Geography* Science*	Geography Science* <i>Natural History</i>
Wales	Geography* Science* <i>Science & Technology LA</i> <i>Humanities LA</i>	Geography† Science* <i>Science & Technology LA</i> <i>Humanities LA</i>
Scotland	Learning for Sustainability theme*	Geography† Environmental Science Engineering Science Religious, Moral, and Philosophical Studies†
Northern Ireland	Geography* Science*	Geography Science

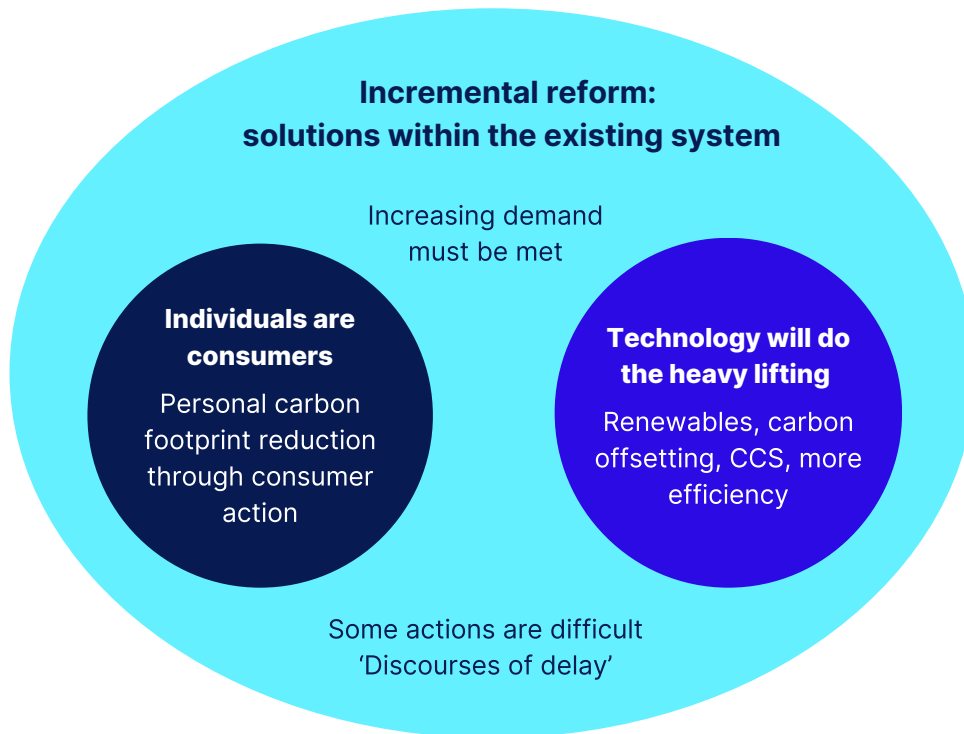
* Mandatory subject

† Climate change is an optional topic
Future-oriented, not yet implemented

Dominant Discourses

Which discourses about responding to climate change are presented? Are there differences across the UK?

The discourses presented in revision guides across the four nations are homogenous, with relatively few difference between exam boards or across nations. Three themes were identified; one over-arching theme, and two sitting within:



Incremental reform: solutions within the system

The case for incremental reform is underpinned by two pillars. First, that growing demand must be met and that reducing demand is not a necessary consideration. This is stated explicitly, and implicitly when content about climate change is separated from content about energy. This separation of content communicates that climate change and energy are not necessarily intertwined, and even enables environmental considerations to be considered secondary to energy security concerns. Second, in some guides, arguments are made that highlight the difficulties associated with taking action on climate change, such as the potentially negative impact on economic development and growth. 'Discourses of delay'¹ – narratives that draw upon truths or partial truths to justify inaction or obscure the need for solutions beyond the incremental – are evident both in these arguments and in the overall emphasis on non-transformational solutions.

1 Lamb, W. F., Mattioli, G., Levi, S., Roberts, J. T., Capstick, S., Creutzig, F., . . . Steinberger, J. K. (2020). Discourses of climate delay. *Global Sustainability*, 3, e17.

If we're going to keep up with the world's energy needs, we'll need to start thinking about increasing our supplies.

Edexcel Geography

Explain why the majority of consumers currently support the 'business as usual' scenario.

Edexcel Geography Workbook

Exam tip: Fossil fuels produce carbon dioxide when burnt. Carbon dioxide is a greenhouse gas and is a major contributor to global warming. This is another very important reason why there is an increasing emphasis on renewable energy sources as opposed to the combustion of fossil fuels. However, greenhouse gases and global warming are covered in the chemistry section of this course and therefore will not be expected as answers in Unit 3 (Physics) papers.

CCEA Science Single Award

But making reductions (to emissions) is still difficult:

- *the technology is not yet developed*
- *new technologies may have unintended consequences the scale of emissions makes it hard to reduce them*
- *governments are worried about the impact on economic growth, which will be bad for wellbeing in developing nations*
- *no country wants to sacrifice economic development if others won't do the same*
- *individuals in developed countries may not understand why or how they should change their lifestyles.*

OCR Double Science, AQA Chemistry, AQA Double Science

We use a LOT of electricity (just look around you) – the energy to power it all has to come from somewhere.

OCR Double Science

Individuals are consumers

Within an incremental reform framework that emphasises technological fixes, relatively little is required of individuals. Their role is that of consumer, they can take actions that limit their personal carbon footprint. These actions are mostly home- and personal transport-related, such as recycling, turning off lights, and walking or cycling rather than driving. There is no consideration of the other – potentially more impactful – roles that individuals occupy in relation to acting on climate change², as community members, investors, business owners and employees, and voters, for example.

Local strategies, such as 'Reduce, Reuse, Recycle' (household recycling), reducing food miles, cycle to school and switching off lights when not in use.

SQA Geography

Conserving energy is about changing our behaviour as consumers, e.g., driving less, drying clothes on a washing line instead of in a dryer.

Edexcel Geography

2 Nielsen, K. S., Clayton, S., Stern, P. C., Dietz, T., Capstick, S. & Whitmarsh, L. (2021). How psychology can help limit climate change. *American Psychologist*, 76(1), 130.

To reduce carbon dioxide emissions, we can try to limit our own use of fossil fuels. This could be doing things on a personal level, like walking or cycling instead of driving or turning your central heating down.

Edexcel Double Science, OCR Chemistry

Technology will do the heavy lifting

There is a strong emphasis on technology and four types of technological solutions are presented. Most of the content relates to renewable energy, with detailed consideration of the advantages and disadvantages of different energy sources, both renewable and non-renewable. Carbon offsetting, carbon capture and storage (CCS), and improved energy efficiency are also considered. Although research suggest that none are a panacea or without risks, these are presented uncritically.

Companies can offset the CO₂ they emit by buying carbon credits – this means that they invest in a scheme that removes it from the atmosphere. For example, if a company emits a certain amount of CO₂, they can pay for trees to be planted that will remove an equivalent amount of CO₂ by photosynthesis.

WJEC Chemistry and Double Science

Renewable energy sources or nuclear energy could be used instead of fossil fuels.

AQA Chemistry and Double Science

If you are asked to evaluate a form of renewable energy, you need to give both good and bad points, then an overall opinion.

CCEA Geography

Conclusion

Although climate change is more integrated into diverse subjects in the curriculum in Scotland (and will be in Wales) than in England, it remains framed as a largely scientific topic across all four nations. Accordingly, solutions are depicted in primarily technological terms and accommodated within existing institutional arrangements. In line with UK energy policy, emphasis is placed on supply-side solutions over changing levels of demand; and the role of the public is relegated to consumers.

The Department for Education considers responding to climate change to be a potentially partisan political issue.³ What is considered politically partisan is determined by the interests and objectives of those with the power to define it. It could be argued that espousing incremental reform as the way to address

3 Department of Education (2022). [Political impartiality in schools](#) (Scenario A).

climate change is precisely partisan, in that it serves particular political and economic interests. It does not necessarily serve the best interests of young people, who will need to be adequately prepared to tackle the multiple challenges arising in their lifetimes from a changing climate, and who should arguably be given the opportunity to consider and appraise all viable routes to respond to climate change. An uncritical presentation of incremental reform in education, and in wider public discourse, restricts opportunities to consider both the possible limitations of incremental reform and the potential consequences to humanity and the planet of it proving ineffective.

Nor do the discourses identified in this analysis adequately fulfil the need for effective public engagement. Around two-thirds of UK emissions reductions will need to involve individuals, either directly or indirectly.⁴ Individuals in curricula are depicted as simply consumers and are not made aware of the many wider actions and roles they can and will need to fulfil.

Policy Recommendations

- Revising national curricula across the four UK nations to include a wider range of roles and actions available to the public in relation to climate change; individuals are more than consumers, and young people should be encouraged to explore their agency to address climate change through citizenship, career choices, and as community members.
- Incorporating content about responding to climate change into a wider range of subjects, including compulsory at-16 subjects, in order to explore systemic causes of climate change and define a wider range of possible solutions beyond only technological (and supply-side) ones (some relevant opportunities have already been identified by the Royal Meteorological Society⁵).
- Balancing content that suggests that responding to climate change may be difficult with the counterargument (what will happen if actions are not taken?).
- Exploring whether content about energy should be linked to and not separated from content about climate change, so that energy systems are considered more holistically and the social and environmental implications of energy choices are always taken into account.
- Encouraging conversation and collaboration between UK nations and exam boards, who produce course specifications, to collectively consider where the boundaries of impartiality lie and how content can best fulfil a public engagement gap, empower and inform young people, and contribute to the UK's net zero target being met.

4 Environment and Climate Change Committee (2022). [In our hands: behaviour change for climate and environmental goals](#).

5 Royal Meteorological Society (2023). [Opportunities for Enhanced Climate Change Education in Current English GCSE Specifications and KS3 Teaching](#).

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