

# Report on the current practice in Key Stage 3 Geography and potential application of the Routes to Resilience programme content to the curriculum

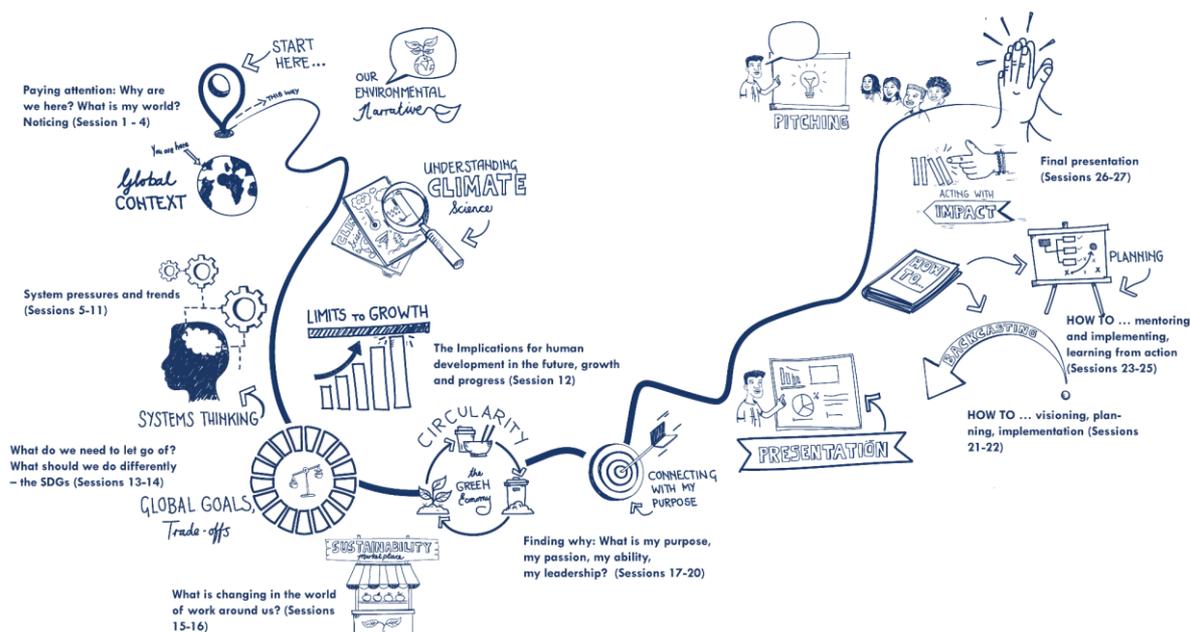
## Introduction:

Routes to Resilience provides accredited learning programmes and experiential encounters designed to develop deep understanding of the interconnectedness between people and planet in young adults, ensuring they have the earliest opportunity to gain, and deeply understand, the knowledge and tools needed to make sustainable life and career choices.

Developed in a unique collaboration with the Impact Trust and Cambridge Institute for Sustainability Leadership (CISL-SA), our programmes develop the literacies, skills, mindset and competencies to inform, inspire and ignite catalysts to encourage intentional global citizenship action and drive sustainable change towards a resilient future.

Routes to Resilience programmes take, at their core, inspiration from Otto Scharmer's U theory and the invitation it extends for us to move from simply downloading information and reacting, to a more reflective orientation to learning:

- open mind (curiosity)
- open heart (compassion, allowing emotional connection with all you notice)
- open will (commitment & courage – recognising what our observations mean for what we must do)



Based on a head (think), heart (feel), hand (do) model, our work is founded on place-based eco-pedagogy and invites critical reflection whilst learning through real-world encounters with nature, community, culture and history, encounters that are embedded in the complexity and richness of real-world situations. These guided experiences resonate and build knowledge of how we are interconnected, interdependent and intertwined with the non-human elements of our world.

Reflecting on these learning encounters encourages us to feel ourselves as part of a larger whole and to see how what we value for ourselves is that which increases the value to all, people and planet. The result: a deep understanding of our global context and a perspective on our place within it that better equips young people with the desire, knowledge and tools to make informed and sustainable life and career choices.

### **A Routes to Resilience Key Stage 3 Curriculum through the lens of Geography:**

This report presents the findings of the analysis of the current KS3 geography syllabus and classroom practice which runs from Year 7-9 (Age 11-14) in order to inform the development of a KS3 Routes to Resilience Geography curriculum. Through desktop research of the syllabus, current school lesson plans and online KS3 geography resources, it sets out the aims and objectives of the KS3 syllabus and identifies the themes and topics that are currently prioritised in learning outcomes. This helps to develop a better understanding of the needs from the curriculum. The report completes a comparative analysis between the KS3 curriculum and Routes to Resilience (R2R) Sygnature content, considering how elements of the latter could be refined to meet the needs of the curriculum. Lastly, by highlighting the difficulties and gaps identified by educators, an avenue for R2R's meaningful contribution to sustainability education within the curriculum is evident.

This report should be used together with the ["R2R Module Edits"](#) document attached, which suggests place-based and digital resources and proposed edits to the R2R module that refine its content and bridge the gaps identified in this report to complete the development of a KS3/R2R geography syllabus.

### **Mapping R2R content to KS3 curriculum:**

The KS3 curriculum does not specify the topics/themes that should be taught by educators, although it makes clear the aims and objectives of the curriculum and the skills that need to be met over the three years of KS3. These were sourced directly from the [UK Department of Education](#) and are presented in Table 1.

The KS3 curriculum aims to:	
<ol style="list-style-type: none"> <li>1) Inspire curiosity and fascination about the world and its people</li> <li>2) Develop knowledge about: <ul style="list-style-type: none"> <li>● diverse places</li> <li>● people</li> <li>● resources</li> <li>● natural and human environments</li> </ul> </li> </ol>	
Subject content to be taught:	
<b>Interaction between physical and human processes:</b>	<ul style="list-style-type: none"> <li>● Human reliance on nature and connection to nature</li> </ul>
<b>Locational Knowledge:</b>	<ul style="list-style-type: none"> <li>● Deepen Spatial awareness of the world through maps</li> <li>● Focus on different environmental regions</li> <li>● Understand key human and physical characteristics of countries and cities</li> <li>● Study Africa and Asia</li> </ul>

<b>Place Knowledge:</b>	<ul style="list-style-type: none"> <li>● Understand geographical similarities, differences and links between places through the study of human and physical geography by focusing on:               <ol style="list-style-type: none"> <li>1) A region in Africa</li> <li>2) A region in Asia</li> </ol> </li> </ul>
<b>Human and Physical Geography:</b>	<ul style="list-style-type: none"> <li>● Geological time</li> <li>● Tectonics</li> <li>● Rocks</li> <li>● Weathering and soils</li> <li>● Weather and Climate</li> <li>● Climate change</li> <li>● Glaciation</li> <li>● Hydrology and coasts</li> </ul> <p>Understand the impact of human and physical interactions on the landscape, environment and climate change.</p>
<b>Geographical knowledge, understanding and skill</b>	<ul style="list-style-type: none"> <li>● Understand how earth is scaled, shaped and interconnected</li> <li>● GIS – interpret and analyse</li> <li>● Interpret Ordnance and Survey maps in class and field:               <ul style="list-style-type: none"> <li>○ Grid references</li> <li>○ Scale</li> <li>○ Topographies</li> <li>○ Thematic mapping</li> <li>○ Aerial and satellite photos</li> </ul> </li> <li>● Field work in contrasting locations</li> </ul>

*Table 1. KS3 Skills and Objectives*

The curriculum also does not differentiate the skills and objectives by year. Thus, teachers have freedom to decide when and how to meet them, and to choose the content topics through which to do so. This lack of rigidity in the structure of the KS3 curriculum presents a meaningful opportunity for integrating R2R content into the KS3 curriculum and adopting a sustainability lens through which contemporary knowledge and understanding can be promoted. Figure 1. reflects how R2R's existing accredited learning materials align with the KS3 national curriculum.

### KS3 Curriculum Objectives:

<b>Interaction between physical and human processes:</b>	<ul style="list-style-type: none"> <li>• Human reliance on nature and connection to nature</li> </ul>
<b>Locational Knowledge:</b>	<ul style="list-style-type: none"> <li>• Deepen Spatial awareness of the world through maps</li> <li>• Focus on different environmental regions</li> <li>• Understand key human and physical characteristics of countries and cities</li> <li>• Study Africa and Asia</li> </ul>
<b>Place Knowledge:</b>	<ul style="list-style-type: none"> <li>• Understand geographical similarities, differences and links between places through the study of human and physical geography by focusing on:               <ol style="list-style-type: none"> <li>1. A region in Africa</li> <li>2. A region in Asia</li> </ol> </li> </ul>
<b>Human and Physical Geography:</b>	<p><u>Physical Geography:</u></p> <ul style="list-style-type: none"> <li>• Geological time</li> <li>• Tectonics</li> <li>• Rocks</li> <li>• Weathering and soils</li> <li>• Weather and Climate</li> <li>• Climate change</li> <li>• Glaciation</li> <li>• Hydrology and coasts</li> </ul> <p>Understand the impact of human and physical interactions on the landscape, environment and climate change.</p> <p><u>Human Geography:</u></p> <ul style="list-style-type: none"> <li>• Population and Urbanization</li> <li>• International Development</li> <li>• Economic activity in the primary, secondary, tertiary and quaternary sector</li> <li>• The use of natural resources</li> </ul>
<b>Geographical knowledge, understanding and skill</b>	<ul style="list-style-type: none"> <li>• Understand how earth is scaled, shaped and interconnected</li> <li>• GIS – interpret and analyze</li> <li>• Interpret Ordnance and survey maps in class and field:               <ul style="list-style-type: none"> <li>• Grid references</li> <li>• Scale</li> <li>• Topographies</li> <li>• Thematic mapping</li> <li>• Aerial and satellite photos</li> </ul> </li> <li>• Field work in contrasting locations</li> </ul>

### KS3 Curriculum Links to R2R:

- M1** Metacognitive reflection on perspectives on nature; (Session 2)
- M1** Phenomenological writing (Session 2)
- M1** Ecological functioning and ecosystem services: biodiversity benefits and the built environment (examples in South Africa and the UK). Forest/grassland biome and biodiversity game based on a UK river (Session 3).
- M1** The wise/unwise use of renewable and non-renewable resources in students lives (Session 3)
- M1** Exploitation of natural resources and extractivism in Uganda, South Africa and the DRC (Session 4)
- M1** Ecological fragmentation and human health (Covid-19 and Zoonoses) (Session 3)
- M2** Systems thinking: Properties (interconnection; feedback loops etc.) and Rich Pictures (Borneo cats) (Session 5&6)
- M2** Geological time (Session 7)
- M2** Climate change: Goldilocks planet; climate science; carbon; causes and impacts of climate change (Session 8)
- M2** Inequity in causes and consequences of climate change; climate refugees (Session 9)
- M2** The Great Acceleration (Session 10)
- M3** Growth and Progress: Economic Growth: A double-edged sword (Session 12)
- M3** Sustainability and Sustainable Development (Session 12)
- M3** Creating the rules for the world: Sustainable Development Goals (Session 13)
- M3** Measuring progress (GDP and economic growth or HDI) (Session 13)
- M3** Creating Sustainable economies: net-zero; the green new deal; doughnut economics (Session 14)
- M3** Lifecycle thinking – thinking about the resources used over the lifecycle of products (Session 14)
- M3** The Circular economy – reducing use of natural resources/making resource use more circular (Session 14)
- M3** The UK's and SA's green economy and the Green Business Awards (Session 15)

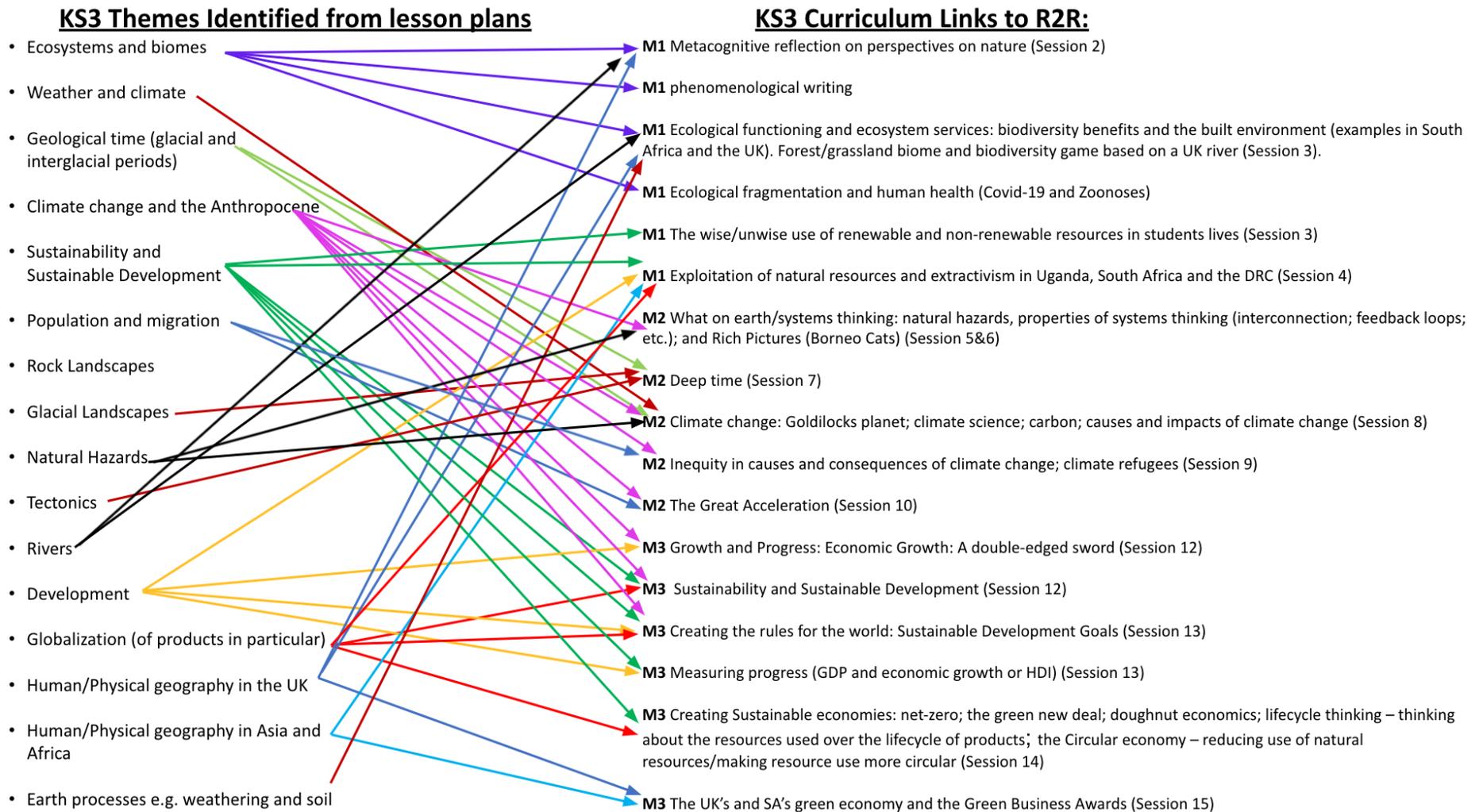
Figure 1. Links between KS3 Skills and Objectives and R2R modules

### **Mapping R2R content to UK KS3 lesson plans:**

Although the KS3 syllabus does not specifically state what topics should be taught, eight current KS3 geography lesson plans were sourced from schools across the UK, via online research, and documents provided by Alexei du Bois and Martin Foulkes, from which the main themes and topics covered over the three years were identified as follows:

- Ecosystems and biomes
- Weather and climate
- Geological time – glacial and interglacial periods
- Climate change and the Anthropocene
- Sustainability and Sustainable Development
- Population, migration and borders
- Rock Landscapes
- Glacial Landscapes
- Natural Hazards
- Tectonics
- Earth processes – e.g. weathering and soil
- Rivers
- Development
- Globalisation (of products in particular)
- Human/Physical geography in the United Kingdom
- Human/Physical geography in Asia and Africa

By identifying the KS3 themes (above) and the skills that the KS3 curriculum requires, I was able to map the connections between R2R's programmes and the aims of the curriculum. These are reflected in the R2R programme, shown in Figure 2 . below. The main conclusion to be drawn from this research is that the KS3 geography curriculum is very broad, nevertheless there is significant overlap between the KS3 themes and the R2R program.



**Figure 2. Links between KS3 Lesson Plan Themes and R2R**

## **R2R curriculum and pedagogy benefits:**

In general, there appeared to be very little work that fosters students' connection to nature, and their local environment\*. It is true that in today's globalised world, local issues are inherently connected on a global scale. The KS3 curriculum has a global perspective but needs to be grounded in local reality. Thus there is a need to zoom in on how people connect to nature in their local communities through place-based learning, as well as develop a new understanding of the connection between the global and local (RSA, 2021).

“Cosmolocal” is a new term used by [The Alternative UK](#) that is based on the idea that people and communities should be universally empowered with human creativity and innovation to build livelihoods and find solutions to problems in their local surroundings. This local innovation is expected to contribute toward the wellbeing of our shared planet. Thus a new connection between the global and local needs to be made, where the application of global principles at a local level can lead to a much deeper, contextualised understanding based on lived-experiences. The R2R global citizenship approach will be useful in developing a more cosmolocal KS3 geography curriculum. It is important to note that this observation was based on the eight lesson plans I was able to access, and this may not be the case at every school.

“Sustainability” was a key theme in the KS3 lesson plans as well as in the R2R curriculum. Every KS3 lesson plan that I had access to introduced sustainability in one form or another. For example, there were several lesson plans that focused on sustainability/sustainable development in places like Africa and Asia. Again, whilst this is important in terms of meeting the KS3 requirements, this knowledge is removed from the students' lived experience. To inspire and encourage intentional global citizenship action and sustainable change, connecting students to the challenges and issues in their local communities is an important first step.

Another key finding was that whilst climate change is comprehensively covered, very few lessons focus on the causal links to “climate change” (even the phrase distances human activity from an external ‘othered’ natural world). Thus, the interconnection between cause and impact, in, for example, human activity, notions of perpetual economic growth, and the link between climate change, social justice, geopolitics and global instability manifest in, for example, climate refugees and human migration patterns, should enter the frame. Further, there is often too little consideration given to what climate change solutions or actions require in geopolitical will.

Without understanding these connections there is a danger of relying on a simplistic and one-dimensional view of problems and solutions. R2R's systemic view of global climate change incorporates an understanding of the planet's precarious state, the causes, consequences and inequities of climate change and builds bridges between other subject areas i.e. history and The Great Acceleration (see page 12). Thus, this is a key area where the R2R program can not only enrich the KS3 curriculum, but contribute to sustainability education across disciplines (see page 9).

## KS3 Online Resources:

Online educational resources that complement the KS3 Geography syllabus provide further insight into the themes and topics covered in KS3. Although there is recent controversy about its positioning of the climate crisis, [BBC Bitesize](#) was recommended as a resource for revision by multiple schools. The information on this site is organised under topics: locational knowledge; human and physical geography; human geography and geographical skills (Table 2). The topics in red and bold are related to the existing R2R scheme of work, illustrating that there is already significant crossover between the KS3 teaching resources and the R2R curriculum.

<b>Locational Knowledge</b>	<ul style="list-style-type: none"> <li>● Antarctica polar regions</li> <li>● Regional Study – Russia</li> <li>● Regional Study – China</li> <li>● Regional Study - Brazil</li> </ul>
<b>Physical Geography:</b>	<ul style="list-style-type: none"> <li>● <b>Weather and climate (Module 2)</b> <ul style="list-style-type: none"> <li>● <b>Climate change: Caused by human activities that increase greenhouse gases; greenhouse effect; evidence for climate change; impacts; managing climate (Module 2)</b></li> </ul> </li> <li>● Coastal Landscapes</li> <li>● <b>Global Biomes (Module 1)</b> <ul style="list-style-type: none"> <li>● <b>Biomes – biomes and the characteristics e.g. rainforests; deserts and polar Biomes</b></li> <li>● <b>Tropical Rainforest biomes – talks about characteristics and deforestation</b></li> <li>● <b>Desert biomes</b></li> </ul> </li> <li>● <b>Environment resources and conflict (Module 1,2 AND 3)</b> <ul style="list-style-type: none"> <li>● <b>Food resources</b></li> <li>● <b>Sustainable food resources: where food is from; carbon footprint; working conditions; resource use in production; local alternatives</b></li> <li>● <b>Energy resources: talks about fossil fuels and shortfalls; discusses renewable energy</b></li> </ul> </li> <li>● Rock Landscapes</li> <li>● Glacial landscapes</li> <li>● <b>Hazards (Module 2)</b></li> <li>● <b>Rivers and water (Module 1)</b></li> <li>● <b>Glaciation (Module 2)</b></li> </ul>
<b>Human Geography:</b>	<ul style="list-style-type: none"> <li>● <b>Development and globalisation – development indicators (e.g. life/death expectancy); measuring development – GDP and HDI; contrasts in development; factors affecting development; millennium goals (outdated!); economic and physical diversity in Asia; emerging countries: China and India; inequality. (Module 3)</b></li> <li>● Tourism</li> <li>● <b>Population and migration (Module 2)</b></li> <li>● Urbanisation</li> </ul>
<b>Geographical skills</b>	

*Table 2. BBC Bitesize Topics*

The information provided is concise and summarized. It is a revision guide, and therefore includes only basic and key information. The BBC Bitesize page has been updated in the course of this analysis, and includes information from KS3 lesson plans, indicating that the information is relatively up to date. There is significant overlap between the information covered on the BBC website and the R2R modules, particularly relating to climate change and development. There are some key terms that I picked out from the BBC Bitesize website which can be integrated into the R2R program to better merge into the KS3 syllabus. These can be found on pg.19 of the “Module Edits Document”.

On further research, current KS3 lesson plans relating to climate change, sustainability and development, all of which complement the R2R program. These lesson plans, and activities from lesson plans have been included in the “R2R Module Edits Document”. The extent to which these resources are being included in schools is unknown, however from my research it appears to be minimal. Some of the most relevant resources I found included: WWF; the Royal Geographical Society; Our Planet; Twinkl; National Geographic; Radical Geographer Paul. These have been integrated into the “Module Edits document”.

### **Opportunities to integrate the R2R programme into the KS3 curriculum:**

This section considers the opportunity to implement existing modules of the R2R program into the KS3 curriculum. It is drawn from desk research, discussions with Martin Foulkes, organisations like the RSA Innovation Education Network and others. To begin, the KS3 curriculum is broad and flexible. That means there is space to integrate the R2R content into it. Martin Foulkes identified the need for a conceptual understanding of environmental problems that build eco-literacy into the curriculum. Given geography's aim of instilling ‘awe and wonder’, as well as fostering a connection to nature through understanding earth's key physical and human processes and their impact on each other, it is an attractive route for intervention (Foulkes, 2021).

A R2R KS3 curriculum will provide students the opportunity to learn about real world issues and increase eco-literacy and action competence. This will ultimately lead to a more inclusive and diverse set of voices entering into discourse about environmental, social and economic sustainability. Geoscience is a discipline rooted in colonialism and remains disproportionately white, with little racial and ethnic diversity. Whilst participation in geography at GCSE and A-level has increased in recent years, there is a demographic difference: in schools with a higher proportion of low-income and ethnic diverse students, the uptake of geography is lower. At a university level, only 1.7% of undergraduate geography students in 2018/19 identified as black (Dorling, 2020; RGS-IBG, 2020; Desai, 2017; Henderson et al., 2018).

[“Black Geographers”](#) is a group of UK-based geography students and working professionals in the green, environment and third sector who are questioning why racial and ethnic diversity remains low in the geoscience/environmental sector. Through their own research, they identify that whilst historic, systemic racism has shaped academia as a whole, there are subject-specific issues that make geography and more generally the environmental sector less inclusive to BAME groups. Issues that may deter the uptake of geography include lower access to natural environments for BAME and low-income communities; a struggle to relate

to the school geography syllabus or find use in the geographical knowledge taught; and difficulty in connecting to an image of geography that does not represent Black geographers.

R2R's eco-pedagogy includes learning through encounters with nature, community, culture and history which are embedded in the complexity and richness of real-world situations including the lived-experiences of students. The integration of this pedagogy into the KS3 curriculum can therefore create a more inspiring and meaningful geography syllabus, which in turn may encourage interest in the subject and provide a platform from which more diverse students are inspired to pursue geography and sustainability further. Accordingly, there may be an opportunity for extra-curricular enrichment beyond the school curriculum where R2R Module 16 and beyond could be implemented. This would be an option for people who are interested in pursuing sustainability education further.

The work that R2R covers in terms of eco-literacy, provides a good basis for its introduction into GCSE geography work which includes topics like climate change, sustainability and development (HDI and GDP etc.). This provides further incentive to implement R2R into the curriculum. There is more freedom to introduce eco-literacy during the KS3 period, allowing the opportunity to enrich the curriculum and to build a foundation for IGCSE. The GCSE geography syllabus overview illustrates the aims and the assessment objectives for the syllabus. The full list of aims and objectives can be found in the appendix, however notable aims and objectives include:

#### **Aims:**

- An understanding of the ways in which **people interact with each other and with their environments**
- An **appreciation of and concern** for the environment
- An **appreciation of the earth** including its people, places, landscapes, natural processes and phenomena.

#### **Objectives:**

- Students should demonstrate knowledge and understanding of the wide range of processes, including **human actions, contributing to the development of physical, economic and social environments and their effects on the landscape**
- Students should demonstrate knowledge and understanding of the **relationship between human activity and the environment**
- Expect students to have an awareness of the contrasting opportunities and constraints of people living in different places and under different physical and human conditions
- A willingness to **review their own attitudes** in the light of the views of others and new knowledge acquired
- Make judgements and decisions and recognize how these are made within a geographical context as affected and constrained by the **increasing level of global independence and the need for sustainable development.**

Furthermore, whilst engaged, responsive and reflexive teaching has always been required, recognition of this has more recently grown among educators worldwide. A variety of organizations, foundations and people, are advocating to restructure the education system to one that helps students gain a sense of agency and humanity as well as the knowledge, skills and resilience to innovate, thrive and make effective change in the world around them in light of challenges like climate change and social justice issues. The Royal Society of Arts, Commerce and Manufacturing (RSA) through their Innovative Education Network is one of these organisations. They provide an outline of the tools required to create an education curriculum that meets the goals mentioned above:

- 1) Knowledge rich curriculums;
- 2) Knowledge development;
- 3) Real-life and place-based curriculums;
- 4) Interdisciplinary and complexity;
- 5) Climate education;

A comparative analysis of the R2R program and the KS3 syllabus demonstrates that the inclusion of elements of the R2R program into the KS3 curriculum can contribute to an enriched KS3 curriculum in multiple ways:

- Firstly, knowledge in R2R modules is mobilised and aligned with real life contexts and issues and connects the learning process to the development of knowledge, skills, values, humanity and resilience which are important for future challenges, particularly climate change.
- Secondly, the R2R pedagogy contributes to knowledge development: the structuring of the R2R curriculum builds understanding through careful linking of concepts that facilitate cognitive assimilation, and the ways in which material is taught values the wider cultural context.
- Thirdly, the R2R curriculum uses real-life, place-based learning to inspire change in students' local communities.
- Fourthly, the integration of elements of the R2R program will help develop a KS3 syllabus that encourages a rich examination of problems, considers creative and innovative solutions and recognizes the complexity of issues. It can also be interwoven with different subjects in school, promoting an interdisciplinary platform (see the next section for more information).
- Finally, it will integrate important climate change education into the KS3 syllabus that avoids a sole focus on scientific examination and explores the importance of different social and emotional aspects and values connected to developing a more sustainable future. In this last critical decade ahead of 2030, the need to provide young adults with the kind of knowledge they will need to drive this future is increasingly urgent. (A full analysis of how the R2R content meets the RSA suggestions can be found in the appendix).

Thus, the R2R programme moves beyond education for sustainable development and citizenship in terms of British values, to a more global citizenship education. One that is critical of the current need for a more '[cosmolocal](#)' approach and includes values of diversity, equity and inclusion through learning that is based on real-life experiences.

Starting with a geography lens is the most practically realizable avenue in terms of supporting educational development with science lessons. However, as discussed above, the R2R curriculum has strands into several other subject areas, which allow not only for integration within KS3 geography but across other disciplines including science, economics, history etc., offering the opportunity to develop an interdisciplinary curriculum in the future (see page 12).

The increasing number of lesson plans focusing on climate and social justice issues are illustrative of the need to include relevant, contemporary learning, based on science and climate literacy in school education. In addition to meeting many of the KS3 aims and objectives, the R2R program has great potential to enrich the KS3 syllabus and lay a foundation for GCSE geography. Thus, there is significant opportunity to create an enhanced KS3/R2R curriculum.

### **Moving forward with KS3 and R2R:**

In order to create an interdisciplinary curriculum for sustainability education, there is a need to establish links between the KS3 Geography curriculum, R2R’s existing materials and its relevance for, and applicability to other KS3 subjects. As a start, I have detailed below points at which these interdisciplinary connections may be possible (Table 3.), however these are an initial assessment and deserve more detailed analysis as a separate exercise. The links between R2R content and other KS3 subjects include areas such as art, music, drama, technology, sociology, psychology etc. (RSA, 2021).

<b>Module:</b>	<b>Subject:</b>
Module 1	<u>Biology</u> – ecosystems; biodiversity; food webs; interdependence
Module 2	<p><u>Science</u> - climate and weather; climate science; global warming; feedback loops; resilience; tipping points</p> <p><u>Biology</u> - animal migration due to temperature changes; ecological fragmentation and human health (Zoonoses/Covide-19)</p> <p><u>History</u> - the Anthropocene; the great acceleration – what made it possible/will sustain it? Consider complex societies and social-ecological collapse in history</p> <p><u>Maths</u> - carbon budgets, business models; graphing environmental change/using ratios e.g. sea level rise/arctic ice melt</p> <p><u>PSHE and Citizenship:</u> economics - carbon budgets</p>
Module 3	<u>PSHE and Citizenship</u> - this develops knowledge, skills and understanding that pupils need to contribute to society as an active and responsible citizen. Discuss: consumerism; how consumerism contributes to linear economies; role of citizens have in environmental concerns

*Table 3. School subjects related to each R2R module*

In terms of where the R2R program content might need to be refined or additionally developed to integrate it into the KS3 curriculum, the [Leeds Development Education Centre](#) (LeedsDEC) have created a climate change curriculum outline for climate education from

year 2 to year 11 based around the SDG goals. They are an educational charity engaging people in global learning and working to empower them to participate in the process of sustainable goal development and decision making at all levels of society. They outline the “Key Ideas” that they believe should be known by the end of each year. These ideas are organised into topics within climate change and are shown in Table 4. below. Given that these terms have been specifically developed for the KS3 timeframe, it is worth considering how these could be integrated into the R2R modules. Table 6. shows where in each section the R2R program could potentially be enriched and where in the “R2R Module Edits Document” suggested adaptations can be found.

<b>Scientific Background:</b>	Perhaps more could be done on carbon sinks and processes that boost/undermine them (This is touched on in forests in Module 1 and was previously included in the Cedar House School curriculum on “fast and slow carbon” and the carbon budget.  Introduce more of the IPCC findings and the work of Carbontracker - Mark Campanale a potential speaker on this.	Pg. 29 of Module Edits Document: IPCC lesson plans
<b>Urgency of Need for Climate Action:</b>	Tipping points could be added to the R2R curriculum. Importantly more depth in the treatment of the ocean thermohaline circulation, the El Nino / La Nina, the Pacific Decadal Oscillation and impacts on the Gulf Stream for the UK could be included.	Pg. 29 of Module Edits Document: Tipping points lesson plan
<b>Impacts of Climate Change:</b>	This is dealt with as a research / poster project but it is important to utilise a systems approach in understanding these, rather than check-list exercise. More knowledge on the IPCC could be included so that students will be able to discuss recent findings.  Include more information on the COP26 conference	Pg. 29 of Module Edits Document: IPCC lesson plans
<b>Responses to climate change:</b>	More evaluation of climate action strategies could be included. This could link with other subjects (design technology, economics, history - circular economy, doughnut economics etc. would provide interesting examples and speakers.  More could be included on community action (successful and unsuccessful). Practical Action, Action for Happiness, Solutions Journalism and other similar initiatives would be useful sources here and could speak across curriculum in opportunities.	Pg. 42 or pg. 32 of Module Edits Document: Nature-based solutions
<b>Consumption and Climate Justice:</b>	Carbon offsetting could be included – e.g. the arguments for and against it.  Climate Justice: this is definitely included in the R2R program, however could be defined as a key term.	Pg. 32 and 33 of Module Edits Document
<b>Possible Futures:</b>	Deepen understanding of how the future might look from scientific findings and possible action. Linking to future fit scenario planning models, Forum for the Future, Moonshot /Preferred Futuring could also be useful life skills activities incorporated into this.	Pg. 32, pg. 42, pg. 34 of Module Edits Document

	Introduce the idea of nexus thinking, permaculture and systems thinking in the FEW nexus.	
<b>Mindsets and Viewpoints:</b>	The R2R program does a good job of exploring a range of different perspectives to climate change, including those of indigenous communities, spiritual/religious perspectives, people of colour and the Global South. (Harkness). How might different viewpoints lead to different behaviour.	Pg. 34 of Module Edits Document
<b>Feelings and Behaviours</b>	Introduce how awareness does not always lead to action – discuss some of the reasons why this is.	Pg. 32 of Module Edits Document

*Table 4. LeedDEC Curriculum requirements and where potential edits can be made to the R2R module*

The comparative analysis of KS3 geography with the R2R programme illustrates multiple connections between R2R and the KS3 aims, objectives and themes (see page 4 and 6). Despite these connections, the R2R modules do not always deal with KS3 themes/topics at depth that the subject discipline would require, or include all KS3 concepts within a topic i.e. the concepts mentioned in Table 4. For example, the R2R section on geological time obviously references glacial and interglacial periods, but does not include conceptual development of glaciation and glacial landforms. Therefore, there is a need to identify where lessons can be built out from the R2R modules to include the topics/concepts not covered in the R2R modules. Building more geographical skills into the R2R programme should also be considered.

As a starting point, Figure 3. illustrates where the R2R programme can be developed into additional lessons to include more KS3 concepts. However, the actual build-out requires the contribution of professional KS3 geography teachers. Martin Foulkes' document on Little Lever's KS3 curriculum aims, calls for a curriculum that uses extensive retrieval practice. [This is the process of actively bringing information to mind, to enhance learning.](#) More low-stake retrieval practices should be included in the R2R modules i.e. quizzes. These may be developed by each individual educator or through collaboration with R2R and KS3 geography teachers to include the content covered in the build-out lessons.

Lastly, the R2R programme offers sessions that look to ignite practical action for change. This part of the R2R curriculum does not directly merge with the KS3 geography curriculum, except insofar as the curriculum objectives include developing student engagement and agency. Moving forward, it is important to consider how to include session 16 and onwards into school education. As discussed above, there may be opportunity to integrate session 16 and onwards into an extracurricular activity, which could contribute toward the achievement of a Duke of Edinburgh Award, of which the R2R programme is in its final stages of accreditation. Alternatively, there may be opportunities to integrate this part of the module into a different discipline or subject e.g. technology/innovation; lifeskills; or PSHE and citizenship. This offers the chance to incorporate [community-connected learning](#) which is learning through experiences and collaboration between external entities to tackle real-world problems. This has an important role in educating students for the 21st century.



## **Possible Module Edits:**

Whilst the R2R programme is currently organised into sessions of approximately 2 hours, it could be re-organized into 40/45 minute classes. The approximate total minutes and weeks required to complete the R2R program in a school setting is shown in Table. 5. It is a rough estimate, based on a KS3 geography allocation of 3x100 minute lessons per fortnight. The term time required for the R2R program might differ across schools due to different time allocations for geography lessons. However the amount of time taken for each module should be less than a semester, leaving approximately 6/7 weeks to teach related topics.

<b>R2R Module:</b>	<b>No. of Lessons (Approx.)</b>	<b>Minutes:</b>	<b>Weeks: (dependent on number of lessons per week*)</b>
Module 1	10	450	3 weeks
Module 2	14	640	4-5 weeks
Module 3	15	675	4-5 weeks

*\*According to Martin 3x100 (300) minute lessons per 2 weeks.*

*Table 5. Number of lessons and term time required for the R2R programme*

It may be useful to start the R2R program from year 8 onwards if possible. My suggestion would be to complete Module 1 in grade 7/8, Module 2 in grade 8/9 and Module 3 in grade 9. This way, the KS3 students will be better able to cope with the material, and the built out set of lessons that include the concepts the R2R does not, can be integrated (see figure 3). I have done my best to ensure that the content is appropriate for students in grades 7-9. However, further guidance from teachers on the comprehension levels of students would be useful.

To make the R2R program suitable for the KS3 geography, some material needed to be adapted to be more place-based and specific to the United Kingdom. These edits can be found in the “R2R Module Edits” document. It suggests edits to the R2R document and resources which may be helpful to bridge the R2R program to the KS3 by filling in the gaps that I have identified in this report.

### **Conclusion:**

To conclude, there is significant opportunity to integrate the R2R module into the KS3 geography syllabus. It is sufficiently broad, has significant overlap with the themes explored in the R2R modules and can act as a platform for IGCSE geography. Additionally, A R2R/KS3 syllabus will contribute toward an enriched KS3 geography curriculum that will help build the skills, knowledge, ability and resilience to thrive in the 21st century. All possible edits and suggestions to refine the R2R module can be found in the “R2R Module Edits Document” attached.

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## Appendix:

### 1) GCSE Aims and Objectives:

#### Aims

The aims describe the purposes of a course based on this syllabus.

The aims are to enable students to:

- an understanding of location on a local, regional and global scale
- an awareness of the characteristics, distribution and processes affecting contrasting physical and human environments
- an understanding of the ways in which people interact with each other and with their environment
- an awareness of the contrasting opportunities and constraints presented by different environments
- an appreciation of and concern for the environment
- an appreciation of the earth including its people, places, landscapes, natural processes and phenomena.

The assessment objectives (AOs) are:

#### AO1 Knowledge with understanding

Candidates should be able to demonstrate knowledge and understanding of:

- the wide range of processes, including human actions, contributing to the development of
  - (a) physical, economic and social environments and their effects on the landscape
  - (b) spatial patterns and interactions which are important within these environments
- the relationships between human activity and the environment
- the importance of scale (whether local, regional or global)
- the changes which occur through time in places, landscapes and spatial distribution.

#### AO3 Judgement and decision-making

Through their geographical training, candidates should be able to:

- reason and make judgements and decisions, including evaluation and conclusions, which demonstrate, where appropriate
  - (a) an appreciation of the attitudes, values and beliefs of others in issues which have a geographical dimension
  - (b) an awareness of the contrasting opportunities and constraints of people living in different places and under different physical and human conditions
  - (c) a willingness to review their own attitudes in the light of the views of others and new knowledge acquired
- make judgements and decisions and recognise how these are made within a geographical context as affected and constrained by
  - (a) the physical and human contexts in which decisions are made
  - (b) the values and perceptions of differing groups or individuals
  - (c) the choices available to decision-makers
  - (d) the increasing level of global interdependence and the need for sustainable development.

### 2) Explanation of how the R2R program can enrich the KS3 syllabus in terms of the RSA's curriculum suggestions:

<b>Knowledge rich Curriculum</b>	R2R mobilises knowledge with real life contexts and issues e.g. <u>Module 1:</u> Fosters their connection to nature through ecosystem ramble; uses a real life example to illustrate resilience and biodiversity in the biodiversity game and zoonoses case study. It discusses injustices and activism using real world examples in Africa. <u>Module 2:</u> Systems thinking mobilised in the real life context/issue of Borneo cats
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<b>Knowledge Development</b>	<p>Develop knowledge that is understood in the context of:  <u>Values, cultures, emotions, humanity:</u>  <u>Module 1:</u> connecting to nature; ecosystem services; looks at different cultures and one’s own culture and their connection to nature e.g. women of Willowvale; uneven impacts of climate change.  <u>Different perspectives and possibilities:</u> This can be developed with additional resources added to the “Module Edits Document” e.g. Nature-based solutions; IPCC lesson ideas.  <u>In relation to high order skills</u> (e.g. critical thinking, problem solving, analytical thinking): Systems thinking (Borneo cats).  <u>Real life issues and problems</u> – e.g. Borneo cats, biodiversity game</p>
<b>Real-life and place-based Curriculums</b>	<p>The R2R module includes several place-based and UK related examples and issues</p>
<b>Interdisciplinary and Complexity</b>	<p>R2R curriculum fosters complexity by encouraging systems thinking, understanding the interconnectedness of ecosystems and human activity and making connections between the causes and consequences of climate change.</p>
<b>Climate Education</b>	<p>Module 2 and 3 focus on climate change beyond the scientific examination of climate change and explore different social and emotional aspects and values needed to develop a more sustainable future.</p>

### 3) Leeds Development Education Centre’s Key Words for their Climate Change Curriculum:

BY THE END OF YEAR 6:	BY THE END OF YEAR 9:
<ul style="list-style-type: none"> <li>→ Carbon footprint</li> <li>→ Climate emergency</li> <li>→ Tipping points</li> <li>→ Intergovernmental Panel on Climate Change</li> <li>→ Ecosystems</li> <li>→ Climate justice</li> <li>→ Carbon sinks</li> <li>→ Biodiversity</li> <li>→ Permaculture</li> </ul>	<ul style="list-style-type: none"> <li>→ Carbon drawdown</li> <li>→ Carbon capture and storage</li> <li>→ Climate debt / climate reparations</li> <li>→ Climate denial</li> <li>→ Computer model</li> <li>→ Climate feedback</li> <li>→ Mass extinction</li> </ul>



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