Understanding climate risks to UK infrastructure

Evaluation of the third round of the Adaptation Reporting Power - July 2022

Climate Change Committee

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The Committee

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Executive Summary
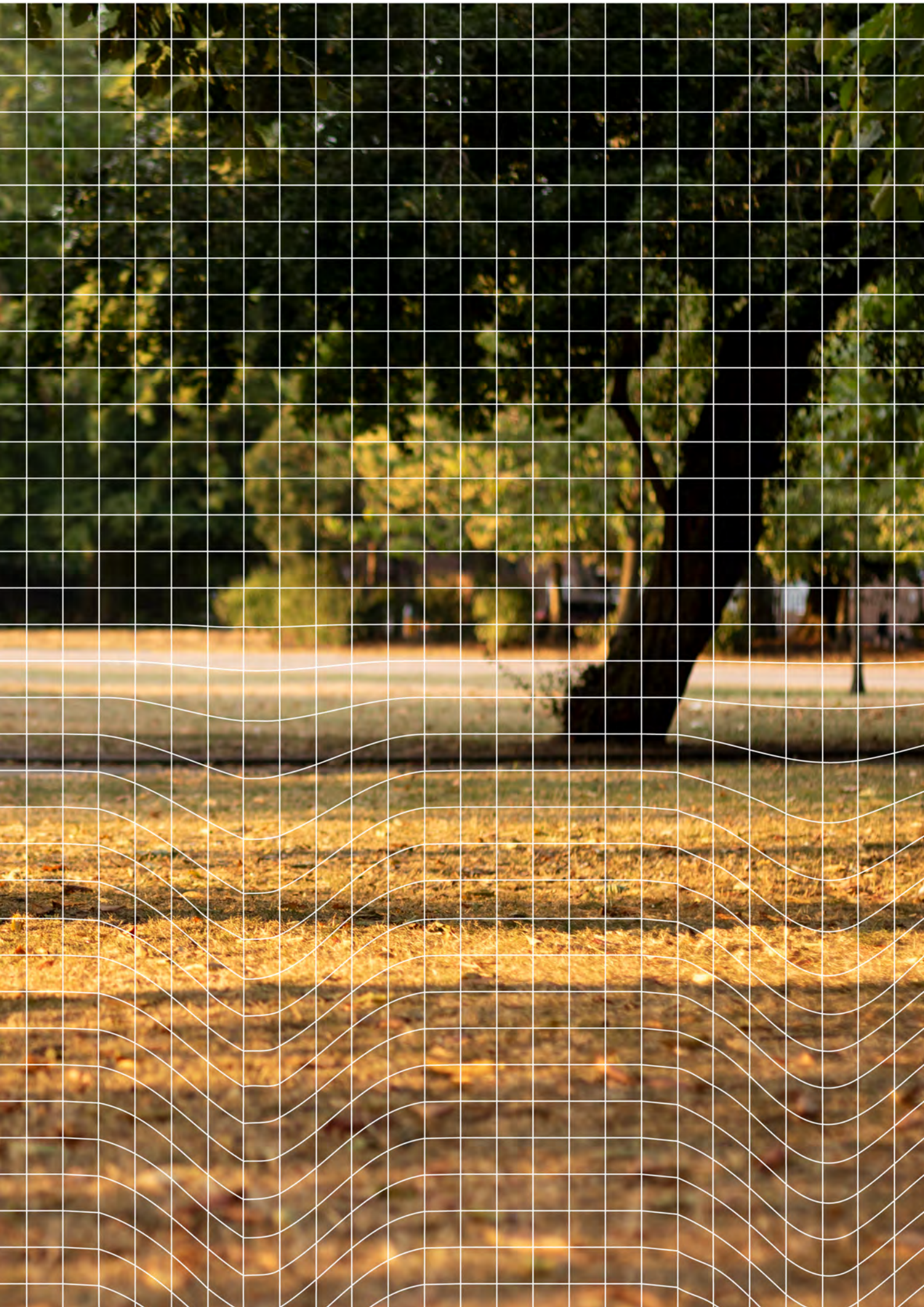
Changes in the UK's weather and climate pose risks to the key infrastructure systems that keep our society running. Flooding can close transport links, high temperatures can cause railway tracks to buckle, periods of drought can stress the provision of water to homes, businesses and food production, and storms can knock-out the power system – which is becoming ever more critical to our lives with many services and systems now dependent on it. Understanding and addressing the risks to infrastructure from future weather and climate are a critical part of a well-adapted UK.

The Adaptation Reporting Power (ARP) was established under the Climate Change Act to help understand these risks. It enables the Government to request reports from critical infrastructure providers on the current and predicted effects of climate change on their organisation; their proposals for adapting to climate change; and progress made towards their implementation. The ARP is a key element of the adaptation policy cycle and provides a unique source for understanding the UK's infrastructure-related climate risks.

This report provides an independent assessment of the third round of the ARP. The rest of this executive summary is structured in three sections:

a) Coverage in the third ARP round

b) Reporting quality

c) Priorities for the next ARP round

a) Coverage in the third ARP round

The third ARP round (ARP3) concluded in December 2021. Like the previous round five years earlier, participation from invited organisations was voluntary. Around 80% of the organisations invited to report in the third ARP round have submitted reports and feature in this assessment. This includes organisations in the electricity, water, gas, road, rail, airports, ports, lighthouses, and digital sectors.

The ARP3 returns come from a broader set of organisations than in the previous round with more financial regulators and heritage environment organisations added to the scope. This wider sectoral scope offers useful additional information regarding climate risks to infrastructure.

However, there are still important gaps in the coverage of the ARP (Figure 1).

- Around 20% of organisations invited to report did not submit reports.

- Around half of the organisations that were invited but did not report had reported in previous rounds, indicating that their engagement with the ARP process has gone down.

- These gaps in coverage exist in many of the sectors. The non-reporting organisations include one airport, six port authorities, one rail operator, five organisations in the water sector, two government regulators, one financial regulator, and two heritage organisations. Not all infrastructure operators are formally invited to report, although this does not preclude organisations making a submission. This means the climate resilience of some crucial UK infrastructure is not known (Figure 2).

Figure 1 Profile of ARP3 submissions
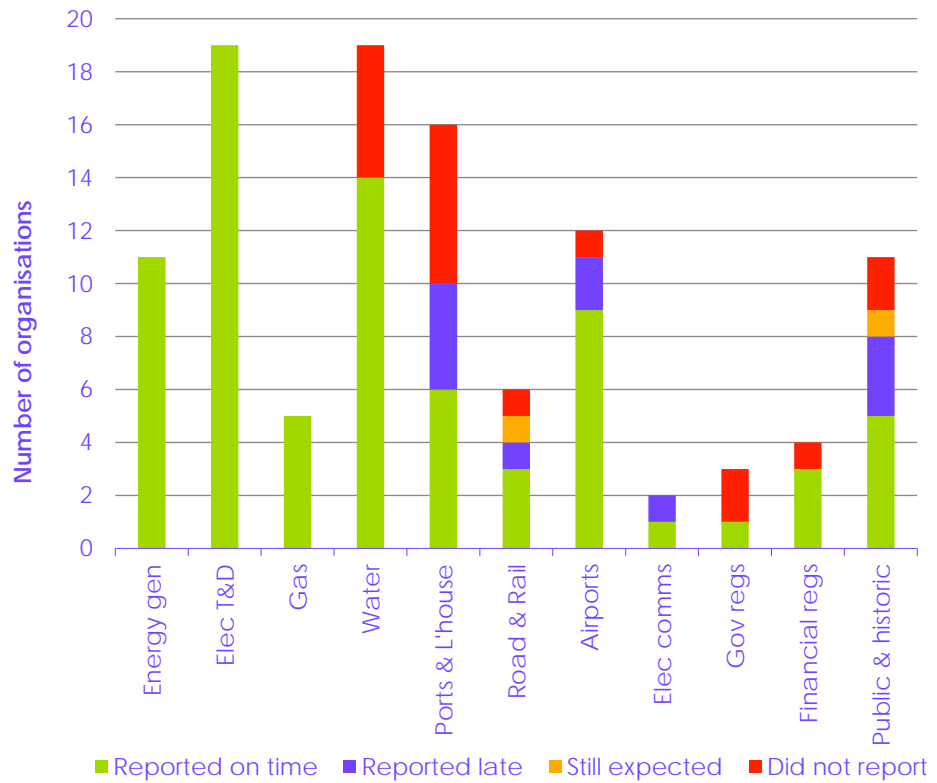
Legend: Reported on time, Reported late, Still expected, Did not report

Source: CCC analysis of Defra ARP3 submission data.

Notes: Shows the number of invited reporting organisations that are covered by a submitted report. The actual number of reports submitted is lower than the number of organisations, as there is some consolidation of reporting by subsidiary entities, or within sectors. For example, Energy UK submitted a sector summary report on behalf of 11 energy generators. Tech UK and the Electronic Communications Resilience and Response Group (ECRRG) each submitted one report for data centres and the telecommunications sector respectively.

Figure 2 Gaps in ARP3 coverage from invited non-reporting organisations

50km railway tunnel carrying around 1600 freight trains and one million passenger vehicles annually

Four harbour authorities handling 21% of trade

One airport used by more than 8.6 million passengers annually

Four water companies serving over 2.8 million people

Source: CCC analysis of Defra ARP3 submission data.
Notes: This map shows key infrastructure gaps in ARP3 submissions due to non-reporting (organisations invited to report that did not submit reports). Not all non-reporting organisations are shown, for example regulators that do not operate physical infrastructure and historic sites are excluded.

Closing these coverage gaps, which are particularly significant in the water, port and communication sectors, should be a priority. In the absence of mandatory reporting for ARP3, these coverage gaps mean there is only an incomplete picture of climate preparedness of key sectors. Furthermore, these gaps prevent other sectors, organisations and Government from gaining an understanding of the risks to their organisations and the UK population that result from infrastructure interdependencies. This hinders the role of ARP as a driver for more action and collaboration on adaptation.

Some key sectors are not currently asked to report under the ARP.

Some key organisations and sectors are not currently being invited to report under ARP. For example, canals and reservoirs (not covered by water company reports), wider aspects of the health and social care sector, local authorities and food supply chains. A more complete picture of the UK's preparedness would be provided if they were included in the list of invited organisations. Some sectors have participated in this ARP round via a single sectoral report by trade bodies (e.g., digital and energy generation sectors). These sectoral reports have provided useful insights on the overall approach to climate risk management in the sector but have limited information on the scale of climate risks to specific infrastructure systems and the progress in and plans for adaptation by individual companies.

b) Reporting quality

Many sectors are producing high quality adaptation reports that provide useful information on climate risks and action to manage risks.

Defra's objectives for the third ARP round included delivering a proportionate, risk-based and streamlined process to minimise burdens and duplication of effort for reporting organisations and build on previous rounds. Our assessment finds that these objectives have largely been achieved, with evidence of improved climate preparedness compared to the previous ARP round in those organisations that have reported. There is good evidence of senior ownership of ARP reporting in organisations in all sectors and most organisations felt that ARP has had at least had some impact in driving action on adaptation.

In all sectors there are areas for further improvement in the quality of ARP reports.

Many sectors are producing high quality adaptation reports (across most organisations) that provide useful information on climate risks and overall report quality has improved since ARP2. However, significant areas for further improvement remain, with no sector scoring in the top category across all assessment criteria (Figure 3):

- **Multiple climate scenarios:** Risk assessment needs to consider multiple possible climate futures to enable robust adaptation decisions. Across reporting organisations, most risk assessments are based on the latest UK Climate Projections (UKCP18) and consider a range of future warming scenarios, broadly consistent with 2°C and 4°C global warming (above pre-industrial levels) scenarios.

- **Actions linked to risks:** Adaptation actions need to have a clear link to the climate risks they are seeking to address. There is good evidence of organisations linking adaptation actions to relevant climate risks, with almost all sectors scoring in the top category for this. However, a significant minority of organisations are still not mapping actions to risks within their detailed risk assessments.

- **Actions have timescales:** Clearly stated timescales support the delivery of adaptation actions. Many organisations have assigned timescales to actions in a number of sectors. However, there still are organisations across all sectors that have not provided timescales for completing actions, meaning many sectors scored low in this area.

- **Appropriate monitoring and evaluation:** Some sectors scored highly on monitoring and evaluation, whilst others did not describe an appropriate approach to monitoring and evaluation. There was very limited information on the effectiveness of recent and planned adaptation actions for organisations in all sectors. This information is crucial to understand how much climate risk has been reduced by adaptation action. Case studies provided some insights, but more information on adaptation effectiveness is needed across the board.

Where reports have been produced by sector organisations, such as for the digital and energy generation sectors, the lack of a detailed risk assessment or programme of adaptation measures means there is not enough information on the preparedness of these sectors for climate change.

Many organisations are struggling to fully assess risks from infrastructure interdependencies.

Connectedness of infrastructure systems means that climate and weather-related impacts in one system can cause large and cascading failures in connected systems.

Nearly all organisations have struggled to take account, adequately, of risks arising from infrastructure interdependencies in their ARP reports. This is a key gap in current national adaptation planning, especially as it is one of the highest priority risks identified in the UK's third Climate Change Risk Assessment.

Figure 3 Adaptation plan scores – all sectors
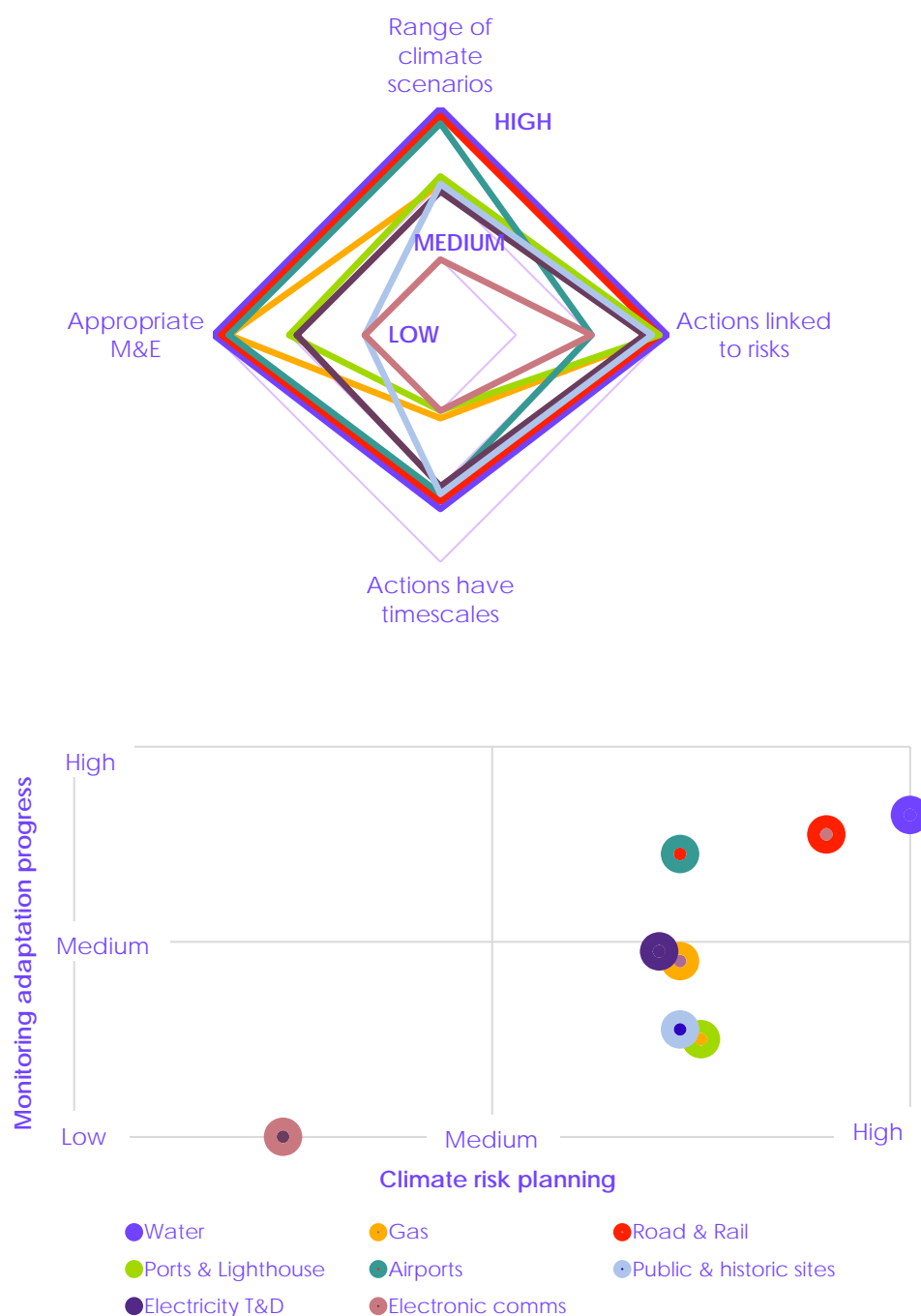
Source: CCC analysis of Defra ARP3 submission data.
Notes: Upper chart - Shows the summary scores given to each sector against the four assessment criteria for evidence of climate preparedness. Lower chart - Shows the summary scores given to each sector for climate risk planning (average of scores for range of climate scenarios considered and actions linked to risks) and monitoring adaptation progress (average of scores for actions have timescales and appropriate monitoring and evaluation in place). The full results of the assessment are set out in Chapter 2, Section 3. The assessment criteria are explained in Chapter 1. A small number of reports could not be assessed against the criteria.

We have also identified several factors that are currently working against the achievement of the stated objectives for the ARP:

- **Misalignment with the adaptation policy cycle.** Less than 5% of all ARP3 reports were available in time to inform two key statutory assessments in 2021 – the third Climate Change Risk Assessment, and the Committee's 2021 Progress Report to Parliament on adaptation (Figure 4). This misalignment is preventing critical information only available through the ARP from being incorporated into nationwide assessments of climate risk.

- **Interaction with other obligations.** Infrastructure regulatory cycles are not aligned to the ARP and there is the risk of duplication between the ARP and other environmental reporting initiatives (such as the Taskforce on Climate-related Financial Disclosures – TCFD). As these initiatives grow in scale (and infrastructure regulation requires more climate resilience-related information) this could create risks of duplication and a disproportionate burden to reporting organisations.

- **Suitability of climate data for infrastructure risk analysis.** Many organisations reported that they encountered significant challenges in making use of the latest UK climate projections (UKCP18) to undertake their risk assessment. The information provided often does not meet the needs of infrastructure operators and this acts to limit the effectiveness and simplicity of undertaking a risk assessment.

These are all areas of opportunity for improvement in the next round of the ARP.

Figure 4 Timing of ARP3 report submissions
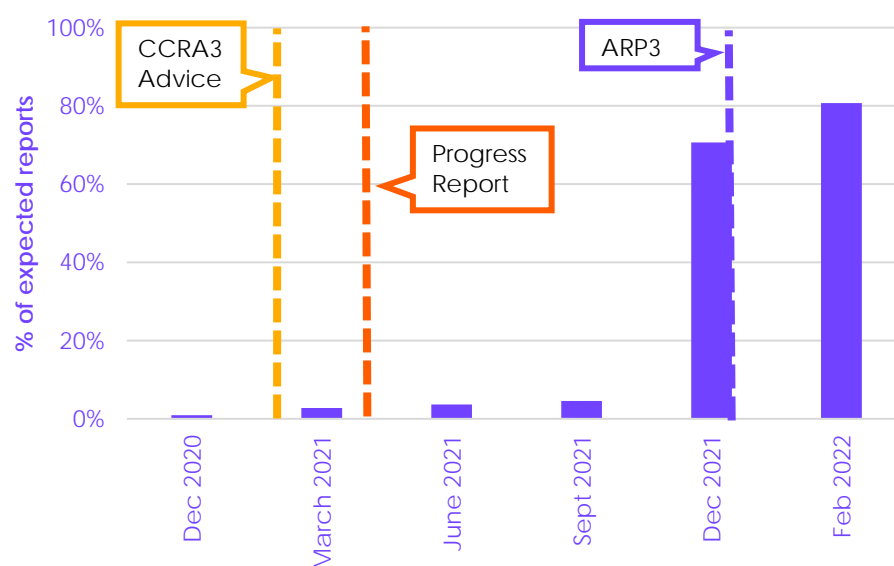
Source: Source: CCC analysis of Defra ARP submissions data.
Notes: Yellow dashed line denotes the latest date by which ARP3 submissions could have been incorporated into the CCRA3 Technical Report. Orange dashed line denotes the latest date by which ARP3 submissions could have been incorporated into the CCC's 2021 Progress Report to Parliament. Purple dashed line denotes the ARP3 deadline.

c) Priorities for the next ARP round

For the next ARP round (ARP4) the Committee recommends a set of changes that would further strengthen the ARP process. Our highest priority recommendations are:

- **ARP4 should be designed to inform the next Climate Change Risk Assessment (CCRA) and National Adaptation Programme (NAP), including re-aligning timeframes in the statutory framework.** The current timing of the ARP, CCRA and NAP cycles are not well aligned, significantly limiting the utility of the ARP in informing the overall level of climate risk. This also occurred with the second ARP round (ARP2). An explicit principle of the next ARP should be to adequately inform the next statutory adaptation cycle.

ARP4 should be a shorter reporting cycle, allowing sufficient time to inform CCRA4.

  As part of this, the Committee recommends that the next ARP round requires submissions by June 2024 – allowing sufficient time to feed into the development of CCRA4. As this would create a much shorter cycle (two and a half years) than previous rounds, the requirements for ARP4 should be streamlined to focus primarily on progress in implementation and the effectiveness of adaptation plans. Subsequent ARP rounds should be on a five-yearly cycle to feed into respective CCRAs.

- **The ARP4 cycle should be mandatory for all invited organisations and the scope should be widened.** Participation in ARP3 was voluntary, with a sizeable number of invited organisations (20%) not submitting a report. This has created gaps in risk coverage for many of the sectors meaning we do not have a complete picture of climate preparedness, and some organisations are unable to assess their risks from interdependencies. The Committee recommends a mandatory requirement to report in the next round to improve participation and drive more action on adaptation.

A mandatory requirement to report in the next round would improve participation and drive more action on adaptation.

  Mandatory reporting was also supported by many of the reporting organisations represented in stakeholder workshops. Extending the scope of ARP to include canals and reservoirs (not covered by water company reports), wider aspects of the health and social care sector, relevant local authority functions and food supply chains would increase the value of ARP in providing a picture of the current resilience of the UK.

- **Government should support reporting organisations to understand climate risks from infrastructure interdependencies.** Sources of interdependency risk (risks that arise from an organisation's reliance on another organisation or sector) have been identified in most ARP3 reports, however these are not being consistently incorporated into risk assessments. Our evaluation identified a number of barriers to identifying and managing interdependencies across reporting organisations, including a lack of understanding of climate impacts and the complexity of interactions between sectors, a lack of or reluctance to share data, and misalignment of funding cycles and research priorities. Government will need to be active in supporting reporting organisations to understand better and to manage the risks. A mandatory requirement to report would also help limit the gaps in information which can act as a barrier to effective planning for interdependencies.

This support should include producing a template or guidance for assessing interdependency risks; further building the evidence base on interdependency risk; supporting sector forums to enable collaboration; working with regulators to support cross-sector working; and leading a stress testing exercise on core infrastructure systems to identify key weaknesses and points of failure under plausible extreme events from future climate conditions.

- **In future reports, there needs to be more consistent linking of adaptation actions to risks, with clear ownership and timescales, and more information on the effectiveness of actions in reducing risk.** An effective adaptation plan will identify adaptation actions for specific climate risks and assign timescales and ownership to actions to signal commitment to their delivery. No sector scored highly in assigning timescales to actions, and while linking adaptation actions to risks has improved since ARP2, there is still not consistent linking of actions to risks in every sector. This should be a focus to improve the quality of adaptation planning in ARP4.

- **More detailed risk assessments and adaptation plans are needed from key sectors.** The consolidation into summary reports for some sectors in this ARP cycle has limited our understanding of the scale of climate risks and progress in adaptation by energy generators, data centres and telecommunications companies. All sectors depend on energy and digital infrastructure, so better information on the climate resilience of these sectors is vital, especially as our energy system is transformed to deliver Net Zero. We recommend the approach to sectoral consolidation is reviewed ahead of the next round.

Table 1 Recommendations for ARP4	
Recommendation	**Owner (s)**
Making ARP work for government	
A principle for future rounds of ARP should be that reports usefully inform CCRA and NAP development. To that end: • The deadline of ARP4 should be June 2024, to ensure the reports can inform CCRA4 and to align ARP better with the statutory climate risk framework under the Climate Change Act. Subsequent ARP rounds should follow a five-year cycle. • Requirements for ARP4 should be streamlined to focus primarily on reporting progress in implementation and the effectiveness of adaptation plans. • Consider commissioning an update of the CCRA3 infrastructure chapter to reflect the new information contained within the ARP assessment. • Consider aligning the reporting requirements with NAP3, requiring organisations to report on activities which will support delivery of NAP objectives.	Defra
The next round of ARP must be mandatory to improve participation and drive action on adaptation.	Defra
The scope of ARP4 should be extended to include relevant local authority functions in England, more health and social care organisations, canals, reservoirs and food supply chains. Defra should also ensure that all organisations who meet the criteria for participation are being invited to report.	Defra
Review the approach to sectoral consolidation of reports, to ensure reports provide detailed and consistent information on the preparedness of all sectors. In particular, more detailed information is needed for the digital and telecommunications sector and energy generators.	Defra

Consider whether reports by regulators should follow a different format than infrastructure operators, to recognise their differing roles and responsibilities.	Defra
Engage with the non-reporters from round three, particularly those who have participated in previous rounds, to understand why they have not participated.	Defra
Making ARP work for reporting organisations	
Improve reporting on interdependencies, by: • Producing a template or guidance for considering interdependencies. • Enabling collaboration and data sharing. • Exploring coordinated stress testing of core infrastructure. • Working with regulators to support cross-sector working to manage interdependencies. • Building the evidence base through publicly funded research.	Defra, reporting organisations
Provide more detailed guidance and support for reporting organisations, accessible online, to ensure quality and consistency of reporting.	Defra
Undertake greater engagement with reporting organisations during the reporting cycle.	Defra
Provide feedback to reporting organisations for future rounds.	Defra
Commission further products to improve accessibility of UKCP18 climate projection data to support climate risk assessments by reporting organisations. For example, a weather generator or building design files with 'typical meteorological years'.	Defra
Improving climate change preparedness of reporting organisations	
In future rounds of ARP: • Require all reporting organisations to link adaptation actions to risks, with clear ownership and timescales, and to provide more information on the effectiveness of adaptation actions in reducing risk within their ARP reports. • Standardise the format of progress reporting on adaptation actions to ensure these are consistently being reported and require all organisations to include evidence of the effectiveness of adaptation actions in reducing risk. • Require all organisations to present climate change risk assessments that consider a range of plausible future warming scenarios. • Require all organisations to assess risks over timeframes that are relevant for the organisations' infrastructure and operations, and as a minimum to 2050, for all reports. • Require all organisations to describe their governance approach and monitoring and evaluation framework.	Defra, reporting organisations
Building on ongoing work to develop indicators for NAP3, provide a set of metrics for reporting organisations to consider measuring and monitoring risks against.	Defra

The rest of this report is set out in three chapters:

1. The Adaptation Reporting Power

2. Evaluation of the third Adaptation Reporting Power round

3. Recommendations for the fourth Adaptation Reporting Power cycle

Chapter 1

The Adaptation Reporting Power

Summary and key messages

This chapter describes the Adaptation Report Power (ARP) and introduces the Climate Change Committee's (CCC) assessment of the reports submitted under the third round of the ARP.

The key messages of this chapter are:

- **The ARP is a key element of the adaptation policy cycle under the Climate Change Act**. The reports submitted every five years under the ARP provide important information on the climate resilience of key infrastructure and services that is not accessible through other sources. The ARP reports are vital for understanding the extent of climate risks facing the UK, and the actions being taken to manage those risks.

- **The scope of the ARP has been widened since the previous round but important gaps remain.** A broader range of organisations have produced ARP returns in the third round; however, the ARP has not been made mandatory and almost 20% of the invited organisations have not submitted a report.

- **We have evaluated the third ARP round against six themes.** These themes span the extent to which useful information regarding climate risks and adaptation actions are available to reporting organisations, through to how well the third round is delivering on the statutory objectives of the ARP. We assessed these themes through a combination of reviewing the submitted reports and workshops with participating organisations.

This chapter is set out in two sections:

1. Introduction to the Adaptation Reporting Power

2. Evaluation approach

Chapter 1: The Adaptation Reporting Power

1. Introduction to the Adaptation Reporting Power

This section introduces the Adaptation Reporting Power (ARP) and the third round of reporting conducted under the Climate Change Act. It is structured in two sub-sections:

a) The role of the ARP under the Climate Change Act and previous reporting rounds

b) The third reporting round of ARP

a) The role of the ARP under the Climate Change Act and previous reporting rounds

The ARP was created under the Climate Change Act in 2008 to enable Government to require key infrastructure operators to report on climate risks.

The ARP was created under the Climate Change Act (2008) to help understand and improve the resilience of key infrastructure systems to climate change. It enables Government to ask certain organisations to produce reports on: [*]

- The current and future predicted effects of climate change on their organisation.

- Their actions taken and their future proposals for adapting to climate change and progress made towards their implementation.

This power can be applied to organisations defined as 'reporting authorities' under the Climate Change Act - defined as 'persons or bodies with a function of a public nature' and 'statutory undertakers.[†] The ARP reports from these organisations are intended to provide key information on infrastructure resilience to be used by other elements of the regular five-yearly adaptation policy cycle (Figure 1.1), including the Climate Change Risk Assessment (CCRA) and the National Adaptation Programme (NAP).

[*] Under section 62(1), the Secretary of State may direct a reporting authority to prepare a report containing any of the following— (a) an assessment of the current and predicted impact of climate change in relation to the authority's functions; (b) a statement of the authority's proposals and policies for adapting to climate change in the exercise of its functions and the time-scales for introducing those proposals and policies; (c) an assessment of the progress made by the authority towards implementing the proposals and policies set out in its previous reports.

[†] This includes (but is not limited to), organisations on the Government's list of 'Agencies and other public bodies' (https://www.gov.uk/government/organisations), organisations established by government authority, organisations whose process or functions are set out in regulations and private companies carrying out functions of a public nature. It excludes Ministers of the Crown, government departments, either House of Parliament, devolved authorities and devolved legislatures.

Figure 1.1 The Adaptation Policy Cycle
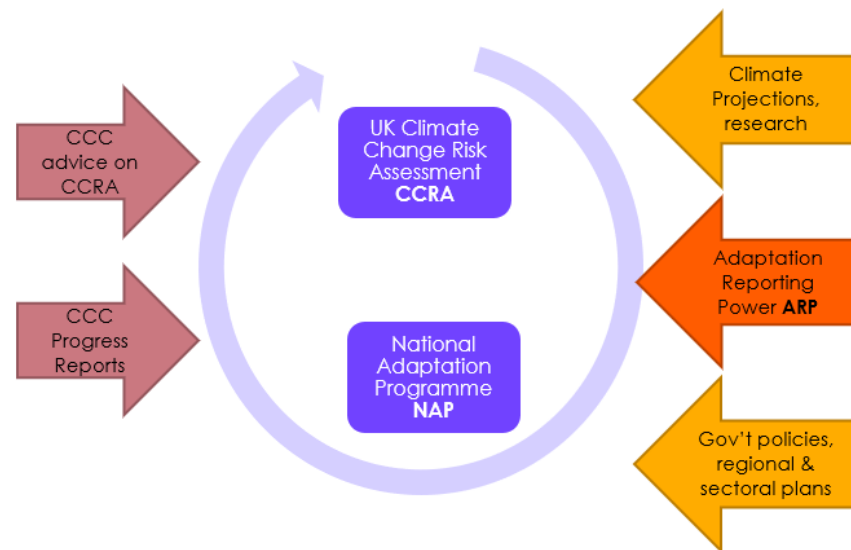
Source: Climate Change Act 2008.

There have been two prior rounds of the ARP:

- The first round, completed in 2012, was mandatory for the 91 organisations directed to report, with an additional 13 invited to report on a voluntary basis.

- The second round, completed in 2016, was voluntary for all and invited a further 11 organisations to report in addition to those invited in the first round.

The CCC was commissioned by Defra to produce an assessment of the second round of ARP returns (ARP2) – which was published in 2017. This previous assessment acknowledged the importance of the ARP and found evidence of progress in assessing risks and in taking appropriate adaptation action since round one, though progress varied across organisations and sectors. The report provided a set of recommendations for the structure of the next (third) round of the ARP. Table 1.1 summarises the extent to which these recommendations have been incorporated into the design of ARP3.

Table 1.1
Status of CCC recommendations from ARP2

Recommendation (summary)		Status
Timing	Organisations should report by December 2019, to feed into CCRA3 and the CCC's 2021 report to Parliament. Other considerations, such as statutory business planning and reporting milestones, should also be taken into account.	Not addressed
Mandatory reporting	ARP3 should be mandatory, to ensure all relevant organisations take part, and senior executives within all relevant organisations are routinely engaged in the process of managing climate change risks.	Not addressed
Updated guidance	Defra should review and improve its guidance for ARP3 to elicit more uniform, meaningful and quantified results and conclusions, including in relation to risks from interdependencies.	Mostly addressed Sector templates developed, required reporting on interdependencies. Reporting organisations have identified a need for more guidance.
Widened scope	Invite other organisations within the telecommunications sector (such as internet and mobile network operators), financial services sector (e.g., Bank of England) and local authorities. Also investigate health and social care sector.	Partly addressed Financial sector coverage broadened.

b) The third reporting round of ARP

The third ARP reporting round closed in December 2021.

The current reporting round was the third round of the ARP (ARP3). This started with Defra's consultation on its approach (in 2018) and concluded with a reporting deadline of 31st December 2021.* Defra's approach for the third round of ARP consisted of several key elements:

- **Prioritisation**. A priority for the third ARP round has been to invite organisations that are vulnerable to the projected impacts of climate change according to the UK Climate Change Risk Assessment (CCRA).

- **Proportionate reporting.** The approach for this round of ARP would be proportionate, risk-based and streamlined to minimise burdens or duplication on the reporting organisations. This round would build on previous rounds of reporting to improve report quality and participation. Umbrella organisations, such as trade bodies have been invited, where appropriate, to report on behalf of members. Risks of duplication are minimised by identifying organisations which are not already subject to other reporting requirements or are not already covered by an existing voluntary agreement which covers management of climate risks.

- **Multiple objectives.** The primary objective of the ARP third reporting round is to support the ongoing integration of climate change risk management into the work of reporting organisations. A secondary object is for the reports to contribute to government understanding of the level of

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*   The consultation asked for views on the voluntary and mandatory nature of reporting, the principles and objectives for future reporting and the scope of the reporting exercise.

preparedness of key sectors to climate change, at a sectoral and national level, including feeding into the CCC's reports to Parliament.

The third ARP round maintained the voluntary approach from the previous round.

- **Voluntary approach.** The third ARP round would be voluntary for all organisations invited to submit reports. Defra provided a template for reporting, guiding organisations to describe their approach to governance, management and strategy, present their risk assessment and programme of adaptation actions, and share case studies.

A wider range of organisations were invited to report in the ARP3 round.

The range of organisations invited to report for the third cycle of ARP has been somewhat widened since the previous ARP (Table 1.2), but reporting has not been made mandatory and the deadline was too late to provide useful information for the Committee's advice on the UK's third CCRA (published in June 2021).

Table 1.2
Changes in scope ARP2 to ARP3

Sector	ARP3 Scope (Geographical coverage)	Changes in scope compared to ARP2
Transport	Strategic road & rail infrastructure (GB) Strategic airports (GB) Commercial ports (England) Lighthouse authorities (GB)	Ports updated to reflect those of national importance in relation to imports
Water	Companies serving over 50,000 billed premises (England)	No change
Energy sector	Electricity transmission and distribution (GB) Gas transportation (GB; serving over 50 000 customers) Energy generators (GB; generating over 10TWh)	Energy generators moved from individual reports by operators to a single sectoral report from Energy UK
Public bodies	With functions covering environment, marine, fisheries and health	No change
Data centres & telecommunications	Tech UK on behalf of data centres Electronic Communications Resilience and Response Group (DCMS) on behalf of member telecommunications companies	Added the Electronic Communications Resilience and Response Group (DCMS)
Regulators	For water, energy, communications and finance	Added financial regulators
Heritage	Heritage environment organisations	Added National Trust

Notes: Not all the newly invited organisations have participated.

109 organisations were invited by Defra to participate in ARP3 (Figure 1.2). Around two thirds (77) of the organisations reported by the deadline. 11 organisations reported late but have still been included in the evaluation.[*]

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[*] The actual number of reports submitted is lower, due to consolidation into sectoral reports and subsidiary companies reporting together.

Chapter 1: The Adaptation Reporting Power

Two organisations have confirmed they still plan to submit an ARP3 report, but these have not been available on time for inclusion in this assessment.

Around 80% of invited organisation have submitted or are still expected to submit a report (Figure 1.2). However, there are gaps in many of the sectors – airports, ports, water, historic sites and Government regulators. This means we do not have a complete picture of preparedness for any of these sectors. 18 invited organisations have not reported – this represents almost 20% of invited organisations. The non-reporting organisations include one airport, six port authorities one rail operator, five organisations in the water sector, two government regulators, one financial regulator, and two heritage organisations. A full list of all invited organisations and their submission status is provided in Appendix A. Participation and sectoral coverage is discussed further in Chapter 2, section 5 'Evolution of Reporting'.

Figure 1.2 Profile of ARP3 submissions
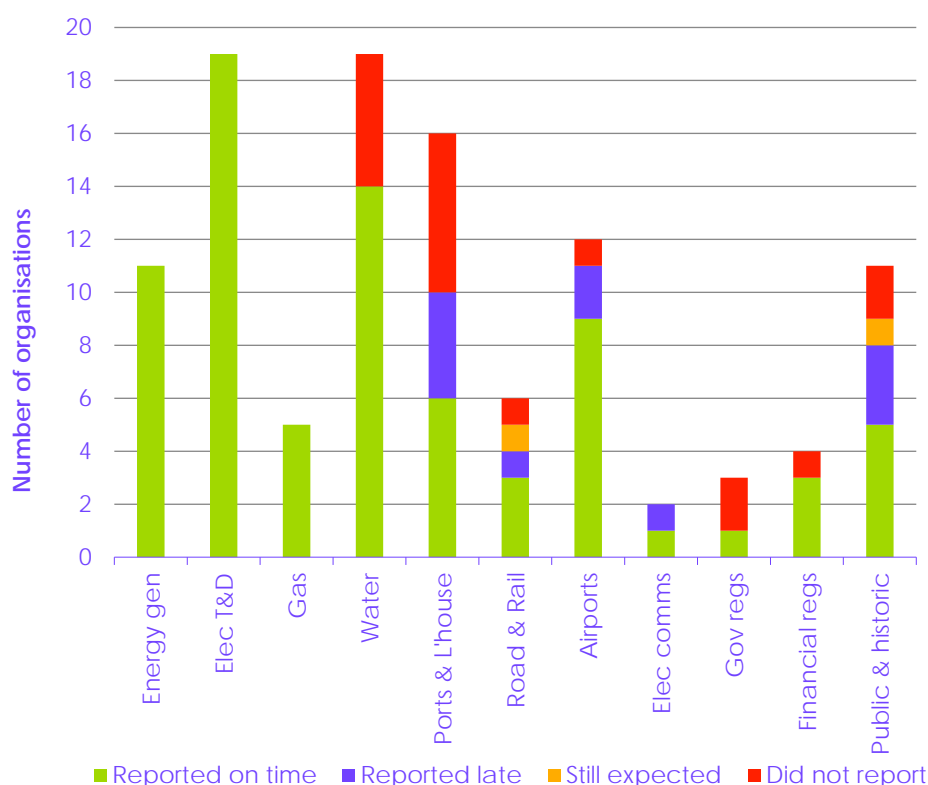
Source: CCC analysis of Defra ARP3 submission data.
Notes: Shows the number of invited reporting organisations that are covered by a submitted report. The actual number of reports submitted is lower than the number of organisations, as there is some consolidation of reporting by subsidiary entities, or within sectors. For example, Energy UK submitted a sector summary report on behalf of 11 energy generators. Tech UK and the Electronic Communications Resilience and Response Group (ECRRG) each submitted one report for data centres and the telecommunications sector respectively.

2. Evaluation approach

We have evaluated ARP3 across six themes.

The CCC's commission from Defra requested evaluation of the ARP3 reports across six themes:

- **Maximising the effectiveness of the statutory framework:** How well has the third round of ARP reporting supported effective delivery of the statutory framework for climate adaptation?

- **Integrating climate risk management:** How well has this round supported the ongoing integration of climate risk management into infrastructure delivery?

- **Evidence of climate change preparedness:** In what ways and to what extent has this round of reporting improved our understanding of the level of preparedness of key sectors for climate change?

- **Principles of ARP:** How well has this round of reporting delivered on the principles set out for it in the round three strategy?

- **Evolution of reporting:** What changes can be observed in organisations' approaches to reporting across the three rounds to date, and the coverage achieved?

- **Other policy insights:** What (if any) insights can we gather from ARP reports in relation to the Government's wider environmental agenda.

We use report reviews, stakeholder workshops, and a review of the regulatory landscape to make our assessment.

Across all of these themes we draw on three different lines of evidence which we integrate to provide our overall assessment: report reviews, stakeholder workshops and a review of the regulatory landscape.

a) Report reviews

We undertook in-depth reviews of all available ARP reports against a detailed assessment framework. The framework elaborated on the six themes, defining a set of criteria against which to evaluate each report. Many of these criteria align with the CCC's ten principles for good adaptation, set out in the CCRA3 Advice Report to Government.[1] The key features of a high-quality adaptation report are summarised in Box 1.1.

To assess the ARP reports we looked for features related to key aspects of good climate preparedness.

In assessing the evidence of preparedness of the sectors for climate change (theme three) we have collated the performance of each sector for four key elements of the assessment: the range of climate scenarios considered, the extent to which adaptation actions are linked to risks, the extent to which actions have timescales and whether appropriate monitoring & evaluation (M&E) is in place. Table 1.3 describes the assessment criteria for scoring the sector overall, which are broadly consistent with the CCC's assessment criteria for national adaptation planning in our progress reports to Parliament.[*2]

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[*] The CCC reports to Parliament every two years on the progress made in implementing national adaptation. The most recent Progress Report was produced in 2021.

Chapter 1: The Adaptation Reporting Power

Table 1.3 Assessment criteria for adaptation plans in ARP3			
Criteria	**High**	**Medium**	**Low**
Range of climate scenarios considered	All or almost all reports for the sector have considered a range of future scenarios, largely consistent with 2°C and 4°C global warming levels (by 2100, above preindustrial levels) in the 2050s and 2080s.	Around half have considered a range of suitable future scenarios.	Consideration of a range of suitable future scenarios is limited across the sector, or not described.
Actions linked to risks	All or almost all have a comprehensive programme of actions linked to risks.	Around half have actions linked to risks or have considered actions in the context of risk areas.	Most of the sector has not linked actions to risks.
Actions have timescales	All or almost all have assigned timescales to each action.	Around half have assigned timescales to actions, or timescales have only been assigned to some actions.	Most of the sector has not assigned timescales to actions.
Appropriate monitoring & evaluation (M&E)	All or almost all have appropriate M&E in place.	Around half have appropriate M&E in place, or M&E is not well described in some reports.	Most of the sector has not presented an appropriate M&E approach.

b) Stakeholder workshops

We undertook several workshops with reporting organisations focused on insights less accessible from the reports.

All organisations invited to report in ARP3 were invited to attend stakeholder workshops. 39 participants representing 35 organisations joined these workshops in total (a full list of attendee organisations is provided in Appendix B). The workshops focused on the aspects more difficult to assess from the reports, including the extent to which ARP is driving action on adaptation, the key challenges organisations are facing and what features could improve future ARP rounds.

c) Regulatory landscape review

We have reviewed the broader regulatory landscape related to the ARP.

A principle of this ARP round is to minimise reporting burden and duplication with other regimes. To evaluate the effectiveness of ARP3, we have considered the broader regulatory landscapes of the reporting sectors and other reporting obligations such as the Task Force on Climate-Related Financial Disclosures (TCFD). We have also reviewed similar reporting regimes such as adaptation reporting by Scottish public bodies under the Climate Change (Scotland) Act 2009.

Box 1.1
Features of a high-quality adaptation report

In assessing the quality of risk assessments and adaptation programmes presented in the reports, we have considered a wide range of factors. Reports followed a range of approaches and formats, however there were consistent features of the highest quality reports.

A high-quality risk assessment will:

- Use the UKCP18 climate projections with explanation of scenarios and assumptions

- Consider a range of suitable future scenarios considered, largely consistent with 2°C and 4°C warming (by 2100, above preindustrial levels) in 2050s and 2080s

- Acknowledge geographical and spatial considerations

- Consider extreme scenarios e.g., low likelihood high impact events

- Identify risks from interdependencies and quantify them in the risk assessment

- Identify opportunities

- Have a clearly defined risk assessment methodology, which reflects likelihood and consequence of events

- Incorporate metrics/performance indicators

A high-quality adaptation action plan will:

- Present a comprehensive programme of actions linked to the risks

- State the benefits of the action in terms of risk reduction and other co-benefits

- Have timescales and ownership for each action

- Include actions to develop the evidence base and build organisational awareness

- Include low-regret and business-as-usual actions and include factoring climate change into long-term decisions

- Have appropriate monitoring & evaluation in place

- Provide an update on previously reported actions and include case studies to demonstrate the effectiveness of adaptation actions already taken

- Identify barriers to effective action

Beyond the risk assessment and action plan, the highest quality reports also showed evidence of:

- Senior ownership of climate risk management and reporting

- Climate risk being integrated into organisational decision making and integration of adaptation into broader strategies, behaviour and organisational culture

- Organisational capability and capacity building for climate risk and adaptation

- Engagement with other organisations and sectors e.g., knowledge sharing, development of common approaches, identifying and managing interdependencies.
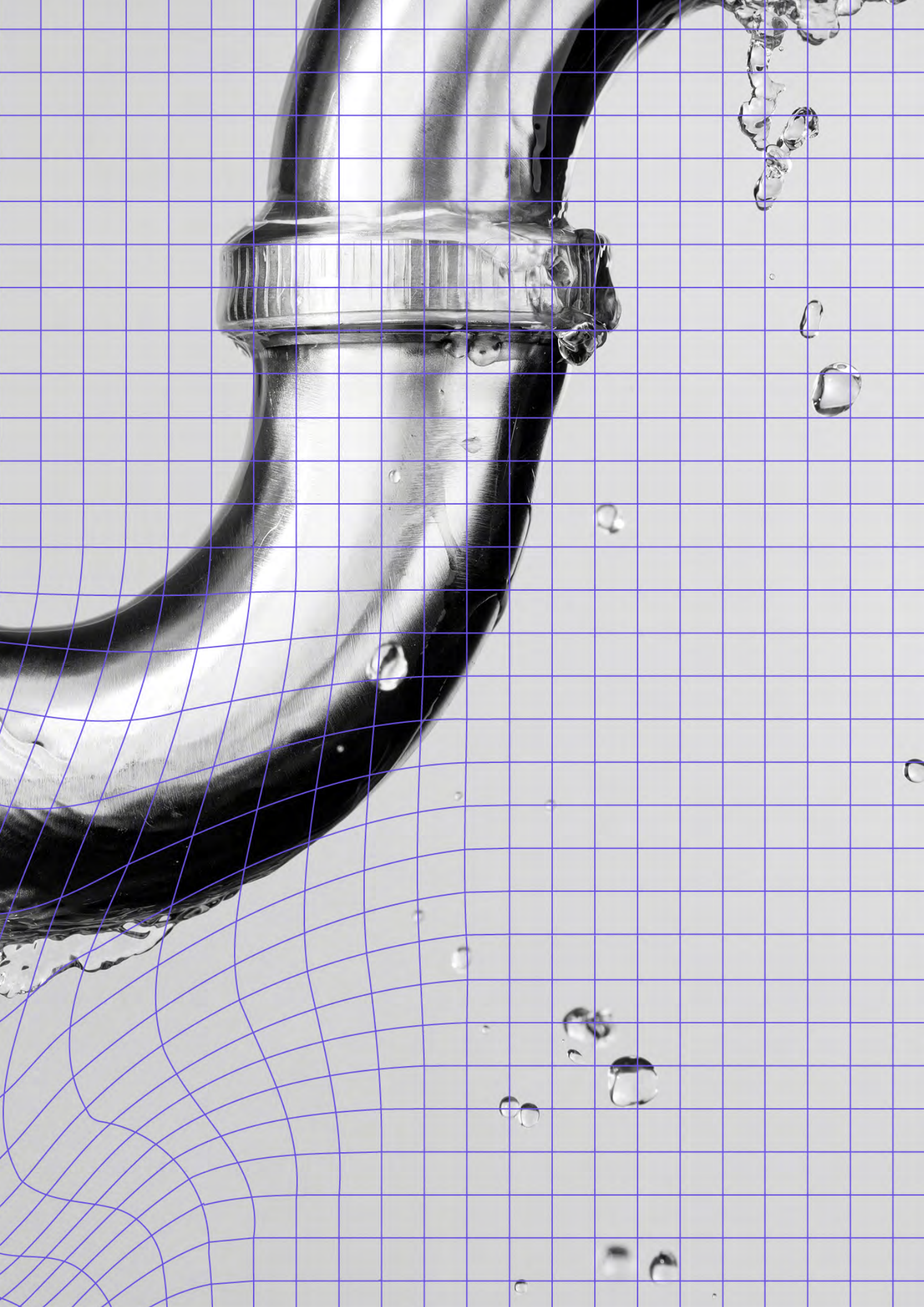
Endnotes

[1] CCC (2021) *Independent Assessment of UK Climate Risk, Advice to Government for the UK's third Climate Change Risk Assessment (CCRA3).*

[2] CCC (2021) *Progress in adapting to climate change.*

Chapter 2

Evaluation of the third Adaptation Reporting Power round

29

Summary and key messages

The ARP3 deadline did not allow for the insights on climate risks to infrastructure it contains to influence the third Climate Change Risk Assessment.

The chapter summaries the findings from our assessment of the third Adaptation Reporting Power round (ARP3). The key messages are:

- **The current timing of ARP does not maximise the effectiveness of the statutory framework.** Most reports for the third ARP round were not available for inclusion as evidence for the third Climate Change Risk Assessment, limiting their utility for other parts of the adaptation policy cycle, including the next National Adaptation Plan.

- **Climate risk management is becoming a leadership priority, but there are opportunities to go further.** Our assessment indicates that ARP is driving action on adaptation and is more of a leadership priority than in past rounds. More can be done to raise the adaptation profile further within reporting organisations, in particular regarding the integration of adaptation into operations.

Report quality has improved but significant areas for improvement remain.

- **The quality of reporting has improved since the second round**. There are areas where more can still be done across all sectors to prepare better for climate change. In particular, consideration of infrastructure interdependencies and the risks of cascading climate-induced impacts remains overall at a low level.

- **There are trade-offs in considering delivery of the principles defined for ARP3.** Alignment of ARP with infrastructure regulatory cycles, with other environmental reporting initiatives, and efficient access to climate data are all risks to ARP delivering on multiple fronts. ARP should complement and add value to other reporting obligations, in order to ensure a proportionate burden upon the reporting organisations.

- **There are gaps in coverage for many of the sectors.** Around 80% of invited organisations have submitted a report and some key organisations and sectors were not invited. There are also gaps in the quality of information reported, especially in reports submitted by sector organisations rather than individual companies.

- **The ARP reports provide useful insights on the broader environmental policy.** These insights primarily cover issues related to the delivery of Net Zero. They also cover the 25-Year Environment Plan and green finance.

This chapter is set out in six sections, considering each one of the evaluation themes:

1. Maximising the effectiveness of the statutory framework

2. Integrating climate risk management

3. Evidence of climate change preparedness

4. Principles of ARP

5. Evolution of reporting

6. Other policy insights

Chapter 2: Evaluation of the third Adaptation Reporting Power round

This section presents our findings on how the third ARP round has supported effective delivery of the statutory framework for climate adaptation.

A key purpose of the ARP is to help inform both the UK Climate Change Risk Assessment (CCRA) and the National Adaptation Programme (NAP). ARP reports provide extensive information on the preparedness of key sectors for climate change and the progress being made in implementing adaptation plans that is not available elsewhere.

The current timing of the ARP, CCRA and NAP cycles are not well aligned, limiting the utility of the third round of ARP.

- The deadline for ARP3 was December 31st 2021. This was around six months after the completion of the technical report and Committee advice on CCRA3 and the CCC's 2021 Progress Report to Parliament on adaptation.[*]

- As a result, less than 5% of all ARP3 reports were available to inform these statutory assessments (Figure 2.1).

- This was also an issue in ARP2, where the vast majority of the reports were not available to inform CCRA2 or the CCC's 2016 Progress Report (Figure 2.2).

A key aim of ARP is to inform the other elements of the UK's adaptation policy cycle.

The ARP3 deadline was too late to contribute to the CCRA3 evidence base.

Figure 2.1 Timing of ARP3 report submissions

Source: Source: CCC analysis of Defra ARP submissions data.
Notes: Yellow dashed line denotes the latest date by which ARP3 submissions could have been incorporated into the CCRA3 Technical Report. Orange dashed line denotes the latest date by which ARP3 submissions could have been incorporated into the CCC's 2021 Progress Report to Parliament. Purple dashed line denotes the ARP3 deadline.

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[*] The Adaptation Committee's Independent Assessment of UK Climate Risk was published in June 2021. The Government's response to that independent advice was published in January 2022.

Figure 2.2 Timing of ARP2 report submissions
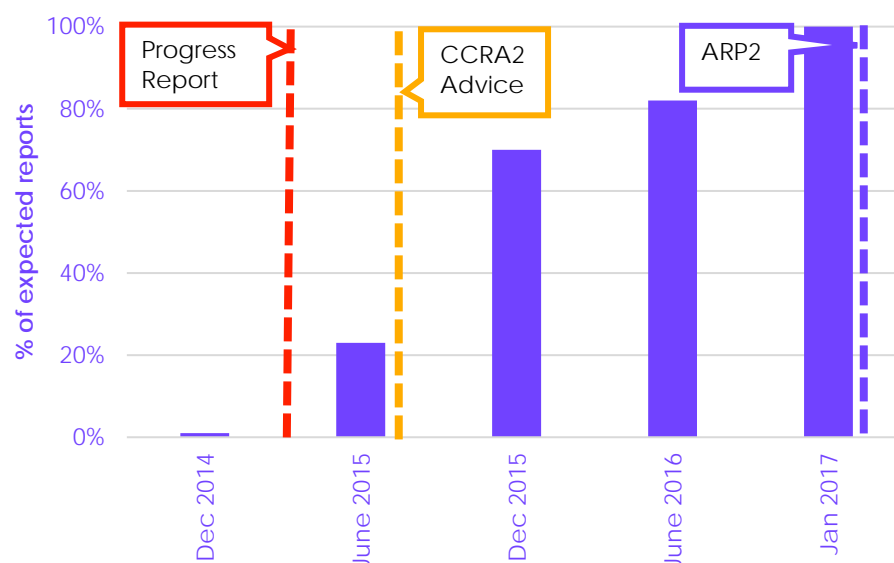
Source: CCC analysis of Defra ARP submissions data.
Notes: Orange dashed line denotes the latest date by which ARP2 submissions could have been incorporated into the CCC's 2015 Progress Report to Parliament. Yellow dashed line denotes the latest date by which ARP2 submissions could have been incorporated into the CCRA2 Technical Report. Purple dashed line denotes the ARP2 deadline.

The lack of information from the ARP has implications for the quality of other key elements of the UK's adaptation policy cycle.

This misalignment of timing has had significant implications for the effectiveness of the statutory framework:

- **CCRA3**: The ARP reports contain extensive information on the steps being taken across the sectors to plan for and adapt to climate change – a key consideration of the CCRA3 methodology which was not available for use in the assessment due to the misaligned timing. Additionally, in almost all ARP3 reports, organisations have categorised climate risks differently to the grouping of risks used in CCRA3. This leads to inefficiency and unnecessary complication in assessing the climate risks facing the UK.

- **NAP3:** The Climate Change Act requires that the NAP addresses the risks highlighted by the previous CCRA. The next NAP, NAP3, currently in development, will aim to address the risks highlighted by CCRA3. As the information on preparedness of key infrastructure and other sectors contained in the reports has not been reflected in CCRA3 this has knock-on implications for NAP creating effective policy to address these risks. Further work will be required to reflect the information from the ARP3 reports into NAP3.

- **CCC Progress Report 2021:** The timing of ARP3 report submission means that nearly all reports were not available in time to inform the CCC's most recent progress report on adapting to climate change in England (published in June 2021). Relevant information from these reports will be reflected in the CCC's next adaptation progress report (due in 2023), but the biennial cycle of progress reporting means that there is substantial lag before they can be incorporated into a formal assessment of progress.[*]

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[*] The ARP reports would have been reflected in higher scores for some sectors, including ports and airports.

An effective statutory policy cycle would not see these disconnects between timelines for these elements. Evidence from the ARP would instead be able to rapidly be integrated through other elements of this policy cycle without substantial lags.

2. Integrating climate risk management

This section looks at evidence for climate risk being integrated into organisational decision-making, strategy, and culture.

This section presents our findings on how well the third ARP round has supported the ongoing integration of climate risk management into infrastructure delivery.

In reviewing the reports, we looked for evidence of climate risk being integrated into broader organisational decision making, of alignment of climate adaptation goals with broader goals and integration into broader strategy, and of the importance of climate risk being integrated into behaviour and organisational culture.

Our assessment indicates that climate risk management is becoming a leadership priority, but there are significant opportunities for further integration into operations.

There is increased evidence of integration of climate risks management into organisational operations in this round.

- In this round of ARP, the integration of climate risk management into the operations of the reporting organisations is more apparent than in the previous round. For example, many reports demonstrated that climate risks are routinely assessed as part of wider organisational risk management practices and that climate resilience features in strategic goals and objectives. Several ARP reports showed good examples of integrated approaches to adaptation (Box 2.1).

- There is good evidence of senior ownership of ARP reporting in organisations in all sectors, though the extent to which this was evident from reports varied. Reports which featured a foreword from a CEO or senior leader demonstrated a commitment to ARP at top levels of the organisation. Across sectors there was good discussion within the reports of the management approaches to ARP and how it is incorporated into wider climate risk management practices.

- More than half (54%) of the workshop participants described climate risk management as a priority issue at top leadership level (Figure 2.3). Only 5% felt that it is not a priority issue at this time. However only 15% of participants felt it had been a significant driver of action. Most (69%) participants agreed it had at least had some impact but 15% of participants felt that ARP has had no obvious impact in driving adaptation action.

We did not find significant differences across sectors regarding the integration of climate risk management into their operations and delivery.

There are opportunites to improve the integration of climate risk management across most organisations.

There are a number of opportunities for greater integration of climate risk management. These include cross-sectoral collaboration and reporting on interdependencies, a mandatory requirement to report and an equal focus on Net Zero and adaptation (organisations are typically prioritising Net Zero). We asked workshop participants to identify which features they considered would drive further action on adaptation in ARP4 (Figure 2.4). More than 70% felt that formal feedback on their ARP report would drive more adaptation action and almost half (46%) of participants felt that mandatory reporting would serve as a driver for more action on adaptation within their organisation.

Chapter 2: Evaluation of the third Adaptation Reporting Power round

Box 2.1
HS2 Integrated approach to adaptation

HS2 is the first organisation to submit an ARP report for a stand-alone project that is still in the design and construction stage. The report demonstrates that climate adaptation and resilience is a fundamental part of the planning consent, design and construction programme:

Integrating climate change adaptation and resilience into the planning, design and construction stages of HS2	
Planning and Consent stage	• Climate resilience assessments undertaken for Phase One[1] and Phase 2a[2] as part of HS2 Ltd's EIA process. • Climate resilience assessments applied UKCP09 climate projections for a range of climate hazards over a 120-year time period. • Environmental Statements determine our Environmental Minimum Requirements.[3]
Design Stage	• Integration of climate change requirements within relevant HS2 standards, and periodically updated where required. • HS2 has developed a Climate Change Design Impact Assessment and Climate Change Resilience and Interdependencies Assessment. • Designers and contractors are required to undertake a review of these assessments, providing a Climate Change Adaptation and Resilience Report, including identifying adaptation measures to mitigate any risks.
Construction Stage	• Code of Construction Practice produced for Phase One[4] and Phase 2a.[5] • Designers and contractors are required to monitor and manage the effects of extreme weather events and related conditions during construction.

Source: HS2 (2022) *HS2 Climate Change Adaptation and Resilience Report.*

Figure 2.3 Integrating climate risk management

Importance of climate risk management

Not a priority
at this time
5%

Priority in
certain areas
of organisation
41%

Priority at top
leadership
level
54%

Driving action on adaptation

No obvious
impact
15.40%

Significant driver
of action
15.40%

Some
impact
69.20%
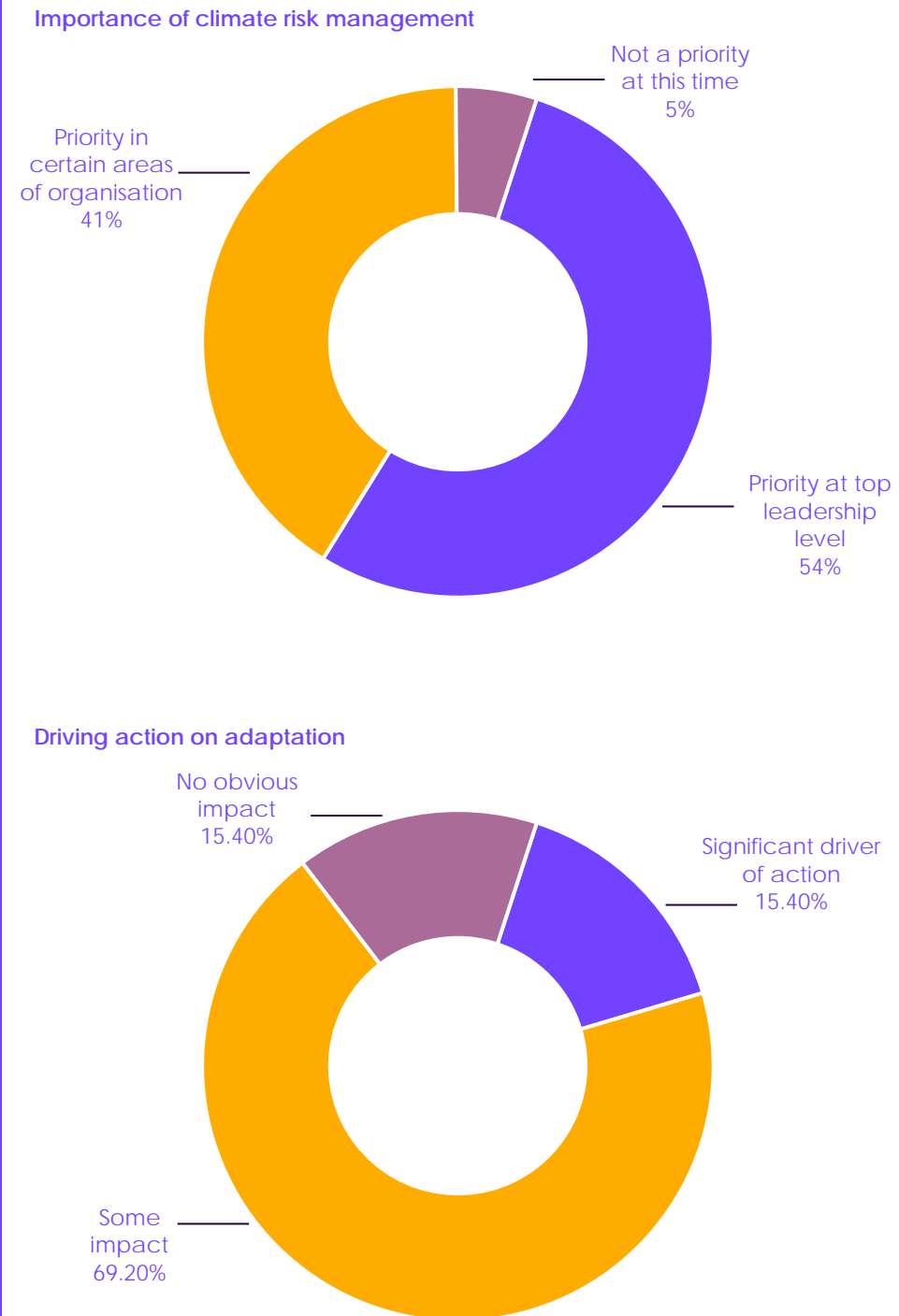
Source: ARP3 evaluation workshops with reporting organisations.
Notes: Data obtained via Zoom poll. Results are the collated responses of 39 participants across 3 workshops.
Left-hand chart: Participants were asked: "How would you rate the level of importance of climate risk management
and adaptation across your organisation?" Right-hand chart: Participants were asked: "To what extent do you think
the ARP has driven action on adaptation in your organisation over the last 10 years?"

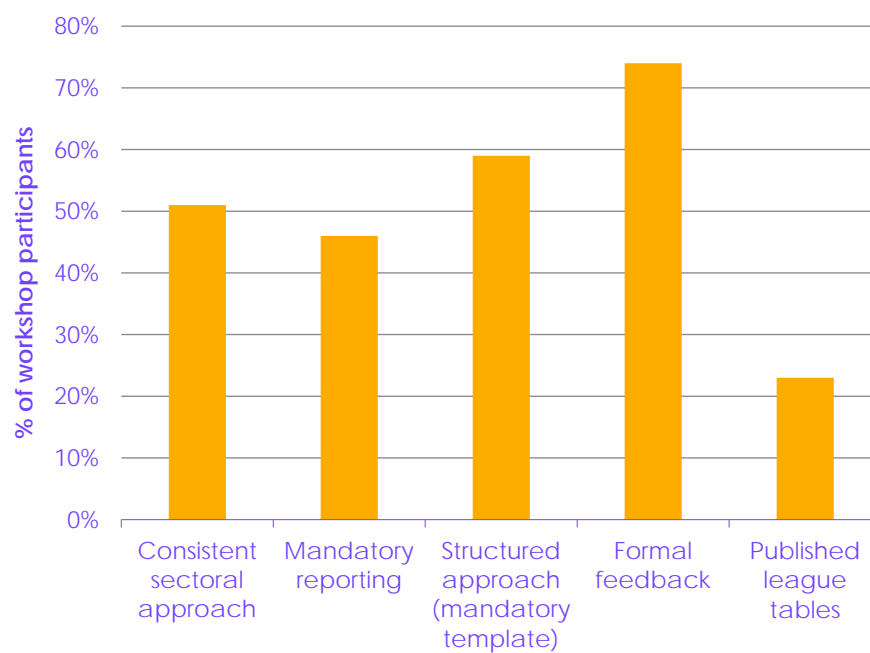## Figure 2.4 Potential features of ARP4 to drive action

Source: ARP3 evaluation workshops with reporting organisations.
Notes: Responses obtained via Zoom poll. Results are the collated responses of 39 participants across 3 workshops. Participants were asked: "In future reporting rounds, which of these features might help raise the profile of climate risk management and adaptation planning in your organisation?"

3. Evidence of climate change preparedness

This section presents our findings on to what extent and how the third ARP round improved our understanding of the level of preparedness of key sectors for climate change. We evaluated preparedness against a set of four criteria indicative of good adaptation planning, as described in Chapter 1.

Overall, the evidence of preparedness and quality of reporting has improved.

Our assessment finds that, overall, the quality of reporting has improved since the second ARP round but there are areas where more could be done across reporting sectors to prepare better for climate change:

- **Multiple climate scenarios:** Most risk assessments are based on the latest UK Climate Projections, UKCP18, and many consider a range of future warming scenarios and timeframes.

Clear timescales associated with adaptation actions could be improved for many organisations across all sectors.

- **Actions linked to risks and have clear timescales:** Almost all risk assessments cover the risks requested by Defra in the ARP3 strategy, though organisations have mostly used their own framing and categorisation of risks rather than the CCRA risk categories. There is good evidence of organisations linking adaptation actions to risks, but significant variation in presentation of adaptation plans across organisations and there are organisations across all sectors who have not provided timescales for completing actions.

- **Appropriate monitoring and evaluation:** There is mixed evidence of the nature of monitoring and evaluation (M&E) in place, but a number of sectors demonstrated appropriate M&E. Progress has been made in implementing adaptation actions since ARP2. Almost all reports provided an update on ARP2 actions and in all cases demonstrated that actions have been completed, or at least progressed. However, there was less evidence on the effectiveness of adaptation actions in reducing risk.

Assessing risks from infrastructure interdependencies remains one of the biggest challenges to reporting organisations.

- **Interdependencies:** Climate risks from interdependencies (risks that arise from an organisation's reliance on another organisation or sector) are not being consistently incorporated into risk assessments. There is some evidence of cross-sector engagement to address interdependencies, but coordination is needed to enable reporting organisations to identify more clearly, and measure and manage these risks better (Box 2.2). The gaps in submissions in many sectors prevents other sectors, organisations and Government from gaining an understanding of risks to their organisations and the UK population that result from infrastructure interdependencies. This hinders the role of ARP as a driver for more action and collaboration on adaptation.

- **Sectoral reporting:** Organisations in the energy, water and road and rail sectors have developed sectoral approaches for ARP3, modifying Defra's template to align better with their sectoral requirements and ensuring consistent reporting of information. This enables a comprehensive picture of sectoral preparedness for climate change, provided all organisations in a sector report. The collation of this information is crucial evidence for national risk assessments and adaptation planning.

Box 2.2
Infrastructure interdependencies

Climate risks from interdependencies (risks that arise from an organisation's reliance on another organisation or sector) remains the biggest challenge for reporting organisations in planning for climate change. Recent storms have demonstrated the potential impacts on the electricity system and knock-on impacts which can cascade across society. Storm Arwen, on 26 November 2021, caused extensive damage to the local electricity grids across northern England and Scotland, initially leaving almost one million homes without power. Water supplies were affected, schools were closed and travel disruption was widespread. Thousands of customers remained without power for days.

Defra required all reporting organisations to report on their interdependency risks in ARP3. Almost all organisations have identified sources of interdependency risk at a high level, however these have not been consistently incorporated into risk assessments. Only 31% of workshop participants felt their organisation has a good understanding of the scale of risk from interdependencies and a plan in place to manage it. Almost half (44%) of participants stated that more work is needed to understand the scale of the risk.

Our assessment identified a number of barriers to identifying and managing interdependencies across reporting organisations:

- Lack of understanding of climate impacts in sectors they depend on for their own operations and the complexity of interactions.

- Inconsistencies across sectors in measuring and reporting on climate risks e.g., different risk criteria, different climate scenarios.

- Incomplete data, or concerns about sharing data.

- Regulatory barriers or disincentives.

- Lack of funding, misalignment of funding cycles or research priorities.

- Lack of top-down leadership.

- Limited mechanisms or opportunities for cross sector engagement.

A number of organisations have undertaken interdependency mapping exercises, including Network Rail and Southern Water. Some evidence is available to support interdependency risk assessments, such as the Interacting Risks report for CCRA3[1] and the National Infrastructure Commission's resilience report[2]. There are also tools under development, such as the Climate Resilience Demonstrator project (CreDo), which is exploring how infrastructure interdependencies impact system resilience and how data sharing can improve overall system resilience. However, Government needs to do more to support organisations to identify and manage risks from interdependencies.

We summarise the findings regarding climate change preparedness for each infrastructure sub-sector separately:

a) Energy

b) Water

c) Roads and rail

d) Airports

e) Ports and lighthouse authorities

f) Public sector bodies and historic sites

g) Electronic communications

h) Regulators

The assessment criteria for adaptation planning are set out in Chapter 1, Table 1.3.

a) Energy

Individual reports were submitted by gas network operators and electricity transmission & distribution (T&D) companies. The Energy Networks Association (ENA) also submitted a sector summary report for the T&D operators. For electricity generation, a sector summary report was submitted by the trade association Energy UK covering 11 generators - individual reports were not submitted by generators.

i) Electricity transmission and distribution

Seven reports were assessed, covering the activities of 19 electricity T&D companies (Figure 2.5).[*]

Figure 2.5 Electricity transmission and distribution – plan score
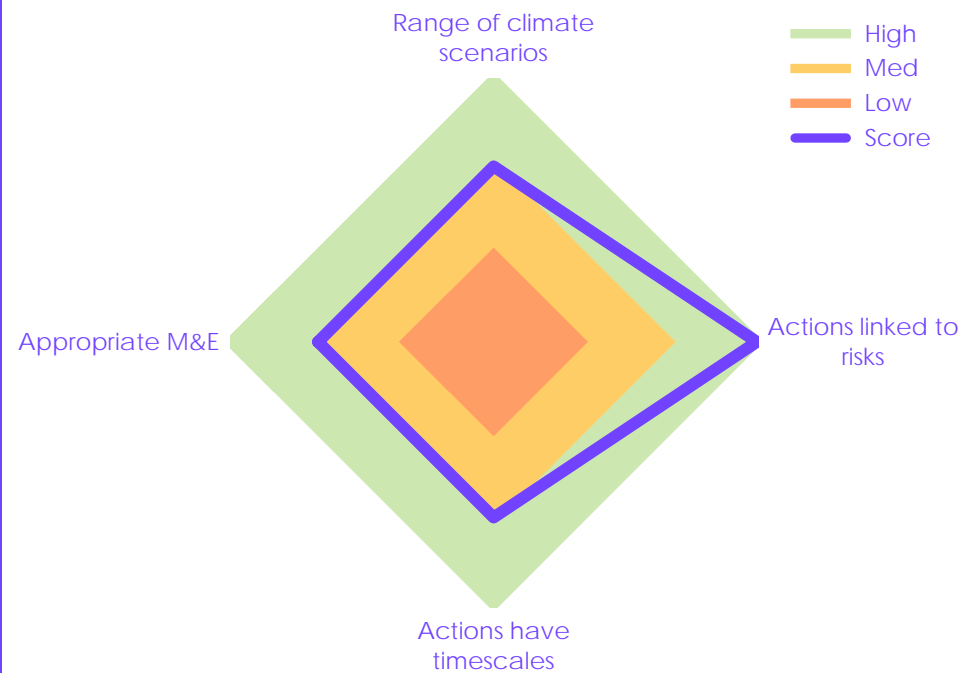
Range of climate scenarios

Appropriate M&E

Actions linked to risks

Actions have timescales

High
Med
Low
Score

Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.

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[*] The ENA report has not been included in the following assessment, as it duplicates information from the individual reports. Many of the electricity transmission & distribution companies reported for their subsidiary companies in a single report.

Chapter 2: Evaluation of the third Adaptation Reporting Power round

The reports from electricity transmission & distribution companies were particularly strong on linking actions to risks (Box 2.3). Evidence was mixed for the other criteria:

- **Range of climate scenarios (Medium):** More than half of the reports have assessed risks in the context of scenarios consistent with a 4°C global warming level (by 2100, above preindustrial levels) and to the 2050s. More than half of the reports have also assessed risks to 2080s or beyond. In one case it was not evident which climate scenarios had been considered.

- **Actions linked to risks (High):** Almost all reports have considered actions in the context of risks, and more than half have linked actions to individual risks.

- **Timescales (Medium):** Almost half of the reports have assigned timescales to actions.

- **Monitoring & evaluation (Medium):** Almost half of the reports have described an appropriate M&E framework. Some of the reports did not describe their approach to M&E.

Box 2.3
UK Power Networks – Linking actions to risks

The linking of adaptation actions to risks is the strongest category across the assessment. UK Power Networks' report does this well, with high level actions and detailed actions for each group of risks. Actions also have timescales, which was not consistently done well across the reports.
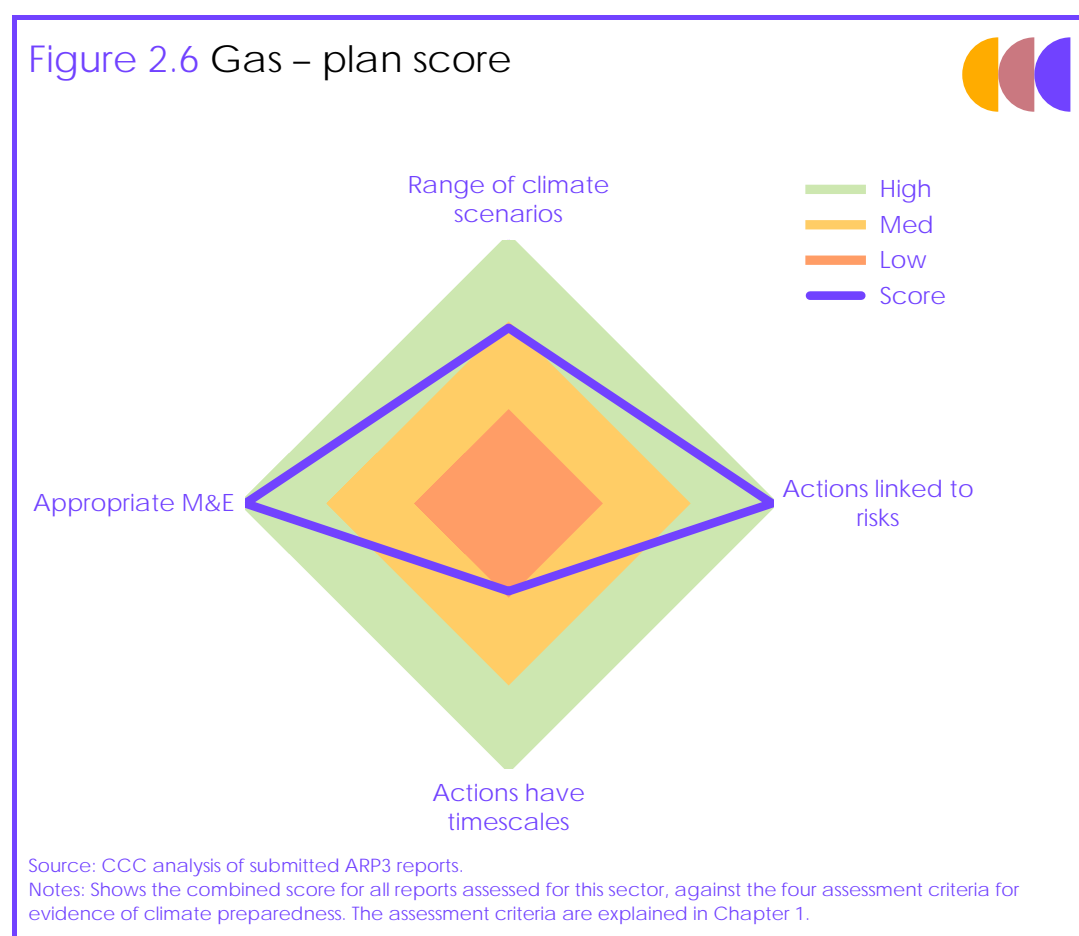
Risk Threshold	Risk Present View 2021	High Level Actions	Actions from Climate Change Adaptation Plan	Timeline
Start			Continuous engagement with ENA Climate Change Working Group to review and assess climate change hazards against our business systems as and when new models become available. Identify priority risks across the business and score with respect to our network systems against time-based scenarios.	
Minor	AR1 AR2 AR4 AR5 AR6 AR7 AR8 AR9 AR14 AR15	Continuous monitoring and tracking of risk as part of ENA Climate Change Working Group and within corporate risk framework.	1. Advocate for the continuation of the current ENA Climate Change Resilience working group with expansion to include stakeholders external to the energy sector such as telecoms, water and local authorities.	2021
			2. Establish a UKPN Climate Change Resilience Steering group consisting of stakeholders from key business directorates to own the climate change strategy going forward with oversight from the UKPN Risk and Assurance team.	2021-2022
			3. Identify opportunities for further data collection and work with our DSO team to integrate this into our asset data systems.	Annually
			4. Analyse and assess our interdependencies against other sectors and customers to better understand our climate change resilience.	2021-2022
Moderate	AR3 AR10 AR11 AR12 AR13	Implement detailed assessment of risk within network and analyse mitigation options to select most cost-effective option. Incorporate mitigation measure(s) within proceeding regulatory submission to deliver over the period. Aim to maintain or reduce risk level over subsequent time periods.	5. Quantify risk(s) at an asset voltage class level within the license areas to identify risk 'hot spots' and take targeted action to mitigate.	2021 - 2023
			6. Assess risk(s) across our supply chain to better understand exposure and collaborate to address risks through increased innovative and resilient solutions.	

Source: UK Power Networks (2022) *ARP3 Report.*

ii) Gas

Five gas network operator reports were assessed (Figure 2.6) representing all of the operators invited to report.

Figure 2.6 Gas – plan score

Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.

Gas network operators consistently demonstrated appropriate M&E and consideration of actions in the context of risks. There was limited evidence of timescales for adaptation actions:

- **Range of climate scenarios (Medium):** More than half of the reports have assessed risks in the context of a high emissions scenario (consistent with a 4°C global warming level by 2100, above preindustrial levels). Risks are mostly assessed out to 2050s, but a small number have only given a current risk score.

- **Actions linked to risks (High):** All of the reports have considered actions in the context of risks, and most have linked actions to specific risks.

- **Timescales (Low):** There was limited information on timescales for adaptation actions across the reports. Only one report allocated timescales to individual actions.

- **Monitoring & evaluation (High):** All have appropriate M&E in place.
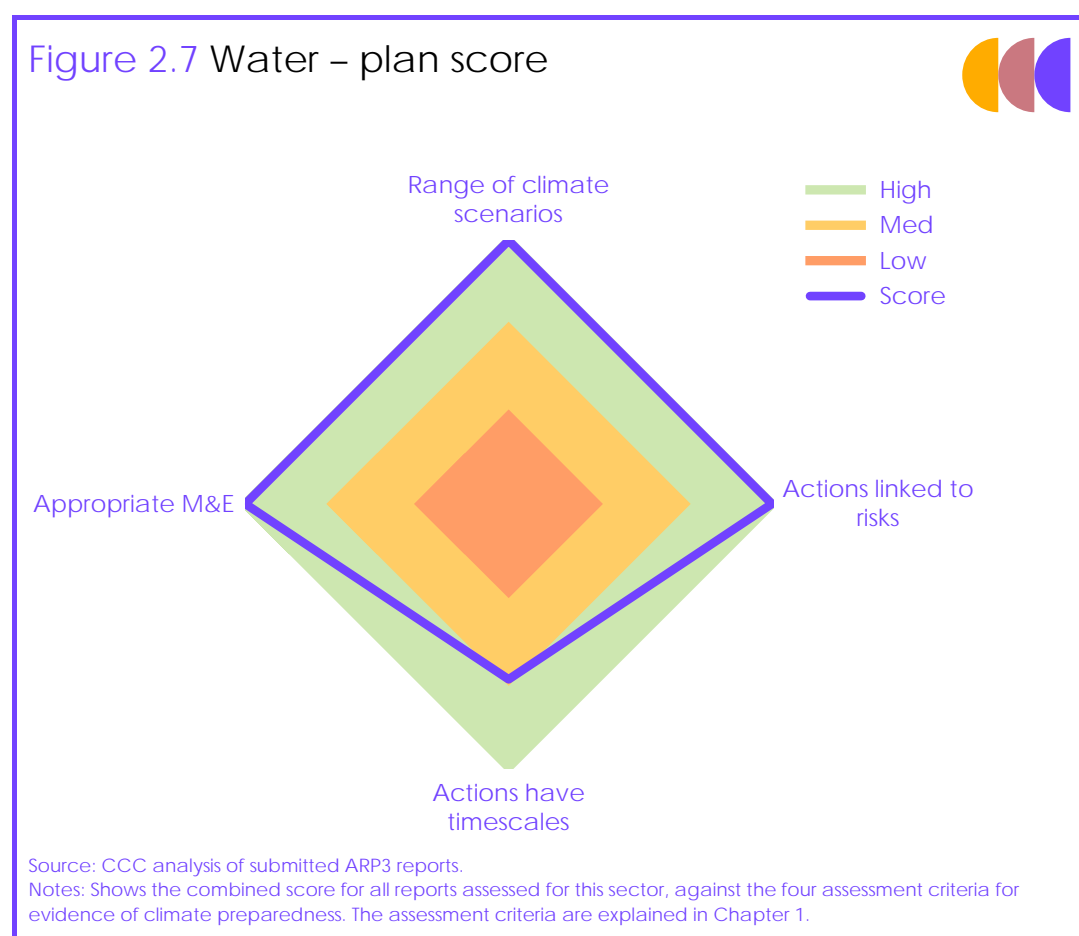
iii) Energy generators

As agreed with Defra, Energy UK presented a sector report for the 11 invited energy generators. Whilst that report provides useful insights into the climate risks facing energy generators and the type of adaptation actions being progressed by the sector as a whole, a detailed risk assessment and adaptation plan was not presented, therefore we have not been able to assess this report against the criteria.

The sector summary report provides an overview of the risks facing electricity generators and considers risks out to 2039 which is stated as a realistic timeframe for the continued operation of existing plant. The report is based on UKCP09 and UKCP18 projections and references warming scenarios consistent with around 4℃ global warming above preindustrial levels by 2100, however a detailed risk assessment is not presented. Case studies provide insights on some of the adaptation actions being taken by operators, but a detailed action plan for the sector is not presented. For future rounds of ARP, it may be appropriate to return to individual reports from energy generators, or to require any sector report to include a detailed risk assessment and programme of adaptation measures on behalf of the sector.

b) Water

14 reports were assessed, covering the operations of 15 water companies in England (Figure 2.7). Five invited organisations in the water sector did not report.

Figure 2.7 Water – plan score

Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.

Reports from the water sector were strong across the range of assessment criteria:

- **Range of climate scenarios (High):** Most reports have assessed a range of climate scenarios consistent with 2°C and 4°C global warming levels out to the 2080s. In a small number of reports, it was not evident which scenarios and timescales had been assessed.

- **Actions linked to risks (High):** Almost all reports have linked actions to risks.

- **Timescales (Medium):** More than two thirds have allocated timescales consistently to actions within the report. Others discussed timescales for at least some of the actions. Only two reports had no mention of timescales.

- **Monitoring & evaluation (High):** Most had appropriate M&E in place. In three reports there was not enough information to evaluate M&E.

There is good evidence of the impact of regulatory drivers for adaptation across the sector. Of particular note is the use of metrics to set targets for and measure progress in adaptation which was demonstrated in a few water sector reports (Box 2.4). Across the other sectors there was very limited evidence of the use of metrics to quantify risks and workshop participants identified this as a challenge.

Box 2.4
Anglian Water – Metrics for adaptation

Anglian Water's approach to quantifying risk and monitoring progress stands out as a leader across the ARP3 reports. A set of metrics have been defined for each headline risk, and the report presents the current performance, short term (2024/25) and long term target values:

1.5 Metrics

Metric	Unit	2009/10	2014/15	2019/20	2024/25 (target)	Long term (target)
Risk of severe restrictions in a 1-in-200-year drought	% customers at risk	-	–	5.20	0	0
Percentage of population supplied by a single supply system	%	-	46.9	24.1	14.1	0
Service Level Restrictions	Number per 10 years	0	1	1	-	-
Security of Supply Index (100 = secure)	Score out of 100	100	100	99.9	100	100
Unplanned outages	% unplanned outages from production capacity	-	–	1.54	2.34	1.74
Water supply interruptions	Average time in minutes: seconds cost per customer	-	20:06	18:39	05:00	03:00
Per capita consumption (3-year average)	Litres per person per day	147	135	136	131	120
Leakage (3-year average)	Ml per day	210	191	185	156	107
Meter penetration	% of customers on a meter	65	85	91	~93	~95

Source: Anglian Water (2020) *Anglian Water's Climate Change Adaptation Report 2020.*

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c) Roads and rail

Four reports were assessed, covering national strategic road and rail infrastructure (Figure 2.8). One invited organisation did not report and another has indicated they will report after the completion of this evaluation.

Figure 2.8 Roads and rail – plan score

Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.
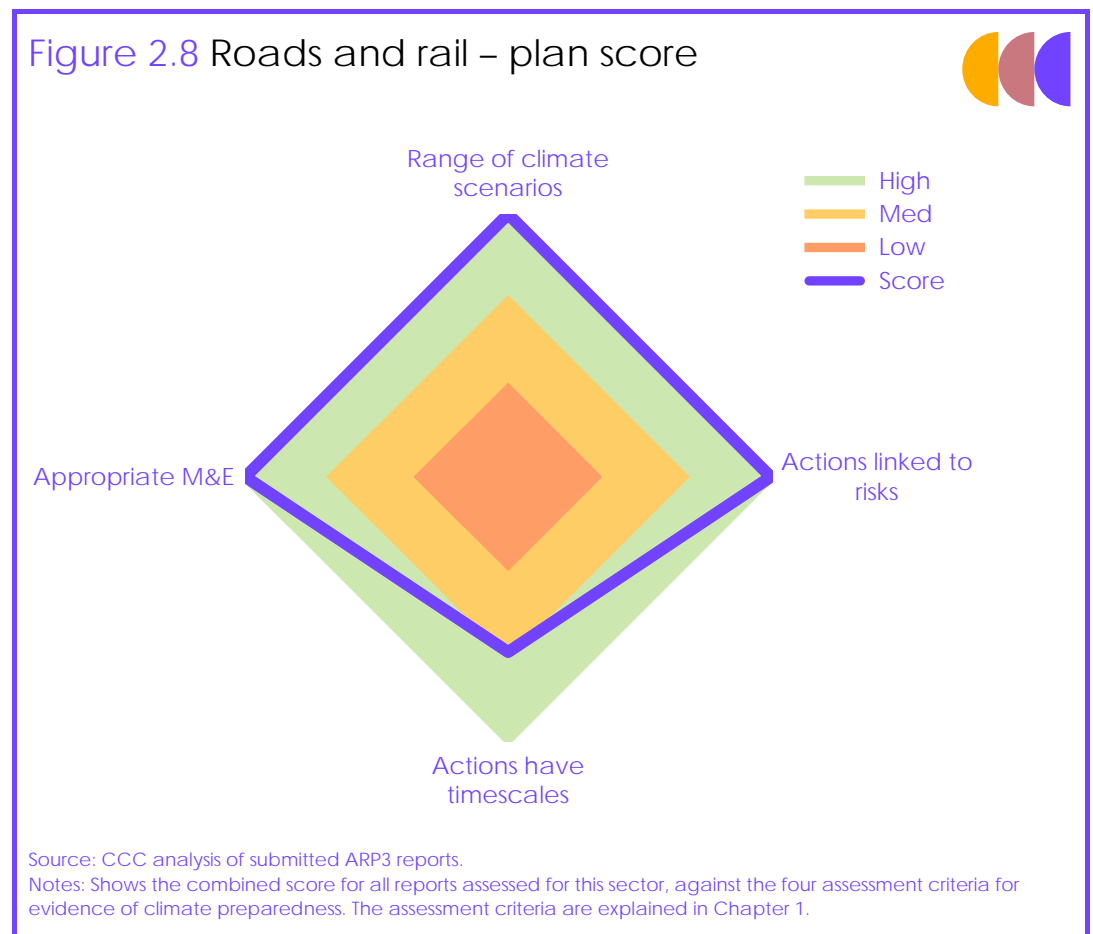
Evidence of climate preparedness in road and rail is generally high in their submitted ARP reports.

The road and rail sector reports also performed well across the assessment criteria. Consideration of risks across a range of future climate scenarios and timescales in particular was evident and well presented (Box 2.5):

- **Range of climate scenarios (High):** Most reports have considered medium to high emissions scenarios over the 2050s and 2080s. One risk assessment has not yet been provided and could not be assessed.

- **Actions linked to risks (High):** Most reports presented a detailed action plan linked to the risk assessment. One action plan has not yet been provided and could not be assessed.

- **Timescales (Medium):** All have covered timescales to some extent. Half of the reports presented timescales for all actions. The others generalised about actions taking place over a five year period but did not give specific timeframes for individual actions.

- **Monitoring & evaluation (High):** All have a suitable M&E framework. In one case there was limited detail provided.

Box 2.5
Network Rail – Current and future risk scores

All of the available risk assessments for road and rail considered a range of future warming scenarios – consistent with medium to high emissions over 2050s and 2080s. The Network Rail report presented a dashboard of current and future risk scores for each risk, grouped by climate variable:

Climate variable	Risk	Score			Infrastructure sector risk
		Current	2050s	2080s	
Long wet days and seasons	Flood defences challenged and overwhelmed	12/major	12/major	16/major	I2
	Increase in likelihood of asset failure as the ground becomes saturated	12/major	25/severe	25/severe	I2, I3, I5, I7
	Water ingress in tunnels leading to an increase in defects	12/major	16/major	20/severe	I2
Fluvial (river) and pluvial (surface water) flooding	Flood defences challenged and overwhelmed	12/major	12/major	16/major	I2
	Scour, loading from high water volume	9/moderate	9/moderate	12/major	I2, I4
	Flooding and scour in tunnels	9/moderate	12/major	16/major	I2
	Re-activation of sinkholes	8/moderate	12/major	12/major	I5
	Flooding of platforms and subways	9/moderate	12/major	12/major	I2
	Disruption to power supplies	9/moderate	9/moderate	12/major	I1

Source: Network Rail (2021) *Network Rail Third Adaptation Report.*

Chapter 2: Evaluation of the third Adaptation Reporting Power round

d) Airports

Nine reports were assessed, covering 11 strategic airports in England and Scotland and National Air Traffic Control Services (Figure 2.9). One invited airport operator did not report.

Figure 2.9 Airports – plan score
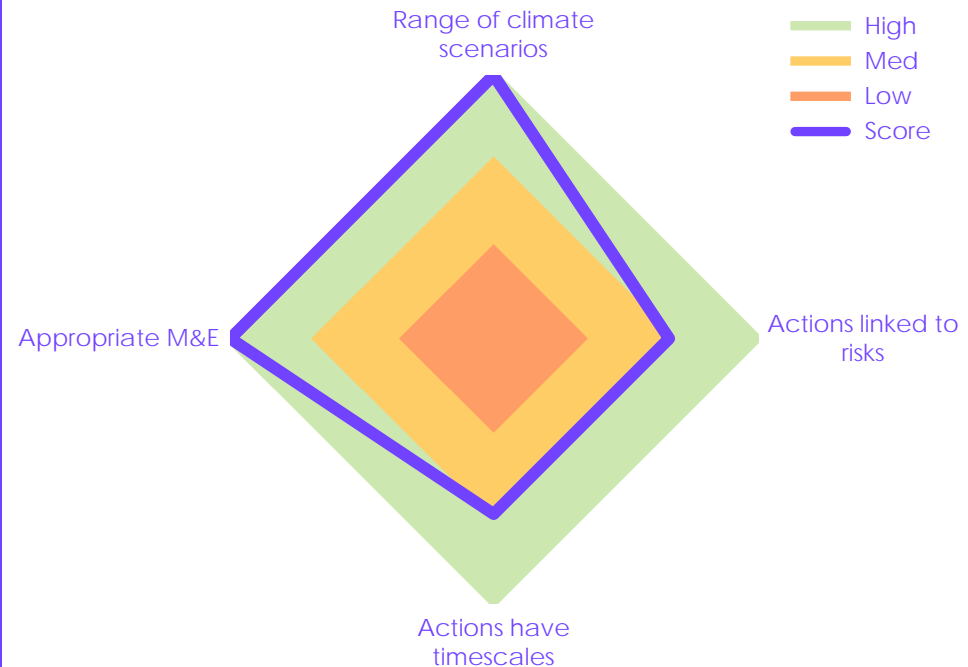
Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.

Using a range of climate scenarios and monitoring and evaluation systems were the stronger elements of evidence of preparedness in the airports sector.

Performance was mixed across the sector:

- **Range of climate scenarios (High):** Most reports have assessed risks under a very high (RCP8.5) global emissions scenario consistent with reaching and exceeding 4°C global warming above preindustrial levels by 2100. A small number are limited to a scenario (RCP6.0) more aligned to the upper end of current policy projections for global emissions. All have assessed risks to at least 2050s and most have assessed them to 2080s.

- **Actions linked to risks (Medium):** Two thirds of the reports have presented a comprehensive programme of adaptation actions with actions linked to risks.

- **Timescales (Medium):** Over half of the reports have timescales attached to actions.

- **Monitoring & evaluation (High):** Almost all have appropriate M&E in place.

e) Ports & lighthouse authorities

Six reports were assessed, covering the operations of eight port and harbour authorities and two lighthouse operators (Figure 2.10). Six invited organisations in the ports sector did not report.

Figure 2.10 Ports and lighthouses – plan score

Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.
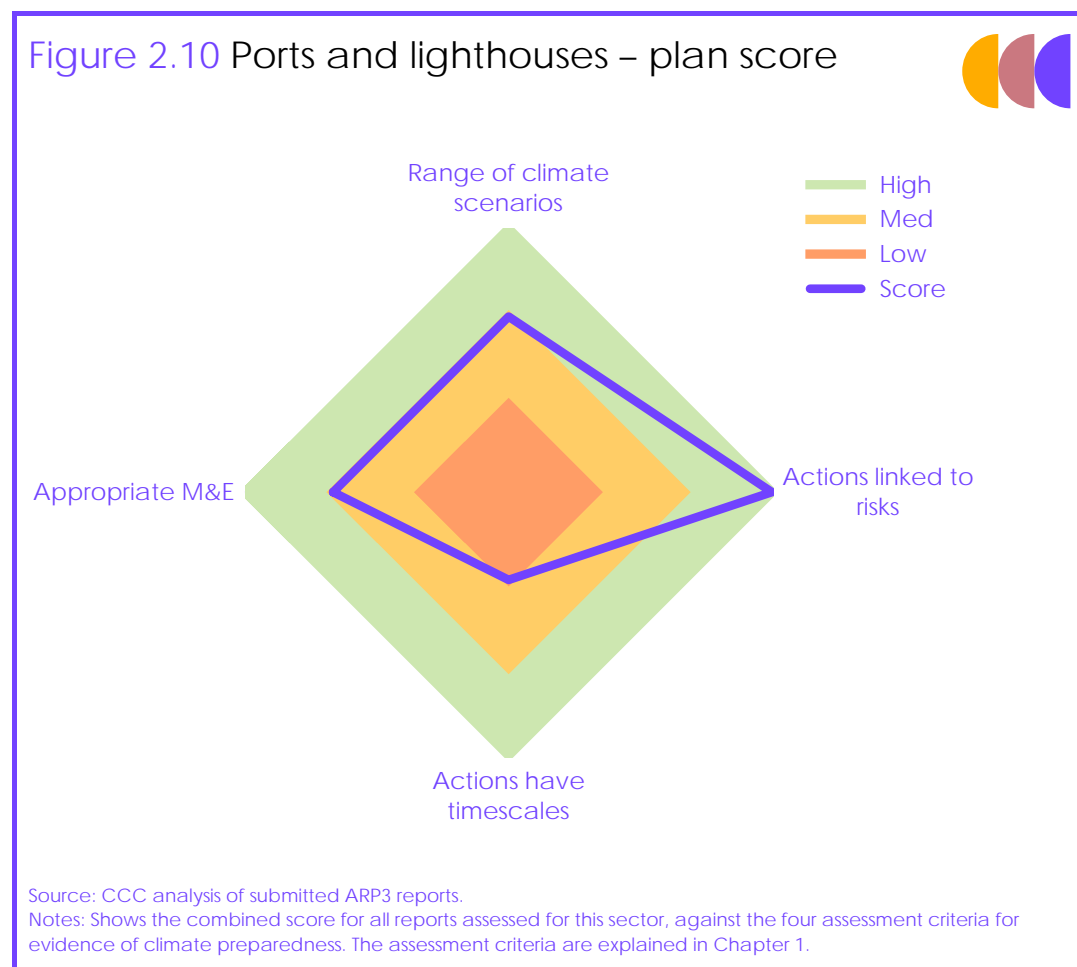
Less than half of reporting ports and lighthouses linked actions with timescales consistently in their reports.

Performance was mixed across the ports and lighthouse authorities:

- **Range of climate scenarios (Medium):** More than half of the reports have assessed risks consistent with a high emissions scenario in 2050s and 2080s, however one risk assessment did not differentiate between current and future risk. Some did not discuss different warming scenarios or timescales.

- **Actions linked to risks (High):** All have presented a comprehensive programme of adaptation actions with actions linked to risks.

- **Timescales (Low):** Only a third of reports presented timescales consistently for all adaptation actions.

- **Monitoring & evaluation (Medium):** Most indicated an M&E framework in place, however there was not always enough information presented, for example on the frequency of risk reviews or escalation processes.
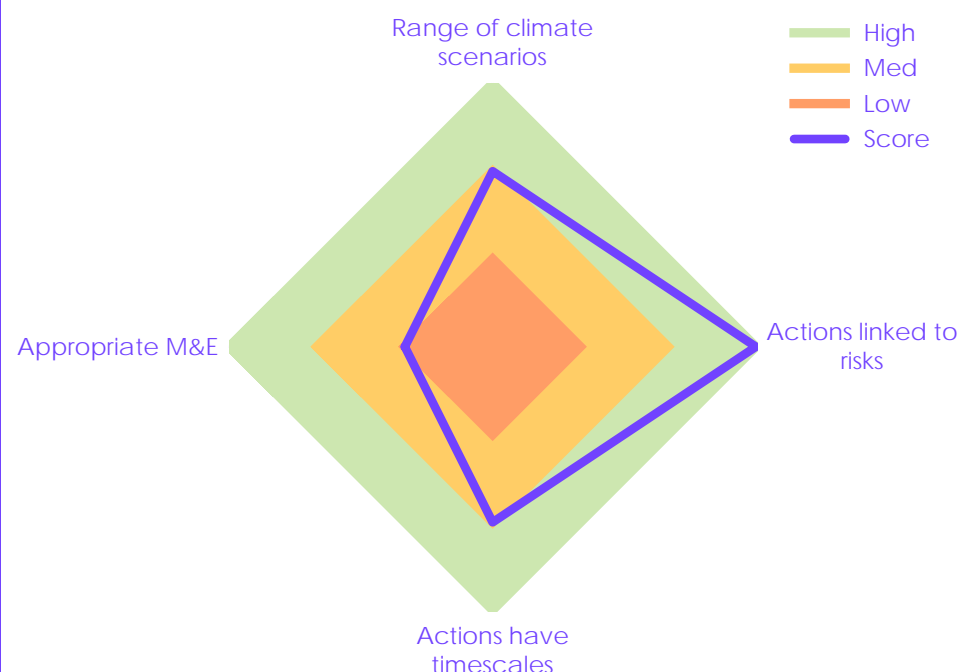
f) Public sector bodies and historic sites

Seven reports were assessed, covering public sector bodies with functions relating to environment, marine, fisheries, health and historic sites (Figure 2.11). One invited organisation has indicated they will report after the completion of this evaluation.

Figure 2.11 Public bodies and historic sites – plan score

Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.

Performance was mixed across these organisations:

- **Range of climate scenarios (Medium):** Half of the reports have assessed risks in the context of a high emissions scenario out to the 2080s. In the other reports it was not evident which scenarios had been considered.

- **Actions linked to risks (High):** Almost all have considered actions in the context of risks, and more than half have linked actions to individual risks.

- **Timescales (Medium):** More than half have assigned timescales to actions, though this was not always consistent across all actions in the reports.

- **Monitoring & evaluation (Low):** In most of the reports, there was not enough information to evaluate M&E.

g) Electronic communications

Sector summary reports were submitted by Tech UK on behalf of UK data centres and by the Electronic Communications Resilience and Response Group (Department for Digital, Culture, Media & Sport) on behalf of their member telecommunications providers (Figure 2.12).

Figure 2.12 Electronic communications – plan score
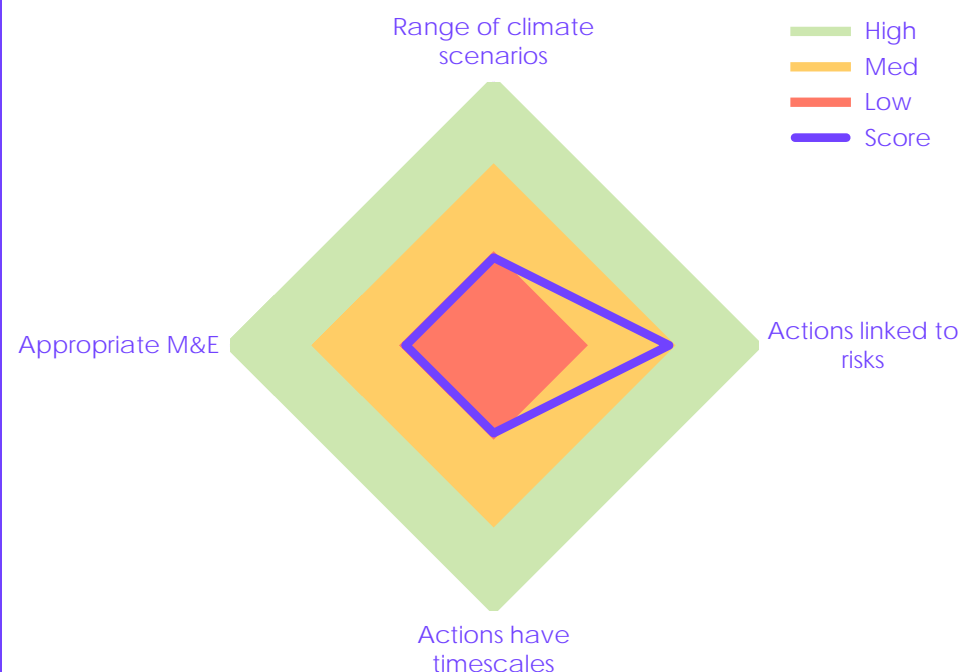
Source: CCC analysis of submitted ARP3 reports.
Notes: Shows the combined score for all reports assessed for this sector, against the four assessment criteria for evidence of climate preparedness. The assessment criteria are explained in Chapter 1.

Detail on climate risk assessment and adaptation planning was limited across the reports:

- **Range of climate scenarios (Low):** There was discussion in both reports that risks had been assessed to 2050 (for data centres) and 2080 (for telecommunications providers), however the reports did not provide detail on the changes in risk across different timeframes.

- **Actions linked to risks (Medium):** One of the reports presented a summary of actions for the sector for each risk. The other report presented a general discussion of the steps the sector is taking and should take to adapt to climate risks but did not present a programme of adaptation measures.

- **Timescales (Low):** There was no discussion of timescales for adaptation actions.

- **Monitoring & evaluation (Low):** Monitoring and evaluation was not discussed in the report.

Electronic communications is a large sector, with an estimated 500 data centres, across the UK and extensive networks of optical fibres, cables and masts.[3] It is also a crucial sector for interdependencies, given the central role of electronic communications in supporting most other infrastructure sectors. Sectoral reporting through trade bodies and sector groups does appear to be a sensible approach in ensuring proportionate reporting where there is a large number of organisations who would otherwise have to report. However sectoral reports must provide the same level of detail on climate risk assessment and adaptation planning as in individual reports. At present, there is not enough information presented in the reports for this sector to understand its preparedness for climate change.

h) Regulators

We assessed the reports of four regulators – three from the financial sector and Ofwat for the water sector. Three invited regulators did not submit a report.

These reports typically present a summary view of climate risks to their sector and information on the actions the regulator is taking to drive action in adaptation in the sector. This approach is appropriate for the nature of their remit and operations, therefore while we have considered these reports in the context of the same criteria as the other sectors, we have not presented a score as we have done for the other sectors.

All of the reports presented an overview of current and future risks to their sector. There is evidence of regulators driving action on adaptation actions through setting targets, creating guidance and taking steps to improve the evidence base on climate risk and adaptation. They also presented insights on the progress being made in their sectors and the aspects they are finding challenging.

4. Principles of ARP

This section presents our findings on how well this round of reporting has delivered on the principles set out in ARP strategy.

Defra defined the following principles for ARP3:

- Proportionate, risk-based and streamlined to minimise burdens or duplication.

- Builds on previous rounds of reporting to improve report quality and participation.

There are several trade-offs with delivering on these principles that were identified as part of our assessment:

- **Alignment with regulatory cycles:** Some reporting organisations highlighted differing timescales of ARP and their other regulatory reporting obligations. They suggested that an alignment of the timetables would help reduce the burden and risk of duplication of effort. However, due to the nature of ARP as a cross-sectoral reporting regime, it is not possible to align ARP reporting with all regulatory reporting timetables which differ across infrastructure subsectors.

- **Risks of duplication with other Environmental, Social and Governance initiatives:** Many organisations reporting under ARP are also within scope of the Task Force on Climate-Related Financial Disclosures (TCFD). There are several TCFD requirements which overlap to some extent with ARP requirements (Box 2.6). Reporting organisations consulted as part of this assessment however felt there was not significant duplication of effort between the two reports, especially since TCFD reports are annual and ARP is every five years. Participants did note that the information compiled annually for TCFD is in fact a helpful source to inform their ARP submission and that the introduction of TCFD has improved the quality of information presented in their ARP reports. As these initiatives grow in scale, and infrastructure regulation requires more climate resilience-related information, this could create risks of duplication and a disproportionate burden to reporting organisations.

- **Suitability of climate risk data:** Accessibility of latest UK Climate Projections (UKCP18) was raised in all workshops as a significant barrier for reporting organisations. Many found it challenging to access or interpret the interfaces to the projection data or found that the relevant variables for assessing their climate risks were not easily accessible.

The organisations that attended the workshops consistently expressed a need for more guidance and support throughout the ARP cycle, both to reduce reporting burdens and to ensure that reports are delivering useful insights. This included a request for more detailed guidance being available online and more engagement through the reporting process.

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Box 2.6
TCFD requirements which overlap with ARP

There are a number of TCFD requirements which overlap to varying extents with the scope of ARP:

- Risk management

    – Describe the organisation's processes for identifying and assessing climate-related risks.

    – Describe the organisation's processes for managing climate-related risks.

    – Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organisation's overall risk management.

- Metrics and targets

    – Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.

    – Describe the targets used by the organisation to manage climate related risks and opportunities and performance against targets.

- Governance

    – Describe the Board's oversight of climate-related risks and opportunities.

    – Describe management's role in assessing and managing climate-related risks and opportunities.

- Strategy

    – Describe the climate-related risks and opportunities the organisation has identified over the short, medium and long term.

    – Describe the impact of climate related risks and opportunities on the organisations business, strategy and financial planning.

    – Describe the resilience of the organisation's strategy, taking into consideration different climate related scenarios including a 2°C or lower scenario.

Source: TCFD Requirements.

Report quality in this round has improved relative to the previous round indicating that there is evidence of increasing standards over time. However, inconsistencies in report quality across sectors and organisations remain. Sectors with greater regulation on adaptation are typically those producing higher quality ARP reports – notably the water, road and rail sectors.

Feedback on ARP reports was desired by many organisations to help drive progress across rounds.

Many reporting organisations also expressed a desire for feedback on submitted ARP reports, indicating that formal feedback would help raise the profile of climate risk management and adaptation planning in their organisation further over future rounds (Figure 2.4). A formal review and feedback process would also add a degree of credibility to the information reported under ARP. Whilst auditing of TCFD submissions will add a degree of quality control for some elements of ARP, in the longer term there may be value in introducing an audit requirement into the ARP process, to increase certainty in the level of climate risk preparedness.
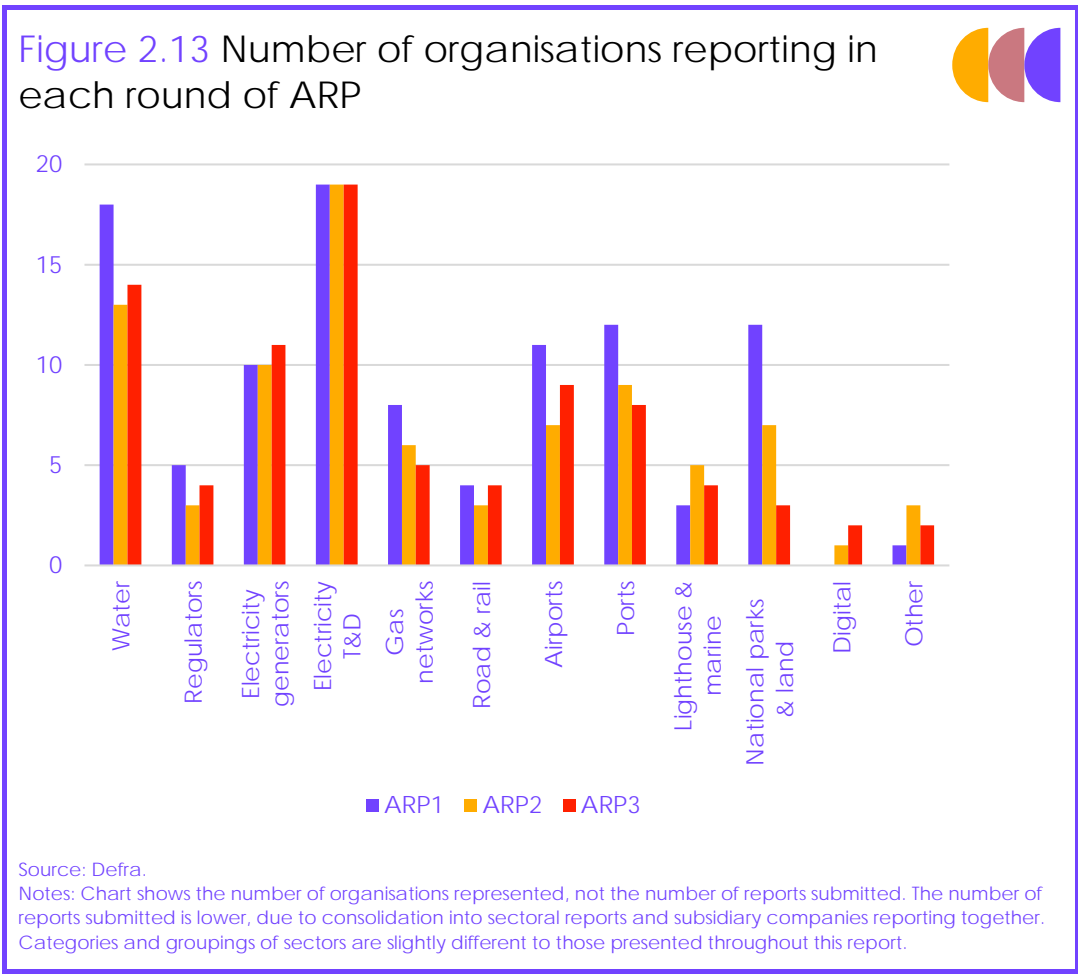
5. Evolution of reporting

This section presents our findings on what changes can be observed in organisations' approaches to reporting across the three ARP rounds to date, and the coverage of sectors achieved under the ARP process.

The number of organisations represented in ARP3 is lower than the first round but similar to the second round (Figure 2.13):

- In ARP1, the only mandatory round of reporting, 105 organisations submitted a report.

- In ARP2, 86 organisations reported voluntarily.

- A total of 88 organisations have reported voluntarily in the third ARP round.[*]

Around one-fifth of invited organisation didn't submit a report in ARP3.

However, despite the number of organisations represented being consistent with the previous round, almost 20% of the invited organisations have not participated in ARP3. As a result, there are gaps in submissions for ARP3 in many of the sectors – airports, ports, water, historic sites and Government regulators. This means we do not have a complete picture of preparedness for any of these sectors. Half of the non-reporters in ARP3 did report in the previous round.

Figure 2.13 Number of organisations reporting in each round of ARP

Source: Defra.
Notes: Chart shows the number of organisations represented, not the number of reports submitted. The number of reports submitted is lower, due to consolidation into sectoral reports and subsidiary companies reporting together. Categories and groupings of sectors are slightly different to those presented throughout this report.

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[*] The numbers represent the number of organisations represented in reports, not the number of reports submitted. Since the first ARP round there has been some consolidation into single sectoral reports (submitted by a trade body) on behalf of a larger number of organisations, and some subsidiary companies reporting together in a single report.

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The gaps in reporting represent significant infrastructure and services in the UK (Figure 2.14):

- Of the 14 port authorities who were invited to report, four major harbour authorities, along with British Ports Association and UK Major Ports did not report. These harbour authorities handled 21% of trade in 2020.

- Out of 19 organisations in the water sector who were invited to report, five did not, including Water UK. These companies collectively serve over 2.8 million customers.

- Bristol airport was used by 8.6 million passengers in 2018 and has some published plans for adaptation. However, these plans were not captured in the reporting as they were the only airport not to report out of 12 that were invited.

- Out of six rail and roads organisations, Eurotunnel Ltd was the only organisation not to report. The organisation has 50km of railway tunnel which 1,654 rail freight trains and almost 1 million passenger vehicles passed through in 2021.

- Ofcom, Ofgem, and the Financial Reporting Council regulate communications; electricity and downstream natural gas; and auditors, accountants and actuaries. These government and financial regulators were invited to report but did not.

It is challenging to directly compare the content and quality of the voluntary ARP3 reports to the decade old mandatory ARP1 reports. As ten years have passed since ARP was mandatory, comparing the quality of the ARP3 voluntary reports to the mandatory reports from 2011 is not a meaningful exercise. Organisations' approaches to climate risk management have evolved in this time due to policy and regulation, reputation and competition, and the impact of weather events on their operations emphasising the need to act.

Figure 2.14 Gaps in ARP3 coverage from non-reporters

50km railway tunnel carrying around 1600 freight trains and one million passenger vehicles annually

Four harbour authorities handling 21% of trade

One airport used by more than 8.6 million passengers annually

Four water companies serving over 2.8 million people

Source: CCC analysis of Defra ARP3 submission data.
Notes: This map shows key infrastructure gaps in ARP3 submissions due to non-reporting (organisations invited to report that did not submit reports). Not all non-reporting organisations are shown, for example regulators that do not operate physical infrastructure and historic sites are excluded.

We have identified an organisation in the gas sector that meets the criteria for participation (number of customers served) but was not invited to report. Ahead of the next round, Defra should review each of the sectors to ensure all organisations who meet the criteria are being invited to report.

6. Other policy insights

This section presents our findings on what insights can be gathered from ARP reports in relation to the Government's wider environmental agenda. A non-exhaustive summary is presented below.

Around 50% of the reports provide useful insights on the broader environmental policy issues of Net Zero, the 25-Year Environment Plan (25YEP), and green finance. Most of the insights beyond adaptation included within the ARP reports related to the transition to Net Zero greenhouse gas emissions and delivery of the 25YEP. There was also evidence of organisations starting to consider adaptation and Net Zero together. There were some limited insights on green finance in the reports, mostly related to green bonds.

a) Net Zero delivery

Every airport operator's report provided insights on their activities related to Net Zero, with many setting out their net zero targets and strategies. For example:

- In 2020 the UK aviation sector set a goal for net zero emissions and published a road map to get there.

- The Glasgow Airport Net-Zero roadmap plans for decarbonisation of the airport heat network by the mid 2030's in line with its net zero target.

- Heathrow has developed a Net Zero Plan, which will be published in early 2022, and consulted with airlines, partners policymakers and environmental groups.

- Manchester Airport Group airports are each independently certified to Level 3+ (Neutrality) of the Airport Carbon Accreditation programme.

In the ports sector, there is evidence of a number of initiatives to reduce emissions and contribute to the Government's Net Zero target, including:

- 17 out of Associated British Ports Group's 21 ports have renewable energy generation projects providing clean power for the business, customers and the national grid. They have reduced their own CO_2 emissions by over 35% since 2014 and invested over £55 million in green technologies, including electric vehicles, fuel efficient pilot vessels, high efficiency transformers, new LED high-mast lighting and energy generation.

- The Port of London Authority has committed to halve carbon emissions relative to its 2014 baseline by 2025 and achieve Net Zero by 2040, or sooner.

The energy sector provided insights related to new technologies for Net Zero. Cadent Gas are in the process of demonstrating that the conversion of their existing gas network to deliver 100% hydrogen is safe, technically feasible and economical. As part of this programme, they are exploring blending hydrogen and the process of conversion to 100% hydrogen. SP Energy Networks reported they are facilitating communities to connect up to 1.8m electric vehicles, 1.1m heat pumps and up to an additional 7.5GW of distributed generation (around 90% of which is derived from renewable and storage solutions) by the end of this decade.

Initiatives in the water sector to contribute to Net Zero include:

- Water UK have produced a Net Zero 2030 Route Map.

- Anglian Water are co-sponsoring the water industry's collective commitment to reach net zero carbon by 2030, with Northumbrian Water and Yorkshire Water. They are using the water industry's net zero route map to develop a detailed action plan around its three distinct pathways: reducing demand, technology-led solutions and nature-led solutions.

- Affinity Water is currently investing £29 million in solar power, with the first two sites in the programme currently in construction. The initial installations will generate 1MW and 0.5MW respectively and are due to be completed in 2022.

- A range of other initiatives by water companies to reduce emissions and improve energy efficiency in operations were reported, such as installing solar generation and developing battery storage on-site capacity.

Network Rail's decarbonisation programme seeks to reduce their direct, indirect and embodied greenhouse gas emissions to meet government targets to decarbonise the railway by 2045 in Scotland and 2050 in England and Wales. National Highways' goal to become net zero is set out in Net Zero Highways: Our 2030/2040/2050 Plan.

The Environment Agency plans to become Net Zero by 2030 and Historic England by 2050.

b) 25 Year Environment Plan delivery

The Environment Agency, Natural England and water sectors reports contained the most insights on the delivery of the 25 Year Environment Plan.

Many of the identified measures for adaptation in the Environment Agency and Natural England reports will directly and indirectly contribute to delivery of the 25 Year Environment Plan (25YEP). For example, the Environment Agency's actions to secure new water supplies, to improve water quality and enhance riverine habitats, and many of Natural England's strategic and underpinning programmes.

Beyond these public bodies, the water sector provided the majority of insights on activities that will support delivery of Government's 25 Year Environment Plan, including:

- Anglian Water will apply biodiversity net gain assessments to projects from April 2020, helping the region's wildlife to become more resilient to climate change. Biodiversity is one of the metrics they use to define their impact on natural capital in the region. Anglian is currently developing a natural capital strategy and key metrics for water quality and quantity and biodiversity.

- Northumbrian Water's catchment-based approach to planning and service delivery allows it to work with local communities and the agriculture sector to develop environmental improvements; these include improving biodiversity, reducing flood risks through natural flood management, reducing the environmental impact of discharges, and improving raw water quality.

Chapter 2: Evaluation of the third Adaptation Reporting Power round

- South East Water is currently co-creating a 25 Year Environment Plan which will set out what it needs to deliver over the next 25 years in addition to principles for Water Resource Management Plans (WRMPs) and future business plans in relation to environmental resilience.

- South West Water's strategic Environment Plan aligns with the Government's 25 Year Environment Plan and details how it will work with communities and businesses to improve the environment and achieve the key targets. Integral to the plan is the work on natural capital and catchment-based planning for both water and wastewater services.

- As part of 2019 price reviews, Ofwat required companies to reduce pollution incidents by 30% by 2025 and to improve 12,000km of rivers. Ofwat's Green Recovery decisions (2021) allowed an additional £2.7 billion of funding for environmental investment, providing extra funding for low-carbon water treatment solutions, nature-based and catchment management solutions and 'blue-green' flood protection infrastructure.

Network Rail's Environmental Sustainability Strategy includes core priorities for improved biodiversity of plants and wildlife, minimal waste and the use of materials. They report that they will continue to protect, maintain and enhance biodiversity across the railway landscape by 2035. Their sustainable land use programme seeks to manage the risks to the railway from lineside vegetation whilst achieving their Environmental Sustainability Strategy ambition of 'improved biodiversity of plants and wildlife'.

The Port of London Authority has been undertaking habitat enhancement to compensate for the decline in habitat. In 2019 their environment team appraised the impact on enhancements continued viability and concluded that, with careful management of sites and planning, the habitat enhancement at PLA's site can reduce the effects of climate change. The habitat enhancement can support migration of species, overwintering species, provide breeding ground, and improve the stability of the riverbank.

c) Green finance

There were some limited insights on green finance in the reports:

- The Financial Conduct Authority discussed capital mobilisation and addressing the challenges to take-up of green finance.

- In 2017 Anglian became the first European utility company to issue a sterling Green Bond, following up with a second in 2018. Their initial £250 million, eight-year bond will mature in August 2025 with a return to investors of 1.625 per cent.

- Northumbrian Water is developing its approach to using sustainable finance instruments, such as green bonds, to finance their business.

- The Environment Agency has included a range of actions around providing technical input and advice into the greening finance framework for investors in the UK.

To gain holistic insights on broader topics from ARP would require broadened reporting requirements.

While the reports do provide some useful insights on these broader policy areas, to gain a full picture on these issues would require an explicit reporting requirement for future rounds, which does not seem a proportionate requirement for ARP reporting.

Endnotes

[1] WSP (2020) *Interacting risks in infrastructure, the built and natural environments. Research in support of the UK's Third Climate Change Risk Assessment Evidence Report.*

[2] National Infrastructure Commission (2020). *Anticipate, React, Recover: Resilient infrastructure systems.*

[3] TechUK (2021) *Sector Readiness for Climate Change Risks: Data Centres - Report to DEFRA under the Adaptation Reporting Power: Third Round.*

Chapter 3

Recommendations for the fourth Adaptation Reporting Power cycle
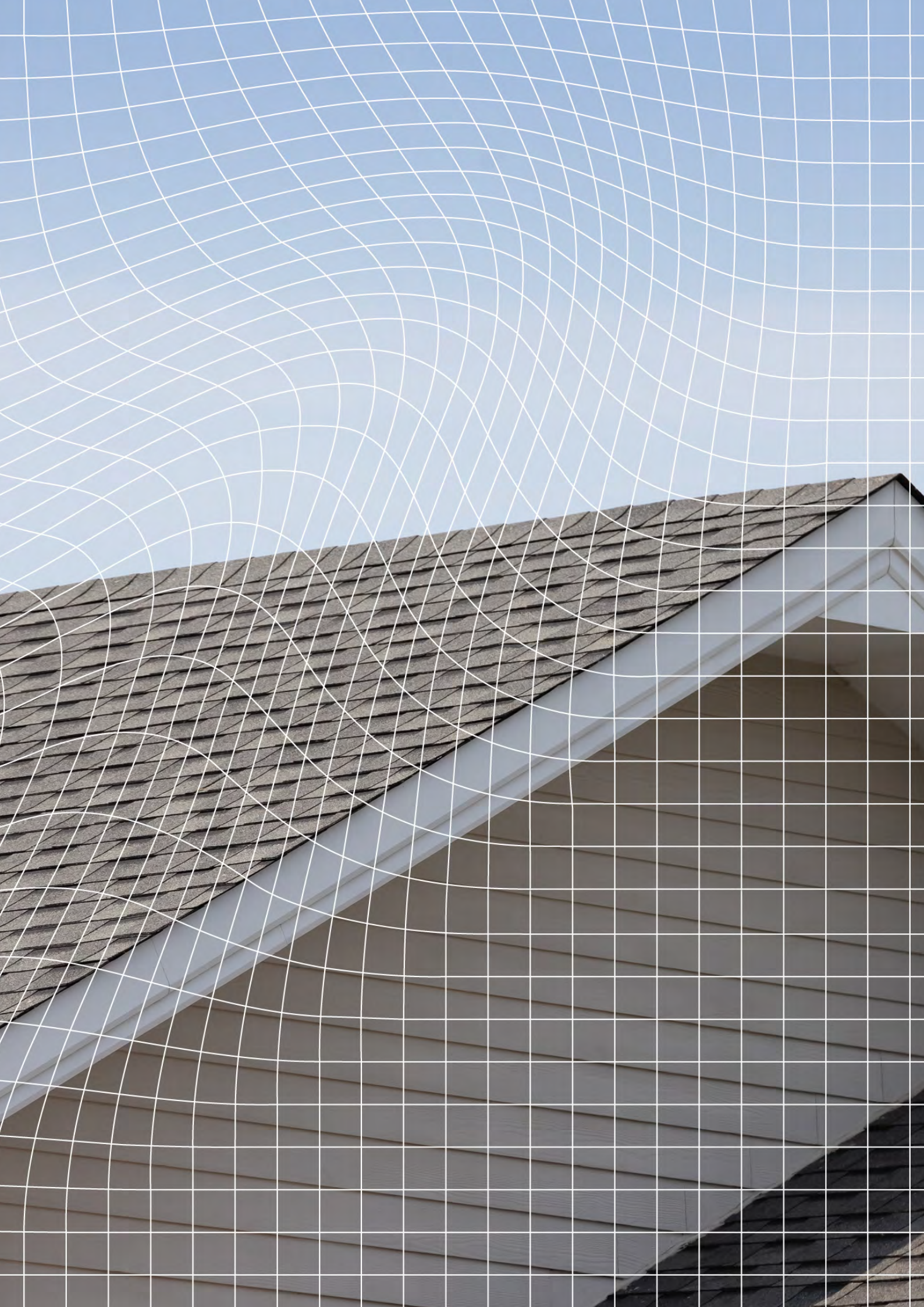
Summary and key messages

This chapter provides recommendations for the next ARP round in three key areas: making ARP work for Government, making ARP work for reporting organisations and improving climate preparedness.

The previous chapter has summarised this assessment's findings across six evaluation themes from the third round of reports under the Adaptation Reporting Power (ARP). This chapters sets out our recommendations for how the next cycle of the ARP (ARP4) could be further improved to best deliver on its aims. Many of these recommendations seek to align ARP with the CCC's ten principles of good adaptation.

Our key areas of recommendation are:

- Making ARP work for Government:

    – Ensure future rounds usefully inform CCRA and NAP

    – Realign ARP timing with the rest of the statutory adaptation cycle

    – Make the next ARP cycle mandatory

    – Expand the scope to include other organisations and sectors

    – Review the approach of consolidated sectoral reports and reporting by regulators

- Making ARP work for reporting organisations:

    – Improve reporting on interdependencies

    – More guidance and support for reporting organisations

    – Improve accessibility of climate projection data

- Improving the climate preparedness of reporting organisations:

    – Consistent identification of and reporting on adaptation actions and their effectiveness

    – More comprehensive, and where possible quantitative, assessments of risk

    – More information on monitoring and evaluation

This chapter has three sections:

1. Making ARP work for Government

2. Making ARP work for reporting organisations

3. Improving climate change preparedness of reporting organisations

1. Making ARP work for Government

In this section we provide recommendations related to making ARP work for Government. These are summarised in Table 3.1 and discussed below.

a) ARP4 should be designed to inform the next Climate Change Risk Assessment (CCRA) and National Adaptation Programme (NAP), including re-aligning timeframes in the statutory framework.

Our assessment of the effectiveness of the statutory framework clearly highlights that the current timing of the ARP, CCRA and NAP cycles are not well aligned:

Our assessment shows that the current ARP cycle is not most effectively supporting the statutory policy cycle.

- Less than 5% of ARP3 reports were available to inform the CCRA3 evidence and advice reports.

- Less than 5% of the ARP3 reports were available to inform the CCC's biennial assessment of progress in adaptation in 2021.

- This was equally an issue in the second reporting round of ARP, where most of the reports were not available to inform CCRA2 or the CCC's 2016 Progress Report.

This has limited the value of the third round of ARP in informing UK-wide risk assessments and adaptation policy programmes. In the immediate term, a priority for Defra should be to consider commissioning an update of the CCRA3 infrastructure chapter to reflect the new information contained within the ARP assessment.

Without adjustment to the timing of the ARP cycle it is likely that a similar situation will arise for the fourth CCRA and subsequent NAP. It is the opinion of the Committee that the timing of ARP must be re-aligned to maximise the effectiveness of the statutory framework.

We recommend that the deadline for the next ARP round should be June 2024.

We recommend a deadline for the submission of ARP reports by June 2024.

- This would mean that reports are available in the third year of the five-year CCRA4 cycle – sufficient lead time for this to inform the assessment of climate change risks to infrastructure in CCRA4.

- This timeframe will align well for some infrastructure regulatory cycles and not well for others. As there is no single timeframe that would work for all infrastructure sub-sectors the timeframe should prioritise alignment with the statutory cycle.

This shortened ARP cycle should be streamlined to focus primarily on reporting progress to minimise the burden to organisations.

A June 2024 deadline for the next ARP cycle would create a shorter reporting cycle for the participating organisations (two and a half years rather than five). For this to be delivered without undue burden to the reporting organisations, the requirements for round four should be streamlined to focus primarily on reporting progress in implementing adaptation plans and their effectiveness in reducing climate risks.[*] Subsequent ARP rounds should follow a five-year cycle.

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[*] Reporting organisations should still review and present a climate risk assessment, however as the status of climate risks is not anticipated to change significantly in two and a half years this could take the form of an update, highlighting key changes since ARP3.

Chapter 3: Recommendations for the fourth Adaptation Reporting Power cycle

With a better aligned statutory framework, there could also be value in requiring ARP reporting organisations to report on activities which will support delivery of NAP objectives.

b) Make the next ARP cycle mandatory.

The analysis of the ARP3 returns highlights significant coverage gaps for information on climate risks to infrastructure:

- Almost 20% of the invited organisations have not participated in ARP3.

- There are gaps in submissions for ARP3 in many of the sectors.

- Half of the non-reporters in ARP3 did report in the previous round.

To help address these coverage gaps the Committee recommends that the next ARP cycle should be mandatory for all invited organisations. A mandatory reporting obligation could also act as a driver of adaptation action, just as TCFD obligations have contributed to increased ambition and action on evaluating climate-related risk and allocating capital to manage those risks. Our engagement with reporting organisations for this assessment suggests that many would not find mandatory ARP reporting a significant burden.[*]

Defra should also engage with the non-reporters from round three, particularly those who have engaged in previous reporting rounds, to understand the reasons behind the decision not to report in this round.

c) Expand the scope.

The Committee has previously recommended that the scope of ARP is widened to incorporate canals and reservoirs (not covered by water company reports), more of the health and social care sector and local authorities. We still consider that extending the ARP scope to these types of organisations would provide important information related to climate risk planning in the UK.

d) Review the approach of consolidated sectoral reports and reporting by regulators.

There has been more consolidation into summary reports for some sectors in this ARP cycle compared to previous ones. Despite the advantages of streamlining the reporting burden and providing sectoral systems perspectives, it has had implications for the quality of information obtained from ARP3. There is limited information on the scale of climate risks and progress in adaptation by energy generators, data centres and telecommunications companies. We recommend the approach to sectoral consolidation is reviewed ahead of the next round. It may be appropriate to return to individual reporting for electricity generators and Defra should work with the electronic communications sector to identify an approach which provides Government and other organisations with more detailed information on the preparedness of the sector. Sector summary reports must also clearly state the organisations that they cover. Defra should also consider whether reports by regulators should follow a different format to infrastructure operators – a detailed risk assessment and programme of adaptation measures is typically not relevant and is already provided by the sector reports. There is however still value in requiring regulators to report on how they are driving and monitoring progress on adaptation in their sectors.

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[*] Almost 50% of organisations attending our workshops stated that mandatory reporting would raise the profile of climate risk management and adaptation planning in their organisation (Figure 2.4, Chapter 2).

e) Engage with non-reporters to understand reasons for not participating.

Almost 20% of the invited organisations have not participated in ARP3. As a result, there are gaps in submissions for ARP3 in many of the sectors – airports, ports, water, historic sites and Government regulators. This means we do not have a complete picture of preparedness for any of these sectors. Half of the non-reporters in ARP3 did report in the previous round. Defra should engage with the organisations who have declined to submit a report to understand why they have not participated.

Table 3.1 Recommendations – Making ARP work for Government	
Recommendation	**Owner**
A principle for future rounds of ARP should be that reports usefully inform CCRA and NAP development. To that end: • The deadline of ARP4 should be June 2024, to ensure the reports can inform CCRA4 and to better align ARP with the statutory climate risk framework under the Climate Change Act. Subsequent ARP rounds should follow a five-year cycle. • Requirements for ARP4 should be streamlined to focus primarily on reporting progress in implementing and effectiveness of adaptation plans. • Consider commissioning an update of the CCRA3 infrastructure chapter to reflect the new information contained within the ARP assessment. • Consider aligning the reporting requirements with NAP3, requiring organisations to report on activities which will support delivery of NAP objectives.	Defra
The next round of ARP must be mandatory to improve participation and drive action on adaptation.	Defra
The scope of ARP4 should be extended to include relevant local authority functions in England, more health and social care organisations, canals, reservoirs and food supply chains. Defra should also ensure that all organisations who meet the criteria for participation are being invited to report.	Defra
Review the approach to sectoral consolidation of reports, to ensure reports provide detailed and consistent information on the preparedness of all sectors. In particular, more detailed information is needed for the digital and telecommunications sector and energy generators.	Defra
Consider whether reports by regulators should follow a different format than infrastructure operators, to recognise their differing roles and responsibilities.	Defra
Engage with the non-reporters from round three, particularly those who have participated in previous rounds, to understand why they have not participated.	Defra

2. Making ARP work for reporting organisations

In this section we provide recommendations related to making the ARP work for reporting organisations. These are summarised in Table 3.2 and discussed below.

a) Improve reporting on interdependencies.
Climate risks from interdependencies (risks that arise from an organisation's reliance on another organisation or sector) remain the biggest gap in our understanding of the climate preparedness of ARP organisations. Almost all organisations have identified sources of interdependency risk at a high level, however these have not been consistently incorporated into risk assessments. Only 31% of workshop participants felt their organisation has a good understanding of the scale of risk from interdependencies and a plan in place to manage it.

Action from Government is needed to overcome the barriers to addressing interdependency risks.

Our assessment identified a number of barriers to identifying and managing interdependencies across reporting organisations. While much of the effort to identify and manage interdependency risks has to come from the infrastructure operators and service providers themselves, there is a need for Government to support reporting organisations to better understand the risks:

- **Produce a template or guidance:** A template for assessing risks from interdependencies would provide more consistent information on risk across sectors which interdependent. More detailed guidance is required to support organisations to identify and manage these risks.

- **Enable collaboration and data sharing**: Provide more support for collaboration and networking forums such as the Infrastructure Operators Adaptation Forum (IOAF). The IOAF is no longer funded, but as a well-engaged network of infrastructure operators, government agencies and researchers, it has the potential to produce data and approaches to improve management of interdependency risk across infrastructure sectors.

- **Stress testing of core infrastructure:** Enable stress testing of core infrastructure. by defining a set of parameters to identify weaknesses in interdependent assets and systems. The Bank of England has recently introduced climate stress tests for the banking sector.

- **Work with regulators:** Where statutory functions allow, regulators can support cross-sector working to manage interdependencies by incorporating this into regulatory obligations.

- **Build the evidence base:** For example, ensure consistent reporting by all the core sectors through requiring mandatory reporting and mandatory use of templates; disseminate information from ARP3 risk assessments to related organisations and sectors; consider an exercise to map interdependencies for CCRA4, allocate public funding and research.

b) More guidance and support for reporting organisations.

Our analysis concludes that there are signs of positive progress in organisations' approaches to risk assessment and adaptation planning since the last round of reporting in 2016. The changes introduced by Defra for round three have contributed to this progression – in particular, the introduction of a template and the push for more reporting on interdependency risks. However, our engagement through the stakeholder workshops identified some areas where organisations require more support:

- Many expressed a need for more detailed reporting guidance. Guidance should be available online to ensure it is accessible to all and to minimise knowledge loss within organisations due to staff turnover.

- There was interest in greater engagement with reporting organisations during the reporting cycle, for example through more sector workshops or one to one engagement.

- Reporters also felt that feedback on their submitted reports would support them to improve their approach, with more than 70% stating that formal feedback on their ARP report would help drive more action on adaptation in their organisations. Formal review and feedback could also strengthen the credibility of the reporting process.

Defra should prioritise increasing the support given to reporting organisations to ensure that the ARP process is as accessible for reporting organisations as possible and supports the production of high-quality reports. This may include additional support for first time reporters and smaller organisations with limited capacity.

c) Improve accessibility of climate projection data.

Accessibility of the latest UK Climate Projections (UKCP18) was raised in all workshops as a significant barrier for reporting organisations. Many found it challenging to access or interpret the interfaces to the projection data or found that the relevant variables for assessing their climate risks were not easily accessible. In its current format, UKCP18 does not provide the necessary information, without further analysis, to assess risk in many infrastructure sectors. Defra should commission further products to improve accessibility of UKCP18 climate projection data to support climate risk assessments and should work with sectors to identify their specific information needs.

More guidance, engagement and feedback can help reporting organisations strengthen their ARP reports.

Some reporting organisations (e.g. first time reporters) may need more guidance than others.

Removing barriers to accessible climate information is a key priority.

Chapter 3: Recommendations for the fourth Adaptation Reporting Power cycle

Table 3.2
Recommendations – Making ARP work for reporting organisations

Recommendation	Owner
Improve reporting on interdependencies, by: • Producing a template or guidance for considering interdependencies. • Enabling collaboration and data sharing between organisations. • Exploring coordinated stress testing of core infrastructure. • Working with regulators to support cross-sector working to manage interdependencies. • Building the evidence base through publicly funded research.	Defra, reporting organisations
Provide more detailed guidance and support for reporting organisations, accessible online, to ensure quality and consistency of reporting.	Defra
Undertake greater engagement with reporting organisations during the reporting cycle.	Defra
Provide feedback to reporting organisations for future rounds.	Defra
Commission further products to improve accessibility of UKCP18 climate projection data to support climate risk assessments by reporting organisations. For example, a weather generator or building design files with 'typical meteorological years'.	Defra

3. Improving climate change preparedness

In this section we provide recommendations related to improving the climate preparedness of reporting organisations. These are summarised in Table 3.3 and discussed below.

Our assessment of the climate preparedness of reporting organisations (Chapter 2, Section 3) found that, overall, the quality of reporting has improved since the second ARP round but opportunities for further improvement remain.

a) Consistent identification of and reporting on adaptation actions and their effectiveness.
Linking adaptation actions to risks has improved since ARP2. Most of the sectors assessed scored High for considering adaptation actions in the context of specific risks, however there is still not consistent linking of actions to risks across all reporting organisations in every sector. Progress reporting on ARP2 actions was mixed. It was not always possible to assess the extent to which previous actions had been completed or progressed, or how effective they were at reducing risks.

Consistent reporting on adaptation actions by infrastructure operators is required in order to inform national adaptation planning.

b) More comprehensive, and where possible quantitative, assessments of risk.
Only three of the sectors assessed scored High in their assessment of a range of warming scenarios and timeframes. The 2°C to 4°C global warming level range is a useful indicator of the spread of possible 2100 climate outcomes that can inform adaptation strategies for the second half of the century (whilst acknowledging that they do not represent the full range of possible changes).

While the majority of reports assessed their climate risks to at least 2050, this was not consistently the case. Much of the infrastructure assets represented in ARP reports will still be in operation later in the century. It is imperative that climate risk assessments consider potential impacts for the lifetime of their assets under a range of plausible climate scenarios.

c) More information on monitoring and evaluation.
Reporting on monitoring & evaluation (M&E) approaches was mixed and, in many cases, we were unable to assess M&E due to a lack of information. It is vital that organisations have effective M&E in place to monitor climate risks and progress in adaptation actions over time. While almost all organisations presented risk assessments based on a risk matrix of likelihood and consequence (or equivalent), only a small number of reports demonstrated the use of metrics or performance indicators to measure and monitor risks. We note that Defra is undertaking a programme of work to develop indicators for the next NAP. Defra could define as set of metrics for reporting organisations to consider measuring and monitoring risks against.

Table 3.3 Recommendations – Improving climate change preparedness of reporting organisations	
Recommendation	**Owner**
In future rounds of ARP: • Require all reporting organisations to link adaptation actions to risks, with clear ownership and timescales, and to provide more information on the effectiveness of adaptation actions in reducing risk within their ARP reports. • Standardise the format of progress reporting on adaptation actions to ensure these are consistently being reported and require all organisations to include evidence of the effectiveness of adaptation actions in reducing risk. • Require all organisations to present climate change risk assessments that consider a range of plausible future warming scenarios. • Require all organisations to assess risks over timeframes that are relevant for the organisations' infrastructure and operations, and as a minimum to 2050 for all reports. • Require all organisations to describe their governance approach and monitoring and evaluation framework.	Defra, reporting organisations
Building on ongoing work to develop indicators for NAP3, provide a set of metrics for reporting organisations to consider measuring and monitoring risks against.	Defra

Endnotes

There were no endnotes in this section.

Chapter 3: Recommendations for the fourth Adaptation Reporting Power cycle

Appendix A

Reporting organisations

The following table lists all of the organisations who submitted an ARP3 report.

Table A1	
Organisations who submitted an ARP3 report	
Sector	**Organisation**
Airports	Birmingham International Airport, Cardiff International Airport, East Midlands Airport, Manchester International Airport, Edinburgh Airport, Glasgow International Airport, London Gatwick Airport, London Luton Airport, London Stansted Airport. *(London Heathrow Airport, National Air Traffic Control Services)
Ports & Lighthouse authorities	Northern Light House, Trinity Lighthouse, Dover Harbour Board, Mersey Docks and Harbour Company, Port of Sheerness Ltd, Port of London Authority. (ABP Harbour Authority Hull, ABP Harbour Authority Humber, ABP Harbour Authority Immingham, ABP Harbour Authority Southampton)
Road & Rail	Transport for London, Network Rail Infrastructure Limited, High Speed 2. (Highways England)
Electronic communications	Electronic Communications – Resilience and Response Group (Tech UK)
Water	Severn Trent Water Ltd, United Utilities Water Plc, Affinity Water (incorporating Veolia Water Central Ltd, Veolia Water East Ltd, Veolia Water Southeast Ltd), Anglian Water Services Ltd, Bristol Water Plc, Essex and Suffolk Water, Northumbrian Water Ltd, Portsmouth Water Ltd, South East Water Ltd, South West Water Ltd, Southern Water Services Ltd, Thames Water Utilities Ltd, Wessex Water Services Ltd, Yorkshire Water Services.
Energy generators	Energy UK on behalf of: Centrica, Drax Power Limited, E.ON UK, EDF energy, ENGIE, InterGen, Innogy, RWE Npower plc, Scottish and Southern Energy, Scottish Power Generation Ltd, Uniper.
Electricity transmission & distribution	Energy Networks Association, National Grid Electricity Transmission Plc, Scottish Hydro Electric Transmission Limited (SSE), Scottish Hydro Electric Power Distribution Plc (SSE), Southern Electric Power Distribution Plc (SSE), SP Transmission Limited (Scottish Power), SP Manweb Plc (Scottish Power), SP Distribution Limited (Scottish Power), Western Power Distribution (East Midlands) Plc, Western Power Distribution (West Midlands) Plc, Western Power Distribution (South Wales) Plc, Western Power Distribution (South West) Plc, UK Power Networks (Eastern), UK Power Networks (London), UK Power Networks (South East), Electricity North West Limited, Northern Power Grid Plc, Northern Power Grid (Yorkshire) Plc, Northern Power Grid (North East) Plc.
Gas networks	Cadent Gas, National Grid Gas Plc, Northern Gas Networks, SGN Plc, Wales and West Utilities Limited.
Government regulators	Ofwat
Public bodies	Environment Agency, Natural England, Sustainable Development Unit for NHS and Public Health, Seafish Industry Authority, Maritime and Coastguard Agency (Forestry Commission)
Financial regulators	Prudential Regulation Authority (Bank of England), The Pensions Regulator, The Financial Conduct Authority
Historic sites	(Historic England, English Heritage Trust)

* Organisations in brackets submitted after the deadline but have still been incorporated in the evaluation.

Appendix A

Still to report

Two organisations have confirmed they still plan to submit an ARP3 report, but these have not been available on time for inclusion in this assessment:

- High Speed 1 Ltd (Road and Rail)

- Marine Management Organisation (Public body)

Non-reporters

The following organisations were invited to participate in ARP3 but have not submitted a report.

Table A2 Organisations who did not submit an ARP3 report	
Sector	**Organisation**
Airports	Bristol Airport
Ports & Lighthouse authorities	British Ports Association, UK Major Ports, Milford Haven Port Authority, PD Teesport Ltd, The Port of Felixstowe, Harwich Haven Authority
Road & Rail	Eurotunnel Ltd
Water	Cambridge Water Company Plc, Sembcorp (Bournemouth and West Hampshire Water) Plc, South Staffordshire Water Plc, Sutton and East Surrey Water Plc, Water UK
Government regulators	Ofcom, Ofgem
Financial regulators	The Financial Reporting Council
Historic sites	Church of England, National Trust

Appendix B

Stakeholder workshops

a) Workshop attendees

All organisations invited to report in ARP3 were invited to attend one of three workshops to help inform the evaluation. There were 39 participants, representing 35 of the organisations who submitted a report. None of the non-reporting organisations attended a workshop. The table below lists the organisations represented in stakeholder workshops.

Table A3 Workshop attendees				
Organisation	**Sector**		**Organisation**	**Sector**
Cardiff Airport	Airport operator		Cadent Gas	Gas
Heathrow Airport	Airport operator		SGN	Gas
National Air Traffic Control Services	Airport operator		Affinity Water	Water
Associated British Ports	Harbour authority		SES Water	Water
Peel Ports	Harbour authority		Thames Water	Water
UK Major Ports Group	Harbour authority		Wessex Water	Water
HS1	Rail		Yorkshire Water	Water
HS2	Rail		DCMS/Electronic Communications Resilience and Response Group	Electronic communications
Network Rail	Rail		Environment Agency	Public body
South Eastern Rail	Rail		Forestry Commission	Public body
Transport for London	Road and rail		Marine Management Organisation	Public body
Highways England	Roads		Natural England	Public body
National Grid	Electricity & gas networks		NHS England	Public body
Electricity Networks Association	Electricity networks		Bank of England/Prudential Regulation Authority	Regulator (financial)
Electricity North West	Electricity networks		Financial Conduct Authority	Regulator (financial)
Northern Powergrid	Electricity networks		Ofwat	Regulator (water)
SP Energy Networks	Electricity networks		WSP (representing a number of reporting organisations)	Various
UK Power Networks	Electricity networks			

b) Workshop questions

The following questions were explored with participants in each of the workshops, via online polls and interactive whiteboard sessions.

Polls

1. To what extent have your organisation's operations been impacted by weather-related incidents in the last ten years? (e.g., storms, floods, extreme heat) (select multiple)

   a) Not at all

   b) Occasionally affected by weather, minimal disruption

   c) Occasionally affected by weather, severe disruption

   d) Regularly affected by weather, minimal disruption

   e) Regularly affected by weather, severe disruption

2. How would you rate the level of importance of climate risk management and adaptation across your organisation? (select one)

   a) It is a priority issue at top leadership level

   b) It is a priority issue in certain areas of the organisation

   c) It is not a priority issue at this time

3. To what extent do you think the ARP has driven action on adaptation in your organisation over the last ten years? (select one)

   a) It has been a significant driver of action

   b) It has had some impact

   c) No obvious impact

4. How would you rate your organisation's approach to managing climate risks from interdependencies (i.e., risks that arise as a result of failure or disruption to other sectors)? (select multiple)

   a) Good understanding of the risks and plan in place to manage them

   b) Good understanding of the risks but no plan in place

   c) Work needed to understand the scale of the risks

   d) Work needed to develop a plan

5. In future reporting rounds, which of these features (if any) might help raise the profile of climate risk management and adaptation planning in your organisation? (select multiple):

   a) Formal feedback on your report and approach to adaptation

b) Published league tables of performance

c) A structured approach to categorising and reporting climate risk and adaptation action

d) A consistent sectoral approach to reporting

e) A mandatory requirement to report

f) None of these/other

Whiteboard sessions

1. How is climate adaptation factored into wider organisation strategies and planning?

2. What would enable it to be better integrated?

3. What sources do you currently use to assess climate risks to your organisation and to identify adaptation actions?

4. What additional sources of information and evidence would be useful to you?

5. What are the barriers to addressing interdependency risks? What could be done to improve the understanding of or planning for interdependency risks in your organisation and/or sector?

6. Are there elements of the current ARP requirements (i.e., Defra's template) that you don't consider possible (or useful) to monitor and report on?

7. What other reporting (mandatory or voluntary) does your organisation undertake related to climate risks and adaptation, or climate change more generally? Are there synergies or duplication with ARP?

8. What could be done to minimise duplication with other reporting obligations?

9. How has your organisation's approach to climate risk assessment and adaptation planning progressed since the introduction of ARP reporting?

10. What (if any) changes would you suggest for the next round of ARP?

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Climate Change Committee
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