

Climate change route maps and score cards: An assessment of best practice, user needs and data availability

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1 Executive summary

1.1 The need for this research

A key recommendation from research and public engagement on climate action in Scotland is for the Scottish Government to develop a clear and concise vision and map. This will help the public understand the goals and the required actions.

Furthermore, Scotland's Climate Assembly called on the Scottish Government to create a score card with 10 key performance indicators for climate change in an easily accessible and understandable format.

1.2 Aims

This research aimed to understand if a climate change score card and/or route map could be used as a communication method and how it could be developed.

To identify relevant examples and best practice, we undertook a rapid international literature review focused on climate change route maps and score cards designed for a public audience. We analysed how these examples could be applied to the Scottish context. This analysis included workshops with members of the public and stakeholder organisations. We used evidence from our literature review and these workshops to identify the needs, preferences and expectations of the Scottish public and stakeholder groups regarding any potential climate change route map and/or score card. In the final task, we assessed the feasibility of implementing these tools to communicate climate change progress and actions in Scotland. This assessment also considered the availability of data that could be used to inform these tools.

1.3 Summary of findings

- We found limited literature on the use and effectiveness of route maps and score cards in communicating climate change goals and actions.
- We also found limited international examples of the use of both tools by national governments and public sector bodies. We identified examples of UK-specific route maps developed in relation to climate change and other policy objectives, particularly in the public sector, and score cards developed by pressure groups and NGOs.
- The public workshops indicated moderate enthusiasm for a visually engaging and descriptive route map. This sentiment was also echoed in the stakeholder organisation workshop, where Adaptation Scotland's Community Climate Adaptation Route map was highlighted by two participants. However, there were doubts about the validity and usefulness of route maps. Many users felt that these would unfairly place the responsibility for achieving climate change targets on individuals. There was an almost universal lack of interest in a score card as a climate change communication tool from both the public and stakeholder organisations.
- Workshop participants in both groups found it challenging to suggest what metrics should be used in both tools, and where they did, these linked to personally relevant actions. Examples included recycling and Ultra Low Emission Zones (ULEZ). However, in the literature review, we found evidence of applicable indicators that were supported by responses given at the stakeholder workshop. These include the Climate Change Committee's adaptation indicators and Defra's environmental indicators.

Our research concluded that a climate change route map and/or score card is most likely not the appropriate means for the Scottish Government to communicate climate change progress and actions to the public and stakeholders. This conclusion is based on the overall lack of support within the workshops for these tools, the lack of evidence on their effectiveness within the literature, and the limited international examples of similar methods. Of the two tools, some evidence that a visually engaging route map could be effective, but this is not conclusive.

1.4 Recommendations

We cannot confidently recommend that the Scottish Government use a score card or route map, for the reasons summarised above. However, if the Government wishes to develop these tools, or any other communication method, we have provided recommendations on the key communication principles these should follow.

We found little evidence on alternative approaches to communicate climate change progress and/or goals in Scotland; therefore, we cannot provide recommendations in these areas.

Recommendations on designing any future climate change communication method are summarised as follows:

1. **Keep it visual** – users are much more likely to engage with content presented in illustrations and infographics. The visual elements should be clear and easy to understand and complemented by minimal text narrative to help users understand its content.
2. **Focus on positive messaging** – users are more likely to be engaged and energised to take climate action if they can understand what the positive outcomes will be. Users are less likely to engage with negative messaging, as this is perceived as judgemental.
3. **Relate outcomes to personal actions** – users are more likely to be engaged if they can understand what actions they need to take to achieve wider climate goals/targets; and they will be interested in understanding the cumulative impact of their actions. An example of this messaging could be: “If everyone in Scotland were to forego one car journey per week, we would be 5% closer to meeting our transport emission reduction targets and would improve air quality and congestion by 8%”.
4. **Emphasise the co-benefits** – users are interested in knowing the co-benefits of taking climate change action for them. For example, additional benefits of reducing transport emissions such as improved air quality and health improvements from active travel should be clearly communicated. See point 3 for an example.
5. **Provide contextual detail for those who want to see it** – some users will want to understand the detail behind any climate change goal/target and the actions required to achieve them. This information should be provided alongside any visual communication, rather than within. This will allow those users who want to explore the details to do so, without diluting any visual elements.
6. **Emphasise roles and responsibilities** – to achieve credibility and legitimacy in the eyes of the users, any communication should clearly detail the roles and responsibilities of different agencies in achieving climate targets and goals. This is to reassure users that the actions, effort, and cost of achieving these goals is being fairly shared. Users, particularly the public, believe that the Government and businesses have the main responsibilities in achieving climate change targets, with the public providing a supporting role.
7. **Consider indicators carefully** – develop indicators to help communicate progress towards climate change goals, according to the following principles:
 - Choose indicators that will be directly affected by the actions detailed in a route map or score card.
 - Emphasise that indicators are not definitive. This will avoid fixation on indicators that could lead to perverse action, which does not lead to environmental benefit.
 - Choose indicators that are easy to update in a timely manner; for example, Electric Vehicle registrations where data is released on a monthly basis.
 - Choose indicators that are expected to remain relevant as government policy and the wider context progress.

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2 Abbreviations table

CCP	Scottish Government's Climate Change Plan
CCC	Climate Change Committee
DBEIS	Department for Business, Energy & Industrial Strategy
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
ENRD	European Network for Rural Development
ENEI	England Natural Environment Indicators
GHG	Greenhouse Gas
IEA	International Energy Agency
JNCC	Joint Nature Conservation Committee
KPIs	Key Performance Indicators
NAEI	National Atmospheric Emissions Inventory
NGO	Non-Governmental Organisations
SSN	Sustainable Scotland Network
TDUK	Timber Development UK

3 Introduction

The Scottish Government's Climate Change Plan sets out the ambitions to meeting the target of achieving net zero emissions by 2045. Achieving this target will require collective action across local government, industry, and society. Regarding individuals within society, the Climate Change Committee (CCC) estimates that 60% of the changes needed to meet Net Zero will require at least some element of behaviour change (CCC, 2019). Therefore, communicating these changes in a manner that generates engagement and facilitates change is crucial if Scotland is going to achieve its climate targets.

Recent research surrounding climate change messaging and public engagement around public action in Scotland has suggested that the public could find a climate change route map and/or score card useful to communicate the key milestones, required actions and progress found within the Climate Change Plan. This research will establish if either of these communication methods are an appropriate tool in communicating to the public. It will also detail how a climate change score card and/or route map, if feasible, could be developed and used, along with the data needed to inform this and to what extent it is available. Effective communication strategies have the potential to accelerate positive public behaviours and increase buy-in to policies that are attempting to reduce emissions.

Given this context, there is a need to explore in greater depth the usefulness and viability of a climate change route map and/or score card for Scotland. Therefore, this research has explored:

1. The capabilities, useability, and best practices of route maps and score cards
2. Their applicability in the Scottish context
3. The needs, preferences, and expectations of potential users; and
4. The feasibility of delivering a route map and score card based on (1), (2), and (3), above.

This research is broken down into the following three stages, as illustrated in Figure 1:

- An evidence review stage, including a literature review to identify the capabilities, usability, and applicability of both tools. This informs the discussion prompts for the engagement stage;
- An engagement stage, including a workshop with stakeholder organisations and five public workshops. This stage identifies the needs, preferences, and expectations of potential users; and
- An assessment stage to assess the feasibility of implementing both tools. This is based on literature from the review stage and information from both workshops in the engagement stage.

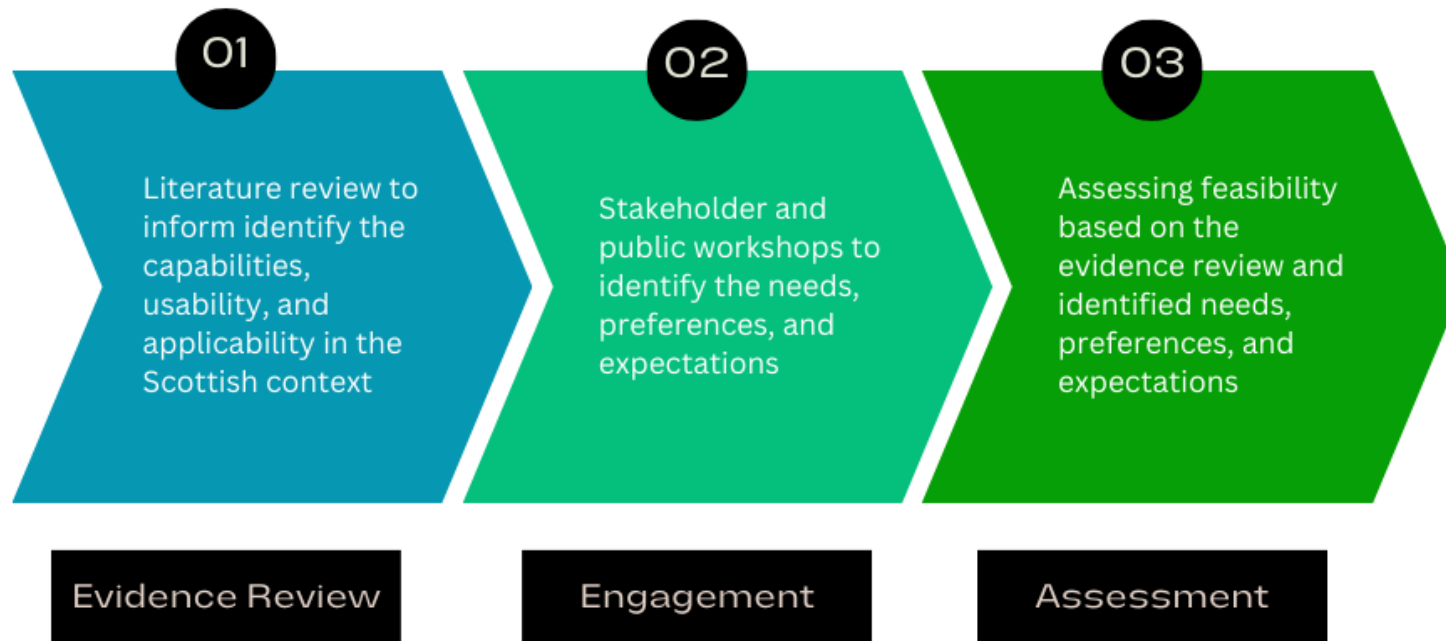


Figure 1: Research methodology for assessing the feasibility and requirements of developing a route map and scorecard

4 Literature review

This section provides an overview of academic literature and relevant examples of route maps and score cards for climate change policy communication and evaluation. We present an overview in relation to capabilities and useability, highlighting best practice to inform the applicability of both resources in the Scottish context. This informed the development of discussion points for the workshops (section 4) to understand needs, preferences, and expectations of potential users in subsequent sections of this report.

4.1 Background

Relevant surveys have indicated the public still views climate change as a global emergency (UNDP, 2021; Drews et al., 2022). In the Scottish context, there is public concern over climate change and support for climate change policies, including Scotland's net zero policies (Scottish Government, 2020b), such as the Climate Change (Emissions Reduction Targets) (Scotland) Act (Scottish Government, 2019) and the Climate Change Plan (Scottish Government, 2020d). Research suggests that Government actions (Hammar and Jagers, 2011; Drews and van den Bergh, 2016; Davidovic and Harring, 2020; Wong and Lai, 2022) combined with effective communication and dissemination (Engler et al., 2021; Nursey-Bray, 2023) can lead to policy support and engagement.

However, recent studies indicate a public lack of understanding of climate change policy terms and the actions needed to achieve climate targets in Scotland (Scottish Government, 2020b; Scottish Government, 2021a). These complexities and uncertainties, as well as the presence of deliberate misinformation (Brulle, 2014), complicate the communication and adoption of climate policies (Budescu et al., 2009; Henderson-Sellers, 2011; Brulle and Roberts, 2017).

We have explored several methodologies in the literature for effectively communicating climate change impacts and policy. For instance, Jones & Peterson, (2017) integrated research findings from climate change science communication with a literature narrative policy framework. Their recommendations include using narratives, tailoring to audiences for relatability, and clearly linking narratives with impacts including risks and benefits. Nursey-Bray, (2023) also states that communications on climate change impacts should be tailored to the right audience, but also highlights that communications must be delivered by trustworthy messengers to be effective.

Similarly, Howarth et al., (2020) encourage the use of narratives to enhance climate science communication and Cameron et al., (2021) explore storytelling methods in addition to visuals in communicating policies. This includes the use of video, text, and maps. Wider studies also conclude that visual storytelling could better improve comprehension (Davidson, 2017; Mirkovski et al., 2019). León et al. (2023) explore social media as a platform and strategy for climate change communications. The authors conclude that including higher levels of interaction in social media strategies remains a challenge but could lead to more effective public engagement.

A study on communicating climate change after COVID-19 (Howick et al., 2020) suggested that a route map identifying clear targets towards net zero policies would aid public understanding of how targets can be achieved. This recommendation was driven by the perceived effectiveness of Scotland's route map through the COVID-19 crisis (Scottish Government, 2020a). This route map presented various scenarios in the form of criteria-defined phases, with further information on current/future public restrictions through which users could understand upcoming mitigation targets and milestones. The study suggested that route maps can improve communications by providing clear and concise overviews of complex policies. This can aid in the understanding of objectives, key stages, uncertainties, and timelines. Furthermore, Scotland's Climate Assembly identified a 'route map' and an accompanying 'scorecard' as potential communication and accountability resources for the Scottish government (Scottish Government, 2021b).

4.2 Route maps

The review of resources used to communicate climate change policies revealed that 'roadmaps' and 'route maps' are terms that have been used interchangeably in the literature to communicate objectives in a metaphorical sense (McGarry et al., 2022). The key features of these tools are their use in identifying objectives and synthesising the main elements of a strategic plan into high-level information. Visual representations usually accompany these tools. Blackwell et al., (2008) present a useful description, referring to route maps as a diverse range of resources used to organise and communicate information related to future plans. However, it is important to note that there is no strict definition of what 'route maps' should include, leading to a wide variety in methods employed under this heading.

4.2.1. Capability and useability

Whilst route maps take many forms, they are typically used as engagement tools. Route maps provide contextual information and long-term perspectives in climate policy documents or action plans, outlining key objectives and timeframes.

Notable examples of route maps used for communicating climate change targets include the Roadmap for the Global Energy Sector (IEA, 2021), the Scottish Government's route map to achieve a 20 percent reduction in car kilometres by 2030 (Scottish Government., 2022) – see Figure 2, the net zero roadmap for the timber industry (TDUK, 2022), and the 2030 route map for water companies (Water UK, 2020). Appendix B of this report presents a list of reviewed route maps, including links for further exploration. The image in **Figure 2** presents the aforementioned route map, used to illustrate achieving a 20% reduction in car kilometres by 2030. **Figure 2**, which shows a descriptive route map, represents the most common type of route map we identified during our review.



Figure 2: Infographic from a route map to achieve a 20% reduction in car kilometres by 2030 (Scottish Government, 2022)

The route maps we identified range from international to local and sectoral-specific applications. Our review revealed that there are limited international examples, with most related route maps coming from UK governments and other public sector bodies. For example, Glasgow City Council published the Circular Economy Route map for Glasgow 2020-2030 (Glasgow City Council, 2020), detailing the vision for the implementation of a circular economy in Glasgow. These public sector documents represent long-term strategies and often detail high-level goals/ambitions and the actions required to achieve them.

There is some variation in the level of detail provided within existing route maps. Some detail specific milestones and indicators, such as the Agricultural Reform Route Map (Scottish Government, 2023), while others simply state a high-level vision, like the Welsh Public Sector Route map (Welsh Government, 2021). These types of route maps have generally been developed within the last decade in response to Local Authorities and other public sector bodies declaring climate emergencies and agreeing to temporal net zero targets. As such, there has been limited scope to explore the effectiveness of either methodology or the effectiveness of route maps in general thus far.

We can consider the key properties of the existing route maps and the overlapping practices between them in the potential development of a route map in the Scottish context. The observed key properties include a general trend of communicating high level climate change policy ambitions, accompanying visual representations, the use of relatable indicators, and time-bound milestones. Most route maps include avenues for further exploration, such as links or supporting documentation, to allow users to find more information where available.

4.2.2. Applicability in the Scottish context

Our review showed that route maps have already been applied by the Scottish Government and Scottish public sector bodies (Scottish Government., 2022; Sniffer, 2023; Scottish Government, 2023). We identified 9 relevant route maps used by the Scottish Government and Scottish public sector bodies that communicate strategic plans for achieving net zero (see Appendix B).

These route maps outline clear pathways using key areas, and milestones, and time bound targets, all accompanied by visual representations. Therefore, the Scottish Government could follow a similar approach in designing a document that outlines the specific objectives, along with the milestones and indicators for the CCP.

This process is well understood and would complement existing documentation. It also enables the inclusion of a broad range of information and detail, enhancing the readers' understanding of why specific objectives need to be achieved along with an outline of the wider context in which they sit.

If the same approach was to be followed for a climate change route map, key milestones, actions, and targets should be specific, measurable, achievable, and time bound. This is particularly important if they cover an extended period. Any future route map should include visual aids to present data and information in a clear and understandable manner. It

may also prove useful to illustrate the interconnections between different actions and how they contribute to overarching goals, as seen in the Community Climate Adaptation Toolkit, (2023).

4.2.3. Limitations

Despite the familiarity of such an approach, there are limitations that should be taken into consideration. The static and informational nature of these documents may not achieve engagement with the public. The documents identified in our horizon scanning exercise vary in length and detail, with some consisting of over 80 pages. Larger documents of this type are highly unlikely to be read in detail by members of the public. For this reason, they may not be effective in communicating climate change objectives, progress, and actions.

Consideration also needs to be given to ‘hard to reach’ groups in terms of accessibility. The reviewed route maps were accessible through the webpages of publishers. This means they may not be suitable for groups who find it harder to access those

The route map approach does not allow dynamic reporting of specific indicators, as the document is produced in a static report form. Whilst this allows a large amount of contextual data to be included, there are issues surrounding updateability and relevance as the wider context changes over time. These issues may limit the ability to communicate key milestones, actions, and progress on tackling climate change to the public. This is because the public is likely to want to track progress against key climate change ambitions over time. To meet this need, a route map would need to be updated on a regular basis to display progress against the overarching themes and indicators identified. Such an approach would be time consuming and perhaps impractical due to the potential complexity of climate change indicators.

The absence of monitoring and the continual assessment of progress in route maps can also raise uncertainties. Monitoring also demonstrates the effectiveness of actions and highlights progress towards policy objectives (ENRD, 2021; UK Government, 2022).

Scotland’s Climate Assembly indicates a need for a score card to monitor and assess the progress towards net zero (SSN, 2022) which can potentially serve as an accountability resource.

4.3 Score cards

The available score cards in the literature cover a wide range of fields and sectors. For instance, the health-based score card developed by Beaglehole & Bonita, (2008) assesses global public health based on five areas key to the agenda of public health, and Ahmed & Rajaleximi, (2019), and Kennedy et al., (2013), use score cards and behavioural score cards respectively for assessing credit scoring. The types of score cards available in the literature are dependent on their use cases. Buys et al., (2014), developed a ‘sustainability scorecard’ to enable an informed and holistic assessment of the sustainability of industries based on assigned sustainability scores. On the other hand, Khazai et al., (2018) developed a ‘performance scorecard’ that quantitatively assesses resilience parameters to measure

urban disaster resilience, and Peterson St-Laurent et al., (2022) produced an ‘adaptation scorecard’ evaluating climate adaptation projects based on 16 criteria.

Climate change related score cards found within the literature have been used to assess policy commitments and actions of public sector bodies and wider sectors towards achieving climate goals and targets, in an attempt to increase accountability and transparency (McKee et al., 2017).

Our review indicates that there are no climate change score cards developed by national governments or public sector bodies. A possible reason for this would be that it could be perceived as disingenuous for a government to assess its progress against self-developed metrics. This is made more complex by the fact that many score cards use qualitative data in assessment, leading to judgement calls when calculating scores/rankings.

4.3.1. Capability and usability

Score cards typically provide intuitive ranking systems based on selected indicators. The capabilities of score cards are flexible, as ranking/scoring metrics can be applied to a wide range of indicators, and the methodology in determining scores/ranking can be as simple or complex as needed. For example, the organisation Climate Scorecard has a very simple methodology where ‘yes/no’ determiners are used to rank climate change progress across a small range of nations (Climate Scorecard, n.d.).

The Climate Change Performance Index includes a comprehensive range of indicators and assessment techniques, accompanied by a technical report (Burck et al., 2022). Similarly, the Climate Scorecard from the Centre for Biological Diversity Action Fund presents a binary method of assessing Joe Biden and Bernie Sanders’s stated climate policy actions (Centre for Biological Diversity Action Fund, 2020), while Defra, (2019) apply multiple indicators to measure progress towards the targets set out in the UK’s 25 Year Environmental Plan. In either case, score cards typically involve the use of indicators to assess selected themes, with indicators sometimes sub-divided into additional ones for more complex assessments, as seen in Cooke et al., (2022).

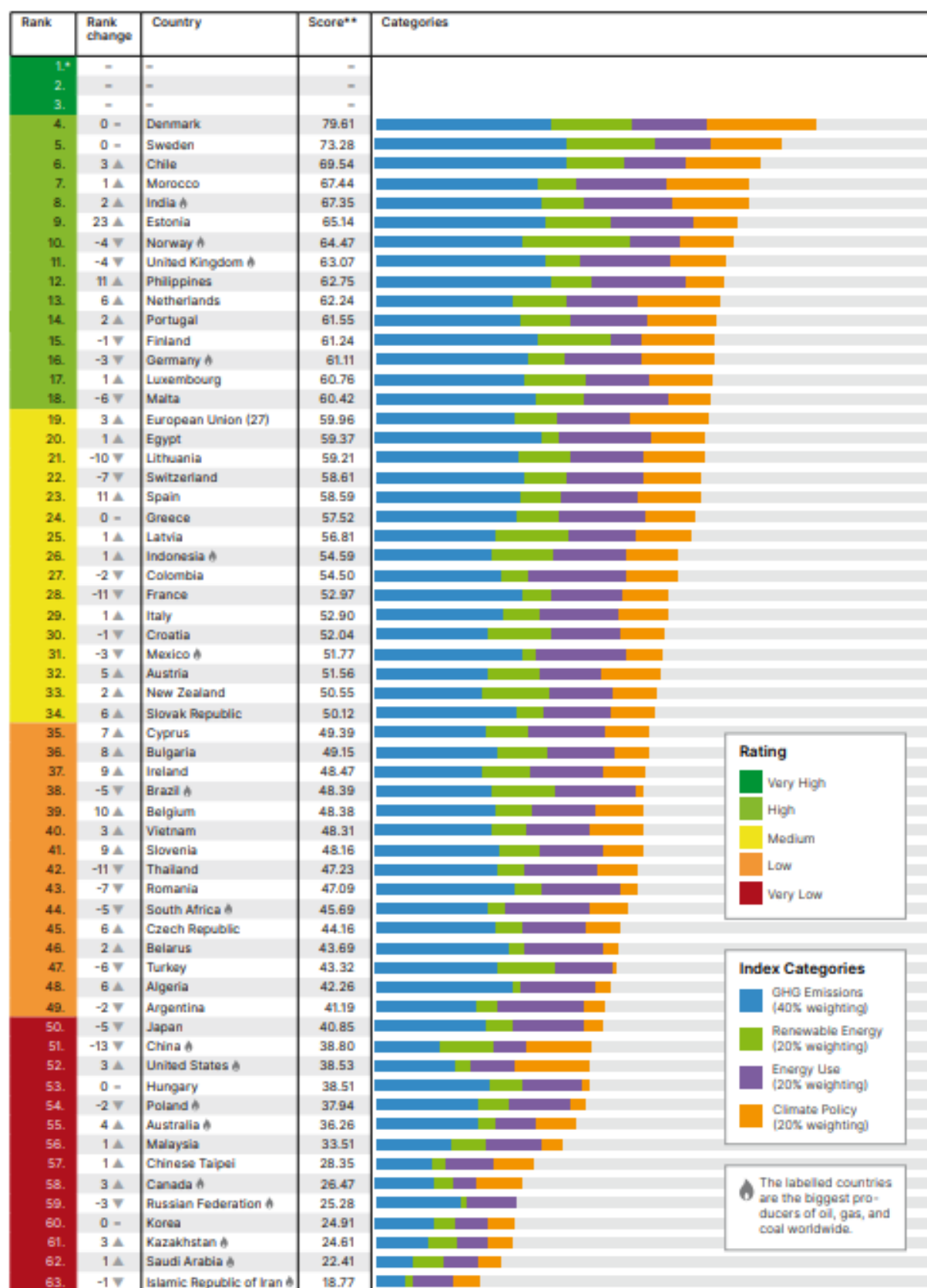
While the score card assessments can be subjective (Centre for Biological Diversity Action Fund, 2020; Climate Scorecard, n.d.), some score cards use indicators and metrics which usually relate to datasets used to measure progress against related policies. For instance, Burck et al. (2022) present a Climate Change Performance Index where 59 countries are ranked based on their climate change performance, with an overall score given to each country. This score is derived from four main index categories, GHG emissions, renewable energy, energy use and climate policy, against which each country is individually assessed. A published methodology paper details how scores are assigned to each country by index category. Figure 3 presents the climate change performance index rating table developed by Burck et al. (2022) for 63 countries.

Most score cards provide easy to understand information on progress towards specific climate goals, allowing users to make quick comparisons between the entities that have been assessed. Intuitive ranking metrics and visual representations such as bar graphs

(Burck et al., 2022) or traffic light systems (Cooke et al., 2022), allow information to be distilled quickly which could make this tool suitable for members of the public in Scotland who are looking for a rapid overview of progress achieved towards high-level climate goals.

Many of these types of score cards are generally interactive, with some hosted as online dashboards, where users can interrogate certain indicators/metrics if they would like to find out more detail. This allows users to drill down into areas they are personally interested in gaining a deeper understanding.

There is limited evidence to assess the effectiveness of score cards for climate change reporting and communication. Additionally, there are no available assessments of their effectiveness that we can draw upon. However, best practices can be inferred from the key characteristics of available score cards.



* None of the countries achieved positions one to three. No country is doing enough to prevent dangerous climate change.

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Figure 3: The climate change performance index by Burck et al. (2022).

Users typically draw on information from score cards to inform decision-making, as shown by Berke et al. (2015), who develop and test a climate change resilience score card that assessed how local plans in Washington DC (U.S.) and in the cities of Nashua and Norfolk (Malecha et al., 2018) target areas most prone to hazards. The score card evaluated planning documents using categories, including community vulnerability, policy response, and plan integration, to assign scores. The effectiveness of local plans was then assessed by policy makers and, based on the results of the scorecard, the city of Nashua amended its hazard mitigation plan, while Norfolk revised its comprehensive plan.

Score cards that use binary assessment methods might offer greater clarity but can potentially oversimplify complex situations, missing important information and face difficulties when measuring progress without quantifiable metrics. Therefore, although this approach could be easily understood by the public, the Scottish Government might need to supplement it with other evaluation methods to ensure comprehensive tracking of progress against its climate goals.

4.3.2. Limitations

There are potential drawbacks to score cards, include data availability, the potential for subjectivity, and the possibility of overlooking external factors influencing performance and omitting the indirect impacts of policies. Berke et al., (2015) highlight some important additional limitations which should be taken into consideration in the development of score cards, including the reliance on proxy indicators to represent climate vulnerabilities and data availability.

The ranking and scoring methodology utilised in any potential score card will need to be robust and transparent to ensure that the ranking/scoring results are viewed as trustworthy by the public. The majority of score cards publish some information on their methodologies, with varying detail articulating how judgements have been formulated.

Interestingly, an Environmental Audit Committee inquiry on an environmental score card Memorandum from the UK Government (UK Parliament, 2015) highlighted the limitations of environmental indicators, and provided the following cautionary notes against implementing an environmental score card:

1. The reasons why indicators change and the levers for influencing them are not always clear. This can limit their value as a tool for making and evaluating policies.
2. It can lead to a fixation on indicators rather than underlying issues which might result in perverse action which does not lead to overall environmental benefit.
3. It may not be possible to keep the score card sufficiently current to influence policy due to lags in data collection and impacts on indicators.
4. The Government will continue to need to prioritise its environmental interventions and priorities may change over time as evidence improves or the political landscape changes. A score card would need to be sufficiently flexible to respond to these changes.

Many of these limitations would also apply to the Scottish Government if they were to look to produce a score card that would provide climate change indicators, which are of a similar nature to environmental indicators.

4.4 Data availability for both methodologies

Smeets et al., (1999) present a set of environmental indicators that reflect trends in the state of the environment and monitor the progress made in realising environmental policy targets. This includes descriptive, response, and performance indicators such as GHG emissions, forest and wildlife resources, the concentration of phosphorus and sulphur in water bodies, recycling rates of domestic waste, and state environmental expenditure.

Similarly, Defra, (2019) also published a comprehensive set of 66 indicators describing environmental change that relates to the 10 goals within the 25 Year Environment Plan (Defra, 2018a). This framework includes indicators across 10 broad themes (covering natural capital assets, including air, water, seas and estuaries, wildlife, and natural resources), some of which relate to climate change. This framework shows the condition of these assets supported by available data. For instance, one of the indicators for the theme 'Air' is 'Emissions for five key air pollutants' which is linked to annually published emissions data. The assessment of change then assesses progress in the reduction of emissions for a date range.

In the Scottish context, the National Performance Framework presents Scotland's national outcomes based on a range of 81 National Indicators, including economic, social, and environmental indicators (Scottish Government, n.d.). Some environmental indicators included within this framework can also be used to monitor progress against Scotland's Climate Change Plan (Scottish Government, 2020c).

The Climate Change Committee (CCC) has also published over 100 indicators built around policy needs. These indicators address the risks identified in the UK's Climate Change Risk Assessment (CCRA) and objectives of Scotland's Climate Change Adaptation Programme (SCCAP), measuring and monitoring progress in building a climate ready Scotland (CCC, 2019). The indicators developed cover a range of themes, including the natural environment, building and infrastructure, and society, with associated sub themes and indicators.

Potential indicators, along with references to supporting data, are also highlighted in Annex B of Scotland's Climate Change Plan (Scottish Government, 2020c). The sector policy outcome indicators cover electricity, buildings, transport, industry, waste and circular economy, agriculture, and land use.

We have provided a table of potential indicators in [Appendix E](#).

4.5 Similarities and differences

Some similarities and differences exist between route maps and score cards relating to their capability and useability.

Both route maps and score cards have been used as public facing communication tools, and typically use visual representations to distil complex information. However, route maps organise and communicate plans (Blackwell et al., 2008), while score cards are used to monitor and assess the progress towards plans, and in some cases, holding leadership accountable (McKee et al., 2017).

Public sector bodies, mostly in the UK, have developed most route maps communicating climate change policies as a means of engaging with the public on strategies and milestones. In contrast, available score cards have been developed by independent bodies assessing a government's commitment to its climate change policies.

During our review, we found no instances where both tools have been used simultaneously to communicate climate policy and assess the progress towards it. This is likely due to the differences in capabilities of both tools, their use cases, and the typical creators.

5 The needs, preferences and expectations of potential users

We have broken this section down into the key questions and themes identified in the research specification. We have assessed and identified the **needs, preferences, and expectations** of potential end-users of a climate change route map and/or scorecard. The 'end user' has been identified as the public in this context.

5.1 User needs

Generally, members of the public in our workshops viewed Scotland's performance regarding climate change progress as fair or reasonable. Scotland was also typically seen as outperforming other countries and other parts of the UK. However, while many felt there is an overarching plan, or that they knew action is being taken, they felt progress is not always visible. Participant responses also noted a need to better communicate progress towards climate change goals, along with the key actions that are happening at different scales and how they link up with existing policy commitments. They were also unaware of what progress was being made.

"On paper it would probably look really good, but when it comes to, you know, hard facts about what they've done, or getting done, or intend to do soon, I would have a lot lower score."

Both the public and stakeholder groups emphasised the need to connect any future climate change communications to personal actions that end users could relate to. This is to understand their own personal contributions to wider goals/progress.

"The bin waste and the food waste, the recycling - I do all that. I have no clue where it goes or what it does. Am I actually making a difference? I just do what the bin says, and every two weeks it gets picked up."

However, the stakeholders stressed that focus should not solely be on end users to achieve the changes needed, as climate targets are a wider scale issue. Stating that users might find it more meaningful to participate in community actions rather than individual changes.

The public workshops also highlighted a wider desire for more positive framing of communication, stating that existing communication is too negative. It is often perceived as directive, telling people what actions they should take, rather than explaining why they should be taking action. Suggestions provided on positive framing included highlighting co-benefits, such as health and saving money. This was reinforced by the stakeholders who suggested that communicating the positive benefits of achieving targets, such as cleaner air or more abundant wildlife, would encourage change.

5.2 User preferences

Within both sets of workshops, we explored the key preferences of end-users regarding a potential climate change route map and/or scorecard. This focused on their preferred communication channels, content, and appearance based on the examples presented.

5.2.1. Communication channels

In the public workshops, despite recognition that a multi-channel approach is needed to reach all demographics, many participants expressed a preference for using social media to find out more about how Scotland is tackling climate change. A range of social media platforms were frequently highlighted as the most appropriate way to communicate, particularly by and for younger groups. Some questioned the value of TV adverts, but suggested alternative uses of TV, such as bulletins after the news in the format of a party-political broadcast, or Covid-style briefings.

“Well, social media is okay, but then it disappears... We've just got our third bin and we've got information through the post to say what goes in every bin. So, I think it's a good idea through the post as well.”

Stakeholders suggested that both traditional and modern modes of communication were effective. For instance, participants suggest social media, podcasts, tweets, and emails were commonly used. However, it was suggested that accessibility issues might arise with modern modes of communication and that traditional means of communication could be equally effective.

5.2.2. Scorecard/route map content and appearance

Public groups showed a clear preference for simple tools which are not overwhelming and help people engage and understand the information quickly. In spite of this, there were frequent calls for more information to be available about why, when and by whom each policy or plan is being implemented. Suggestions for how this demand for more information could be accessed without overloading a simple tool included:

- Breaking down a visual roadmap or score card into separate elements which could be used in social media posts or posters.

- The potential for a website, platform, or hover-over functionality to provide more information, though few respondents spontaneously called for a large website or dashboard, presenting them with detailed information.

Of the three examples presented to participants, there was a clear preference for a visually engaging route map such as the 'Transport Scotland route map to achieve a 20 per cent reduction in car kilometres by 2030' (see **Figure 2**).

This example was widely preferred because it:

- Presents the information in a visually engaging, colourful, attention-grabbing way.
- Highlights clear timeframes and goals.
- Breaks down information into bite-sized chunks and short, concise sentences.
- Includes and distinguishes between legislation and investment.
- Considers accessibility e.g., it is easier to read or digest for dyslexic or neurodiverse individuals or might spark interest in young people.
- Could be adapted or broken down for different channels, such as linearly on a bus, shown in parts at a bus stop, featured in a social media post, or placed on a fridge.

These themes were echoed by stakeholders who commented that visuals in a route map which communicate how different areas can be affected by climate change would be useful. Similarly, the connection between people and nature was identified as useful in aiding the public to understand the relevance of climate change action and targets, with agriculture being a major topic in this regard. Participants also stated that communication styles should be tailored to specific sectors.

'Trusted messenger' participants also provided recommendations for the development of route maps, stating that route maps should:

- Lay out actions that communities can take on climate action and be presented in a visually engaging manner and include functionality to interact with the data;
- Explore how existing reporting requirements connect with route maps; and
- Investigate ways to streamline reporting so additional reporting requirements are not placed on public bodies.

However, stakeholders raised concerns over the granularity of a potential route map. It was suggested that a single overarching route map would be useful, but risks either being too complex or too high a level. Having the functionality that allows users to interrogate the supporting data and information and explore different policy areas including buildings, energy, nature, and transport, would be useful. It was also suggested that support needs to be available for access and use, and ways for the public to get involved should be included, such as providing contact details to get involved with a new bike path. One stakeholder who commented summarised this:

“A route map would be useful if it had a simple graphic on the landing page, with the added functionality of being able to interrogate the information further and to provide further context and specific information”

5.2.3. Score cards

Public groups were shown three examples of score cards (see Appendix C). The preferred choice was the Climate Change Performance Index (Burck et al., 2022) (see **Figure 3**), for a variety of reasons:

- The graph itself is visually engaging, with the colours clearly outlining a ranking and what information is being used.
- The ranking system enabled readers to readily compare the UK’s progress with others.
- It is based on a variety of metrics.
- The key typically made it easy to follow.

Stakeholders did not express a preference for score card content, noting that while score cards could use numbers as an engagement tool, they were not a public facing resource and would provide less value than a route map. A participant referred to score cards as a “political football”, stating that metrics already exist to assess and monitor progress such as biodiversity intactness index used to highlight Scotland’s biodiversity crisis.

5.3 User expectations

5.3.1. Scorecard/route map content

Members of the public and stakeholders both expressed strong expectations of what a climate change score card and/or route map should look like, if this was to be developed by the Scottish Government.

One expectation raised by the public was the need for greater recognition of the barriers they face in taking action. A lack of, or more limited, services and infrastructure was noted across the groups, but was more frequently raised by those in rural areas. Some challenges included fewer or less frequent recycling facilities, fewer or closing local services such as banks and GPs, meaning travel is required to access the same services elsewhere, and reduced public transport options, which heightens reliance on cars. A route map needs to consider or acknowledge that these issues exist, particularly in rural areas.

“Because it's alright us sitting here saying we all need to do more, but we all need to be able to do more.”

This was part of a wider dialogue suggesting that any potential route map and/or score card should emphasise the need for a ‘just transition’ and recognise that certain groups are more disadvantaged than others and that the benefits of any change should be equally shared. For example, stakeholders noted that harder to reach groups should be targeted by any communication method. Participants recommend that there should be a balance between

the scale of the challenge and the method of communication, focusing on ‘empowering or equipping rather than education’.

This point was further built upon, with stakeholders suggesting that the onus should not be placed wholly on individuals. Stakeholders stated that in implementing route maps, clear roles and responsibilities should be defined for each action and outcome. In making this clarification, further responses from participants suggested making clear distinctions between public and government actions. In fact, a participant suggested that there be a separate route map for the government and the public, showing how a public route map could connect to the government route map.

It was also suggested that national and regional route maps should clearly indicate where people can take part, mentioning the Community Climate Adaptation Route map¹ as an example of where this has been implemented at multiple levels. The participant noted that, given the public’s interest in what agencies/government are doing, it might be best to signpost the public to resources for community action to avoid conflating the two responsibilities. This is because conflating personal or community action with public or private sector actions could result in more complex plans, which could turn the public off the messaging. It was recommended that simple messages be attached to route maps to avoid such complexity.

Some participants described how a route map could be useful, or the benefits of having one readily available. These included that it would help to provide some reassurance that there is a plan in place, or that action is being taken, and that it helps to provide advance notice of changes and actions which a household might be required to make in the future. It was noted that this helps provide some information for longer-term planning, for example, how long a household might have available to save to buy an electric vehicle.

5.3.2. Metrics

When the public groups were asked about the metrics or information, they would like to see on a score card or route map, only a few issues were consistently or frequently raised. Suggestions included: progress in reducing emissions or carbon footprint; increased use of renewable energy; improved recycling rates; and reduction in use of single-use plastics and driving mileage. Earlier parts of the discussion highlighting the importance to individuals of understanding their own personal contribution, making it clear that a score card might only be of use or interest if it relates directly to what people are doing on a day-to-day basis.

“I think it goes back to it being relatable and the small things and the impact that has. So it's letting us know the small things that we do and how that impacts and improves things. For me, anyway. It's got to be relatable to be interesting.”

The public groups also widely agreed that while the Scottish Government or local government may need to provide data, the validity of any tools should be independently assessed. All groups agreed on the need for independent oversight, emphasising that the

¹ <https://www.adaptationscotland.org.uk/how-adapt/tools-and-resources/community-climate-adaptation-routemap>

Government should not be able to ‘mark its own homework’. A few also noted that an external body could help ensure the consistency of data collection and use. Suggestions for who might provide oversight included SEPA, academics and third-sector organisations.

“I think the Scottish Government can collect it, but they do need an outsider to come in and make sure that they're not making it look like we're better than we are.”

Stakeholders offered a broader suggestion of metrics that could be utilised by both communication techniques. Stakeholders suggested that it would be important to report progress against key drivers or themes such as transport, agriculture, and energy, as communities want to know how policy is tackling these sectors as well as what real progress is being made.

Stakeholders acknowledged that accessible data and metrics already exist which could be used to develop a route map/scorecard. However, concerns were raised over local and individual understanding of metrics. As such, it would be important to use metrics relevant to the public. Local air quality was given as an example that the public would easily understand and engage with. However, it was also stated that duplication and contradiction with existing metrics should be avoided so as not to dilute or cloud climate messaging. It was also suggested that “perhaps future resourcing should focus on engagement around metrics which could have more impact than creating a scorecard”. We have discussed what these metrics could look like in our recommendations.

In the public workshops, frequently mentioned examples of climate change progress referenced recycling, the introduction of Low Emission Zones, and more renewable energy and wind farms; however, not all participants viewed these developments favourably. Other signs of progress included being a net exporter of power, bike paths, phasing out gas boilers, becoming carbon neutral or net zero, and more electric cars and buses on the road. Although we cannot draw definitive conclusions on why these topics were mentioned, it is possible they were highlighted due to recent public discourse surrounding them.

5.4 Summary of workshops

Both public and trusted messenger workshops indicated a need for better communication regarding climate change targets and the actions needed to achieve them. However, it was not indicated that a route map and score card or an alternative tool would be appropriate for this purpose.

The workshops indicate a need for:

- Positive framing;
- Greater recognition of the barriers to individuals taking action;
- Communicating the wider benefits of taking action; and
- Relating climate targets to community and personal actions supplemented by information about why action is being taken.

There was moderate enthusiasm for a route map but a lack of enthusiasm for a score card in both workshops. While the tools can complement each other, overall, there is greater interest in understanding where progress is being made.

There was an overall preference for more descriptive but visually engaging tools with simple, concise text. However, there is still a desire for more detailed information which could be accessed via the tools.

The public and stakeholders found it challenging to suggest what metrics should be used on a scorecard; where they did, these again linked back to personally relevant actions, such as recycling. There was also widespread agreement that any tools should be independently assessed. Concerning the development of a route map and/or scorecard, stakeholders stressed avoiding placing additional burdens on reporting on both local and national governments. This suggests that, should the government proceed with the development of a scorecard, indicators would need to be tied to existing metrics and data sources where available.

6 Conclusions

Our research has revealed:

- There are no international examples of a climate change route map and or/score card being employed by another national government. Most existing route maps have been developed by UK local authorities and public sector bodies, and available score cards have been developed by independent bodies.
- There is a gap in the literature regarding the effectiveness of route maps and score cards for climate change communication and reporting.
- There seems to be no apparent need for a route map, but there is a moderate preference towards visually engaging yet descriptive route maps. such as the 'Transport Scotland route map to achieve a 20 percent reduction in car kilometres by 2030' and the 'Community Climate Adaptation Routemap'. This aligns with our findings in the academic literature on climate change communication methodologies. Effective climate change communication methods should employ visual presentation methods whilst also creating a strong narrative that conveys clear milestones in an easy-to-understand format.
- There is no need or preference for a scorecard, and there is no indication of specific metrics or indicators that could be applied in the development of a potential scorecard. Participants in the public workshops were more concerned with evaluating and influencing personal actions like recycling, and stakeholders raised concern over how familiar the public would be with reporting metric and indicators.
- There is little indication of what alternative methodology would be effective.

We have suggested a range of indicators that could potentially be utilised if the Scottish Government decides to implement a climate change progress and goals communication

tool. This can be found in [Appendix E](#), and has been extrapolated from the findings of the literature review and indications from workshops.

Our research has suggested that there is still the need for improved climate change communication methods. Although we have not been able to identify which methods would be effective, in the recommendations, we have highlighted the key principles we have uncovered that will improve climate change communications. The details of these principles are covered below in section 7.1.2.

7 Recommendations

One of the aims of this project was to “make recommendations for how the recommendations for a route map and score card could be taken forward separately or in combination in Scotland”. As detailed in our conclusions, we did not find strong evidence that either approach is effective in communicating climate change goals and/or progress.

Therefore, we cannot confidently recommend that either approach is taken forward by the Scottish Government.

7.1.1. Alternative approaches

We found little evidence on alternative approaches that could be taken to communicate climate change progress/goals in Scotland. Therefore, we cannot provide recommendations that explicitly highlight other communication methods that have been successful.

We do, however, note that our research has indicated that there is a need to improve climate change messaging in Scotland. This has the potential to improve public and stakeholder buy in and contributions towards climate change goals and targets.

Based on the findings of our research, we can provide recommendations on how any future climate change communication method, whether it be a route map, score card or an alternative approach, should be designed. These recommendations are summarised below.

7.1.2. Communication fundamentals

1. **Use visual methods** – users of a potential route map/score card are much more likely to engage with its content if it is of a visual nature. The visual elements should be clear and easy to understand and complemented by minimal text narrative to help users understand its content.
2. **Focus on positive messaging** – any future communication method should focus on the positive outcomes/elements of taking climate change action. Users are more likely to be engaged and energised to take action if they can understand what positive outcomes will result from taking these actions. Users are less likely to engage with negative messaging, as this is perceived as judgemental.
3. **Relate outcomes to personal actions** – Users are more likely to engage with a climate change communication method if they can understand what actions they need to take to achieve wider goals/targets. Users will be interested in understanding the cumulative impact of personal actions. An example of this

messaging could be: “If everyone in Scotland were to forego one car journey per week, we would be 5% closer to meeting our transport emission reduction targets, and would also improve air quality and congestion by 8%”.

4. **Emphasise the co-benefits** – users are interested in understanding what the co-benefits of taking climate change action will be for them. For example, if reducing transport emissions is listed as a key outcome/goal of a route map/score card, the additional benefits of improved air quality and health improvements from active travel should also be clearly detailed and communicated. See the example in point 3 for an example of how this could work.
5. **Provide contextual detail, but only for those who want to see it** – some users will want to understand the detail behind any climate change goal/target and the actions required to achieve them. This information should be provided alongside any visual communication method, rather than within. This will allow those users who want to explore the details to do so, without diluting any visual elements.
6. **Emphasise roles and responsibilities** – to achieve credibility and legitimacy in the eyes of the users, any communication method should clearly detail the roles and responsibilities of different agencies in achieving climate change targets and goals. This is to reassure users that the actions/effort/cost of achieving climate change goals is being fairly shared. Users, particularly the public, believe that the Government and businesses have the primary responsibilities in enabling climate change targets, with the public providing a supporting role.
7. **Consider indicators carefully** – it will be necessary to develop indicators to help communicate progress towards climate change goals. They should follow these principles:
 - Choose indicators where it can be proven that the actions detailed in any route map/score card will directly affect the indicator.
 - Emphasise that indicators are not definitive. This will avoid fixation on indicators that could lead to perverse action, which does not lead to overall environmental benefit.
 - Choose indicators that are easy to update in a timely manner; for example, Electric Vehicle registrations where data is released on a monthly basis.
 - Choose indicators that are expected to remain relevant as government policy and the wider context progress.

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9 Appendices

9.1 Appendix A: Literature review methodology

We conducted a systematic literature review to identify key academic and grey literature relating to various forms of score cards for climate change communication and other public messaging using approved search terms. This was also done to identify sources that provide insights into communication and messaging strategies as well as methodologies that could be adopted to best convey key topics.

The search strategy was developed using identified keywords for four concepts/themes including:

- Public communication in other sectors;
- Climate change for communication and engagement;
- Scottish communication and messaging strategies; and
- Score card and route map climate change topics.

The concepts were searched using keywords and related search terms in the Google Scholar and Scopus database. Some inclusion and exclusion criteria were applied to ensure the review remained objective such as a date range between 2023 and 2011 to identify the most relevant and recent literature, however, a forward and backward snowballing process was also adopted, where relevant cited papers within papers were also used to inform the literature review. The inclusion and exclusion criteria were also based on publication titles, abstracts, and full text screenings, as well as key word exclusions. For example, there is some overlap between 'balanced scorecard' and 'scorecard'.

The literature search returns frequently included reference to the 'balanced scorecard' approach. The 'balanced scorecard' approach is a framework developed by Kaplan & Norton, (1992) to translate strategies and mission statements into specific measures and goals in a corporate setting. The methodology for using a BSC involves developing critical measures for four perspectives in an organisation, usually financial, customer, internal progress, and learning and development (Kaplan and Norton, 1996). The BSC is a management and strategy framework, and does not resemble the type of score card being explored (**Figure 3**, for example). As such, evidence in the academic literature of the use of score cards specifically for climate change communication, which could inform the methodologies used for identifying KPIs to better communicate policies, was limited.

Boolean operators such as "AND" and "OR" were used to search between keywords and related search terms, and the minus sign "-", was used to remove excluded keywords and search terms.

9.2 Appendix B: Evidence review of existing score cards/route maps

Communication typology	Description	Examples	Positives	Negatives	Applicability to the Scottish context	Potential key metrics
Qualitative Score card	Assesses the policy commitments and actions of countries/sectors and their contribution towards climate goals in an attempt to hold those that are not taking appropriate action to account.	Council Climate Change Score Card (Climate Emergency UK, 2021). Climate Change performance Index (Burck et al, 2023). Climate change and health scorecard . (Cooke et al, 2022). The Climate Score card (Climate Scorecard, n.d.)	Simple criteria and scoring system that is easy to follow and understand; Allows users to make informed decisions; Intuitive ranking system to assess the progress/effectiveness of different countries/ sectors; Interactive interface increases user engagement and ability to interrogate the data;	Potential for subjectivity; Potentially missing policies which indirectly impact criteria; May not consider external factors which may influence performance; Requires users to interrogate methodology to understand how scoring has been determined; Provides a static assessment that is	- Usually produced by an NGO or pressure group who are motivated to hold governments/sectors to account for not taking enough action on mitigating/adapting to climate change. Therefore, it is unlikely this approach would be suitable for the Scottish Government as this would potentially appear disingenuous if	Publicly available qualitative and quantitative targets and actions; High level policy commitments; Progress against policy commitments (either qualitative or quantitative)

		Climate Score card (Centre for Biological Diversity Action Fund, 2020).	Allows easy comparison of different countries/sectors that allows a rapid assessment of progress against; Aids communication and transparency; Can be used by countries/sectors for benchmarking against competitors.	only updated at a certain point in time i.e., yearly.	Scotland were to score highly compared to other nations based on its own scoring criteria; Potential for confusion with whether to focus on short-term or long-term actions/progress; - Requires regular updating which could be a significantly administrative burden for the Scottish Government and will also rely on data availability and suitability; + Aligns with goals by linking scorecard/KPIs	
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					with specific objectives and targets. + Familiar and easy to understand for a wide range of users. This approach could be adapted by the Scottish Government to reflect key KPIs and track progress towards these. + Easy to compare actions and progress with other countries.	
Dashboards	Provides environmental indicators without further contextual information or subjective	Measuring UK greenhouse gas emissions (UK Government, 2023).				Specific climatic indicators, such as trees planted, electric vehicles registered etc.

	analysis. Does not include target data or pathways to net zero.					
Route maps						
Route map	Designed to help users plot their own path to net zero Shows the key objectives and timeframes as part of a climate change policy document or action plan	Roadmap for the Global Energy Sector (IEA, 2021). A route map to achieve a 20 per cent reduction in car kilometres by 2030 (Scottish Government, 2022). The timber industry Net Zero Roadmap. (TDUK, 2022).	Can include simple wording as well as provide contextual information surrounding climate change targets and ambitions Dovetails with policy ambitions co-located in documentation, allowing users to cross references ambitions against policy. Typically includes a long-term perspective with a	Often lacks specific quantitative metrics that are tied to route map timeframes Generally static documents that provide high level ambition but do not allow progress to be tracked unless document is updated on a regular basis Assumption heavy as often tied to	+ Well understood practice that has been widely adopted within the Scottish Government and wider public sector bodies in both Scotland and the UK as a whole + Facilitates communication of high level ambitions on climate change mitigation/adaptation and provides clear objectives	Personal actions that users could take to contribute towards climate change goals and indicators

		Agricultural Reform Route Map (Scottish Government, 2023). Marine recovery route map (UK Government, 2022). Circular economy route map for Glasgow 2020 (Glasgow City Council 2020). Route map towards greater ethnic diversity (Wildlife & Countryside Link, 2022)	specific timeframe or goal in mind, such as Net Zero or other environmental objectives. Facilitates risk assessment and mitigation Usually visual and broken down into easily digestible sections This type of route map has been employed by the public sector in the UK and is a tried and tested approach.	high level policy objectives Text heavy and lengthy, creating barriers to user engagement. Often lacking defined actions or measures that will be taken to achieve long term goals or specific objectives Difficult to measure progress where metrics and milestones are not clearly defined or quantifiable Provides a set of actions that individuals can take rather than	+ No restrictions on the type or quantity of information that can be provided + can facilitate international cooperation, as it provides a common framework for different countries to work together and share best practices + Allows users to plot their own path towards a specific goal, such as Net Zero, by providing advice and recommendations that they can	
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		Waste Regulation Route Map (WRAP, 2014) Net zero carbon status by 2030: public sector route map (Welsh Government, 2021). Route map to Net Zero (Moray Council, 2022) Community Climate Adaptation Routemap (Sniffer, 2023).		providing updates/progress against a specific climate goal. Static document that would prove challenging and time consuming to update. Difficult to measure the impact of such a route map	implement in a personal context. + Provides easy to understand information that is accessible to a wide range of users -Often lacks detail on how targets will be met along with specific -Often very text heavy and lacking specific detail, meaning that many users may not engage with the content, especially the public. - Focus on a smaller spatial	
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					scale, meaning that this type of route map may not be suitable at a national scale. -Static document that would be time consuming to update as the context surrounding climate change shifts as time moves onwards. -More suitable to policy audiences and those with prior knowledge/interest.	
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9.3 Appendix C: Public workshop

Five discussion groups were held with the general public between 21st and 30th August 2023. Each group was 90 minutes long and attended by six members of the public; 30 people took part in total.

Quotas were set across the total sample to ensure it was broadly representative of the Scottish population. However, it was agreed that it would be split equally between urban and rural participants to ensure rural views are considered. The quotas were:

Demographic	Overall quotas
Gender	50% male / 50% female
Age	50% 18-44 / 50% 45+
Social grade	50% ABC1 / 50% C2DE
Urban/rural	50% Urban / 50% Rural
Views on climate change	A mix of views (answers a to d from the screening question below), excluding those who are not convinced climate change is happening (answer e) Which of these statements, if any, comes closest to your own view? a. Climate change is an immediate and urgent problem. b. Climate change is more of a problem for the future. c. Climate change is not really a problem. d. None of these/don't know. e. I'm still not convinced that climate change is happening.

Participants were recruited by Taylor McKenzie Research on behalf of The Lines Between, using a recruitment screener which was agreed by all parties. Groups were facilitated by The Lines Between.

Introduction – 20 mins

First, I'd like us to do a little exercise and introduce ourselves.

I'd like you to take a couple of minutes to think about how you would rate Scotland's progress so far in tackling climate change.

I don't mind what sort of rating you use, as I'd like to hear it in a way that makes sense to you.

I'd also like you to explain why you'd give it that rating. You might only want or need to give one or two reasons, but I'd like to hear what you think we're doing well or not so well.

After a couple of minutes, I'd like to go around the room and ask everyone to:

- Tell us your name and where you are from.
- Give us your rating of Scotland's progress.
- Explain why you have rated Scotland's progress as you have.

[NOTE: this exercise will allow us to set the scene with each group but also understand:

- What specific metrics are most important regarding climate change in Scotland.
- What sort of rating scales they see as useful e.g. some may do a scale of 1-10, some Excellent to Poor, etc).
- The wider context of how well they think Scottish Government is currently performing.]

How would you prefer to be informed about the Scottish Government's progress against climate targets?

- Who should evaluate what they are doing?
- What format would you like to see progress in?
- What is the best way to hold the Scottish Government to account for its climate change targets?

Route maps – 30 mins

One of the two things we want to look at tonight is the idea of a routemap, which could also be known as a roadmap or a pathway.

The aim of a routemap is to provide a clear and concise plan to help everyone understand what's happening, what the endpoint is, and the actions or journey that needs to happen to get there. It should be able to communicate:

- What are the targets or goals of a policy or strategy
- What actions are needed for those targets can be achieved
- What timescales, milestones or order the changes need to happen in
- Any connections between or consequences from taking action

I'm going to quickly show you a few examples:

Guidance routemap – could be more visual or storytelling about the path or journey, or using accessible visuals and wording

- [A route map to achieve a 20 per cent reduction in car kilometres by 2030 | Transport Scotland](#)
- [Net zero carbon status by 2030: A route map for decarbonisation across the Welsh public sector \(gov.wales\)](#)

Descriptive routemap - provides contextual information and long-term perspectives in climate policy documents or action plans, outlining key objectives and timeframes.

- [RoutemapToNetZeroCarbonFinal.pdf \(churchofengland.org\)](https://www.churchofengland.org/routemap-to-net-zero-carbon-final.pdf)

Which of those examples do you prefer? Which resonate with you?

Does anyone feel they have seen anything like this before:

- About climate change?
- From the Scottish Government on another policy area?
- From another government or organisation about another issue?

IF YES: Probe for detail on the topic, what was included, and why useful / not.

What would a climate change routemap look like to you?

- What format would be most engaging?
- Would the examples I showed you work? What would need to change?

What information would you like to see in a routemap that would be useful in helping you or other people understand:

- What the Scottish Government is doing?
- When changes are going to take place?
- Your role in tackling climate change and helping you to plan what actions you might need to take?

Score cards – 30 mins

Moving on now, I'd like to talk about a Scorecard. By this, I mean a tool which would provide you with an easy-to-read assessment of how effective the Scottish Government's climate change policies, strategies and actions have been. The aim would be to have something clear, trustworthy and easy to understand, though there are potentially lots of levels of detail.

I'm going to quickly show you a few examples:

- Climate Change Performance Index: <https://ccpi.org/wp-content/uploads/CCPI-2023-Results-3.pdf>
- Cooke et al., (2022) assesses the progress of UK professional and regulatory organizations in tackling climate change.
- The Green Central Banking Scorecard scores and ranks the range of green policies and initiatives adopted by G20 central banks. <https://greencentralbanking.com/scorecard>.

Which of those examples do you prefer? Which resonate with you?

Can anyone think of any other examples, not necessarily climate change, that you have found useful?

Let's think about what a climate change scorecard might look like for you.

We're going to do another exercise. I'd like you to consider what actions, steps, targets or data you'd like to see included on a scorecard that monitors Scotland's progress. There could be up to 10, but it's absolutely fine if you can't think of as many as that. I'll give you a few minutes to think about what you'd like to see, and if you could type them in the chat. However, don't send them – I'll tell you when we can all send them together at the end of the exercise.

Talk through metrics and reasons for including them.

Who should decide what indicators are included?

Who should produce the scorecard? Scottish Government, or someone else?

- Who would you want to hear from? Who would you believe?
- Who should provide the data for the scorecard?

How frequently should it be updated?

Would it be useful to compare Scottish progress against other nations?

Finally, I'd like to ask about your preferences for the format of a scorecard.

Would you prefer:

- A focus on data (e.g. numbers and comparison with targets) or a more visual or storytelling approach?
- How do we represent progress? For example, Red/Amber/Green status, Yes/No if met, or quantitative data.
- Would you prefer to view progress against high-level targets (e.g. for the country as a whole) or more sector-specific objectives (e.g. energy, transport)?
- Would you prefer an interactive dashboard with less detail or a static dashboard with more detail?

Thank and close – 5 mins

Thank you for attending the session today; your time and input is greatly appreciated. We will arrange a £60 payment to each of you as a thank you.

Regarding the next steps, today's discussion will be transcribed, and the key themes and statements will be extracted and compared to the findings from other participants. These will form the basis of our report to the Scottish Government

9.3.1. Route map samples



Figure 4 -The Scottish Government's route map to achieve a 20 per cent reduction in car kilometres by 2030 (Scottish Government, 2022)

Figure 4 displays the Scottish Governments route map to achieve a 20 per cent reduction in car kilometres by 2030. It displays a linear routemap beginning in 2021 and ending in the target year of 2030. Key milestones are represented, along with the associated actions that will be implemented to achieve these milestones. For example, the early 2022 milestone includes a commitment to provide free bus travel for those under 22 years of age.

Net zero carbon status by 2030

A route map for decarbonisation across the Welsh public sector



Achieving our goal 2026–2030

The journey to net zero: Mobility and transport



Citizen-centred models of service delivery reduces the need for travel by staff, visitors and service users.

Commuting and business travel takes place using Wales' integrated public transport system is ultra-low emission, including our rail services. This is assisted by our aim to reduce the carbon footprint of buses, taxis and private hire vehicles to zero by 2028.

Where practicably possible, all new heavy goods vehicles in the public fleet are ultra low emission by 2030.

Well on our way 2022–2026

Continued flexible working, use of local hubs and shared facilities, active travel and greater use of public transport significantly reduces car commutes and business travel in our working lives post-Covid pandemic.

All new cars and light goods vehicles in the public sector fleet are ultra low emission by 2025.

Moving up a gear 2021–2022

We will continue to work flexibly and make greater use of active travel.

We will understand the nature and use of our fleet, future patterns of usage, and a feasible technological pathway for an ultra-low emission transformation.

We will accelerate the roll-out of EV charging infrastructure and our staff will be offered the opportunity to test ultra-low emission vehicles.

We commit to fleet transformation plans and there is a considerable upscaling of ULEV uptake.

Figure 5: The net zero carbon status by 2030: A route map for decarbonisation across the Welsh public sector (Welsh Government 2021).

Figure 5 shows the transport page of the Welsh public sector route map for decarbonisation. It sets out the key principles that the Welsh public sector will undertake to achieve net zero in transport. A broad timescale for action is displayed on the left of the image, ranging from 'Moving up a gear 2021-2022' to 'Achieving our goal 2026-2030'. On the right of the image, short sentences describe the key objectives of the route map, such as a commitment to increase the utilisation of active travel in the public sector.

Introduction	Vision and Scope	The Routemap	Net zero carbon planning principles	The kind of change that is needed	How we will make the changes	Complex areas	Reporting	Challenges to achieving Net Zero Carbon	Appendix	◀ ⋮ ▶
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4.2 Churches and Cathedrals

This section includes churches and cathedrals as well as all church buildings and those within the cathedral precinct. Although there are no specific milestones for these associated buildings, opportunities to improve energy efficiency, reduce energy consumption and decarbonise heating should be considered for these associated buildings too.

Many of the milestones and actions in this section rely on ownership of the building, which is not the case in all dioceses (e.g. Europe, Sodor & Man and Salisbury (for the Channel Islands)) – in these cases the role of influence should be key.

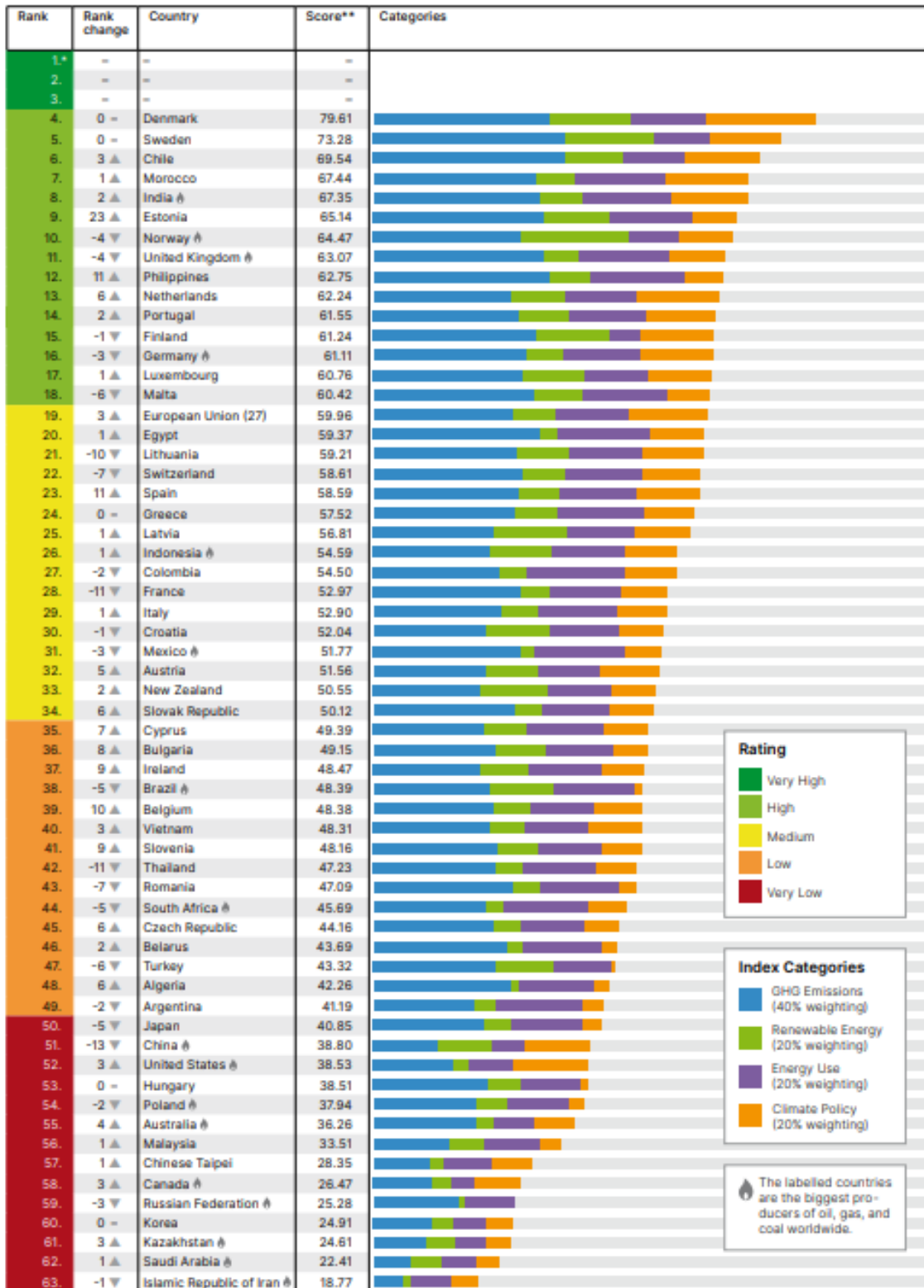
	Milestone	Date
4.2.1.	National: Faculty rule changes were agreed by General Synod in 2022, for a range of changes to the rules to support net zero carbon. Clear guidance to be issued on agreed changes, and wide communication about the implications.	2022
4.2.2.	National: Promote the Practical Path to Net Zero checklist, Heating Options Appraisal guidance, and church energy audit programme to all those responsible for church buildings.	2022+
4.2.3.	National: Parish Buying rolls out and promotes new net zero carbon product offering, including solar panels, heating solutions, 'green' gas tariff and EV car charging.	2022+
4.2.4.	Cathedrals and Churches: Over the duration of a Quinquennium and from 2022, all cathedrals and the top 20% of energy-consuming churches to develop net zero carbon action plans for completion by no later than 2027. These should include, as a minimum, low-carbon heating options to replace fossil-fuel heating at end-of-life, such as heat pumps or far infra-red heating panels. The Action Plan should also contain a Heating Resilience Plan which should consider how to manage heat should the existing system fail, to avoid needing a quick like-for-like fossil-fuel replacement.	2022-2027
4.2.5.	Dioceses: Every diocese has a 90%+ completion rate for the Energy Footprint Tool, and 100% of cathedrals complete the Energy Footprint Tool.	2023+
4.2.6.	Cathedrals: All cathedrals to have sustainability reviews completed. The review should make reference to the Practical Path to Net Zero and actively consider implementation of 'quick wins', how to decarbonise heat and how to reduce energy consumption.	2023
4.2.7.	National: Pilot an investment scheme for projects with high enough Return on Investment (see also Section 5.4).	2023
4.2.8.	National: Proposal to change APCM rules to require reporting of carbon footprint results to come to General Synod.	2023

Figure 6: The Church of England's Route map to Net Zero Carbon by 2030 (The Church of England, 2022).

Figure 6 shows the 'kind of change that is needed' section of the Church of England Routemap to Net Zero Carbon. It shows key milestones that need to be achieved and the target date for when they will be achieved. A brief introduction to the key milestones is included on the left of the image. A table of milestones is presented to the right, including a description of each objective alongside a target date for when each will be implemented.

9.3.2. Score card samples

Climate Change Performance Index 2023 – Rating table



* None of the countries achieved positions one to three. No country is doing enough to prevent dangerous climate change.

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Figure 7: The climate change performance index by Burck et al, (2023).

Figure 7 shows the ranking table from the Climate Change Performance Index, with nations given a score out of 100 based on a different range of index categories (such as GHG Emissions). Each country is given

(from left to right) an overall ranking (including a low to high rating) , score out of 100 and index category scores.

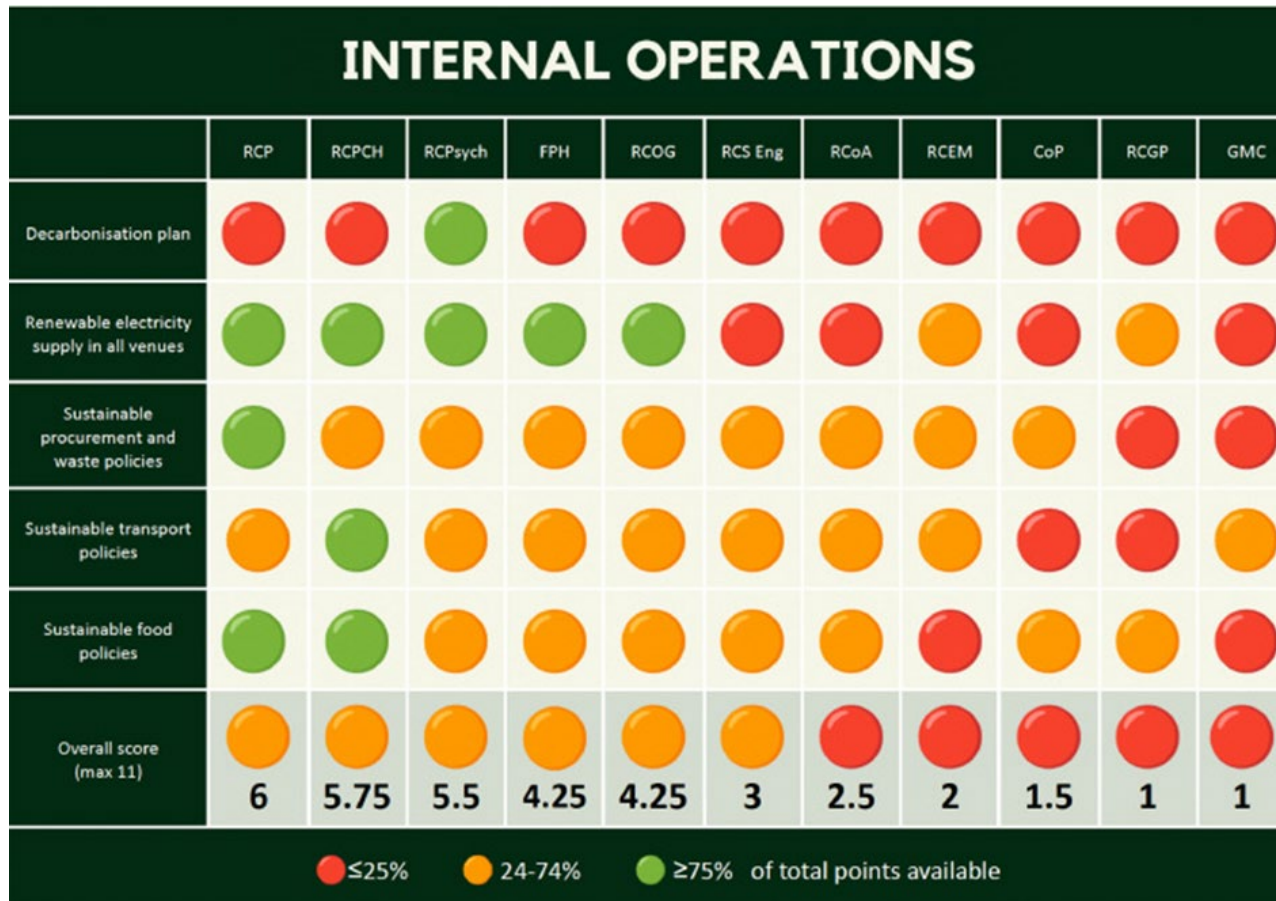


Figure 8 The score card for assessing organisational climate change policies by Cooke et al., (2022).

Figure 8 displays a score card that assesses different organisations on their climate change policies. Each organisation is given a score based on their policies regarding to elements such as their decarbonisation plan. The different assessment criteria are given on the left and the organisations assessed are given on the top. An overall score out of 11 is presented at the bottom, with the body of image showing green, amber and red indicators where each assessment criteria has been applied to each organisation.

Rank ^{↑↓}	Country ^{↑↓}	Aggregate Score ^{↑↓} (out of 130)	Grade ^{↑↓} (A+ to F)	Research and Advocacy ^{↑↓} (out of 10)	Monetary Policy ^{↑↓} (out of 50)	Financial Policy ^{↑↓} (out of 50)	Leading by Example ^{↑↓} (out of 20)
1	 France	70	B-	10	12	31	17
2	 Italy	61	C+	10	12	31	8
3	 Germany	60	C+	10	12	30	8
4	 European Union	58	C	10	12	28	8
5	 United Kingdom	56	C	10	10	27	9
6=	 Brazil	53	C	10	18	18	7
6=	 China	53	C	10	12	31	0
8	 Japan	35	D+	10	6	14	5
9	 Indonesia	30	D+	10	1	14	5
10	 Canada	28	D	10	2	14	2
11	 Mexico	23	D	10	4	4	5
12	 India	21	D	10	0	10	1
13	 South Korea	19	D-	10	1	6	2
14	 Russia	18	D-	8	0	8	2
15	 Australia	17	D-	10	0	4	3

Figure 9 The Green Central Banking Score card (Green Central Banking, 2022)

Figure 9 shows the ranking page of the Green Central Banking scorecard. Each country has been assessed on certain indicators, such as Monetary Policy, which are added together for an aggregate score out of 130. The image displays, from left to right, the country assessed, aggregate score, grade and the score for each of the assessment criteria (Research and Advocacy, Monetary Policy, Financial Policy, Leading by Example).

9.4 Appendix D: Stakeholder workshop discussion guide

The stakeholder workshop consisted of the following organisations agreed with the steering group to represent ‘trusted messengers’ regarding climate change. The workshop consisted of 9 organisations and lasted 1 ½ hours. The organisations that attended are listed below, along with the discussion guide.

- Creative Carbon Scotland
- Energy Saving Trust
- Highlands Climate Hub
- Improvement Service
- Royal Society for the Protection of Birds
- NatureScot
- North East Scotland Climate Action Network
- Scottish Communities Climate Action Network & Transition Network Hub for Scotland
- Sniffer

Step 1 - Introductions

Short round of introductions from both workshop organisers and attendees

Step 2 – Summary of research project aims

Short summary of the research aims

Step 3 - Summary of the findings from the public workshops

Short summary of the headline findings from the public workshops

Step 4 – Questions

Set of questions to prompt discussion on key points.

1. How do you currently communicate climate change goals and progress to the public?
 - What information would be helpful in your communication with the public?
 - How would you make that information land the most effectively and what methods would you utilise?
2. Do you need information/tools for influencing behaviour or reporting on progress (or both)?
 - How do you ensure that they motivate and encourage action?
3. What value would a climate change route map and/or scorecard have in your organisation?
 - Do you, or other organisations you are aware of, already have or use either?
 - Would you use one within your organisation to communicate on climate change?

- Do you think a route map/score card is the best method to fill current information gaps?
- d. Do you think there is a more effective way of communicating climate change progress/ambitions?
- Do you make a distinction between a route map/scorecard or see them as a complimentary method?
4. We've identified concerns around lack of positive communication, wider responsibility and wanting to know more about personal contributions.
- Do you think a route map/score card would address those issues?
 - If not, what would?
 - How could a route map or score card be used to communicate a positive or incentivising message?
 - Would there be a more effective way to provide feedback on personal contribution to public other than a route map / score card?
 - How do we make both tools as relevant as possible to individuals and their daily lives / actions?
 - What metrics / issues have you found to be of most interest to the public in your work?
5. Feasibility to inform Phase 4 of the study.
- What metrics do you think would be most effective in communicating climate change progress goals/progress?
 - Which bodies would provide the best independent oversight?

9.5 Appendix E - Potential indicators and their viability

As the workshops did not provide a clear preference regarding indicators that should be included in a potential scorecard, it was challenging to develop relevant indicators informed by stakeholder and public involvement. However, we provide a list of potential indicators based primarily on the literature review and proxies relating to responses during the workshops below. Indicators were also selected based on existing targets included in relevant UK and Scottish policies, such as Scotland's Climate Change Plan, as a means of providing reference measurements where progress can be assessed. Therefore, the indicators suggested are intended to act as performance indicators following description by Smeets et al., (1999).

It is important to note that the indicators provided are not a representation of the preferences from the Scottish public and only serve as points of consideration if the Scottish government were to go forward with the development of a scorecard.

The table below presents the summary of potential indicators, their data sources, and the selection bias.

Indicators	Data source	Justification
Air quality	The National Atmospheric Emissions Inventory (NAEI, 2023)	Literature review; Air Quality (Scotland) Amendment Regulation 2016; Proxy indicator based on reference to responses during the stakeholder workshop.
Greenhouse Gas (GHG) emissions	UK territorial greenhouse gas emissions national statistics (DBEIS and DESNZ, 2023); The National Atmospheric Emissions Inventory (NAEI, 2023).	Literature review; Scotland's Net Zero targets; Scotland's Climate Change Plan
Tree cover/woodland area	Forest Research Woodland Statistics (Forest Research, 2023).	Literature review; Scotland's Climate Change Plan Scottish Government's 2032 vision to expand woodland cover; Proxy indicator based on reference to responses during the stakeholder workshop.
Renewable energy generation	Regional Renewable Statistics (DESNZ, 2023).	Literature review; Scotland's Net Zero targets; Scotland's Climate Change Plan
Recycling rates	UK statistics on waste: Recycling rate from waste from households (Defra, 2023).	Proxy indicator based on reference to responses from public workshop; Scotland's Climate Change Plan

		Scotland's Zero waste Plan to recycle 70% of waste by 2025
Wildlife abundance	UK Biodiversity Indicators 2022 (JNCC, 2022)	Stakeholder workshop; Scotland's Draft Biodiversity Strategy to 2045; Literature review.

Table 1 Summary of potential indicators

If you require the report in an alternative format such as a Word document, please contact info@climatexchange.org.uk or 0131 651 4783.

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