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Cyfoeth Naturiol Cymru Natural Resources Wales

Environment Agency

Llywodraeth Cymru Welsh Government

Evaluating the effectiveness of flood and coastal erosion risk governance in England and Wales

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Email: enquiries@environment-agency.gov.uk

Authors:
Meghan Alexander, Sally Priest, Edmund Penning-Rowsell, Paul Cobbing.

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Research contractor:
Flood Hazard Research Centre, Middlesex University, The Burroughs, Hendon, NW4 4BT

Environment Agency's Project Manager:
Kate Kipling, FCRM Directorate

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Professor Doug Wilson
Director, Research, Analysis and Evaluation

Executive summary

Effective governance for flood and coastal erosion risk management (FCERM) is essential for building and maintaining national resilience, wellbeing and sustainable development in the face of increasing risks posed by climate change. Ensuring the best possible arrangement of actors, rules, resources and bridging mechanisms for multi-level governance is not only necessary for effective FCERM but is pivotal to the nation's ability to adapt to the declared climate emergency.

In the wake of recent and substantial flooding in the UK (winter 2019 to 2020) and the launch of the revised national FCERM strategies in England and Wales, this research provides a timely assessment of the effectiveness of current FCERM governance and opportunities to ensure it is fit for the future. This research draws from around 60 interviews with policymakers and practitioners operating nationally and locally, carried out between May 2019 and February 2020. These insights are supported by in-depth policy and legal analysis, to examine the process, outcomes and impacts of FCERM governance in England and Wales.

Our findings highlight where different elements of governance are constraining the effectiveness of FCERM. If no action is taken, these are likely to hamper the ability to achieve the ambitions of the national FCERM strategies. A total of 35 findings have been identified and grouped according to 7 themes, as follows.

Theme 1: Reconciling complexity through coherent governance arrangements – FCERM governance is notoriously complex. Establishing greater coherence will require further clarification of roles and responsibilities, particularly with regards to climate change adaptation. A legislative review could support more effective operational delivery in FCERM and help to improve resource efficiency. Integrative governance mechanisms could be enhanced/introduced to improve cross-departmental/sectoral working, alongside dedicated resources to truly embed partnership working into institutional cultures.

Theme 2: Resourcing effective FCERM governance – Effective FCERM governance depends on sufficient financial resources. This will require i) long-term settlements for resource/revenue funding, ii) a coherent strategy for involving the private sector and incentivising private finance, and iii) maximising opportunities for aligning FCERM with other socio-economic and environmental agendas (such as the Environmental Land Management Scheme in England and the Sustainable Farming Scheme in Wales). Monitoring the extent to which English partnership funding reforms unlock funding for a wider range of schemes is essential and cross-border learning should be encouraged. Finally, a consistent and transparent governance framework should be established for determining socially-just post-event commitments of funding.

Theme 3: Addressing governance barriers to adaptation – There is an adaptation-implementation deficit, which must be addressed with a greater sense of urgency. This will require the funding gap to be filled, which could involve potential changes to FCERM funding formulae, establishing new cross-departmental/sectoral funding mechanisms and

leveraging alternative forms of finance. Strategic and practical guidance, alongside enhanced/new instruments for implementing adaptive responses (informed through further research), will be essential. Moreover, legal consideration should be given to how provisions for diverting and extinguishing public rights of way may be amended more easily. Overall, there is a need to raise the profile of Shoreline Management Plans (SMPs) and increase awareness across various sectors and the public. Additional resources and capacity building are necessary for meaningful and sustained community engagement, to actively involve communities in visioning and planning for adaptive pathways.

Theme 4: Establishing climate resilient places through spatial planning and resilient design – To avoid inappropriate development in high-risk areas or areas subject to future (SMP) policy change, it may be necessary to i) align planning horizons for strategic policies within local (development) plans and SMPs, ii) strengthen governance capacity (including resources) to ensure adherence to Environment Agency/Natural Resources Wales advice and enable proactive compliance checking, and iii) enhance the accountability of developers. Strengthening governance capacity will be necessary for monitoring compliance as well as the uptake of sustainable drainage systems; for example, through the commencement of Schedule 3 of the Flood and Water Management Act 2010 in England. To increase the uptake of property flood resilience measures, consideration should be given to extending the coverage of Building Regulations (Part C), as well as increasing access to property flood resilience grants. Planning reforms in England must embed climate adaptation into spatial planning.

Theme 5: Facilitating socially-just recovery and building back better through flood insurance – Monitoring the transition to risk-reflective pricing will be essential. Clear targets/milestones could help to avoid potential drift and these could be outlined in the National Adaptation Programme. This could include monitoring insurance penetration to ensure coverage does not significantly reduce as premiums increase, with particular attention to lower income households to ensure inequalities are not exacerbated. Insurance mechanisms (such as reduced premiums and flood performance certificates) can potentially encourage wider uptake of property-level measures. However, these must be carefully designed and implemented as part of a wider package of cross-sectoral initiatives.

Theme 6: Maximising opportunities for FCERM through land use management and agricultural policy reform – The proposed Environmental Land Management Scheme (ELMS: England) and Sustainable Farming Scheme (SFS: Wales) both have the potential to strengthen policy integration between FCERM and land use management and generate transformative change in governance. Payment rates need to be attractive, while accounting for the quality of outcomes and supporting ongoing maintenance where possible. Secondly, there is a need to consider how payment schemes will incentivise coordination between land managers to provide public FCERM goods at-scale. Finally, the boundaries between different finance streams (for example, ELMS/SFS payments, FCERM grant-in-aid and the Nature for Climate Fund) and scope for blended funding, should be fully considered.

Theme 7: Aligning nature recovery and FCERM agendas – Numerous governance mechanisms have been, or soon will be, established to support nature recovery with simultaneous benefits for FCERM. Area Statements (introduced in Wales) and Local Nature Recovery Strategies (proposed for England) provide new bridging mechanisms to facilitate collaborative, joined-up working across public sector bodies and promote multi-benefit approaches. However, it will be important to monitor performance and the extent to which integration, collaboration and delivery is enhanced in practice. The UK Government should consider opportunities to mandate environmental net gain in spatial planning and the achievement of 'net gain' ambitions within the proposed planning reforms. The application of FCERM indicators within the Outcome Indicator Framework of the 25 Year Environment Plan should also be carefully considered.

Acknowledgements

The research was developed in consultation with the project steering group, which included representatives from the Department for Environment, Food & Rural Affairs (Defra), Welsh Government, the Environment Agency, Natural Resources Wales (NRW), the Welsh Local Government Association, the Association of Drainage Authorities (ADA), Water UK and local authority representatives.

We would like to thank the members of the steering group for their time and valuable feedback throughout this project. In particular, we would like to thank Kate Kipling (project manager) and Andy Brown (project executive) for their continued support throughout the research. We are also extremely grateful to those who participated in this study, for sharing their experiences and expert knowledge on matters of flood and coastal erosion risk management.

With thanks to the project steering group:

Andy Brown (Environment Agency)
Kate Kipling (Environment Agency)
Anna Lorentzon (Environment Agency)
Amy Shaw (Environment Agency)
Ian Moodie (Association of Drainage Authorities)
Richard Behan (Water UK and South West Water)
Max Tant (Kent County Council)
Stewart Rowe (Scarborough Council)
Ross Akers (Natural Resources Wales)
Jean-Francois Dulong (Welsh Local Government Association)
Alice Baverstock (Defra)
Jess Phoenix (Defra)
Lowri Norrington-Davies (Welsh Government)
James Morris (Welsh Government)

Contents

1 Introduction

1.1 Background

Effective governance for flood and coastal erosion risk management (FCERM) is essential for building and maintaining national resilience, wellbeing and sustainable development in the face of increasing risks posed by climate change. In the wake of recent and substantial flooding in the UK (winter 2019 to 2020) and the launch of the revised national FCERM strategies in England and Wales, this research provides a timely assessment of the effectiveness of current FCERM governance and whether it is fit for purpose for the future.

1.2 Defining governance

Governance refers to the range of actors (public, private, civil society), rules (formal and informal), resources (financial, knowledge, technological) and discourses that shape the decision-making process, as well as the outcome and impact of this process, in relation to a collective goal. For our purposes, the collective goal refers to effective FCERM in England and Wales. Put simply, governance is about the way in which decisions are taken and implemented, and decision-makers are held accountable. We refer to 'multi-level governance' to reflect the dependencies and interactions that occur between various levels of governance occurring at national, sub-national and local scales.

1.3 Aims and objectives

This research was commissioned to evaluate the effectiveness of FCERM governance in England and Wales, focusing on flood (fluvial, coastal and surface water) and coastal erosions risks. The project addresses 2 main objectives.

Objective 1 – Evaluate multi-level governance arrangements for FCERM in England and Wales to identify opportunities and lessons for enhancing governance effectiveness.

Objective 2 – Evaluate emergent local governance arrangements from selected partnerships to identify good governance practices and inform lessons for enhancing the effectiveness of future partnerships at the local scale.

The project considered the following research questions:

1. How effective are national and local governance arrangements in tackling flood and coastal erosion risks?
2. What are the success conditions for effective FCERM governance? What opportunities exist for improving effectiveness?
3. To what extent are local innovations in governance transferable to other locations and how might transferability be achieved?

This report addresses objective 1 and presents the findings from an in-depth evaluation of FCERM governance in England and Wales, focusing on research questions 1 and 2.

These findings are also presented in a set of summary slides. The research outcomes related to objective 2 (and research question 3) are presented in a separate report, 'Supporting flood and coastal erosion risk management through local partnerships' (Priest and others, 2021), and associated summary slides. Findings from this research have been used to create a partnership self-assessment framework and journey planners (on legitimate partnerships; internal partnership dynamics; and cross-sectoral coordination and integration) providing lessons and examples aimed at practitioners involved in partnership working in FCERM and water management.

1.4 Research methods

The research drew from semi-structured interviews (n=59) carried out between May 2019 and February 2020 with stakeholders operating at national and local scales. These insights were further supported by in-depth document analysis of important policies and legislation within FCERM and related areas of policy. These data were analysed according to various criteria related to governance processes, outcomes and impacts.

1.5 Target audience

This report provides a critical assessment of the current state of FCERM governance in England and Wales, identifying strengths, weaknesses and governance gaps, while highlighting opportunities for improving effectiveness. This information will be useful for policymakers and practitioners working within FCERM in both England and Wales. In particular, the research findings will be valuable for informing the implementation of the latest national FCERM strategies. Furthermore, the information presented may also be of interest to other stakeholders, scrutiny bodies, researchers and consultants with an interest in FCERM.

1.6 Report structure

The report can be navigated according to the interest of the reader and does not need to be read cover to cover. The report is structured as follows:

Section 2 – Understanding governance

This section gives an overview of what is meant by governance and describes the different forms governance may take. It further outlines important features of so-called 'good' and effective governance identified in the literature, which informed the design of the evaluation framework.

Section 3 - Methodology

This section describes the research methods used in this study. This includes an overview of the i) conceptual framework used to characterise FCERM governance (via the Policy Arrangements Approach), ii) the evaluation framework used to assess different features of

governance processes, outcomes and impacts, and iii) methods of data collection and analysis. This section also outlines the limitations of study.

Section 4 - Overview of FCERM governance in England and Wales

This section provides an overview of FCERM in England and Wales, including the distribution of roles and responsibilities. Important similarities and differences between the two systems are highlighted.

Section 5 – Evaluation findings

The main findings from the research are presented in section 5. This is organised thematically to make it easier for readers to focus on specific aspects of FCERM of interest, as follows:

- Reconciling complexity through coherent governance arrangements
- Resourcing effective FCERM governance
- Governance barriers to adaptation
- Establishing climate resilient places through spatial planning and resilient design
- Facilitating socially-just recovery and building back better through flood insurance
- Maximising opportunities for FCERM through land use management and agricultural policy reform
- Aligning nature recovery and FCERM agendas

Section 6 – Summary of findings

Lists the findings from previous sections.

Section 7 – Future research needs

The appendices are available separately:

Appendix A: Governance evaluation framework

Appendix B: Summary of evaluation findings in England

Appendix C: Summary of evaluation findings in Wales

Appendix D: Summary of enablers and barriers to adaptation in England and Wales

2 Understanding governance

2.1 Defining governance

Governance has been defined in various ways (see table 2.1). However, there is a strong consensus that governance is fundamentally concerned with how a collective goal is realised. In short, governance can be regarded as the 'means to an end' (OECD, 2018).

The process of governing is influenced by various (interdependent) dimensions of governance, such as the (combination of) actors, the policy instruments, rules and institutional structures, which collectively influence how things are done. To examine governance in practice we adopt an approach whereby governance is framed in terms of the arrangement of actors, rules, resources and discourses (Hegger and others, 2014; Alexander and others, 2016b).

For the purpose of this research - Governance is defined as the range of actors (public, private, civil society), rules (formal and informal), resources (financial, knowledge, technological) and discourses that shape the decision-making process, as well as the outcome and impact of this process, in relation to a collective goal. For our purposes, the collective goal refers to effective FCERM in England and Wales. Put simply, governance is concerned with the way in which decisions are taken and implemented, and decision makers are held accountable.

We refer to '**multi-level governance'** to reflect the dependencies and interactions that occur between various levels of governance. While we refer broadly to national, sub-national and local levels of governance, it is important to stress that multi-level governance research is not simply concerned with the interaction across administrative jurisdictions, but the extent to which governance arrangements (within and across different levels) support management at the appropriate scale of the problem being addressed (Fournier and others, 2016). Multi-level governance further reinforces the importance of coordination and other forms of 'bridging mechanisms' to overcome fragmentation and foster integrated approaches to complex problems (Gilissen and others, 2016; Cumiskey and others, 2019). For example, it is desirable for spatial planning policy to be aligned to FCERM policy to minimise the exposure of future development to flood and coastal erosion risks.

Table 2.1: Definitions of governance

Definitions of governance
Water governance refers to the "range of political, institutional and administrative rules, practices and processes (formal and informal) through which decisions are taken and

Definitions of governance

implemented, stakeholders can articulate their interests and have their concerns considered, and decision makers are held accountable for water management" (OECD, 2015). In other words, governance addresses the role of institutions and relationships between organisations and social groups involved in water decision making, both horizontally across sectors and between urban and rural areas, and vertically from local to international levels. (OECD, 2018).

Flood risk governance arrangements embody "the actor networks, rules, resources, discourses and multi-level coordination mechanisms through which flood risk management is pursued" (Alexander and others, 2016a: 39).

Environmental governance "refers to the means by which society determines and acts on goals related to the management of the environment. It includes instruments, rules and processes that lead to decisions and implementation" (Driessen and others, 2012: 144).

Environmental governance "refers to the set of regulatory processes, mechanisms and organisations through which political actors influence environmental actions and outcomes. Governance is not the same as government. It includes the actions of the state and, in addition, encompasses actors such as communities, businesses, and NGOs" (Lemos and Agrawal, 2006).

2.2 Different modes of governing

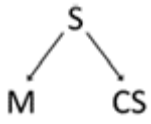
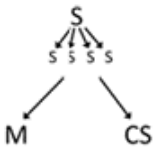
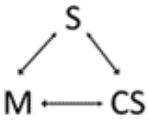
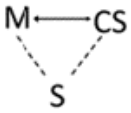
The concept of 'governance' emerged from the recognition that a variety of actors are increasingly involved in managing societal issues and collective action dilemmas, such as climate change adaptation or sustainable development (Lang and others, 2013). In turn, this has prompted debate within academic fields about the evolving role (and power) of the State and how best to provide solutions to collective problems.

For some, governance represents a shift from centralised, state-led ('top-down') decision-making, towards non-hierarchical forms of decision-making ('government to governance' hypothesis; Swyngedouw, 2005). Rather than a single central authority (or monocentric governance), it is argued that multiple 'centres of authority' may establish at different (non-hierarchical) scales and self-organise to address specific problems (Morrison and others, 2019). This is typically described as polycentric governance (Ostrom, 2010). Compared to monocentric systems, polycentric governance is seen as advantageous in terms of achieving benefits at multiple scales, enhancing opportunities for experimentation and enabling more actors to become involved.

However, scholars have been critical of how polycentric governance has been juxtaposed to traditional forms of monocentric governance and its benefits arguably over-stated, with little consideration of documented problems (such as high transaction costs and inconsistencies; see Morrison and others, 2019). Rather than replacing monocentric governance, researchers have highlighted how multiple forms of governance, or hybrid modes, may co-exist and complement (rather than substitute) governmental steering, with the State continuing to play a significant role (Lemos and Agrawal, 2006; Driessen and others, 2012; Bauer and Steurer, 2014). Furthermore, others have challenged whether decentralised approaches alone are sufficient for addressing climate change challenges

(Uyl and Russel, 2018). Proponents of this perspective support a pluralistic view on governance and argue that **different modes of governance may (co-)exist** - from more traditional forms of centralised governance (top-down, government-led), through to decentralised governance and other configurations (for example, public-private governance; Hegger and others, 2020). Archetypical modes of governance are outlined below and reflect different 'centres of authority' within decision-making (adapted from Driessen and others, 2012). This research adopts this latter position. Within our assessment and analysis of FCERM governance we considered what (mix of) different governance modes have established and their effectiveness within current governance arrangements in England and Wales (see section 4).

Table 2.2: Archetypical modes of governance (adapted from Driessen and others, 2012)

Centralised	Decentralised	Public-private	Interactive	Self-governance
				
Central government takes the lead. Formal rules and fixed procedures. Top down; command and control decision making.	Regional or local government takes the lead. Formal rules and fixed procedures. Sub-national governments decide autonomously about collaborations within top-down determined boundaries.	Cooperation mainly between government and market actors (who are granted some autonomy within determined boundaries). Market principles Private actors decide autonomously about collaborations.	Cooperation between government, market and civil society actors (the latter two groups are granted some autonomy within determined boundaries). Collaboration occurs on equal terms. Interactive: social learning, deliberations and negotiations.	Market and civil society actors are autonomous and able to initiate approaches. Informal rules and self-crafted formal rules. Bottom-up: social learning, deliberations and negotiations.
→ dominant role; ←→ equivalent role; - - - background role. *Broad categories of actors include State actors (S), Market actors (M) and Civil Society (CS).*				

2.3 Features of good and effective governance

This research evaluates the effectiveness of current FCERM governance. However, there are multiple ways in which 'effectiveness' may be defined. Therefore, to inform our

evaluation framework, we looked to existing evaluative research, spanning flood and water governance specifically, to (environmental) governance more broadly and assessments of so-called ‘good’ governance. This section provides a brief summary of the literature that was particularly influential in developing our evaluation framework.

Firstly, it is crucial to acknowledge that evaluation needs to be culturally sensitive and context-based (Alexander and others, 2016b). There is no ‘one size fits all’ model of effective governance. Moreover, what is regarded as good or successful is inherently underpinned by social norms and values. Nonetheless, there is a general consensus about broader principles of good governance, which typically include notions of legitimacy, accountability, transparency, human rights, the rule of law, inclusiveness and fairness (Lockwood and others, 2010; Schmidt, 2013; OECD, 2015). Many of these are reinforced through international law, such as the Aarhus Convention on ‘Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters’, which came into force in 2001. Fundamentally, governance should enable citizens to both articulate their interests and exercise their legal rights. These underlying principles of good governance are embedded within the evaluation framework adopted in this research (see section 3.1 and Appendix A).

Expanding this further, the Organisation for Economic Co-operation and Development (OECD) outlines 12 principles of good water governance, formed around 3 central dimensions - effectiveness, efficiency, and trust and engagement. Governance is deemed ‘good’ if it can solve water challenges, “using a combination of bottom-up and top-down processes, while fostering constructive state-society relations” (OECD, 2015: 5). Within this framework, effective governance is supported through the following principles:

- clear roles and responsibilities and coordination across responsible authorities
- management at appropriate scales and fostering coordination between scales
- policy coherence through effective cross-sectoral coordination
- capacity of responsible authorities to address the complexity of water challenges to be met

Principles related to efficiency include providing data and information, mobilising financial resources, effective regulatory frameworks and promoting innovative practices (for example, through learning, experimentation and science-policy interaction). The final dimension of good governance focuses on enhancing trust and engagement through i) mainstreaming integrity and transparency for greater accountability, ii) promoting stakeholder engagement, iii) frameworks and participatory approaches for managing trade-offs (for example, across water users, rural and urban areas, and generations), and iv) regular monitoring and evaluation (OECD, 2015). Although the OECD principles distinguish between effectiveness, efficiency and trust and engagement, it was decided that each of the 12 principles are highly relevant for effective FCERM, therefore, these are embedded in the final evaluation framework (see Appendix A).

We also looked to the limited number of evaluation frameworks that have been proposed for the specific study of FCERM governance. For instance, Alexander and others (2016b) outline a framework for examining ‘resilience’, ‘efficiency’ and ‘legitimacy’ of flood risk

governance arrangements, comprising various sub-criteria and benchmarks for determining success. Societal resilience is assessed through sub-criteria related to capacities to ‘resist, respond and recover’, and ‘adapt’, while legitimacy is further divided into ‘social equity, accountability, transparency, participation, access to information, procedural justice and acceptability’. Effectiveness is presented as a necessary precondition for each criterion individually and is therefore inherently embedded within evaluative assessments. The framework further provides a means of shifting the locus of evaluation to reflect on the process, outcome and impact of flood risk governance. Adopting this approach, our evaluation criteria are also related to the governance process, outcome and impact.

Other frameworks have been developed to assess how specific types of governance mechanisms may mitigate fragmentation and policy silos in flood risk management. For instance, Gilissen and others (2016) define bridging mechanisms as “instruments that remedy fragmentation by enhancing interconnectedness between relevant actors through information transfer, coordination and cooperation.” In turn, the authors demonstrate how these ‘bridging mechanisms’ help remedy specific types of fragmentation seen in flood risk governance arrangements in selected European countries. Another framework is proposed by Cumiskey and others (2019) to assess degrees of integration on flood risk management. Within this, capacity for integration is determined through the strength and type of relationships between actors and influencing mechanisms (categorised according to actors, rules and resources). Integration is also measured in terms of outcome and its realisation in policy and practice. Both Gilissen and others (2016) and Cumiskey and others (2019) were influential in our approach in characterising bridging mechanisms in governance and informing criteria for ‘Integration and collaboration’ (see section 3.1).

3 Methodology

This research evaluates the effectiveness of multi-level governance arrangements for FCERM in England and Wales to identify opportunities for enhancing governance effectiveness. This section presents the analytical frameworks for firstly characterising, and secondly evaluating, FCERM governance, which were developed in consultation with the project steering group[1]. We then present the mixed methods approach used for data collection and analysis, and explain the scope and limitations of the research.

3.1 Criteria for characterising and evaluating FCERM governance

To characterise and describe governance, this research used the Policy Arrangements Approach[2] (PAA) (Arts and others, 2006). The PAA framework distinguishes 4 interrelated dimensions to governance, comprised of actors, rules, resources and discourses. Extending the original PAA framework, we have also included so-called 'bridging mechanisms', related to transfer, coordination and integration, and cooperation. Such bridging mechanisms are defined as governance mechanisms or instruments which help to resolve fragmentation in governance arrangements by creating linkages between actors either within FCERM, or between FCERM and allied policy areas (Gilissen and others, 2016; Cumiskey and others, 2019).

These criteria and guiding questions are summarised below. Although this framework was used to characterise FCERM governance, for brevity, the full details of this are not presented here. However, this information can be found in related reports (see Alexander and others, 2016a; 2019).

[1] The steering group included representatives from Defra, Welsh Government, the Environment Agency, Natural Resources Wales, the Welsh Local Government Association, the Association of Drainage Authorities, Water UK and Local Authority representatives from Kent County Council and Scarborough Borough Council.

[2] The PAA framework was adopted to mirror the approaches used in previous research, namely the EU STAR-FLOOD and the CoastWEB projects, to ensure the cross-utility of findings and consistency in defining governance.

Table 3.1: Policy Arrangement Approach criteria for characterising FCERM governance

Dimension	Guiding questions
Actors Those individuals and organisations that either have responsibilities for managing flood and coastal erosion risks or who are affected. Actors can include public, private and voluntary sectors as well as civil society more broadly.	• Which (public, private and civil society) actors are involved in FCERM? • How are responsibilities for addressing flood and coastal erosion risks distributed? • Which actors have formal or informal decision-making powers and who can influence both FCERM policy and practice? • How are actors working together? Where do actors meet? • Can actor coalitions be identified? • How are local communities at risk involved within decision-making?
Rules Formal and informal legislation, policies, guidance and codes of practice which affect the management of flood and coastal erosion risks. This might also include cultural norms and values.	• What rules are present and leading the approach? • Are rules and responsibilities clearly articulated? • Have any additional rules been adopted to facilitate good FCERM governance? (for example, local agreements)? • What role do 'rules' play in creating bridging mechanisms within FCERM governance? • What legal mechanisms are used to safeguard appropriate governance?
Resources Knowledge, financial, personnel and technical resources needed/available for FCERM.	• What (knowledge, financial, personnel, technical) resources are available? • Is sufficient (knowledge, financial, personnel, technical) available? • How are resources allocated and shared?
Discourses Ideas and concepts that impact and/or influence FCERM governance and how problems/solutions are framed, contested and managed.	• How is risk or FCERM 'framed'? How does this impact on the outcomes? • What are the dominant storylines or ruling policy concepts present (for example, catchment-based approaches)? • Are there shared goals and visions by those involved?
Bridging mechanisms	
Transfer	• What mechanisms are in place to facilitate the transfer of resources (for example, financial, technology, human) for FCERM activities, national-to-local scale, or with other relevant policy domains? (for example, mutual aid agreements)
Coordination and integration	• What mechanisms are in place to facilitate coordinated action within FCERM governance arrangements to ensure activities are aligned and integrated where appropriate? (For example, duties to cooperate are outlined in the Flood and Water Management Act 2010). • What mechanisms are in place to facilitate coordinated action between FCERM and other relevant policy domains? (For

Dimension	Guiding questions
	example, wellbeing duties are placed on all public bodies in Wales).
Cooperation	• What mechanisms are in place to facilitate cooperation within/between different RMAs and other stakeholders involved in FCERM governance, or other relevant stakeholders in adjacent policy domains?

An evaluation framework was developed to assess the effectiveness of FCERM. This builds upon existing approaches to evaluating governance and key criteria identified in the academic literature (see section 2.3). Criteria are structured according to 3 areas of evaluation: 'process', 'outcome' and 'impact' (Alexander and others, 2016b). A total of 18 criteria were identified, as summarised in table 3.2. For each of these, important questions were developed to help guide evaluation. These questions draw from both objective and subjective sources of information to support a mixed methods approach (as outlined in the section below). **The full evaluation framework is presented in Appendix A.**

Table 3.2: Criteria for evaluating the effectiveness of English and Welsh FCERM governance

Process	Outcome	Impact
Line of sight	Multi-benefits	Resilient places
Place	Partnership working	Resilient growth
Resource efficiency	Hazard reduction	Adaptive capacity
Collaboration	Societal resilience	Social equity
Integration		Acceptability
Long-term sustainability		
Participation		
Evidence		
Accountability		

3.2 Data collection

The research drew from **semi-structured interviews** with stakeholders, operating at national to local scales of governance (England = 29, Wales = 30). Interviews were carried out between **May 2019 and February 2020**, with stakeholder representatives (see table 3.3). The interviews addressed perceived strengths, weaknesses and gaps in current FCERM governance and the implications of this. Discussions were recorded and the written transcripts subject to thematic analysis (guided by the evaluation criteria outlined above) to identify main themes within the data.

Table 3.3: List of stakeholder groups interviewed as part of this research

Summary of interviewees	
Stakeholders interviewed in England	• Department for Environment, Food & Rural Affairs (Defra) • Environment Agency • Regional Flood and Coastal Committee representatives • Association of Drainage Authorities • Selected Lead Local Flood Authorities • Catchment-Based Approach (CaBA) floods working group
Stakeholders interviewed in Wales	• Welsh Government • Natural Resources Wales (NRW) • Flood and Coastal Erosion Committee • Wales Coastal Groups Forum • Wales Coastal Monitoring Centre • Welsh Local Government Association • Welsh Water (Dŵr Cymru) • Network Rail (Wales route) • Selected Lead Local Flood Authorities
Cross-border stakeholders interviewed	• National Flood Forum • Coastal Group Network • Water UK • Selected consultancies

These insights were further supported by **in-depth document analysis** of important policies and legislation within FCERM and related areas of policy. This included the consultation documents for the revised national FCERM strategy in England (Environment Agency, 2019) and in Wales (Welsh Government, 2019a), as well as the final versions of these (Environment Agency, 2020; HM Government, 2020a; Welsh Government 2020a).

This research has also built upon the national-level findings from the STAR-FLOOD and CoastWEB projects (as well as in some cases the raw data collected) and did not repeat the analyses undertaken. For context, the STAR-FLOOD project focused on analysing, evaluating and designing policies to better deal with fluvial flood risks in urban agglomerations across Europe[3]. The analysis of English flood risk management (undertaken by the Flood Hazard Research Centre) was based on in-depth policy and legal analysis, over 60 interviews and 2 stakeholder workshops; the results of which are published in Alexander and others (2016a). Welsh FCERM governance has been studied through the CoastWEB project and research undertaken at Cardiff University[4]. This

[3] STAR-FLOOD: STrengthening And Redesigning European FLOOD risk practices: Towards appropriate and resilient flood risk governance arrangements (2012 to 2016).

[4] Valuing the contribution which COASTal habitats make to human health and WEllBeing, with a focus on the alleviation of natural hazards (2016 to 2020).

research examined the strengths and weaknesses of FCERM, with a particular focus on coastal risks, to identify the challenges and opportunities for aligning FCERM with the national wellbeing agenda (Alexander and others, 2019). Given the overlaps between the CoastWEB project and this R&D-funded research, some of the interviews and analysis were conducted concurrently.

In qualitative research of this nature, it is important to consider the 'credibility' (authentic representation of the data), 'dependability' (consistency in judgement) and 'transferability'[5] of the research (Lincoln and Guba, 1985). Observations from different sources (interviews, documents) were collated and findings compared as part of the mixed methods design of the research (also known as triangulation). Triangulation as an approach forces the researcher to confront and account for points of convergence and disagreement in the data and is therefore an important technique for enhancing the credibility and dependability of the research (Fielding and Fielding, 2008). Data analysis was also guided by the evaluation framework (and corresponding steering questions; Appendix A) to support consistency between the researchers. Credibility is further ensured through the use of verbatim quotes from interview participants and selected documents to provide transparency and to ensure that conclusions are firmly rooted in the data.

3.3 Limitations of research

This research was commissioned to evaluate the effectiveness of FCERM governance in England and Wales, focusing on flood (fluvial, coastal and surface water) and coastal erosions risks[6]. Governance for groundwater flooding and reservoirs was excluded.

The results presented in this report focus on the formal governance arrangements for FCERM in England and Wales. The governance arrangements in both nations span multiple levels, including national, sub-national and the local level, and therefore represent 'multi-level governance arrangements'. Each of these levels are considered within our evaluation. However, it should be noted that this research was intended to provide a broad assessment and therefore, does not elaborate in depth on individual aspects of these

[5] Transferability concerns the extent to which the findings extend beyond the research context; while this is not a specific goal of this research, detailed descriptions of the context are provided (including the dates of data collection) and the full evaluation framework, in order to support potential follow-on research and comparative studies.

[6] For an in-depth review of local approaches to surface water flood risk management, the reader is referred to (Defra, 2018b). Since the research was undertaken, the Jenkins Review (Hyperlink to Surface water and drainage: review of responsibilities) was also published 26 August 2020.

governance arrangements (such as specific actors or individual governance mechanisms), unless specifically highlighted during the course of stakeholder interviews.

While the analysis looks across fluvial, coastal and surface water risks, attention is given to important aspects of FCERM governance, where weaknesses and opportunities for improvement were identified. Therefore, areas of FCERM governance that appear to be working well and are considered to be effective (such as flood forecasting, warning and emergency preparedness), are not discussed in this report, but are included in the separate evaluation tables for England (Appendix B) and Wales (Appendix C).

Certain policy areas and sectors were outside the primary remit of this study, including critical infrastructure, economic growth, water management and wellbeing[7] (Wales). Although these have not been included in depth in this report, relevant findings are also included within appendices B and C.

Finally, it is crucial to note the timing of data collection, which took place between **May 2019 and February 2020**. The revised National FCERM Strategy for England[8] (Environment Agency, 2020a), Defra's Policy Statement (HM Government, 2020a) and the National FCERM Strategy for Wales (Welsh Government, 2020a) were published in July and October 2020. Changes to partnership funding in England were also announced on 17 April 2020. Furthermore, the white paper 'Planning for the future' was published on 6 August 2020 (DLUHC, 2020). Although these changes occurred outside the data collection period, where possible we have highlighted where these changes may address certain concerns that were raised during stakeholder interviews. Subsequent policy or legislative changes have also been highlighted in the footnotes where possible.

Other significant legislative and policy changes are anticipated through the Agriculture Act (2020) and Environment Bill 2019-2021, which are highly relevant for FCERM governance. While the agricultural and environment sectors were not extensively studied as part of this research, our analysis highlights potential opportunities for aligning policy agendas and developing governance bridging mechanisms. More widely, there may be opportunities for cross-sectoral learning and to examine the transferability of certain governance practices from sectors external to FCERM. However, this was beyond the scope of this research and is highlighted as a future research need (see section 7).

[7] For an in-depth evaluation of FCERM governance and the wellbeing agenda in Wales, the reader is referred to Alexander and others (2019).

[8] Since this research was completed the Environment Agency has also published the Action Plan accompanying the National Strategy (Hyperlink to Flood and Coastal Erosion Risk Management Strategy Action Plan 2021, published 12 May 2021).

4 Overview of multi-level FCERM governance in England and Wales

This section provides a brief overview of the multi-level flood and coastal erosion risk management (FCERM) governance arrangements that are established in England and Wales (further in-depth descriptions can be found in Alexander and others, 2016a; 2019).

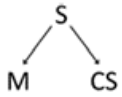
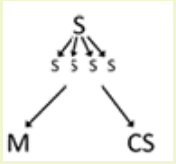
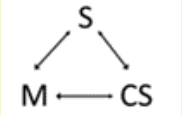
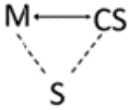
Both arrangements are highly complex and involve multiple actors, operating at national, sub-national and local scales. Major primary legislation is shared across both administrations, including the Flood and Water Management Act 2010, the Flood Risk Regulations 2009, the Coast Protection Act 1949, Water Resources Act 1991 and Land Drainage Act 1991. Risk management authorities (RMAs) are identified in the Flood and Water Management Act 2010. In England, this includes the Environment Agency, Lead Local Flood Authorities (LLFA) (unitary authorities or county councils), internal drainage boards (IDBs) (where they exist), district councils (for an area for which there is no unitary authority), highway authorities and water companies. In Wales, RMAs are composed of Natural Resources Wales (NRW[9]), LLFAs (referring to all 22 Welsh local authorities), highway authorities and water companies. An overview of the main organisations involved in FCERM in England and Wales is provided in figure 4.1.

Different modes of governance are evident in FCERM governance (as discussed in section 2, table 2.2). Some examples are illustrated in table 4.1. The governance arrangements for England and Wales predominantly adopt centralised and decentralised forms of governance, although, with regards to the latter, devolved responsibilities and activities at the local scale (such as those assigned to LLFAs) must be consistent with national policy. With the growing emphasis on partnership working and partnership funding, new modes of governance are starting to emerge, particularly at the scale of individual FCERM schemes, where risk-sharing agreements are leading to public-private and interactive modes of governing.

Table 4.1: Examples of different modes of governance within FCERM in England and Wales

Mode of governance	Examples in FCERM
Centralised	• National FCERM Strategy and requirement for RMAs to act consistently with this • Strategic overview/oversight roles of the Environment Agency and NRW

[9] NRW was formed in April 2013, taking over the functions of the Environment Agency Wales, Countryside Council for Wales and Forestry Commission Wales.

Mode of governance	Examples in FCERM
	• Central funding for capital and revenue activities in FCERM • Local authority recovery via Bellwin Scheme • Flood forecasting and warning
Decentralised 	• LLFAs must develop, maintain, apply and monitor a local flood risk management strategy • Spatial planning (albeit situated within a hierarchical plan-led approach) • Emergency management, with devolved responsibilities based on subsidiarity principle
Public-private 	• Flood insurance is provided via private insurance companies, operating on a market basis (although Flood Re introduces a degree of state regulation) • Some examples of public-private governance may be established through partnership approaches to funding FCERM schemes (depending on the nature of risk-sharing agreements) • Economic regulators have powers to specify investment needs for critical infrastructure (for example, for enhancing resilience) via periodic price reviews • Water companies operate as RMAs but are also quasi-private actors (under the regulation of Ofwat)
Interactive 	• Community engagement activities, whereby communities are treated as equal partners in FCERM • Some examples of interactive governance may be established through partnership approaches to FCERM schemes (depending on the nature of risk-sharing agreements) • Interactive governance may emerge through SuDS approval bodies in Wales
Self-governance 	• Self-starting community-led activities – for example, formation of community flood action groups (though these typically evolve into interactive forms of governance) • Self-starting household-led activities (for example, personal decision to install property-level resilience or resistance measures) • Private efforts and investments made by businesses

The complexity of FCERM governance in England and Wales reflects the incremental way in which governance has evolved and embraced a diversity of strategies for addressing flood and coastal erosion risks. Broadly speaking, there have been 3 fundamental changes in management over the past century – from land drainage (around 1930 to 1970s) and

flood defence (1980s to 1990s) to risk management (around 2000s to today) (see commentaries in Johnson and others, 2005; Alexander and others, 2016a).

Contemporary risk-based management recognises the value of taking a diversified, holistic approach to mitigating the likelihood and magnitude of flood and erosion hazards, while simultaneously trying to minimise exposure and the consequences arising from hazard events. While defence-based approaches continue to be a main strategy, this is part of a portfolio of equally important strategies (such as spatial planning, flood warning, emergency management and community engagement). Other important changes have occurred in FCERM in recent years, including;

- increased emphasis on partnership working, both within and outside the FCERM community
- striving to achieve multiple benefits through FCERM schemes (for example, for the environment, wellbeing and the economy)
- efforts to diversify financial contributions to FCERM schemes from sources outside FCERM grant-in-aid
- increased emphasis on building resilience at the local scale and working with local communities
- increased emphasis on working with natural processes, natural flood management and hybrid approaches
- efforts to facilitate policy coordination with allied policy areas (for example, environment and agriculture)

These have been reinforced in the revised National FCERM Strategies (Environment Agency, 2020a; Welsh Government, 2020a) and Defra's Policy Statement (HM Government, 2020a), as summarised in table 4.2. While there are differences between the 2 strategies, both systems emphasise the importance of embracing a broader range of strategies and measures to support resilience and climate change adaptation.

Table 4.2: Main aims, ambitions and objectives for FCERM in England and Wales

England National FCERM Strategy (Environment Agency, 2020) and Defra's Policy Statement (HM Government, 2020a)	**Wales** National FCERM Strategy for Wales (Welsh Government, 2020a)

• Long-term vision of the strategy - a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100
 	
• Ambitions set out in the Strategy –
  ○ Climate resilient places
  ○ Today's growth and infrastructure resilient in tomorrow's climate
	• Aim of the strategy - to reduce the risks to people and communities from flooding and coastal erosion
	
	• Objectives:
	  ○ Improving our understanding and communication of risk
	  ○ Preparedness and building resilience

England National FCERM Strategy (Environment Agency, 2020) and Defra's Policy Statement (HM Government, 2020a)	Wales National FCERM Strategy for Wales (Welsh Government, 2020a)
○ A nation ready to respond and adapt to flooding and coastal change • Policy areas set out in the Policy Statement: ○ Upgrading and expanding our national flood defences and infrastructure ○ Managing the flow of water more effectively ○ Harnessing the power of nature to reduce flood and coastal erosion risk and achieve multiple benefits ○ Better preparing our communities ○ Enabling more resilient places through a catchment-based approach	○ Prioritising investment to the most at-risk communities ○ Preventing more people becoming exposed to risk ○ Providing an effective and sustained response to events • Emphasis on better provision of information, natural flood management, catchment approaches, spatial planning and achieving wider wellbeing benefits.

There are some important differences between the 2 governance systems in England and Wales. Although NRW maintains strategic oversight for all types of flooding, Welsh Government maintains overall responsibility and sets the strategic direction of FCERM through the publication of the national FCERM strategy. This stands in contrast to the English system, where responsibility for developing, maintaining and monitoring the national FCERM strategy is assigned to the Environment Agency. Since April 2015, NRW has also been responsible for managing the water levels of all internal drainage districts (once managed by IDBs), with the support of advisory groups (representing land occupiers and local authorities). Furthermore, unlike England, Schedule 3 of the Flood and Water Management Act 2010 was implemented in January 2019 and SuDS Approval Bodies (SABs) are now established within local authorities[10]. It is also vital to understand Welsh FCERM governance within the wider legislative context and new legislative portfolio which was introduced in 2015 to 2016, including the Well-being of Future Generations (Wales) Act 2015, the Planning (Wales) Act 2015 and Environment (Wales) Act 2016. These are summarised in table 4.3.

[10] Additional secondary legislation includes The Sustainable Drainage (Approval and Adoption) (Wales) Order 2018; The Sustainable Drainage (Approval and Adoption Procedure) Regulations 2018; The Sustainable Drainage (Enforcement) (Wales) Order; The Sustainable Drainage (Appeals) (Wales) Regulations 2018; The Sustainable Drainage (Application for Approval Fees) Regulations 2018; alongside Sustainable Drainage (SuDS) Statutory Guidance 2019.

Table 4.3: Overview of recent legislation in Wales (adapted from Alexander and others, 2019)

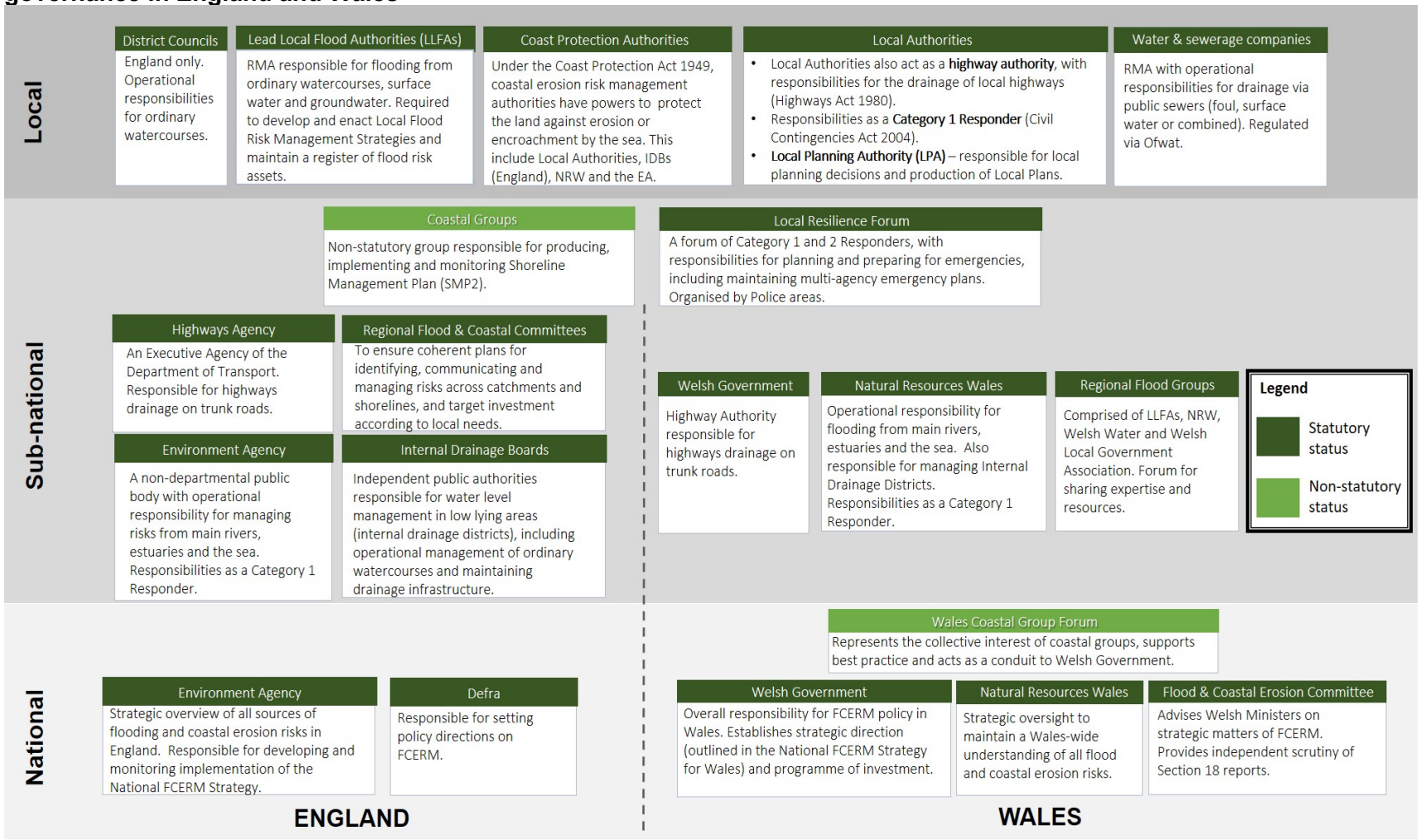
Legislation	Summary
Well-being of Future Generations (Wales) Act 2015	Places a wellbeing duty on public bodies to contribute towards 7 national wellbeing goals – prosperity, resilience, health, equality, cohesive communities, vibrant culture and thriving Welsh language, and global responsibility. Establishes the role of the Future Generations Commissioner and formation of Public Service Boards (at local authority scale) – formal board members include representatives from the local authority, Local Health Board, Fire and Rescue Authority and NRW, plus invited participants. Public bodies must act in accordance with the sustainable development principle and Five Ways of Working (long-term, prevention, integration, collaboration and involvement).
Planning (Wales) Act 2015	To ensure resilient planning in line with sustainable development. The Act reinforces a plan-led approach, including the provision to produce Strategic Development Plans. The Act introduced a legal framework for Welsh Ministers to prepare a National Development Framework for Wales. The Act also introduces a requirement for formal pre-application discussions with statutory consultees for certain development types; this includes NRW for certain developments proposed in Flood Zone C.
Environment (Wales) Act 2016	Mandates for the Sustainable Management of Natural Resources (SMNR) (based on 9 principles), achieved through a new policy framework comprising – a State of Natural Resources Report (SoNaRR) (to be published every 5 years and produced by NRW); Natural Resources Policy (to be produced by Welsh Ministers); and Area Statements to provide the evidence-base at the local scale (to be produced by NRW). The act further places a Biodiversity and Resilience of Ecosystems Duty (Section 6 Duty) on public bodies. The Act also establishes statutory emission reduction targets and the formation and remit of the Flood and Coastal Erosion Committee.

It is important to recognise that this research has been undertaken at a time of considerable change within FCERM in both England and Wales, with the publication of the revised National FCERM Strategies (Environment Agency[11], 2020a; Welsh Government, 2020a), and Defra's Policy Statement (HM Government, 2020a). Changes to partnership funding in England were also announced on 17 April 2020 and the white paper 'Planning for the future' was published on 6 August 2020 (DLUHC, 2020). Moreover, there are a

[11] Since this research was completed the Environment Agency has also published the Action Plan accompanying the National Strategy (Hyperlink to Flood and Coastal Erosion Risk Management Strategy Action Plan 2021, published 12 May 2021).

number of implications associated with the UK's exit from the European Union (31 January 2020) and significant changes to governance proposed (for example, Agricultural and Environment Bills 2019-2021), which potentially provide new windows of opportunity for advancing FCERM objectives. These have been taken into account in data analysis and evaluation, where possible.

Figure 4.1: Main organisations involved in local, sub-national and national scales of flood and coastal erosion risk management governance in England and Wales



5 Evaluating FCERM governance

The importance of a diversified, holistic approach to FCERM has long been recognised in the UK, whereby different strategies for reducing the likelihood, exposure and consequences of risks are established as part of a whole system approach to FCERM (Alexander and others, 2016). However, the extent to which a whole system approach can be achieved in practice depends on the extent to which governance enables this (Sayers and others, 2020). The right governance arrangements and mechanisms must be in place to ensure:

- a clear 'line of sight' between the national and local scales to establish strategic direction and maintain consistency, while still enabling place-informed and place-based decision-making
- roles and responsibilities are clear and include the necessary powers and authority to implement activities and ensure compliance
- resources are sufficient and allocated to where they need to go, while maximising resource efficiency
- policy coordination and integration with relevant policy areas and sectors to support coherent joined-up working and achieve multi-benefit approaches

Taking these factors into account, this section critically examines the effectiveness of the current FCERM governance arrangements in England and Wales and presents the main findings from in-depth document analysis and stakeholder interviews. Drawing across evaluative criteria (see section 3.1), we examine the processes, outcomes and impacts associated with FCERM governance, from current policy and governance structures through to implementation on the ground. For results pertaining to individual evaluative criteria the reader is referred to Appendix B (England) and Appendix C (Wales).

The section is organised thematically **and focuses on important aspects of FCERM governance, where weaknesses and opportunities for improvement were identified**. Therefore, areas of FCERM governance that appear to be working well and are considered to be effective, (such as flood forecasting, warning and emergency preparedness), are not discussed in this report. However, these are included in the separate evaluation tables (Appendices B and C).

This section appraises the following aspects of FCERM governance – Governance coherence, resourcing effective FCERM governance and governance barriers to adaptation. Following this, we identify the governance mechanisms that enable or constrain coordination and integration between FCERM and allied policy areas[12], including

[12] Other policy areas and sectors were outside the primary remit of this study, including critical infrastructure, economic growth, water management and wellbeing (Wales). Although these have not been included in

spatial planning, flood insurance, land use management and agricultural policy reform, and the environment.

5.1 Reconciling complexity through coherent governance arrangements

Effective FCERM governance depends on the clear distribution of roles and responsibilities, institutional structures and governance bridging mechanisms, which facilitate coordination between actors across multiple levels of governance. Clarity is also essential for ensuring accountability.

However, FCERM governance in England and Wales is notably complex (section 4). In turn, this complexity enhances the risk of fragmented governance, siloed working and gaps in responsibility. Therefore, this section examines the coherency of current governance arrangements and the extent to which complexity is reconciled through effective governance mechanisms.

5.1.1 Maintaining line of sight in multi-level governance

Maintaining a clear 'line of sight' is necessary to ensure that policies and decision-making outcomes are appropriately interpreted and implemented on the ground, while establishing consistency across the country. There are numerous governance mechanisms that facilitate this and maintain interactions between national and local scales.

In accordance with the Flood and Water Management Act 2010, the Environment Agency and Welsh Ministers (via NRW) must have a strategic overview of all matters related to FCERM. The respective **strategic overview and oversight** roles of the Environment Agency and NRW are an essential aspect of FCERM governance for maintaining line of sight from the national to the local scale (Environment Agency, 2018: NRW, 2019a). This role includes developing the national strategies, which establish the strategic direction and objectives for FCERM. Under the Flood and Water Management Act 2010, all RMAs are mandated to act in a way that is consistent with the national strategy. This is monitored by the Environment Agency and NRW through the Section 18 reporting mechanism, although there is no formal date for periodically submitting these reports.

Despite unanimous agreement among interviewees that the strategic oversight and overview roles are essential, this has lacked clarity and is not formerly defined in legislation. To some extent, this appears to have blurred the boundaries of (perceived) responsibilities and expectations among RMAs. As one interviewee commented "…there's a real danger that strategic oversight gets used as a catch all" (NRW). At the very least,

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depth in this report, relevant findings have been included within the evaluation tables for England (Appendix B) and Wales (Appendix C).

interviewees felt that the national FCERM strategies represented opportunities to improve clarity surrounding roles and responsibilities. The strategies have since been published and it is evident that greater consideration has gone into explaining the remit of strategic overview/oversight roles (Environment Agency, 2020a; Welsh Government, 2020a). However, it is noteworthy that the activities within this remit have been substantially broadened since the original 2011 national strategies and include a mix of statutory and non-statutory duties. Reflecting on this, Environment Agency and NRW interviewees explained how the role is currently being exercised to its fullest capacity insofar as resources have allowed. These discussions revealed a clear tension between the 'must dos' and the 'want to dos' given resource constraints within these organisations, which mean resources are prioritised according to statutory obligations. In order to carry out activities within the broadened remit of the oversight/overview roles, the Environment Agency/NRW must be sufficiently resourced to do so.

At the regional scale in England, the **Regional Flood and Coastal Committees**[13] (RFCCs) play a central role in identifying, communicating and managing risks across catchments and shorelines, targeting investment according to local needs and consenting to the amount of local levy raised by the Environment Agency from LLFAs. Membership includes elected members from LLFAs, the Environment Agency and other local interest groups, overseen by a government-appointed chair. The independence of the chair is seen as important for supporting collaboration across different interest groups (Environment Agency, 2018). Moreover, the RFCCs are considered crucial in ensuring that investment is prioritised and resources allocated efficiently to maximise benefits. However, some have questioned the 'statutory teeth' of the RFCCs, given the relatively weak duty of the Environment Agency to 'take into account any representations (whether made in response to a consultation or otherwise) made by the Committee'[14]. Nonetheless, the Flood and Water Management Act requires the Environment Agency to consult and obtain consent from the RFCC before commencing its FCERM functions, including raising local levies from LLFAs and spending revenue[15]. In this regard, the RFCC maintains a strategic overview of the catchment and/or shoreline within its jurisdictional boundaries.

In contrast, a single national **Flood and Coastal Erosion Committee**[16] (FCEC) exists in Wales, which acts in an advisory capacity to the Welsh Ministers on all FCERM matters.

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[13] Established under the Flood and Water Management Act 2010 (Part 1, S4) and the Regional Flood and Coastal Committees (England and Wales) Regulations 2011. There are 12 RFCCs in England.

[14] Under Part 1, section 23 of the Flood and Water Management Act 2010.

[15] Raised under section 118 of the Water Resources Act 1991.

[16] Established under the Environment (Wales) Act 2016. This abolished the Regional Flood and Coastal Committee established under section 22(1)(c) of the Flood and Water Management Act 2010. Further provisions are outlined in the Flood and Coastal Erosion Committee for Wales Regulations 2017.

The FCEC was established in 2019, with members elected by Welsh Ministers. In addition to establishing its own programme of advisory activity (such as identifying national priorities and research needs), the Committee also provides an additional layer of scrutiny through its independent review of NRW's Section 18 reports (Welsh Government, 2020a). This addresses concerns raised by recent inquiries about the appropriateness of NRW reporting on its own activities (Auditor General for Wales, 2016; PAC, 2017). Although NRW asserted the 'factual' nature of the Section 18 report, most interviewees welcome this additional role of the FCEC. In turn, this will help enhance accountability in Welsh FCERM governance.

While the FCEC works at the national level, regional working in Welsh FCERM is facilitated through 3 **Regional Flood Groups** (RFGs)[17], which have been established since 2010. These are non-statutory groups, composed of representatives from LLFAs, NRW, Dŵr Cymru Welsh Water and WLGA, and provide a forum for sharing good practice and resources (knowledge, information, data) and supporting dialogue with Welsh Government and the Flood and Coastal Risk Programme Board (Welsh Government, 2020a). The RFGs also support strategic activities, such as helping develop Flood Risk Management Plans and facilitating consultation on Local Flood Risk Management Strategies. However, while these groups play a valuable role, certain limitations have been observed in relation to their non-statutory nature, the lack of seniority in members and "inability of current members to make corporate commitments", which mean the groups often lack strategic direction (WLGA, 2018: 18). In this regard, there is scope to strengthen the role of the RFGs and their ability to support strategic activities in FCERM, as well as linking FCERM with wider regional agendas (such as economic growth).

Opportunities for expanding regional delivery of FCERM in Wales were also explored by the Welsh Local Government Association (WLGA, 2018), following the recommendation of the Public Accounts Committee and the white paper of local government reform (PAC, 2017; Welsh Government, 2017e). While the report cautions against the formal regionalisation of FCERM, it indicates certain areas where FCERM may benefit from a regional approach to improve effectiveness and efficiency, especially in the context of resource constraints. Recommendations include the need to establish clear communication mechanisms between RFC members, their executive and portfolio members to garner "corporate support to take work forward and include FCERM collaboration as part of the wider regional work agenda" (WLGA, 2018: 18). The WLGA also calls for the RFCs to i) coordinate flood asset inspection and maintenance programmes, ii) develop a business case for regional flood awareness programmes, and iii) identify funding opportunities for increasing in-house capacity and technical expertise. These recommendations have since been addressed through the RFCs. Although this is

[17] Regional Flood Groups are aligned to river basin districts, including the south-east, south-west and North Wales.

on an informal basis, with some scope for improvement, this aspect of governance is generally viewed as effective within the overarching governance arrangement.

Sub-nationally, strategic flood risk planning is supported by **Flood Risk Management Plans** (as required under the Flood Risk Regulations 2009[18]), which outline the risks and management measures associated with all sources of flooding[19]. These are developed for each river basin district (RBD) (with the Dee and Severn RBDs managed cross-border between England and Wales). These plans help inform the FCERM programme of work and investment, while establishing how different actors will work together to carry out FCERM and adaptive approaches (Environment Agency, 2020a; Welsh Government, 2020a). At the same time, LLFAs are required to develop, maintain, apply and monitor **local Flood Risk Management Strategies** for managing local flood risks (surface water, ordinary watercourses and groundwater). These must include objectives, proposed measures (alongside cost-benefit considerations) and timescales for implementation (as outlined in section 9 of the Flood and Water Management Act 2010).

Defra has specified its intention to transform local strategic delivery and **reform local flood and coastal erosion risk planning** by 2026 (HM Government, 2020a). The goal is to better support catchment-based approaches, with local flood and coastal erosion plans sitting alongside other strategic documents (for example, water resource management plans, local nature recovery strategies and development plans) to maximise opportunities to align agendas and achieve multiple benefits. This responds to previous criticisms raised by others (NAO, 2014; NIC, 2018). However, it is not yet clear what form these reformed plans will take, although emphasis is being placed on the importance of establishing adaptive approaches and steering long-term investment and action at the local scale. The scale of these plans (and corresponding distribution of responsibilities for producing and implementing these) will be important, especially for river catchments that span across administrative boundaries. Recognising this, Defra has specified that further consultation will explore these issues and how accountability, oversight and scrutiny will be maintained, while also considering options for joining-up flood resilience with other responsibilities held by mayors or combined authorities (HM Government, 2020a: 36).

For coastal matters, line of sight and consistency in governance is supported through the Coastal Groups Network (CGN[20]), which acts as a conduit for information locally and nationally. Indeed, the chair of this group is involved in various other strategic-level groups to ensure that coastal matters are not overlooked – “I try to communicate and keep all our partners alive to the issues that are happening on that coast” (CGN). Coastal Groups also

[18] As required by the EU Floods Directive 2007/60/EC.

[19] Flood Risk Management Plans are produced on a 6-yearly cycle; the first plans apply to 2015 to 2021. The second cycle plans apply from 2021 to 2027.

[20] Formerly referred to as the Coastal Groups Chairs Network.

adopt a shared terms of reference, developed by the CGN, to help maintain a degree of consistency in governance at the local scale. Line of sight is further supported in Wales through the Wales Coastal Group Forum (WCGF), which includes the chairs from all Welsh Coastal Groups as well as representatives from NRW and Welsh Government. This is seen as an essential forum for exchanging knowledge and best practice, while facilitating communication between Welsh Government and Coastal Groups at the local level. New reporting requirements have also been introduced through the Welsh National FCERM Strategy, requiring Coastal Groups to report to the WCGF on annual progress on the Shoreline Management Plan (SMP) Action Plan, which will further strengthen monitoring. While national consistency is important, this is well balanced with placed-based decision-making through the network of Coastal Groups, who are responsible for the development and implementation of Shoreline Management Plans (SMP2); “each Coastal Group is as different and as diverse as the coastlines that they manage” (interviewee from the Coastal Groups Network).

However, some interviewees expressed concerns about the disconnect between ‘flood’ and ‘coastal’ erosion risks. Despite the presence of Regional Flood and Coastal Committees in England, it was felt that coastal matters are poorly addressed through these fora and more should be done to better integrate the two. This is partially supported by certain members of the CGN attending the (annual) RFCCs’ chairs’ meeting, as well as monthly updates which are shared through the CGN. At the local level, Coastal Group representatives (namely the LLFA) are also invited to attend RFCC meetings, to help represent ‘the voice’ of Coastal Group members. However, it was suggested that Coastal Groups should be made a formal part of the RFCCs “so that there is good cross-cutting across all flood and coastal erosion risk matters” (national interviewee, England). While this is something that warrants further attention in England, this is not a reported issue for Welsh governance, where there is a single national-level Flood and Coastal Erosion Committee; of which the chair of the WCGF is a member and can ensure that coastal issues are represented within committee discussions.

5.1.2 Clarifying roles and responsibilities

Clarity of roles and responsibilities is essential for effective, efficient and accountable governance. Significant steps have been made to improve this, especially through ‘rule’ changes in governance through the enactment of the Flood and Water Management Act 2010. This has been particularly beneficial in clarifying the governance arrangements for surface water flood risk management (see Defra, 2018b). Furthermore, duties to cooperate and share information (as introduced by the Act) were also credited for improving collaboration between RMAs.

However, the complexity and confusion surrounding roles and responsibilities has continued to be raised by scrutiny bodies in England and Wales (for example, NRW, 2015a; Auditor General for Wales, 2016; Efra Committee, 2016, PAC, 2017). This concern was also voiced by some interviewees, who stated that, while RMAs may have knowledge of their own responsibilities, they appear to lack a clear understanding of others’ responsibilities - “the basic understanding of the governance is just not there” (national

interviewee, England). There was a general consensus that more efforts could be made to clarify roles and responsibilities further to enhance understanding among both local communities and RMAs, to manage expectations accordingly.

Interviewees identified the revised national FCERM strategies as a crucial mechanism for clarifying roles and responsibilities further. However, interesting discussions were raised about the extent to which high-level policy is best placed to do this. For example, an interviewee in Wales described national policy as "too woolly" (referring to the consultation version of the national FCERM strategy) and therefore open to interpretation and variation, especially at the operational level where specific issues are encountered. To overcome this, it was suggested that regional-based memoranda of understanding (MoU) could help to "bridge this gap" and set out "who does what for each regional area … clarifying roles and responsibilities from the legislation overview all the way down to delivery" (national interviewee, Wales). Although the revised national FCERM strategies have since been published and efforts have been taken to clarify roles and responsibilities at a high-level, it is too soon to evaluate the extent to which this has been achieved, and there may still be scope to explore other means, such as the use of MoU, to further support operational delivery.

Calls were also made for a **legislative review** (and possible amendments), including the Coast Protection Act 1949 and the Flood and Water Management Act 2010[21]. An important issue was highlighted relating to the unequal distribution of powers across various legislation, which is creating additional financial and administrative burdens, particularly with regards to marine licensing. One interviewee explained – "Although RMAs have equal powers under the Flood and Water Management Act, these have not been updated or duplicated within other legislation, including the Coast Protection Act. For example, LLFAs will be required to apply for permits/licences for maintenance works, whereas the Environment Agency/NRW don't" (national interviewee, Wales). Other evidence suggests that the exercise of Coast Protection Act powers to carry out coast protection works and levy charges is limited due to low levels of awareness and challenges with implementation (Defra, 2020f). This calls into question whether the Coast Protection Act is fit for purpose. Defra has outlined its intentions to "review the current mechanisms, including legal powers, which coastal erosion risk management authorities can use to manage the coast" (HM Government, 2020a: 38). More widely, Welsh Government has called upon the Flood and Coastal Erosion Committee to examine the need for legislative changes by 2022, including, but not limited to, the Coast Protection Act (Measure 1: Welsh Government, 2020a). Given the shared nature of this legislation, we strongly urge a combined approach to legislative review.

[21] Other legislation that was highlighted for review included the Highways Act 1980 (see section 5.3.2) and Building Regulations (see section 5.4.2).

In particular, interviewees emphasised the need to clarify and establish the legal remit of roles and responsibilities pertaining to **climate change adaptation**. Governance for adaptation is highly fragmented and unclear. Moreover, the different priorities, remits and varying planning and funding cycles can make it difficult to align agendas and activities, which is severely restricting the implementation of adaptation initiatives. In addition, there is a seeming lack of problem ownership for adaptation between government departments (Uyl and Russel, 2018).

While the need for adaptation is initiated by flood and coastal erosion risks (under the remit of Defra or the FCERM division of Welsh Government), the problems and solutions associated with adaptation span policy areas and sectors. Adaptation cannot be addressed in a policy silo. There is a clear need for deliberative structures through which to navigate complex, cross-departmental/sectoral adaptation challenges in an integrated way and **improve coordination between government departments**. This was unanimously called for by interviewees.

However, the current co-ordination deficit must be overcome (Diamond, 2020). Resolving fragmentation will require new bridging mechanisms to be introduced to support integrative governance and truly holistic approaches to FCERM. For example, new cross-departmental funding streams may help to overcome the constraints created by budget silos. New governance mechanisms for land use management (section 5.6) and environmental enhancement (section 5.7) also present windows of opportunity for transforming governance (these are explored in depth in later sections of this report). In Wales, the Public Service Boards could also play a role in establishing oversight for local adaptation – “for the PSBs to provide this oversight presents a real opportunity and could offer a good structure for multi-sectoral leadership around adaptive change – ideally, being formally directed to do so by the Well-being Commissioner which would perhaps help them to apply some Wales-wide focus for all the PSBs” (national interviewee, Wales). Bridging FCERM and wellbeing governance in Wales is also discussed in Alexander and others (2019).

5.1.3 Barriers to partnership working

Partnership working is a central principle of FCERM governance, and the flexibility and high commitment of FCERM practitioners is one of the main strengths of the current governance arrangements in England and Wales. There is a demonstrated ability to work innovatively at the local level to realise FCERM outcomes, with various examples of success explored in depth in the corresponding case study research to this report (see Priest and others, 2021). More effective partnership working between RMAs and others has also been reported in the context of surface water flood risk management (Defra, 2018b). However, despite the significant policy momentum around joint working and clear desire among FCERM practitioners to establish joined-up approaches, certain barriers remain.

Resource constraints are a prominent concern, especially with regards to the time-intensiveness of establishing collaborations. In contrast to Welsh governance, where

collaboration is mandated through the Well-being of Future Generations (Wales) Act 2015, in England, collaborative efforts are often viewed as additional to the 'day job' and somewhat of an 'add on' activity or 'nice to have'. However, even in Wales, interviewees described the 'catch 22' of trying to implement new ways of working; "If we don't have the resources then we can't improve, everybody's just got their head down and doing day-to-day without much time for forward planning." Nowhere is this more evident than in local authorities, where resources, including funding, expertise and staff time, are stretched to capacity (Public Accounts Committee, 2018; WLGA, 2018; LGA, 2019; HCLG Committee, 2019).

These constraints are significantly restricting capacities to engage in partnership working and partnership groups. This is seen as a substantial threat to the sustainability of Coastal Groups in particular – "the groups will or could easily just stop running … [local authorities are] withdrawing membership because they're saying they can't afford to send someone along, it's too much on the day job" (interviewee from the Coastal Groups Network). While partnership working can support resource efficiencies and facilitate the sharing of resources (such as knowledge and data), interviewees explained how this is sometimes difficult to demonstrate; therefore, making it harder to justify involvement in partnership groups. This highlights the need for clear measures and tangible evidence to demonstrate the added value of partnership working.

Related to the above point, there was also some concern in England that collaboration is over reliant on individuals and individual 'good will' in order to work effectively. This raised several issues, not least the danger that important individuals 'hold the system together' and the fragility of the system should these individuals move on. These points indicate the need for further efforts to embed collaboration within institutional cultures and practices to ensure it is treated as 'business as usual', rather than an add-on task.

Barriers were also identified in relation to **cross-sectoral working** and navigating different governmental departments or regulators (for example, Defra, Department for Levelling Up, Housing and Communities (DLUHC), Transport, Ofwat), with different priorities and planning cycles. Cross-departmental/sectoral alignment is not only essential for maximising opportunities to achieve multiple benefits, but is also crucial for ensuring potentially unintended consequences that may arise are adequately considered (for example, the emphasis on economic growth may lead to increased residual risk). However, disparities and misalignment between remits and planning/funding cycles remain a significant barrier. For example, Network Rail was frequently cited as a potential funding partner. However, Network Rail's budgets and asset management planning is organised on a 5 yearly-basis and directed towards maintenance only, rather than enhancement – "The money we're going to get now in [control period] CP6 is purely to manage the infrastructure as it stands… we're not covered to spend money on other people's assets, we're not covered to spend money on enhancements or improvements […] it's the perception perhaps that we're being obstructive, uncollaborative and we're actually not" (Network Rail). To overcome these challenges, interviewees highlighted the need for better cross-departmental engagement in government. At the local level, collaboration through new or established partnerships was also viewed as a crucial

strategy for helping to resolve issues stemming from the misalignment of planning/funding cycles, plans/strategies and administrative boundaries of responsibilities.

Effective partnership working also requires a **shared understanding** of the problem to inform solutions. However, interviewees discussed how partnership working can sometimes be constrained by different understandings of risk and resilience across organisations. In order to facilitate a shared view on problems and solutions, further efforts may be required to normalise understandings of risk and resilience. The revised national FCERM strategies were seen by interviewees as a crucial mechanism for establishing these concepts. However, putting this into practice will be critical for success.

Data sharing was another important barrier that interviewees identified. While this has been greatly enhanced with the enactment of the Flood and Water Management Act, interviewees still reported various difficulties. These included incompatible formats and systems, data storage capacities, competition issues and concerns about sharing commercially sensitive data and liabilities stemming from data use, as well as having the skills and capacities to use data. Problems were also attributed to differences in the spatial scale and frequency of data collection, which can make data sharing and integration difficult. To overcome this, interviewees provided examples of where partnerships have established data sharing agreements and protocols to enhance coordination.

Specific examples of good practice and governance lessons related to different types of FCERM partnerships were examined further through the case study component of this research, as reported in Priest and others (2021). This report identifies a number of points which are recognised as important for effective partnership working. These include the decision-making authority, executive ‘buy-in’, clarity of purpose and the development of shared and measurable goals, as well as governance flexibility, diversity in membership and alignment with other local and regional governance structures. The considerable potential of collaborative partnerships in implementing FCERM is highlighted, while recognising the challenges that these partnerships face.

5.1.4 Accountability and assurance mechanisms

Accountability and assurance mechanisms are not only essential for legitimate governance (Alexander and others, 2017), but by ensuring responsibilities and commitments have been met, they can help realise more outcomes from FCERM as well as facilitate coordinated, joined-up approaches. A range of these mechanisms are established in England and Wales.

External to the FCERM governance arrangement, FCERM governance is periodically scrutinised by the National Audit Office, the Public Accounts Committee and (cross-party) departmental select committees (such as the Environment, Food and Rural Affairs Committee). Post-flood event inquiries have also played a central role in holding actors accountable, as well as facilitating learning and governance change (Johnson and others, 2005). Some examples include the Pitt Review 2007 (Pitt, 2008), the National Flood

Resilience Review (HM Government, 2016) and Wales Coastal Flooding Review (NRW, 2014 a,b; 2016c).

Assurance mechanisms are also established at multiple levels within the FCERM governance arrangement. At the national scale, the strategic overview/oversight roles of the Environment Agency and NRW and Section 18 reporting mechanism, provide a means of monitoring the implementation of the national FCERM strategies and assuring that RMAs are meeting governance and performance requirements (Environment Agency, 2020a). Furthermore, in Wales, Section 18 reports will be subject to an additional layer of scrutiny from the national Flood and Coastal Erosion Committee (section 5.1.1). Regional assurance is further supported in England through the role of the RFCCs, who maintain a strategic overview of the catchment and/or shorelines within their jurisdictional boundaries (see section 5.1.1).

At the local level, LLFAs are required to investigate specific flood incidents and whether RMAs have exercised their duties, in accordance with section 19 of the Flood and Water Management Act. However, some have observed the potential for 'local politics' to influence this process and a lack of consistency (Efra, 2020b). Reporting thresholds are now outlined in the revised National FCERM Strategy for Wales. Furthermore, Welsh Government has requested that the Flood and Coastal Erosion Committee collaborates with others to establish high-level requirements and supporting guidance by 2023 to simplify the process and improve consistency. However, while the Section 19 mechanism is useful, there is no formal requirement to act upon the lessons or recommendations identified.

Local Authority Overview and Scrutiny Committees[22] may also scrutinise FCERM activities and local arrangements for FCERM. These are intended to provide local democratic oversight, with members and chairs selected on the basis of their experience, expertise and ability to act impartially, while taking into account the political proportionality of the authority. While the external scrutiny role of these committees has expanded, the committees cannot oblige external bodies or the council Executives to act upon their findings, nor are external bodies compelled to appear before the Committee (House of Commons Library, 2019b); therefore, limiting their effectiveness to a certain degree. However, although specific legislation pertaining to FCERM and the Overview and Scrutiny Committees in England was removed in April 2018[23], due to their limited impact (Defra, 2018c), RMAs must still comply with requests for information from the committee (under section 9FH of the Local Government Act).

[22] Established in England and Wales under the Local Government Act 2000, as amended through the Localism Act 2011 (Schedule 2) and the Local Government (Wales) Measure 2011.

[23] Flood Risk Management Overview and Scrutiny Committee (England) Regulations 2011 (2011/697).

Despite the range of accountability and assurance mechanisms in place, some interviewees, particularly in England, expressed their concerns that certain organisations lack rigorous forms of monitoring, particularly compared to regulated sectors. While this may reflect a lack of awareness of the accountability mechanisms that are in fact in place, interviewees also expressed concerns about the consistency and effectiveness of some of these mechanisms. It was also felt that accountability is sometimes challenged by the complexity of roles and responsibilities, and lack of transparency. Local communities in particular, have continued to express frustration with this, as demonstrated in the quote below.

> "The issue of a lack of transparency and accountability is raised time and time again by communities in England … people complain bitterly that they are not listened to and that there is no transparency or accountability in either the planning system or in the work of the RMAs in places. They also say that when they try to use the complaint mechanisms, such as the Local Government Ombudsman, that action rarely follows, even if the complaint is upheld." (interview from the NFF)

Broad questions were raised about whether FCERM is too **reliant on internal self-assurance** and whether there is a need for more external assurance mechanisms. According to the National Flood Forum, there is an appetite among local communities for a separate, independent flood risk regulator or ombudsman to which local communities could refer cases where required, although any additional form of external scrutiny would need to be balanced with the potential resource implications of stricter monitoring to ensure that attention is not diverted from implementing FCERM. Outside this suggestion, it was felt that improved strategic coordination, alongside appropriate and proportional reporting arrangements, is essential for monitoring progress and ensuring accountability within FCERM.

5.1.5 Findings

Reconciling complexity through coherent governance arrangements

Finding 1 - Consideration should be given to where regional governance mechanisms might enhance the effectiveness of FCERM. In England, this should include the extent to which formal representation of Coastal Groups' members within Regional Flood and Coastal Committees is needed to maintain an integrated approach to flood and coastal erosion risk management. In Wales, there may be scope to strengthen the role of the Regional Flood Groups and their ability to support strategic activities in FCERM, and link FCERM with wider regional agendas. The Flood and Coastal Erosion Committee could identify how the Regional Flood Groups could be supported in this regard.

Finding 2 - There is a need to examine whether the revised national FCERM strategies have successfully clarified roles and responsibilities, particularly in terms of supporting operational delivery of FCERM, or whether existing or new governance mechanisms could support this further (such as the establishment of regional Memoranda of Understanding).

Finding 3 - A legislative review (including the Coast Protection Act and Flood and Water Management Act) could be used to identify potential conflicts, ensure consistency and improve clarity across legislation. Attention should be given to where changes would support more effective operational delivery in FCERM and improve resource efficiency. We support the recent commitments of Defra and Welsh Government to undertake a legislation review, although we encourage Defra to broaden its review beyond coastal erosion risk management authorities. Given the shared nature of this legislation, we urge a combined approach to legislative review.

Finding 4 - There is an opportunity to clarify and establish the legal remit of roles and responsibilities pertaining to climate change adaptation. Improved coordination and shared problem ownership across government departments is essential. Integrative governance could be supported by introducing new bridging mechanisms to resolve fragmentation and siloed working. This could include establishing cross-departmental funding mechanisms and recent/proposed reforms to environmental policy and land use management, as well as the involvement of Public Service Boards in Wales.

Finding 5 - Further resources are required to better embed partnership working into institutional cultures and practices to ensure this is treated as 'business as usual' and not overly reliant on specific individuals. Methods should be developed to provide evidence of the benefits of joint working (for example, efficiency savings made or achieving better outcomes) in order to gain support for partnership working.

5.2 Resourcing effective FCERM governance

Providing appropriate and sufficient resources, and using them efficiently, is essential for effective FCERM governance and achieving desired outcomes. Taking a broad view on resources, this research considered a range of resources, such as financial, technological, knowledge, skills and capacities, which underscore FCERM governance, and examined the extent to which these resources are currently either enabling or constraining the effectiveness of FCERM governance. This section focuses primarily on the main issues that were raised with regards to FCERM funding; for findings related to other types of resources the reader is referred to Appendices B and C.

5.2.1 Capital programmes and revenue funding

The presence of medium-term capital programmes in England and Wales was seen as fundamental in supporting longer term planning, providing greater certainty over funding and enabling opportunities to achieve efficiencies, for example, by 'packaging' projects and sourcing competitive prices from suppliers.

In England, the most recent 6-year, £2.6 billion capital programme (April 2015 to March 2021), has afforded better protection to 300,000 properties from 1,500 schemes (Environment Agency, 2018). Doubling this, the next capital programme will allocate £5.2 billion towards 2,000 flood defence schemes over the next 6 years and further protect 336,000 properties (HM Government, 2020a). Although the number of properties to be

protected is comparatively similar, but requires double the funding, this partly reflects the more straightforward gains addressed through the first capital programme. Nonetheless, the “infrastructure that’s protected, the economic growth, it’s still a really healthy cost-benefit programme of over 5:1”, and is expected to provide £32 billion in avoided wider economic damages (evidence from John Curtin to the Efra committee, 2020a). Many interviewees highlighted the establishment of the 6-year programme as a significant improvement to the previous governance arrangement in terms of supporting longer-term planning, although some uncertainty exists about the extent to which efficiency savings have truly been made. The additional commitment to the £200 million Flood & Coastal Resilience Innovation Programme (2021 to 2027) is also an important step forward in terms of promoting innovative approaches to FCERM[24].

In Wales, there is a 4-year Flood and Coastal Investment Programme (2017/18 to 2020/21, available to LLFAs and NRW) and a separate 3-year (2018/19 to 2020/21) £150 million Coastal Risk Management Programme (CRMP), which is available to LLFAs only. These programmes are situated within a wider commitment of £350 million towards FCERM activities over the current Assembly term (Welsh Government, 2020c). However, the investment programme is still agreed on an annual basis, with the latest settlement (released 3 April 2020) committing £35 million of capital investment in the year ahead (Welsh Government, 2020c). Some interviewees considered this to be hindering longer-term planning. Furthermore, concerns were expressed about the length of the medium-term programmes themselves, and CRMP in particular, with several interviewees calling for longer-term settlements to provide security and better enable resource efficiencies. Welsh Government has since committed to working with RMAs to develop a 5 to10 year investment programme pipeline to inform its long-term investment requirements and support effective forward planning (Measures 22 and 23; Welsh Government, 2020a).

Outside of the capital programmes, **shortfalls in revenue funding[25]** (also referred to as resources funding in England) were consistently identified by interviewees as an ongoing weakness within FCERM governance in England and Wales. Indeed, the FCERM team within Welsh Government described itself as relatively ‘capital rich but revenue poor’[26]. This has significant implications for maintaining the standards of protection provided by existing defence assets, as well as achieving a wider remit of activities in FCERM. However, this is not a new observation and levels of annual funding for defence

[24] Since the completion of this research, 25 projects have been selected as part of the Flood & Coastal Resilience Innovation Programme (Hyperlink to further details).

[25] Resource or revenue funding covers a range of FCERM activities, such as routine asset maintenance, flood forecasting, risk mapping and awareness raising, as well as day to day resources and administration costs. Any major refurbishment or repair of existing assets is covered through capital expenditure.

[26] Since data collection commenced, Welsh Government has allocated £21 million to NRW and increased revenue support to local authorities by 50%, ring-fenced for FCERM activities (Welsh Government, 2020c).

maintenance have been criticised in successive inquiries over the years (NAO, 2014; Efra Committee, 2014; EAC, 2016). In England, the Spending Review and Autumn Statement 2015 protected the budget for flood defence maintenance for a 3-year period for 2016/17 to 2019/20 (Priestley, 2017). However, wider resources budgets have continued to be supported through annual allocations, as is the case in Wales. This is seen as a substantial threat to achieving FCERM objectives and there was a strong consensus among interviewees that **longer-term settlements for resource/revenue funding** must be established.

5.2.2 Diversifying funding contributions

In both countries, there have been significant efforts to diversify sources of funding, through partnership funding in England and the match funding model used in Wales. However, the emphasis on private sector and civil society contributions is considerably greater in the English system. Diversified funding is generally regarded positively and seen as an important pathway for enabling more schemes to be funded and developed than would be possible through national funding alone, while also stimulating the implementation of multi-beneficial projects and innovations.

However, **raising funding contributions at the local scale** was highlighted as challenging. Under the match funding model used in Wales, LLFAs must secure 15% of funding under both the Flood and Coastal Investment Programmes and CRMP; the latter of which was reduced from 25% in the latest settlement in recognition of the "national importance of our coastal programme and the challenges we are already facing from sea-level rise" (Welsh Government, 2020c). Local contributions are seen as important "because it gives ownership to local authorities" and encourages local authorities to seek out alternative sources of funding (Welsh Government interviewee). However, interviewees discussed reported difficulties among LLFAs in terms of securing match funding and internal competition between FCERM projects and other corporate priorities. Similar struggles have been reported under the partnership funding arrangement in England. These discussions highlighted concerns about different access to funding at the local scale and potential inequalities, which are discussed further in the following section.

Although both countries aspire to involve the private sector in funding FCERM activities, realising this remains challenging. Even in England, where it is possible for private companies to obtain corporation tax relief,[27] this appears to be underutilised. This has been attributed to a lack of understanding, tax complexity and lack of clear guidance on eligibility (see Defra, 2020f: 26), although Defra has since committed to review current guidance to improve clarity (HM Government, 2020a). Repeated concerns have been raised in England about how the £600 million target for external investment will be met

[27] Under the Finance Act 2015 (Schedule 5), companies and unincorporated businesses can claim tax relief on funding contributions to FCERM schemes.

(Efra Committee, 2015; Alexander and others, 2016a); 15% of which (around £100 million) it is expected will be secured through private sources (Priestley, 2017). Despite green financing ambitions (HM Government, 2019b) and calls for collective action in FCERM (HM Government, 2020a), the **lack of a coherent strategy for incentivising private sector contributions** has been criticised (Efra Committee, 2019). This was also echoed by interviewees, alongside criticisms about the lack of mechanisms within partnership funding for achieving private finance sufficiently. Interviewees mentioned that often businesses struggled to understand the potential benefits of FCERM interventions, especially over the longer term, and also encountered difficulties accessing mechanisms in place to incentivise contributions (such as tax relief).

A more strategic approach to encouraging and leveraging private finance is needed. Consideration should also be given to how current policy instruments may need to be adjusted or accompanied by new instruments and financial mechanisms to better enable private and community-funded initiatives. Interesting suggestions are outlined in Defra (2020f: 32), such as the development of project portfolios to enable private investment, community interest companies and green financing.

Outside the private sector, there are considerable opportunities for aligning FCERM with other socio-economic and environmental agendas and sharing resources within the public sector to maximise efficiency. Combining FCERM grant-in-aid (GiA) with other sources of public funding has proved highly beneficial and there are numerous examples of success (Welsh Government, 2020a; Environment Agency, 2020a). For example, the River Aire Flood Alleviation Scheme brings together various contributions of funding from the Department for Business, Energy and Industrial Strategy (BEIS) Regional Growth Fund, Defra's Growth Fund, FCERM grant-in-aid, Leeds City Region Enterprise Partnership, Yorkshire Water and CEG[28]. The alignment of FCERM and economic growth agendas has enabled the £50 million scheme to progress where it would not have been possible within FCERM funding alone (Alexander and others, 2016a).

However, the ability to access and blend finance streams in the public sector is often constrained by budget silos and difficulties establishing departmental 'buy-in'. This is further exacerbated by resource constraints within the public sector. Although interviewees did highlight some examples of success, many felt that there is considerable scope for improvement in order to mainstream integrated approaches into 'business as usual'. Opportunities for achieving FCERM benefits through the newly proposed Environmental Land Management Scheme (England) and Sustainable Farming Scheme (Wales) were also discussed (see section 5.6).

[28] Hyperlink to Leeds City Council flood alleviation scheme, phase 1

5.2.3 Funding processes – accessibility, efficiency and equity

There are merits and weaknesses in the methods used to allocate funding. In both nations, there is a **transparent and consistent approach** to investment and clear criteria. Furthermore, the use of cost-benefit analysis (CBA) and whole-life costing is widely regarded as a robust and appropriate means of ensuring cost-effectiveness, considering the balance against alternatives, routine maintenance and capital replacements for the life of the asset. The average cost-benefit ratio in England is 5:1 (Environment Agency, 2020a). However, in Wales, a less stringent approach is taken, whereby all schemes with cost-benefit ratio greater than 1 are considered (Welsh Government, no date).

However, interviewees highlighted issues with the **efficiency** of the funding process in England. Many felt that the process for accessing funding was unduly complex, particularly in instances where only small amounts of finance were being sought, giving the impression of needing to "jump through hoops" (national interviewee, England). This is seen as driving unnecessarily **high transaction costs**. This has also been reported elsewhere in the context of surface water flood risk management schemes specifically (Defra, 2018b). In this regard, there may be opportunities to simplify this process. In Wales for example, a **Small Scale Works Grant**, up to the value of £150,000, is available to LLFAs carrying out maintenance or upgrading works and NFM projects, which is seen as providing a simplified approach to enable small works to take place[29].

In both countries, efforts have been made to achieve an **equitable approach to funding**. In Wales, this is achieved through the prioritisation of risk, based on the Communities at Risk Register (CaRR[30]) - "actually focusing on funding of where the greatest risk is and where the greatest need therefore is… the way that we prioritise our funding promotes that transparency and fairness to anybody that's at risk" (Welsh Government). Points are allocated according to the top 50% of communities at risk according to a sliding scale (with the top 5% allocated the most points). This goes some way towards minimising potential biases towards urban areas with higher concentrations of people and property. In recent years, Welsh Government has also reduced the influence of the CaRR within its prioritisation index to better enable smaller schemes to progress. The CaRR now accounts for approximately one third of the final score (Welsh Government, no date). This is accompanied by information on the frequency and impact of flood events, which, when combined, accounts for another third of the final score. Furthermore, while opportunities for partnership funding are encouraged, a smaller proportion of points are available (at the full business case stage) for schemes where there are no realistic or relevant opportunities

[29] The budget cap on small scale schemes was also removed in the latest settlement to enable more schemes to be implemented in the year ahead (Welsh Government, 2020c).

[30] The Communities at Risk Register provides a national flood risk index, based on modelled data for fluvial, pluvial and tidal flooding, across 2,208 communities in Wales.

for partnership funding (for example, those that solely reduce risk to homes and no other assets), which helps to minimise the potential disadvantage that this might otherwise cause. Efforts have also been made to enhance the equity of the approach by minimising the focus on cost-benefit ratios, which is explained by Welsh Government as follows – “a low total number of points of 5 is available for cost-benefit ratio as this can be influenced by property prices and we do not want to actively direct funding towards areas of higher value properties” (Welsh Government, no date).

In comparison, a deprivation bias has been embedded within the partnership funding calculator in England, meaning that households within different deprivation bands qualify for funding on a sliding scale, that is the top 20% and 21 to 40% deprivation bands will qualify for 2.25 and 1.5 times higher (respectively) than the amount available to non-deprived households (Defra, 2011; Environment Agency, 2020d). Despite this sliding scale, some interviewees raised concern about whether **socially vulnerable communities** were being helped enough to overcome the funding gap and the realisation of schemes, as well as to recover in the aftermath of flood events. Nonetheless, it is clear that compared to the previous funding regime, significant improvements have been made. Indeed, a recent evaluation of partnership funding estimates that 5,500 more properties in deprived areas have been protected from flooding than might have been under the previous approach, albeit the number of additional properties in deprived communities protected against coastal erosion is noticeably lower (Clarke and others, 2018).

Concerns have also been raised about whether partnership funding in England inadvertently disadvantages **rural communities**, due to small numbers of properties, the lack of potential funding partners and lower prioritisation of agricultural land. One interviewee commented that the allocation of funding towards urban and economically wealthy areas further reinforces growth in these locations at the expense of others. Related to this, it was felt that some communities are better able to mobilise resources and social capital, and access partnership contributions more easily than others, potentially leading to ‘queue jumping’ and inequalities.

Coastal adaptation is another area where the effectiveness and fairness of funding has been criticised in both countries. As acknowledged in the recent Efra Committee inquiry, “current government funding policy does not fully facilitate the allocation of FCERM-GiA [grant-in-aid] to adaptation or roll back measures” (Environment Agency, quoted in Efra Committee, 2019). This is significantly constraining the ability to implement adaptation initiatives and just transitions in the face of climate change (as discussed further in section 5.3). Even the Coastal Risk Management Programme (CRMP) in Wales, which was intentionally designed to promote adaptation, was criticised by several interviewees who felt that the ambition of CRMP had not been fully realised through the awarded schemes, which instead tended to focus on strengthening defences. Indeed, one interviewee commented “they were asking for innovative flood defences or adaptations, but in my mind, it sort of degenerated back into … building new defences” (local-level interviewee, Wales).

The perceived injustices and failings related to FCERM funding were typically attributed to the **underlying weighting between criteria** and the emphasis on the protection of people

and property, and reductions in flood probability. This is less apparent in Welsh funding policy, where the CaRR and the number of homes benefitting and cost per home, account for one third and one fifth of the scoring, respectively. Nonetheless, FCERM funding is ultimately designed to benefit schemes that offer the greatest reduction in flood probability to the greatest number of properties. While this is a defensible means of using public money, it inadvertently tends to favour defence-based approaches to the disadvantage of natural flood management (NFM), adaptation and multi-benefit approaches. Interviewees were particularly critical of this in the context of partnership funding in England, where funding criteria were described as inhibiting the development of multi-benefit approaches and even actively 'blocking' NFM approaches. This is perceived to be exacerbated by the narrow view on additional benefits in FCERM funding, which is restricting optimal solutions being provided. Also in England, strict considerations of what risk reduction means (that is, moving from one risk band to another) neglects wider considerations of residual risk and potentially underestimates those benefitting from FCERM. Clarke and others (2018) also highlighted several similar points to those raised here, whereby 82% of those questioned stated that partnership funding could be improved.

To some extent, some of these concerns will be addressed in England through the **recent changes to partnership funding**, announced in April 2020. These include i) updated payment rates to better account for wider benefits (particularly environmental outcomes; Environment Agency, 2020f), ii) mental health impacts (Environment Agency, 2020g), iii) the introduction of an intermediate risk band and iv) inclusion of benefits for properties that will become at risk within the lifetime of defence assets due to the impacts of climate change (ADA, 2019; Environment Agency, 2020d,e). While it is too soon to evaluate the effectiveness of these changes, these amendments promise to unlock funding for a wider range of schemes.

In Wales, significant steps have been taken to promote and support the implementation of other types of FCERM schemes, particularly involving natural flood management (NFM). This is encouraged through the Small Scale Work Grant and the FCERM Business Case Guidance, which requires NFM options to be shortlisted in the options assessment (Welsh Government, 2019c). Furthermore, the revised National FCERM Strategy establishes a commitment to provide 100% grant funding for NFM schemes for a trial period (from 2020/21) (Welsh Government, 2020a). However, it is noteworthy that within the scoring methodology for FCERM funding, the ability to demonstrate opportunities for 'wider benefits' forms the smallest contribution to the scheme's final score (5%), based on a binary (yes/no) response and accompanying written description. In this regard, we would strongly advocate learning from the recent reforms to partnership funding in England to determine how multiple benefits might be better reflected and rewarded in Welsh FCERM funding, to both incentivise and maximise delivery of multi-benefit schemes.

Furthermore, interviewees discussed how the ability to demonstrate and quantify the intangible benefits of various FCERM activities is challenged by **knowledge gaps**. While the health and wellbeing benefits of nature for instance have been widely studied in the academic literature (Bell and others, 2014; 2015; Sandifer and others, 2015; White and others, 2019), interviewees explained that this has yet to translate into practical

instruments to support decision-making. To some degree this may improve with the new guidance in England for including environmental benefits and mental health impacts within benefit cost calculations (Environment Agency, 2020f: 2020g), which may also be useful in Wales. In turn, this should help to widen the representation of additional benefits within FCERM funding.

A final point raised by interviewees in England, related to **perceived injustices that occur when additional, reactive funding is allocated** to schemes outside of partnership funding policy. For instance, the River Thames Scheme received £60 million in the Autumn Statement in 2014 and the Somerset Levels were awarded £10 million of central government funding for dredging and other repair activities, without undergoing a formal cost-benefit analysis (Efra Committee, 2014; NAO, 2014; England and Knox, 2015). Similarly, the Environmental Audit Committee criticised the reactive 'political calculation' that informed the allocation of £700 million of funding following the 2015 to 2016 winter floods and the potential for "inefficiencies in flood investment, poor decision making and potentially geographical unfair outcomes" resulting from this approach (EAC, 2016: 3). This is perceived to undermine FCERM funding policy as well as reinforcing societal expectations for state intervention and potentially establishing precedents that cannot be sustained long term (this was also discussed in Alexander and others, 2016a). Moreover, there is evidence to suggest that this may inadvertently dissuade efforts to establish funding arrangements at the local scale, as some organisations may "wait hoping that government will step in" to fill the gap as they have done in other situations (national interviewee, England).

5.2.4 Findings

Resourcing effective FCERM governance

Finding 6 - Long-term (and sufficient) settlements for resource/revenue funding are essential to maintain the standards of protection of existing defences where appropriate, as well as to support the wider remit of FCERM activities and ambitions of the national FCERM strategies.

Finding 7 - Private sector involvement is essential for keeping pace with climate change. A systematic and coherent strategy for involving the private sector and incentivising private finance should be established in England and Wales. Further research is required to better understand the barriers/enablers to private sector input and inform appropriate governance mechanisms for facilitating this.

Finding 8 - New opportunities exist for diversifying public sector contributions and aligning FCERM with other socio-economic and environmental agendas (for example, through Environmental Land Management Scheme in England or Sustainable Farming Scheme in Wales). However, there is a need to set out the boundaries between different finance streams and clarify mechanisms for blended funding. Cross-departmental buy-in will be essential.

Finding 9 - There is a need to address the high transaction costs involved in partnership funding (England) to improve resource efficiency. Lessons could be drawn from Welsh FCERM governance and the Small Scale Works Grant, which has enabled Lead Local Flood Authorities to more easily access funding for maintenance/upgrading works and natural flood management projects (NFM).

Finding 10 – FCERM funding inadvertently tends to favour defences to the disadvantage of NFM, adaptation and multi-benefit approaches. Promising changes have been introduced through reforms to partnership funding in April 2020, but it will be important to monitor the extent to which these unlock funding for a wider range of schemes. Various approaches have been taken in Wales to support the uptake of NFM in particular (including the Small Scale Works Grant and upcoming trial of ring-fenced funding). However, the representation of 'wider benefits' within the scoring methodology for FCERM funding remains limited. Welsh Government should consider how multiple benefits might be better reflected and rewarded in FCERM funding, to both incentivise and maximise implementation of multi-benefit schemes.

Finding 11 - Funding should be allocated in a consistent and transparent way to ensure a socially equitable and efficient approach to FCERM. In this regard, we caution against reactive, politically-judged commitments of funding in the wake of significant flood events unless a consistent governance framework/approach is established for such instances, which takes into account the scale of impacts and adopts consistent criteria for determining how additional funding should be allocated.

5.3 Governance barriers to adaptation

There is a strong scientific consensus that the UK will need to adapt to at least 1m of sea level rise at some point in the future as well as increasing flood and erosion risks under future climate change (CCC, 2018; Howard and others, 2019; Sayers and others, 2020). In order to effectively respond to changing risks there is a need to (further) embed adaptation within current FCERM governance. This can take many forms – from the design of engineered defences (with allowances for future climate change) and the inclusion of climate change within spatial planning, through to decisions to 'roll-back' or relocate people, property and infrastructure. The latter approach will be crucial in high-risk areas, both inland and on the coast, where defences are either not viable or not regarded as sustainable over the longer term.

This section focuses on the main barriers in governance that constrain efforts to adapt to climate and coastal change. For a more comprehensive picture on the enablers and barriers to adaptation (including relevant points from other sections of this report), the reader is referred to Appendix D.

5.3.1 Funding gaps

As outlined in section 5.2.3, FCERM funding inadvertently favours defence-based approaches and risk-reduction to people and property. This is at odds with the nature of

adaptation initiatives, which typically involve a wide range of measures, such as setback defences, the relocation of people, potential compensation and decommissioning of infrastructure. As highlighted by Alexander and others (2019), adaptation can blur the boundaries in funding eligibility and mean that some schemes essentially fall through the gaps created by budget silos. This is further exacerbated by the lack of problem ownership for adaptation and cross-departmental buy-in (as highlighted in the quote below and discussed in section 5.1.2).

> "Implementation of shoreline management plans isn't just for FCERM […] everything still very much seems to be in its silos […] I really do think that this collaborative approach to delivery of SMPs is an absolute priority… we need to work more collaboratively to deliver coastal adaptation … with a wide range of government departments and stakeholders and businesses in order for it to be successful." (NRW)

Managed realignment in Newgale (Pembrokeshire, Wales) is a good example of the implementation challenges, where no clear funding mechanism exists for decommissioning parts of the A487 - the "lack of housing assets means the scheme doesn't qualify for FCERM, nor is the highway in such condition as to warrant a major highway scheme" (Williams and others, 2019). Significant challenges have also been reported in Fairbourne (Gwynedd, North Wales). In this case, innovative proposals to establish a community interest company for enabling a buy-to-let scheme and to facilitate the relocation of residents, have been unable to secure funding (see Priest and others, 2021).

Addressing this, many interviewees reflected on the need to **reframe flooding** (and climate change more widely) as more than a technical issue or threat to life and property, but as a wider social problem. This would enable the economic case for funding within FCERM to be broadened accordingly.

> "Climate change is seen as a flooding issue rather than it being a social and community issue…you can't just talk about flooding, it being the responsibility of NRW and the local authority without them bringing in the issues regarding housing, regarding health and wellbeing, regarding education … the services like water, electricity, gas, roads, railways, everything that encompasses a community needs to be brought into the discussion" (National interviewee, Wales).

In agreement with the CCC (2018), our analysis highlights **the urgent need for either i) revising FCERM funding formulae to support adaptation actions, or ii) providing**

alternative funding mechanisms. There are also opportunities for learning from the pilot projects selected through Defra's Flood and Coastal Resilience Innovation Programme[31].

Given the complexity of adaptation, any new central funding mechanism should promote cross-departmental and cross-sectoral coordination, cooperation and collaboration. A good example of efforts to address this was the Coastal Risk Management Funding Programme (CRMP) Board in Wales, which included other governmental departments such as regeneration, housing and transport[32]. However, while in theory this was intended to stimulate the implementation of multi-beneficial schemes, this was limited in practice - "it's not really worked, whether that's because people haven't got any money internally or whether we just haven't been as joined up as we need to be. I think perhaps they saw it as this is an opportunity for our pot of money to do things to them [rather than] let's do this altogether, and also the way that the business case was written in the first place, it was written about protecting homes and businesses" (interviewee from Welsh Government). This example demonstrates the importance of establishing a clear business case from the outset, based on integrated cross-sectoral priorities. This will be central to the success of any future funding mechanism that is introduced for facilitating adaptation initiatives.

Leveraging alternative forms of finance will also be needed (see section 5.2.2). Moving forward, Defra proposes to "explore the availability and role of financial products and services that can help people or businesses to achieve a managed transition of property and infrastructure away from areas at very high risk of coastal erosion" (HM Government, 2020a: 38). This should be approached with the sense of urgency required to address the adaptation challenge and growing adaptation gap.

5.3.2 The lack of policy instruments and prohibitive legislation

Recurrent barriers to implementing adaptation were discussed by interviewees, including the lack of i) policy instruments or delivery mechanisms, ii) strategic and practical guidance, and iii) impact of prohibitive legislation. Collectively, these are seen to be contributing to an **implementation gap** in coastal adaptation.

Efforts have been made to examine potential mechanisms through the Defra Coastal Pathfinder scheme (2009 to 2011). For example, £3 million was awarded to North Norfolk District Council to purchase, demolish and relocate 9 residential properties at risk of coastal erosion, with the support of a Coastal Erosion Assistance Grant from Defra (£6,000 per property). However, although buy/leaseback options were examined in 3 of

[31] Since the completion of this research, 25 projects have been selected as part of the Flood & Coastal Resilience Innovation Programme (Hyperlink to further details).

[32] The CRMP programme has since been merged with the FCERM programme, to form a single Flood and Coastal Risk Programme Board, as of April 2019 (Welsh Government, 2020a).

the pathfinder projects, these were not developed further due to either financial constraints (East Riding of Yorkshire and North Norfolk projects) or community opposition (Scratby project; see Defra and others, 2015). Therefore, there is a pressing need to further investigate the feasibility of different buy/leaseback approaches, taking into account the legal and practical considerations. These should be considered alongside a range of other mechanisms and requirements for implementing adaptation, such as alternative forms of financing (section 5.2), spatial planning and building regulations (section 5.4) and insurance mechanisms (section 5.5), as discussed in other sections of this report. This step will be essential for moving beyond investigation to implementation and from adaptation in theory to adaptation in action.

In terms of strategic and practical guidance, a coastal adaptation toolkit has long been promised in Wales (NRW, 2015a), but has yet to come to fruition. Expressing their frustration, one interviewee commented "I think it's really disappointing that there's a concept of having a coastal adaptation toolkit within the recommendations [of] the coastal flooding review in 2014, and we're in 2019 and we don't seem to have got anywhere with it" (National interviewee, Wales). There continues to be a high demand for this, however, interviewees were equally keen to stress that the guidance should avoid becoming too prescriptive given the differences between places. For example, one interviewee commented "if it really is a toolkit that tells you what a hammer can be used for that might be fine… It mustn't be too prescriptive, it's got to get down to the principles of what you're trying to do". This highlights the importance of co-developing such guidance/toolkits with those directly involved in implementing adaptation. This has also been recognised within the National FCERM Strategy for Wales, which specifies that Welsh Government will work with Coastal Groups and NRW to develop coastal adaptation guidance by 2022 (measure 18: Welsh Government, 2020a).

Adaptation guidance is also notably absent from the English system. Although the Coastal Handbook was published in 2010 to provide a technical guide for operating authorities working on the coast (across various policy areas), this is now outdated and does not directly advise on adaptation matters (Environment Agency, 2010). More recently, good practice guidance has been produced for local government to assist in adaptation planning (ADEPT and others, 2019), with additional resources available through the UKCIP toolkit and Adaptation Wizard to support organisational planning[33]. However, clear strategic or practical guidance for informing the planning, integration and implementation of adaptation in FCERM remains elusive. Recognising this, the national FCERM strategy promises to provide a new package of guidance, web-based resources and adaptation tools, drawing from learning from adaptive pathways, by 2025 (Measure 1.2.3: Environment Agency, 2020a).

[33] Hyperlink to UKCIP Wizard tools portfolio.

The lack of available practical guidance for implementing adaptation policies to date gives the impression that adaptation is not being approached with the **sense of urgency** or leadership it requires. There was also some concern that coastal risks are not given the same priority as flooding; indeed, one interviewee described coastal erosion as the 'poor relation' in FCERM (National interviewee, England). Moving forwards, it is essential that collaborative work begins now to ensure the timely provision of promised guidance/toolkits for adaptation.

Adaptation requiring the roll-back or relocation of certain assets may be further impeded by certain '**prohibitive' legislation**; namely the Highways Act 1980. Under the Highways Act, highway authorities[34] have a duty to maintain public rights of way (PRoW[35]) and to ensure safe passage, so far as is reasonably practicable. While it is possible to legally change, divert or close a highway, this process is complex, time-consuming and expensive (Natural England, 2008). Diversions or closures can be initiated by local authorities through a public path extinguishment order or a public path diversion order (as outlined in sections 118 and 119), subject to specific tests[36]. The authority must be satisfied that it would be advantageous to divert the path or way either on the grounds that it is not needed for public use (extinguishment order), or that it would be in the interests of the public or the owner, lessee or occupier of the intersecting land (diversion order). In these instances, the authority must also be satisfied that the diversion will not be substantially inconvenient to the public, adversely affect public enjoyment of the path or way as a whole (and other land served by this), or the land affected by the proposed diversion (Natural England, 2008). As a public matter, any changes to PRoW must be subject to advertisement, consultation and dispute procedures, which may involve a local inquiry, hearing or written representations procedure. Given the wide range of users of PRoW who may oppose public path orders, and lengthy legal processes involved, there is a common adage 'once a highway, always a highway' (Planning Inspectorate, 2009). In this regard, the Highways Act was described by interviewees as prohibiting adaptation. While this equally applies to inland adaptation, this was mostly discussed in the context of the coast,

[34] Designated highway authorities are the county council (where there are 2 tiers of authority); otherwise, the unitary authority (which may be either a county, district, borough or city council), as well as London borough councils. They are responsible for all highways in their area (whether or not maintainable at public expense). The Minister or Welsh Ministers are the highway authority for highways maintainable at public expense as outlined in s1(1) Highways Act 1980. A National Park Authority or a district council may take over the rights of way functions from highway authorities by agreement.

[35] All public rights of way (PRoW) are highways under the law.

[36] Additional orders can be initiated to divert or close PRoW for purposes of development (under section 27 of the Town and Country Planning Act 1990) or to prevent damage to nature conservation features of SSSI sites (SSSI diversion orders).

where the legal imperative to maintain and protect PRoW supersedes the non-statutory status of SMP policy.

These tensions have been highlighted in the case of the Cwm Ivy habitat creation project (North Gower, Wales), where NRW and the National Trust have sought to create compensatory saltmarsh habitat following a natural breach in the sea wall (NRW, 2015b). While this is in line with the 'No active intervention' policy outlined in the Shoreline Management Plan (SMP), it has come into conflict with the City and County of Swansea's duties as a highway authority as well as other users of the PRoW who have argued that the path on the existing sea wall should be reinstated. Consequently, further action has stalled while the council conducts an options assessment for access to determine whether to repair the existing breach.

To remedy this, it may be necessary to better **bridge FCERM with highways planning and corresponding Access Forums**. The Wales Coastal Group Forum (WCGF) is exploring several ways in which this might be achieved, such as evidence gathering to map out the coastal assets (subject to future SMP policy change) currently acting as PRoW and directly engaging with the access reform programme in Wales, the National Access Forum and Access Reform Group to examine opportunities for collective action (NRW, 2019b; Welsh Government, 2019g). Similarly, there is a need for closer engagement between Coastal Groups and Local Access Forums[37] in England to help align priorities. At the very least, formal guidance for local authorities on PRoW could make explicit reference to SMPs, which it currently does not (Defra, 2009; Welsh Government, 2016f). However, legal consideration should be given to how provisions for diverting and extinguishing rights of way may be amended to better reflect the dynamic nature of the coastline and enable, rather than prohibit, future adaptation.

5.3.3 The non-statutory status of Shoreline Management Plans (SMPs)

The research brought to light various issues regarding the non-statutory status of SMPs. Firstly, the non-statutory status of the SMPs often comes into conflict with statutory duties. As discussed in the previous section, duties to maintain public rights of way (under the Highways Act 1980) supersede SMP policies.

Secondly, there is a seeming lack of awareness of SMPs outside the FCERM community, which is seen to be restricting the effectiveness of SMPs as policy instruments for sustainable coastal management. Interviewees stressed the need to (at the very least)

[37] Local Access Forums (LAFs) are established under the Countryside and Rights of Way Act 2000 and governed by The Local Access Forums (England) Regulations 2007. The LAFs have an advisory remit on matters relating to public access to land and outdoor recreation, including public rights of way, and comprise volunteers representing users, landowners and occupiers (see Defra, 2009).

raise awareness of SMPs among crucial actors, particularly those involved in spatial planning, infrastructure owners/providers and landowners.

However, it is noteworthy that interviewees expressed mixed views when asked about whether the statutory status of SMPs should be changed. For some, placing SMPs on a statutory footing was seen as essential for implementing the corresponding action plans and ensuring the necessary commitment of resources. For example, one interviewee remarked, “I think the fact of them being non-statutory is the biggest problem, with that you probably won’t get so much investment or funding being passed on in this area to ensure that the action plans are taken forward or to ensure that they can be built into work programme […] we would like to see the documents be statutory documents so they are embedded in local policies and strategies, development planning…” (national interviewee, Wales). It was also felt that this would support efforts to embed SMP policies into other aspects of public policy.

Others, however, were less convinced that changing the status of SMPs would be beneficial for effective governance. Some highlighted the practical difficulties of this and expressed concerns that SMPs might be ‘watered down’ as a consequence (“it would be nice to have them as statutory documents, I’m just not sure how achievable that is”, interviewee from NRW). Interviewees also emphasised how other governance mechanisms have been established, namely requirements to regard SMPs, to promote consideration of SMPs in spatial and marine planning for example - “the main controls are in the planning system so as long as the planning system takes the SMP as the policy to be applied to the coastline then there’s no real need to have them as a statutory document because the planning process will do it’ (local-level interviewee, Wales).

Despite the mix of responses, there was a shared consensus about the need to raise the profile of SMPs and increase both awareness and usage of SMPs among relevant stakeholders. While Coastal Groups are making efforts to raise awareness at the local scale, this is highly varied and restricted by the lack of resources and the voluntary status of the Group[38]. In order to address this, interviewees reflected on the need for greater national recognition – “it needs more national recognition I think to help filter down … with climate change and sea level rise and the ageing defences that we’ve got, you can see all of those things coming together in a perfect storm, which will mean that the … advice and knowledge of those groups [Coastal Groups] is really important going forward” (national interviewee). This could be supported through better signposting in national policies (outside the FCERM remit) to promote SMPs as essential evidence for long-term decision-making. However, as noted by the CCC, the decision to remove signposting to SMPs in

[38] This issue is examined further in the accompanying case study research to this study – see Priest and others (2021).

the revised National Planning Policy Framework “gives the appearance of its importance being downgraded” (CCC, 2018: 49).

This situation is exacerbated further by the poor accessibility of SMPs to those outside the Coastal Group network. To help address this, the Environment Agency has announced plans to develop a web-based tool to improve access and use of SMPs (Environment Agency, 2020a), with other plans to extend this to the 4 Welsh SMPs (Welsh Government, 2020a). The current refresh of SMPs in England was also highlighted by interviewees as an opportunity to raise awareness among planners and other local authority departments.

5.3.4 Difficult conversations and community engagement

Both national FCERM strategies in England and Wales acknowledge that difficult decisions will need to be made about the future of certain communities, where, whether for technical, social and/or environmental reasons, it would be unsustainable to defend against the impacts of future climate change (Environment Agency, 2020a; Welsh Government, 2020a). This will require difficult conversations with local communities.

The need for meaningful (and sustained) engagement with local communities, as opposed to one-way consultation, has been increasingly embraced by the Environment Agency, NRW and local authorities. Indeed, John Curtin (Executive Director of Flood and Coastal Risk Management at the Environment Agency, at the time of writing) remarked in a recent Efra Committee hearing, “there has been a cultural shift within the organisation to listen to and absorb all knowledge” (Efra Committee, 2020). Welsh Government has also asserted its commitment to open and transparent communication (Welsh Government, 2020a). However, the Committee on Climate Change has drawn attention to the lack of public awareness of coastal change in particular, and the seeming lack of political will to engage coastal communities in future planning (CCC, 2018). Interviewees in this research also expressed their frustrations with this - “we need to move from talking about it, to how do we resource effective coastal change now” (national interviewee).

Resource capacity, or lack of it, is also a pressing issue. While recognising the necessity for proactive community engagement, interviewees explained this process is resource intensive and that resource constraints are restricting this. Simultaneously, new forms of community engagement that embrace participatory and creative methods have been requested to foster understanding and encourage collective ownership of the problem at-hand (such as the use of simulations, visualisations and storytelling) (Kelly and Kelly, 2019). However, such techniques are likely to require additional training and capacity building to expand the skillset of community engagement officers, as well as requiring input from specialist engagement practitioners, technical specialists and artists.

It is essential that a proactive approach to long-term planning for adaptation is taken now and that communities are actively involved in the decision-making process and shaping their own futures. This is will be vital for building understanding, trust and collective ownership for the difficult decisions that need to be made, while also enhancing the legitimacy of local governance arrangements.

There are limited examples where this is occurring in practice. For instance, the Fairbourne Moving Forwards Partnership has produced a 'Framework for the Future', which adopts a 40-year planning horizon (2014 to 2054) to maintain a safe, viable community, while working towards a solution for 'decommissioning' Fairbourne when required (FMF, 2019). Numerous lessons and examples of good practice can be identified from this example, such as the need to establish a framework and deliberative structures (as opposed to a fixed 'project' or plan) to provide a flexible roadmap for action, as well as dedicated resources for community engagement. These lessons are discussed further in the corresponding case study research to this report (see Priest and others, 2021).

The importance of adopting an adaptive pathways approach to long-term planning is also reinforced through the National FCERM Strategy for England (Environment Agency, 2020a). This approach outlines different options (or pathways) for addressing flood and coastal erosion risks, while being flexible to emerging trends, scientific evidence and other changes to the local environment. In turn, this approach can better inform local planning for adaptation, strategic investments and resource efficiency. The Environment Agency intends to develop this approach in a range of different places exposed to high risks of flooding or coastal erosion over the next 5 years to inform future adaptation guidance and resources, as well as reforms to local Flood and Coastal Erosion Plans (Environment Agency, 2020a; HM Government, 2020a). Although this will be developed with other RMAs and local partners, local communities are not explicitly mentioned. Consideration should be given to how local communities can actively contribute to the visioning of adaptive pathways to help enhance understanding and establish realistic options for the future (Jacobs, 2018).

5.3.5 Findings

Addressing governance barriers to adaptation

Finding 12 – To address the adaptation funding gap, consideration should be given to whether further revisions might be needed within FCERM funding formulae, and opportunities explored for establishing a cross-departmental/sectoral funding mechanisms and leveraging alternatives forms of finance.

Finding 13 - Existing governance mechanisms are considered insufficient for implementing adaptation. A multi-sectoral approach will be essential. Further research is required to establish how governance arrangements could be expanded, such as alternative forms of (blended) financing, spatial planning/building regulations and insurance mechanisms.

Finding 14 - A greater sense of urgency is needed to support adaptation planning and implementation at the local scale. Strategic and practical guidance for implementing adaptation initiatives (such as roll back, equity-release and relocation options) is necessary (including, for example, funding options, legal implications and advice for community engagement). It is essential that collaboration begins now to ensure the timely

provision of promised guidance/toolkits for adaptation in 2022 (Wales) and 2025 (England), if not sooner.

Finding 15 - The Highways Act 1980 and duties to maintain public rights of way can at times hinder adaptation. There may be a need to better bridge FCERM with highways planning and Access Forums in order to enhance awareness of current and future issues (in consultation with Shoreline Management Plan policies), and help align priorities. Legal consideration should also be given to how provisions for diverting and extinguishing rights of way may be amended to better reflect the dynamic nature of the coastline and enable future adaptation.

Finding 16 - There is a need to raise the profile of Shoreline Management Plans (SMPs). This is likely to require both top-down and bottom-up approaches. At the national scale, greater signposting in relevant national policies (outside the FCERM remit) could help to promote SMPs as essential evidence for long-term decision-making. Local scale engagement should be supported by the Coastal Groups Network and Wales Coastal Group Forum, who should help in developing communication and engagement materials; this will also help ensure consistency across Coastal Groups. Accessibility to SMPs must also be improved. We welcome the Environment Agency's announcement to develop a web-based tool to improve the access and use of SMPs, and Welsh Government's decision to extend this to Wales.

Finding 17 - A proactive approach to long-term planning for adaptation should be taken now and actively involve communities in shaping their own futures. This will require additional resources and capacity building to support meaningful and sustained community engagement. Consideration should be given to how local communities can be involved in adaptive pathways visioning and planning.

5.4 Establishing climate resilient places through spatial planning and resilient design

Effective spatial planning is essential for both managing the exposure of people and assets to flood and coastal hazards, as well as helping to reduce the consequences of these hazards should they occur (for example, through resistant and resilient property design). This section examines the extent to which this is facilitated through the current governance arrangements in England and Wales, outlining both the enabling (section 5.4.1) and disabling (section 5.4.2) aspects of governance. Section 5.4.3 evaluates the extent to which surface water management, with a focus on sustainable drainage systems (SuDS), is supported through the current governance arrangements in spatial planning. These findings are summarised in section 5.4.4.

5.4.1 Enabling aspects of governance

Establishing line of sight

Flood and coastal erosion risks are a material consideration in both planning systems[39]. In England, policies relating to flood and coastal risks are outlined in the National Planning Policy Framework[40] (NPPF: DLUHC, 2019a) and Planning Practice Guidance 'Flood Risk and Coastal Change' (DLUHC, 2014)[41]. In Wales, these policies are outlined in Planning Policy Wales (PPW: Welsh Government, 2018a) and Technical Advice Notes (TAN) 'TAN15 Development and Flood Risk' (Welsh Assembly Government, 2004) and 'TAN14 Coastal Planning' (Welsh Office, 1998), with TAN15 and TAN14 soon to be assimilated within the revised TAN15 for 'Development, Flooding and Coastal Erosion'[42] (Welsh Government, 2019b). These policies establish 'line of sight' from the national to local scale and help to bridge planning and FCERM policy agendas.

More recently, efforts have been made to strengthen planning policy in both nations. The revised TAN15 in Wales (anticipated in 2021) establishes a risk-based framework, with changes to flood risk zones and development categories, and a stronger position against highly vulnerable development in high and medium risk areas. Greater coherence is established with the decision to replace the Development Advice Map with the Wales Flood Map and the merger with TAN14 (Coastal Planning), alongside new guidance on flood resilient development, site and property resilience measures (Welsh Government, 2019b). This addresses numerous weaknesses that have been identified within the current framework (JBA, 2017; Alexander and others, 2019). Moreover, the spatial planning and FCERM divisions of Welsh Government have worked closely together to strengthen policy alignment.

In England, the NPPF was significantly reformed in 2018, particularly with regards to the plan-making process and other reforms following the housing white paper (DCLG, 2017a: HCL, 2019a). Although there were few direct changes to policies pertaining directly to flood and coastal erosion risks, certain revisions will help enhance effectiveness and policy integration between FCERM and spatial planning. For example, there is more clarification that the sequential approach in plan-making should take into account current and future impacts of climate change, while safeguarding land from development that is required, or

[39] Spatial planning governance is further situated within the wider legislative context, including the Town and Country Planning Act 1990 (England and Wales) and the Planning (Wales) Act 2015, among others.

[40] The National Planning Policy Framework has since been updated (as of July 2021): Hyperlink to NPPF.

[41] Revised and updated flood risk Planning Practice Guidance in England is anticipated to be published later in 2021, following the [Hyperlink to] Review of policy for development in areas at flood risk (published 29 July 2021).

[42] The revised TAN15 is currently under revision following consultation 9 October 2019 to 17 January 2020.

'likely to be required', for current or future flood management (DLUHC, 2019a: para.157). Subtle changes have also been made to the presumption in favour of sustainable development to help prevent inappropriate development going ahead in instances where development plan policies are either absent or out of date (HCL, 2019a). In this regard, NPPF policies relating to flooding and coastal change are explicitly listed as an exception for where the presumption in favour of sustainable development should not apply (para 11(d)).

Preventing inappropriate development

Similar governance mechanisms are used in both systems to steer development away from high-risk areas and ensure that any development on the flood plain satisfies a number of conditions. An important mechanism for this is the 'sequential and exception tests' in England, and the 'justification and acceptability' tests in Wales, which are applied to the plan-making process as well as individual applications, where required. For applications in flood risk areas, planning applicants must submit a flood risk assessment (England) and a Flood Consequence Assessment (Wales) to demonstrate how these tests have been met and how risks will be managed over the lifetime of the development, taking into account climate change and the vulnerability of users.

Moreover, local planning authorities (LPAs) have a statutory duty to consult the Environment Agency/NRW and LLFAs for proposed developments in certain at-risk areas[43]. Although reported resource constraints are restricting the ability of these consultees to comment on individual planning applications and provide technical flood risk advice, the use of standing advice for smaller, lower risk developments helps to mitigate this and improve resource efficiency (Environment Agency, 2019b). Standing advice for proposals for highly vulnerable development in high flood risk areas have also been trialled in Wales and will be rolled out more widely as part of efforts to maximise resource efficiencies, while improving consistency (NRW, 2019a).

In Wales, developers are also required to consult NRW as part of the statutory pre-application consultation for major developments for flood zones C1 or C2[44], which further helps promote efficiency in the system (for example, providing an early indication of the likely success of the application and advice on consequences and scope of the flood consequence assessment). Pre-application engagement is similarly advocated in England

[43] In England, LLFAs became statutory consultees on major planning applications with surface water drainage implications in April 2015.

[44] Under amendments to the Town and Country Planning Act 1990 (section 61Z) brought in by the Planning (Wales) Act 2015, and Schedule 4 of The Town and Country Planning (Development Management Procedure) (Wales) Order 2012 (as amended by The Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016).

to improve efficiency and effectiveness, but is not a statutory requirement (DLUHC, 2019a).

While it is possible for planning applications to be approved contrary to Environment Agency/NRW advice, certain checkpoints have been established to monitor this. For example, LPAs are required to notify the Environment Agency if they are likely to grant permission for major developments[45] contrary to advice and are encouraged to work with the Environment Agency and the applicant to try to modify the application so that the objection can be withdrawn[46]. Failing this, the Town and Country Planning (Consultation) (England) Direction 2009[47] requires LPAs to notify the Secretary of State[48], upon which a Direction may be issued for the planning decision to be referred to the Secretary of State[49]. The same notification requirement exists in Wales (under the Town and Country Planning (Notification) (Wales) Direction 2012)[50]. To date, this has applied to residential developments of 10 or more dwellings (as is the case in England; Welsh Government, 2012). However, according to interviewees in Wales, it is anticipated that this will be strengthened to ensure Ministers are notified and can use the call-in process for one dwelling or more located within flood zone 3 (Alexander and others, 2019). However, in general, there appears to be a general adherence to Environment Agency/NRW advice (NRW, 2016a; JBA, 2017; Environment Agency, 2018).

Another important mechanism for minimising exposure to flood and coastal risks is through the Local Plan (referred to as the Local Development Plan in Wales), which is established on the basis of a strategic flood risk assessment (SFRA, in England) and strategic flood consequence assessments[51] (FRCA, in Wales). The NPPF explicitly states

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[45] Major development refers to i) in respect to residential development, the provision of 10 or more dwellings, or a site of 0.5 hectares or more, ii) in respect of non-residential development, new floorspace of 1,000 square metres or more, or a site of 1 hectare or more.

[46] This applies to any major developments within flood zones 2 or 3, or on land within flood zone 1, which has been notified to the local planning authority as having critical drainage problems.

[47] Since the completion of the research, this has been replaced by The Town and Country Planning (Consultation) (England) Direction 2021, which came into force 21 April 2021.

[48] Since the completion of the research, a Review of policy for development in areas at flood risk (in England) was published in July 2021. This includes observations on the call-in direction, which in general is seen to encourage LPAs to work with the EA to resolve flood risk issues.

[49] Under section 77 of the Town and Country Planning Act 1990.

[50] This applies to developments pertaining entirely to flood zone C2, incorporating highly vulnerable development or emergency services.

[51] Note that the use of strategic flood consequence assessments to inform development plans in Wales has been clarified and strengthened in the proposed changes to TAN15 (Welsh Government, 2019b).

that “plans should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas” (DLUHC, 2019a: 48). Any area likely to be affected by physical changes to the coast should be identified as a Coastal Change Management Area, making it clear what development will be appropriate, and making provisions for any development or infrastructure that needs to be relocated. Planning Policy Wales similarly states that “the priorities contained within [the SMPs] should influence and inform the preparation of development plans” and outline where development would be unsuitable or where specific characteristics should be considered (Welsh Government, 2018a: 145).

Planning for climate futures

Allowances for climate change have also been integrated within the planning system to help minimise future exposure and promote resilient places. This is endorsed through the rules dimension of governance through legislation and policy. Under the Planning and Compulsory Purchase Act 2004[52], development plans must include ‘policies designed to secure that the development and use of land in the local planning authority’s area contribute to the mitigation of, and adaptation to, climate change’ (section 19(1A)). A circular was further issued in Wales to provide Guidance on Climate Change Allowances for Planning Purposes (CL-03-16, Welsh Government, 2016d), to support (strategic) flood consequence assessments. The intention is that this will allow for development proposals to incorporate design measures that help manage that risk and improve resilience (Welsh Government, 2016f). However, many have been critical of the current Welsh system and the absence of climate change allowances from the Development Advice Map, upon which the Local Development Plans are based (JBA, 2017; Alexander and others, 2019). These concerns will be addressed through the proposed revisions to TAN15 and the replacement of the Development Advice Map with a Wales Flood Map, which will indicate different risk zones (zones 1 to 3[53]) as well as integrate surface water mapping and climate change allowances (Welsh Government, 2019b). In England, (strategic) flood risk assessments are equally required to take account of the impacts of climate change (DLUHC, 2019a,b; Environment Agency, 2020c).These allowances (and associated impacts) must be considered over the lifetime of the proposed development[54].

[52] As amended by the Planning Act 2008.

[53] The new flood zones will replace the current zone A to C system used in Wales.

[54] The assumed lifetime of residential properties is 100 years. Non-residential development is generally assumed to be 75 years in Wales. In the English planning system, the lifetime of a non-residential development depends on the characteristics of that development and developers are expected to justify why they have adopted a given lifetime for the development when preparing a site-specific flood risk assessment, for example.

Monitoring and reporting

Assessing the effectiveness of planning governance depends on effective governance mechanisms for reporting and monitoring development in flood risk areas. This is also essential for maintaining 'line of sight' from the national to local scale.

In England, development in at-risk areas is monitored through the Notification Direction, as well as the Land Use Change Statistics (LUCS[55]). The LUCS report on the location and area of land use change, including the proportion of new residential development created in flood zone 3. Figures show that fewer than 9% of new residential addresses were established within high flood risk areas[56] (between 1 April 2018 and 31 March 2019; Environment Agency, 2019d; DLUHC, 2019c). These statistics are provided through an agreement between DLUHC and the Ordnance Survey and are based on the digitised boundaries of flood zone 3 maintained by the Environment Agency (DCLG, 2015b). The LUCS have been collected since 1985 and therefore are an important resource for monitoring development trends over time. Moreover, other collected statistics are useful for monitoring development in the wider catchment (for example, percentage of housing development constructed on agricultural land and the green belt, and density). Following a consultation in 2019, the LUCS will be broadened and provide annual updates of summary statistics and local authority level maps, as well as estimates of hectarage change data at 3-yearly intervals; these will be compared with flood risk boundaries (DLUHC, 2020c). This aspect of governance is essential for monitoring the effectiveness of the planning system and maintaining 'line of sight' from the national to local scale.

Accompanying this, the Single Data List requires local government to report to government on their performance based around a number of datasets each year, including FCERM and sustainable drainage systems[57]. This includes data pertaining to LLFAs in terms of the number of i) major planning applications on which the LLFA were consulted with regards to surface water drainage; ii) residential units within planning decisions for major development where the application has been refused or made in line with LLFA advice on surface water drainage; iii) major development applications where the application has been refused or has been made in line with LLFA advice on surface water drainage; as well as iv) reporting in relation to the implementation of the Flood and Water Management Act. The latter is based on a short multiple-choice questionnaire, which includes local flood risk management strategies, partnership working, asset registers, section 19 flood investigations and capacity. Information is also collected regarding developments in flood risk areas (the number of planning decisions for developments on which the Environment

[55] Live tables can be accessed from Hyperlink to government land use change statistics.

[56] More recent figures are available from the EA's Flood and coastal erosion risk management report: 1 April 2019 to 31 March 2020.

[57] Hyperlink to Guidance on the Single Data List

Agency has objected on flood risk grounds[58]), strategic overview of flood and coastal erosion risks (number of properties where flood or coastal erosion risk has been reduced/managed), as well as reporting on the EU flood risk regulations (required every 6 years). However, it is not clear to what extent this reporting is actively taking place or enforced.

In Wales, monitoring is based on the Notification Direction and 'call-in' powers, as well as Sustainable Development Indicators to monitor planning decisions. The latter includes information on the number of planning permissions granted and refused in zones C1 and C2 (SD4 'resilience to climate change - flood risk'), which is returned by LPAs on an annual basis to Welsh Government. Recent reports indicate a rise in planning permissions granted in zone C, including a very small number of applications that were granted planning permission despite not meeting all requirements of TAN 15 (see JBA, 2017; NRW, 2019a). However, monitoring these figures is complicated by the fact that not all LPAs consistently return this information, with resource constraints meaning that this activity is often deprioritised. This is identified as a current weakness in the Welsh planning system. To address this, Welsh Government (planning and FCERM divisions) could review the current approach to monitoring and consider whether this should become a mandatory activity for LPAs (with dedicated resources to support this), or whether there is a need to establish an alternative approach.

5.4.2 Disabling aspects of governance

While the governance mechanisms outlined above help support societal and place-based resilience, there are notable weaknesses within planning governance:

- misalignment between Local (development) Plans and Shoreline Management Plans (SMPs)
- lack of enforcement mechanisms for ensuring compliance with planning conditions, which has been exacerbated by reduced capacity within the planning system
- lack of governance mechanisms to facilitate the uptake of property level resilience measures, including limited coverage of building regulations

Disjointed Local Plans and Shoreline Management Plans

There is a degree of fragmentation between FCERM and planning governance, which stems from the misalignment between Local (development) Plans and SMPs. In part, this is fuelled by the non-statutory status of SMPs and the fact that there are no mandatory requirements for spatial planning to consider or address SMP policies, only a loose duty

[58] The Environment Agency objections to planning on the basis of flood risk is published each year to help local authorities complete their annual monitoring reports and submit information required for the Single Data List to government.

'to regard'. Indeed, research has found that up to one third of Local Plans for coastal locations show no evidence of using SMPs (CCC, 2018).

Interviewees also reported a general lack of awareness of SMPs outside the FCERM community, particularly among spatial planners, as well as land/asset owners and infrastructure providers. Decisions to remove signposting to SMPs from the NPPF may exacerbate this and "gives the appearance of its importance being downgraded" (CCC, 2018: 49). Moreover, the poor accessibility of SMPs to those outside the Coastal Group network compounds this further still. These issues are discussed further in section 5.3.3.

Fragmentation is further reinforced by different planning horizons. Whereas SMPs adopt a 100-year planning horizon (sub-divided into 3 epochs), strategic policies within Local Plans are required to look 15 years ahead (as a minimum) to adequately plan for housing and infrastructure needs. Although Planning Practice Guidance encourages a long-term view (DLUHC, 2014), it is possible that through the interpretation and application of planning policy there is a potential risk that SMP policies beyond this strategic planning period may not be represented within Local Plans or within designated Coastal Change Management Areas (CCMAs); therefore, inadvertently heightening exposure to coastal risks (as highlighted by the CCC, 2018). This issue may be further compounded by recent observations that certain 'Hold the line' policies (excluded from CCMAs) may actually be economically unsustainable in the future (CCC, 2018; Defra, 2020f). In order to avoid locking-in potentially unsustainable patterns of development and to ensure policy cohesion, the planning horizon for strategic policies within Local (development) Plans should reflect the long-term policy aspirations outlined in the SMPs (including epochs 2 and 3).

Lack of mechanisms for enforcement and accountability

The planning system has a fundamental role to play in minimising the exposure of development to current and future risks. Although this is dependent on effective mechanisms to ensure compliance with planning conditions, our evaluation highlights a continued lack of enforcement in spatial planning[59].

Firstly, it is important to remain mindful that the statutory duty to consult the Environment Agency/NRW does not mean there is a legal requirement to adhere to the advice given. Although research has shown that this advice generally appears to be followed (NRW, 2016a; EA, 2019d), effective governance mechanisms for ensuring adherence to this advice are fundamental to the success of PPG/TAN15 policy. Furthermore, there are certain limitations to consultation advice, which is based on present-day flood risk from rivers or the sea in high-risk areas, and not for those areas which may be exposed to

[59] Further observations and recommendations relating to enforcement and compliance in spatial planning in England are outlined in Defra, DLUHC and Environment Agency Review of policy for development in areas at flood risk (published in July 2021).

greater risks in the future or are susceptible to other sources of flooding, including groundwater, reservoirs or surface water (for non-major developments in England). While LPAs can seek advise on these issues, there is no statutory duty for consultees to respond. Therefore, further consideration should be given to enhancing the powers of the Environment Agency and NRW and mandating that Environment Agency/NRW advice on planning applications is followed. This view was widely supported by interviewees.

However, the primary reason for the lack of enforcement in spatial planning appears to be attributed to the lack of resources and capacity within LPAs. As a result, a reactive approach to compliance checking has established, whereby LPAs respond to complaints or issues raised by third parties. Therefore, monitoring compliance is highly variable. The ability to be proactive is significantly constrained by limited resources in both England and Wales; an observation which has similarly been reported elsewhere (Defra, 2018b; DLUHC, 2018; NRW, 2019a). As highlighted by the Environmental Audit Committee, this means that the extent to which Environment Agency advice is followed is not systematically monitored, reported or followed up through the planning system (EAC, 2016).

Interviewees also reflected on the lack of accountability attributed to developers themselves. Rather than risks being simply passed onto homeowners, it was argued that developers should also retain some responsibility and liability, which may further help to improve compliance with planning conditions. How this might be achieved warrants further debate. Liability for flood damages is established in nuisance and negligence law, where landowners owe a ‘measured duty’ of care in instances of reasonable foreseeability (Upton, 2014). However, the interpretation of floods as a ‘natural nuisance’ (as opposed to manmade) can lead to softer treatment through the courts. This is exacerbated further by the lack of statutory requirements in the planning system, particularly in relation to building regulations and surface water management (England only), through which developers may be held accountable; these are discussed further below. Other suggestions have included using financial levers, such as bonds, to ensure that the cost of flood mitigation is covered. This could also help to incentivise better quality flood risk assessments and drainage plans (NFF, 2020; Efra, 2020b).

Lack of governance mechanisms to facilitate property flood resilience

The uptake of property-level resistance and resilience measures has been increasingly promoted to minimise future damages from flood events and facilitate faster recovery (Lamond and others, 2016). This has been strengthened in recent planning policy (Welsh Government, 2019b; DLUHC, 2019a), and incentivised through post-event flood resilience grants in England. This agenda is further supported through the Property Flood Resilience Roundtable, the property flood resilience action plan (‘Bonfield Report’, Defra, 2016), and the Code of Practice for Property Flood Resilience (CIRIA, 2019). Moreover, the

establishment of industry standards for flood resistance products is seen as a fundamental stepping stone for increasing confidence among buyers[60].

However, the implementation of property level resistance and resilience measures is not yet common practice and uptake has been slow (NRW, 2019a; Sayers and others, 2020). There are 3 main areas within the current governance arrangement through which this may be improved:

I. extensions to existing building regulations
II. establishing a consistent flood resilient grant system for property owners
III. insurance mechanisms and Flood Re (see section 5.5)

An aspect of governance that has largely remained untouched to date relates to building regulations, despite recommendations in the Pitt Review that this would be "the simplest way of ensuring that appropriate flood resilient measures are taken" (Pitt, 2008: 76). **Building regulations** are established in England and Wales through the Buildings Act 1984, the Buildings Regulations 2010 and accompanying approved documents. Certain provisions in Schedule 1 of the Building Regulations are of relevance to FCERM governance; namely Part C and Part H. Part C relates to 'Site preparation and resistance to contaminants and moisture' and, while there are no legal requirements for flood resilient and resistant construction, the corresponding approved document C specifies ways of mitigating the effects of flooding (for example, by using non-return valves, anti-flooding devices and water resistant construction (Welsh Government, 2017c; HM Government, 2020c). Nonetheless, developers are under no legal obligation to comply with these suggestions. An extension of Part C of the Building Regulations – to 'Site preparation and resistance to contaminants, moisture and flooding' – could help establish a legally enforceable expectation for flood resilient and resistant construction.

Part H of Schedule 1 (Drainage and water disposal) requires rainwater to be discharged (in order of priority) through an adequate soakaway (or other adequate infiltration system) where it is practically reasonable to do so, or failing this, discharged to a watercourse, or sewer. Further guidance is provided on sustainable rainwater drainage and certain SuDS options within approved document H (Welsh Government, 2017d; HM Government, 2020c). In this aspect, the building regulations help 'encourage' the use of SuDS and surface water management. However, interpretations of what is 'reasonably practical' may excuse this and the use of SuDS is not explicitly mandated. Strengthening the wording within Part H and the corresponding approved document with regards to SuDS (and what qualifies as 'reasonably practical') could help foster flood resilient design at site level. Again, this could establish a legally enforceable expectation, which is currently absent in the English system (see section 5.4.3).

[60] Hyperlink to BS 851188-1:2019 Flood resistance products. Building products. Specification. Published on October 1 2019.

Another important way of promoting the use of property resilience measures is by providing **household grants**. Following the winter 2013 to 2014 floods, the Repair and Renew grant scheme was launched in England (1 April 2014), with grants up to £5,000 made available through the local authority to cover additional costs for flood resilient repair. This included homes and businesses as well as collaborative applications for community-wide resilience measures (Defra, 2014a). The Household Flood Resilience Grant Scheme was also reopened following subsequent flood events in 2015 to 2016, 2019 and 2020. However, grants for property level resilience are not included within the core package of the Flood Recovery Framework in England, which focuses on immediate recovery needs only (DCLG, 2017b). Instead, property flood resilience grants are initiated on a reactive, ad hoc basis following significant flood events and determined at the time of an event. This is justified in the context of research which has demonstrated that the cost of internal resilience is considerably lower when undertaken as part of other works and specifically flood reinstatement (Lamond and others, 2016; 2018). However, the exclusion of the property flood resilient grant scheme from the Flood Recovery Framework means that there is a lack of consistency.

There is also considerable scope to support and incentivise the uptake of property flood resilience and enable property owners to access funding without waiting for a flood event to occur. This raises critical questions about the appropriate mode(s) of governance and whether (and to what extent) property-level resilience measures should be funded through public money (for example, via a central grant scheme), the insurance system, individual citizens and/or a combination of these, taking into account the considerations of public versus private gain and social justice concerns. There is no straightforward answer to this question, nonetheless it is apparent that this debate needs to take place.

In Wales, an emergency flood relief scheme has been made available to provide immediate financial support to flood-affected householders[61] and flood relief for businesses[62], but this does not cover the costs of property flood resilience measures. We understand that Welsh Government's reluctance to establish post-flood funding for property measures (direct to property owners) reflects its desire to invest in proactive and preventative measures, "focusing on funding improvements to reduce risk at source" (interviewee from Welsh Government). Moreover, funding for property flood resilience measures is available through FCERM funding, securing around £1 million to date (Welsh Government, pers comm). Nonetheless, there is a strong case for maximising all opportunities to incentivise the uptake of property-level measures, especially given the

[61] Emergency Assistance Payments were up to £500 and £1,000 for insured and uninsured households, respectively.

[62] This was initiated in response to storms Ciara, Dennis and Jorge, 2020.

economic benefits of implementing internal resilience measures as part of other works and flood reinstatement (Lamond and others, 2016; 2018).

In both nations, ensuring confidence in the effectiveness of property-level measures will not only require certified products (as already established) but may also require a system for certifying flood risk assessors. This was highlighted by some interviewees as an important competency gap to be addressed, and one that will be necessary to ensure that property surveys are carried out effectively. Other incentive mechanisms are being promoted through the insurance industry and are discussed further below (section 5.5).

Managing potentially conflicting priorities and proposed reforms

The research highlighted particular concerns with how different, and potentially conflicting, priorities are negotiated within the planning system. While the planning system aims to steer development away from at-risk areas and minimise exposure to future risk, there are deep concerns that pressures to build housing in a timely manner could lead to inappropriate development in current or future at-risk areas.

These fears were also highlighted in evidence provided to the Efra Committee, where it was suggested that pressures to meet housing targets are leading some local authorities to not designate Coastal Change Management Areas within local plans where they should (Efra, 2019), although research has indicated otherwise (Defra, 2018a). The Committee on Climate Change has equally drawn attention to the disjointedness between Defra and DLUHC and conflicting priorities, particularly with regards to the current target to construct 300,000 new homes a year, which could lead to 90,000 homes being built in the next 5 years in flood risk areas (CCC, 2018: 45). Continued development in flood risk areas has also been reported in Wales (NRW, 2019a).

On 6 August 2020, the government released a **white paper 'Planning for the future'**, which proposes radical reforms to the English planning system (DLUHC, 2020a)[63]. To simplify the planning process, a new zoning system is put forward, whereby Local Plans will identify i) growth areas suitable for substantial development, ii) renewal areas, and iii) protected areas, where development restrictions will apply. The latter would include areas of significant flood risk. However, it is also possible that flood risk areas could be included within growth areas if 'risk can be fully mitigated' (DLUHC, 2020a: 28). Local Plans would be expected to outline what is permissible within these areas by cross referencing with the NPPF.

Under the new proposals, development approval would be automatically secured in growth areas and the statutory presumption in favour of sustainable development granted in

[63] The white paper 'Planning for the future' was published after the data collection period for this project and was therefore not discussed with interviewees. However, this document was subject to policy and discourse analysis as part of this study. A response from government to the consultation is anticipated in Autumn 2021.

renewal areas, where the forms/types and uses of development conform to those specified in the Local Plan[64]. This could lead to the removal of existing safeguards in the planning system at the planning application stage[65], while restricting public participation and local democracy to the plan-making stage. While the reforms suggest the enhancement of local democracy and accountability through the use of technology and greater transparency ("moving away from notices on lamp posts to an interactive and accessible map-based online system" DLUHC, 2020a: 8), the opposite would be achieved by the proposal to remove these other layers of scrutiny. It is also not clear how detailed local knowledge on flood risk matters (typically excluded from the Local Plan stage) could be integrated into the proposed new system (NFF, 2020).

To accelerate the planning process, the reforms seek to 'cut red tape' (DLUHC, 2020: 8) and introduce a simplified process to assess the environmental impacts of Local Plans through a slimmed down assessment within a single, statutory sustainable development test. While this would need to meet existing legal requirements, the current sustainability appraisal process underscoring Local Plans would be abolished under this proposed arrangement[66]. This is an important governance mechanism within the current system through which the environmental, economic and social effects of the Local Plan are considered and weighed against reasonable alternatives, as well as fulfilling the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004[67] (DLUHC, 2020b). Other tests are also highlighted as "unnecessary assessments and requirements that cause delay", with proposals to replace tests of soundness, update requirements for environmental impacts and viability assessments, and abolishing the Duty to Cooperate (DLUHC, 2020a: 20). The latter could potentially weaken incentives and capabilities to deliver catchment-based management and cross-boundary collaboration which is essential for effective flood risk management.

Despite statements that appear to recognise the central role of the planning system in addressing national challenges, such as combating climate change and improving biodiversity, the timely provision of land for housing is a core priority. Arguably, the establishment of 'more resilient places' appears secondary ("a simpler framework would

[64] This would also be subject to site- and area-specific requirements and design codes, outlined in the Local Plan.

[65] The exception to this will be for proposals within protected Areas, which will be considered through the planning application stage.

[66] Note that strategic flood risk assessments are also encouraged as part of the sustainability appraisal (DLUHC, 2014).

[67] The requirement to carry out a sustainability appraisal pertaining to Local Plans is outlined in the Planning and Compulsory Purchase Act 2004. Sustainability appraisals should meet the requirements of the Environmental Assessment of Plans and Programmes Regulations 2004 so a separate strategic environmental assessment is not required (DLUHC, 2020b).

better support a more competitive market with a greater diversity of developers, and more resilient places" DLUHC, 2020a: 10). This is reinforced through proposals to introduce binding targets limited to housing only. Furthermore, it is unclear how design codes might be used to incentivise and achieve climate mitigation and adaptation, or how these may sit alongside specifications for 'beauty', or the extent to which monitoring and enforcement of design standards might be achieved by establishing a new body (proposal 12).

The government's response to the consultation of the White Paper is anticipated in Autumn 2021. Therefore, it is unclear at this stage what proposed reforms will be taken forward, revised or removed. In addition, the UK government announced its intention to specifically review policy to prevent building in areas of high flood risk, which will inform revised guidance within the NPPF[68] (Hansard HC Deb., 20 March 2020). It is paramount that certain issues highlighted above are taken into account in order to avoid unsustainable development and simply storing up risks for the future.

5.4.3 Managing surface water risks

As part of this research, we evaluated the extent to which surface water management, focusing on the use of sustainable drainage systems (SuDS), is supported through the current governance arrangements in spatial planning[69]. For an in-depth review of local approaches to surface water flood risk management more widely, the reader is referred to Defra (2018b)[70].

With the implementation of Schedule 3 of the Flood and Water Management Act 2010, SuDS Approval Bodies (SABs) were introduced in Wales on 7 January 2019. This role is exercised through the local authorities alongside their duties as LLFAs, with additional technical advice provided by certain statutory consultees[71]. Although the SAB is independent of the planning permission process, new developments[72] cannot commence construction without first obtaining the SABs' approval, and a corresponding agreement on adoption and management arrangements (including funding arrangements for the maintenance of SuDS infrastructure; Welsh Government, 2018a: para 8.5). As reinforced

[68] This review has since been published by Defra, DLUHC & EA (2021) [Hyperlink to] Review of policy for development in areas at flood risk (29 July 2021).

[69] This is considered further in the [Hyperlink to] Review of policy for development in areas at flood risk.

[70] Since the research was undertaken, the [Hyperlink to] Surface water and drainage: review of responsibilities (Jenkins Review) was published 26 August 2020.

[71] Statutory consultees include the sewerage undertaker, NRW, the relevant local highway authority, and the Canal and Rivers Trust.

[72] This is applicable to new developments of more than one dwelling, or where the area covered by construction works equals or exceeds 100 square metres.

through national planning policy, “the provision of SuDS must be considered as an integral part of the design of new development” and delivered through the planning system at the individual site scale “at the very least” (Welsh Government, 2018a: 150), as well as being promoted through development plans (Welsh Government, 2019b).

It is still too soon to evaluate fully the effectiveness of this arrangement[73], although LLFAs have reported initial challenges related to the lack of additional resources to carry out this role (NRW, 2019a). Nonetheless, interviewees viewed the introduction of SABs and statutory standards and guidance for SuDS (Welsh Government, 2018c, 2019f) as a means of ensuring consistency and achieving better outcomes for FCERM, water quality and the environment. Developers also appear to have received the new arrangement positively, “early indications are that developers are approaching it sort of openly and they accept that there can be savings to be made” (national interviewee, Wales).

A different approach has been taken in England, where the decision was made not to commence Schedule 3 of the Flood and Water Management Act 2010 (including SABs and changes to the automatic right to connect to public sewers). This decision reflects expressed concerns that SABs would complicate and delay the planning process, and conflict with the need for housing and economic recovery (House of Commons, 2015). Instead, national planning policy was strengthened in 2015, which made SuDS a material consideration for new major development and LLFAs statutory consultees for surface water flooding for major developments (DCLG, 2014; 2015). Non-statutory technical standards for SuDS were also published in 2015 (Defra, 2015). This established the expectation that SuDS would be used in major developments “wherever this is appropriate”, including requirements for developers to establish a maintenance regime for the lifetime of the development (DCLG, 2014).

A recent review of the effectiveness of planning policy for SuDS[74] shows a general level of coherence between the NPPF (2012, as amended) and local plans, with 80% of the adopted plans sampled exceeding national expectations and specifying the use of SuDS in all developments (DLUHC, 2018). Of the sampled planning applications, 87% explicitly reported the use of SuDS, with SuDS excluded in only 5% of major developments in flood risk areas. However, LPAs and LLFAs expressed concerns that developments where these were not included appeared to lack sufficient justification. It was also noted that details pertaining to SuDS are often not considered at the master planning stage or even in the early development stage, reflecting a poor understanding of SuDS (and their added benefits) among developers. Clear maintenance arrangements were also lacking in initial planning applications. Other weaknesses in the current approach were also identified with

[73] Welsh Government will commence a review of the effectiveness of SuDS legislation in 2021 (Measure 16: Welsh Government, 2020a).

[74] As required under the Housing and Planning Act 2016 (Section 171).

regards to monitoring. Indeed, 70% of the sampled (adopted) plans lacked a system for monitoring, and almost all of the LPAs interviewed explained that they do not actively monitor the uptake of SuDS, primarily due to resource constraints. Instead, they adopt a reactive approach in responding to complaints or issues raised by third parties. The study also highlighted the absence of formal mechanisms to monitor the extent to which LLFA advice was followed by LPAs. While this study concluded that the current arrangements in planning have successfully encouraged the uptake of SuDS, it also brings to light certain weaknesses in the current system.

The revised NPPF has since been published and further strengthens the requirement for major development to incorporate SuDS, "unless there is clear evidence that this would be inappropriate" (para. 165: DLUHC, 2019a). This establishes a clearer expectation that developers should provide sufficient justifications (with clear evidence) where SuDS are not included within development proposals. The (in)appropriateness of SuDS is judged by the LPA in consultation with the LLFA and other relevant bodies (DLUHC, 2014). The policy further makes it clear that maintenance arrangements should be established to ensure an acceptable standard of operation for the lifetime of the development, as well as encouraging the use of systems that provide multi-functional benefits. Attention is also given to (non-major) developments more widely, where it is explicitly stipulated that any development in areas at risk of flooding should only be allowed if it incorporates SuDS (para 163(c)). This is reinforced in Planning Practice Guidance, which further specifies that SuDS take into account the likely impacts of climate change within the lifetime of the development (DLUHC, 2014).

While these can be praised as strengths in the current arrangement, there are notable weaknesses with this approach. The focus on major development (10 properties or more) means the cumulative effect of small developments on surface water run-off is not accounted for. Moreover, in the absence of an overseeing body (such as SABs), the case-by-case approval process could lead to a piecemeal approach and restrict the ability to realise the full potential of SuDS as part of a suite of complementary measures within an area. The decision to maintain automatic rights to connect to public sewers has also been recurrently criticised[75] (Efra committee, 2017; CCC, 2019). Compared to Wales, the English system is solely reliant on effective planning policy and planning conditions to incentivise sustainable drainage; there is no legal requirement to do so and it is possible for SuDS to be disregarded if a compelling case can be made. There is a considerable risk that SuDS policy will be further weakened if planning permission is automatically granted in so-called 'Growth and Renewal Areas' without the need for site-specific flood risk assessments or drainage plans, as currently proposed (DLUHC, 2020a). It is essential that

[75] Since the completion of the research, new rules came into effect on 1 April 2020 as part of the Sewerage Sector Guidance (approved by Ofwat under its [Hyperlink to] Code for Adoption Agreements), which will allow water and sewerage companies in England to adopt a wider range of sewer types, including those with sustainable elements, if requested by developers.

the current governance arrangement for SuDS is not weakened but strengthened. Therefore, in agreement with interviewees and others (CCC, 2020; Efra, 2020b), we consider that the commencement of Schedule 3 of the Flood and Water Management Act could address some of these issues[76].

5.4.4 Findings

Establishing climate resilient places through spatial planning and resilient design

Finding 18 – In order to avoid locking-in potentially unsustainable patterns of development, the planning horizon for strategic policies within Local (development) Plans could be extended beyond the 15-year minimum and aligned with the 100-year planning horizon of Shoreline Management Plans to ensure policy cohesion.

Finding 19 – There are opportunities to strengthen governance capacity to ensure adherence to Environment Agency/Natural Resources Wales advice and enforce compliance. Further consideration should be given to mandating that Environment Agency/NRW advice on planning applications is followed. Crucially, current shortfalls in resources must be addressed in order to shift from reactive to proactive compliance checking.

Finding 20 - Developers could be made more accountable for potential flood risks created or exacerbated by new developments and longer-term insurability. Mechanisms through which responsibility and liability could be ensured should be examined further, such as the introduction of new statutory requirements (for example, in building regulations) (as outlined in Finding 21) or issuing bonds, for example.

Finding 21 - Governance mechanisms for promoting property flood resilience could be enhanced by extending the coverage of building regulations. Part C (Schedule 1, Building Regulations 2010) could be broadened to 'Site preparation and resistance to contaminants, moisture and flooding' to establish a legally enforceable expectation for flood resilient and resistant construction. Furthermore, strengthening the wording within Part H (Drainage and water disposal) could establish a stronger expectation for the use of sustainable drainage systems (not legally required in England), and foster flood resilient design at site level.

Finding 22 – Welsh Government (planning and FCERM divisions) should review the current approach to monitoring planning applications approved in high flood risk areas and consider whether Local Planning Authority self-returned information should be made

[76] The Jenkins Review similarly recommends re-examining the case for commencing Schedule 3 of the Flood and Water Management Act 2010, or some equivalent mandatory arrangements (Hyperlink to Surface water and drainage: review of responsibilities).

mandatory (with dedicated resources to support this) or alternatively, whether there is a need to establish a new approach.

Finding 23 - Access to property flood resilience grants could be increased. This grant could be made available as part of the core package of the Flood Recovery Framework in England to maximise reactive opportunities for resilient repair and recovery following major flood events, while ensuring a consistent policy trigger. An equivalent grant scheme could also be introduced in Wales. Further research and public debate is warranted to examine the extent to which such grants should be made available to incentivise the proactive uptake of property-level measures, taking into account the considerations of public versus private gain and social justice concerns.

Finding 24 - Planning reforms in England must ensure that the speedy provision of housing does not come at the expense of creating resilient places. Consideration should be given to how proposed design codes outlined in the white paper 'Planning for the future' could incentivise and maximise climate mitigation and adaptation in order to address the climate emergency at the pace required.

Finding 25 - Governance capacity could be enhanced with regards to monitoring the uptake of sustainable drainage systems in new developments and ensuring compliance with planning conditions. A proactive (rather than reactive) approach will require resource constraints within local authorities to be addressed in both England and Wales. In England, consideration should be given to the commencement of Schedule 3 of the Flood and Water Management Act 2010, drawing lessons from Wales.

5.5 Facilitating socially-just recovery and building back better through flood insurance

The effectiveness of FCERM governance cannot be understood, or indeed enhanced, without first understanding the relationship between FCERM and the private market insurance industry. As stated by Sayers and others, "insurance underpins all other FRM policies in the UK, relieving the government of the obligation to pay compensation for the damage caused by flooding" (Sayers and others, 2020: 47). As such, it is vital to understand the role insurance plays in supporting, or conversely constraining, effective FCERM governance, and the ambitions of the national FCERM strategies to establish climate resilient places.

Flood insurance is provided as part of standard composite insurance policies (buildings and contents) for households and businesses. In turn, the compulsory purchase of building insurance has led to high insurance penetration. The fundamentals of this arrangement, where insurance has been available via the private, commercial market, have remained unchanged since the 1960s (Penning-Rowsell and others, 2014). For a long time, the provision of flood insurance to high-risk households was maintained through increasingly formalised governance mechanisms, namely the Gentleman's Agreement (1961 to 2001), the Memorandum between the Association of British Insurers (ABI) and government (2001 to 2003), followed by the Statement of Principles (see overview in Penning-Rowsell and

others, 2014). As flood frequency and damages increased, the industry has increasingly demanded improved FCERM, with agreements conditional of continued public investment in defences. In turn, this has helped reinforce path dependency within FCERM governance and the dominance of structural, defence-based approaches (ABI, 2008; Harries and Penning-Rowsell, 2011). Pressure from the insurance industry, and the fixed timeframe of the final Statement of Principles (ABI, 2008), has led to greater government intervention in flood recovery.

The introduction of the Flood Reinsurance Scheme ('Flood Re') in 2016[77] redefines the relationship between the insurance industry, government and FCERM policy more broadly. Flood Re is a government-backed, not-for-profit scheme, which establishes a 25-year agreement between the UK government and the insurance industry to ensure access to affordable home insurance in high-risk areas. The scheme functions as a pool-backed system, whereby the premiums of properties at high risk are capped and subsidised by a levy payable by insurers. This levy raises £180 million a year through a cross subsidy on buildings and home insurance policies. Additional funding for Flood Re is provided through the fixed premium (based on council tax bands) and a fixed excess on each policy, both charged to the insurer (as opposed to individual policy holders).

Flood Re is intended to facilitate the transition towards risk-reflective market pricing by 2039. The Water Act requires the scheme to be reviewed at least once every 5 years, with recommendations for 'fine tuning' to be submitted to the Secretary of State. The first of these reviews was published in 2019 (Flood Re, 2019). Similarly, a transition plan must be produced at least every 5 years to monitor progress (the second of which was published in 2018; Flood Re, 2018).

According to the latest update, Flood Re is now offered through 90% of the home insurance market, benefitting nearly 250,000 properties across the UK (Flood Re, 2018; 2019). In turn, households have reported having access to more choice as well as seeing price reductions. Since its inception, Flood Re has been tested by a number of flood events, although fortuitously for the arrangement, the early years of its existence were relatively quiet from a flooding perspective. As the levy from each domestic property was paid over this period, this allowed sufficient pooling of funds in advance of any widespread flooding. In this way, the arrangement has successfully been able to fulfil its function to pay claims on ceded policies without government intervention.

There are both strengths and potential weaknesses associated with Flood Re, which have implications for the effectiveness of FCERM governance and societal resilience more widely. Firstly, mirroring the former Statement of Principles, the eligibility requirements

[77] Flood Re was established under Part 4 of the Water Act 2014 for England and Wales, alongside secondary legislation, including The Flood Reinsurance (Scheme and Scheme Administrator Designation) Regulations 2015 and The Flood Reinsurance (Scheme Funding and Administration) Regulations 2015.

mean that only properties built before 2009 may be entered into the scheme, therefore maintaining this additional mechanism for **deterring development away from at-risk areas**.

Secondly, by ensuring **access to affordable insurance**, Flood Re is partially helping to address inequalities created through the private insurance market. However, it is important to note that the wider uptake of insurance remains uneven, with lower income households less likely to be insured. Moreover, the gradual rise in premiums within Flood Re as it moves towards risk-reflective levels may ultimately impact upon penetration. Some households will be unable to afford to reduce their flood risk and therefore receive an associated premium reduction, and at some point, insurance may become unaffordable. This situation will ultimately disadvantage lower income property owners. Managing a socially-just transition towards risk-reflective pricing will be essential.

Other potential inequalities are caused by the eligibility criteria,[78] which means the scheme is not accessible to everyone in high-risk areas, in particular, small businesses properties, large blocks of residential apartments or properties rented for a profit are excluded. Although this is intended to restrict benefits for commercial landlords, tenants may also suffer from adverse impacts if landlords have been unable to insure. This may disproportionately impact upon those already struggling with housing poverty.

In terms of enhancing societal resilience, Flood Re has significant potential for **incentivising the uptake of property-level flood resilience** and resistance measures. To date, resilient repair has been severely limited by restrictions on making improvements as well as limited awareness, guidance or training around resilient repair within the wider industry (Lamond and others, 2016). Nevertheless, this is starting to shift within the insurance sector. In its 5-year review, Flood Re put forward its proposal to '**Build Back Better'** and permit the payment of claims which include a limited amount of resilient and/or resistant repair, above and beyond the flood-related loss (Flood Re, 2019: 11). Flood Re has also outlined proposals to offer lower premiums upon the uptake of property level flood resilience measures (Flood Re, 2019[79]). Flood performance certificates (similar to energy performance certificates) are also being advocated as a means of documenting resilience/resistant measures that have already or could be implemented, and raising awareness among property buyers (Flood Re, 2018; Efra, 2020b). More widely, Flood Re is actively involved in (and indeed chairs) the Property Flood Resilience Roundtable.

While these are crucial mechanisms through which resilience and adaptive capacity could be enhanced at the household scale, interviewees, existing research and Flood Re itself

[78] Hyperlink to Flood Re page: Qualifying policies which may be ceded to Flood Re.

[79] The exact details of these proposals (including the specification of property-level measures) are subject to ongoing discussions and collaboration between Flood Re, insurers and other stakeholders (Flood Re, 2019).

have highlighted certain limitations. One interviewee remarked on the dangers of a property protection scorecard and limited set of property-level measures, which could potentially disincentivise households from engaging in other (potentially more beneficial) risk-reducing activities. Oakley (2018) also concludes that incentives within Flood Re alone are unlikely to drive significant change in householders' behaviours, although premium discounts could help provide a much needed 'nudge' in this direction (Flood Re, 2019: 52). However, it is important to remain mindful that realising the risk reduction benefits of property-level measures may be more challenging for some and also depend on the collective action of neighbouring properties. More widely, there is a risk that the presence of the scheme itself could reduce the sense of urgency required, and even disincentivise risk mitigation as financial incentives have been removed (CCC, 2018). This may be further exacerbated by policyholders not being aware of their entry into the scheme (Surminski, 2018). Therefore, it is important that Flood Re is not seen as a panacea but embedded within a system-wide approach. Normalising the uptake of property-level measures will require a package of initiatives, cross-sectoral coordination and consideration of different funding mechanisms, taking into account the distribution of public and private gain (also see section 5.4.2).

In agreement with the Committee on Climate Change (CCC, 2018), we stress the need to monitor the transition to risk-reflective insurance and establish clear targets/milestones to avoid potential drift. This could be achieved through the National Adaptation Programme and scrutiny of the 5-yearly Transition Plan. Without monitoring, it is impossible to evaluate the effectiveness of this governance arrangement or identify how any advantages and disadvantages are distributed. In particular, monitoring changes in penetration of cover over time will be vital for identifying potential variations in the ability of communities to recover.

It is also important to remain mindful that there is no insurance coverage for **coastal erosion**. Therefore, it will be essential to consider how existing or new policy instruments may help support those at risk of coastal erosion to relocate and provide some form of compensation for uninsurable losses (as outlined in section 5.3.2).

In April 2020, the government announced an independent review into flood insurance (led by Amanda Blanc)[80]. The Blanc Review examined both household and business insurance (not covered in this report), including Flood Re, with a particular focus on Doncaster in the aftermath of the November 2019 floods. Our findings should be read in conjunction with those outlined by the Blanc Review (Blanc, 2020).

Facilitating socially-just recovery and building back better through flood insurance

[80] Hyperlink to the Independent Review of Flood Insurance in Doncaster (Blanc Review)

Finding 26 - Monitoring the transition to risk-reflective pricing will be essential. This could be supported through clear targets/milestones that are clearly outlined in the National Adaptation Programme to avoid potential drift. Particular attention should be paid to lower income households to ensure inequalities are not exacerbated with the transition to risk-reflective pricing. Insurance mechanisms (such as reduced premiums and flood performance certificates) have the potential to facilitate wider uptake of property-level measures. However, these must be carefully thought out and implemented as part of a wider package of cross-sectoral initiatives.

5.6 Maximising opportunities for FCERM through land use management and agricultural policy reform

Wider land use management and agricultural policy have significant implications for flood and coastal erosion risk management (FCERM) and the realisation of catchment-based and catchment-to-coast approaches. Therefore, this section considers the extent to which these 2 areas of public policy are aligned, and potential changes following the UK's withdrawal from the European Union and the Common Agricultural Policy (CAP).

In both nations, the removal of CAP is seen as creating significant opportunities for reforming the Basic Payment Scheme to better reflect the value of public goods and services. Whereas direct payments through CAP were determined according to the amount of land farmed, these will be phased out over a transition period and replaced with new farm support schemes, founded on the principle of 'public money for public goods'. This will include land management approaches that help mitigate or adapt to climate change, or prevent, reduce or protect against environmental hazards (such as flooding), among other public goods such as water quality or reversing biodiversity decline.

In England, these changes are outlined in the Agriculture Bill 2019-2021[81], with proposals for the new Environmental Land Management Scheme (ELMS) currently subject to consultation (Defra, 2020a[82], 2020b). In Wales, 2 public consultations have taken place; namely 'Brexit and our Land' (Welsh Government, 2018b) and 'Sustainable farming and our land'[83], which outlines the details of a Sustainable Farming Scheme (SFS) (Welsh Government, 2019d; Welsh Government, 2020b). Both ELMS and SFS will couple payments to farmers, foresters and other land managers with sustainable land management outcomes, and reward services not currently recognised through market

[81] The Agriculture Bill 2019-2021 passed into law as the Agriculture Act in November 2020.

[82] The ELMS Policy Discussion document was subject to public consultation from 25 February 2020 until 31 July 2020 (including a temporary pause from 8 April due to COVID-19).

[83] The consultation took place between 9 July 2019 and 30 October 2019. The summary of responses was published on 6 May 2020.

mechanisms. By offering conditional payments subject to actions, the new schemes have the 'potential' to better incentivise a wider range of activities than the universal income support currently offered through CAP. This also represents a significant change in the relationship between the State and landowners/managers, who will play a central role in providing public goods and services, including FCERM.

This section firstly considers the lessons from previous and current agri-environment schemes and the governance barriers that have undermined their effectiveness. The Environmental Land Management Scheme (England) and Sustainable Farming Scheme (Wales) are then presented in turn. In each case, we highlight the potential strengths and weaknesses in the proposed schemes with regards to FCERM policy. The section concludes by summarising the findings that could help maximise opportunities for FCERM through land use management and agricultural policy reform.

5.6.1 Learning from the past

It will be crucial that the governance of the new schemes is appropriately designed in order to realise and maximise benefits. Learning from previous and current agri-environment schemes, such as the Countryside Stewardship (England) and Glastir (Wales), will be an important first step. Research has highlighted barriers to the success of these agri-environment schemes, attributed to issues of distrust, unreliability of payments, inflexibility, eligibility restrictions, prescriptiveness, unattractive payment rates and undue bureaucracy (Ngai and others, 2020). Other socio-cultural factors are also highly relevant for understanding farmers' participation in agri-environment schemes (Tsouvalis-Gerber and Little, 2019).

More broadly, there is a need to address the (perceived) barriers to the uptake of FCERM measures, and NFM measures in particular, among farmers and other landowners and managers. For instance, Ngai and others (2020) show that concerns around liability and maintenance are the main barrier to the uptake of NFM. Land law is notably complex and comprises statute, equity and common law (Environment Agency, 2014a; Schofield Sweeny, 2019). Therefore, it may not be clear who (riparian landowners, asset owner and/or tenant occupier) would be liable should a mitigation measure contribute to (worsened) flooding downstream and result in damages or injury. Duties of care and the rights of downstream beneficiaries are often uncertain. While these issues can be resolved through written agreements, research has shown that landowners are reluctant to enter into complex legal agreements and do not want to assume responsibilities for maintenance (without agreed funding) or (perceived) liabilities (Schofield Sweeny, 2019). Maintenance costs are also typically excluded from Countryside Stewardship grants, which cover a short-term, 5-year period to carry out a specific initiative and to complete capital works. This means that maintenance costs are often passed onto the landowner over the longer term. In the absence of this financial support, there is a risk that measures could be reversed and removed (Ngai and others, 2020).

Both proposed schemes in England and Wales have sought to build on these lessons (Welsh Government, 2018b; Defra, 2020a). The following discussion briefly describes

each scheme in turn. We consider the advantages, disadvantages and current uncertainties, and reflect on the implications of these for FCERM in the future, while remaining aware that both policies will be subject to future consultation and change.

5.6.2 The Environmental Land Management Scheme, England

Under ELMS, a 3-tier design is envisioned. Tier 1 focuses on smaller-scale changes in farming practices and land use management, and measures that need to be carried out at-scale in order to provide environmental benefits (for example, cover crops, livestock management, riparian buffer strips). Stepping up from this, tier 2 actions focus on achieving locally targeted environmental outcomes, and rely on collaboration between land managers, such as habitat creation and flow attenuation (slow the flow techniques). In contrast, tier 3 actions represent landscape scale land use changes (such as woodland creation and floodplain restoration).

Uncertainties remain about how best to finance the actions ascribed to these three tiers and to establish different types of ELM agreements at different scales (Defra, 2020a). Moreover, uptake of the scheme will depend on the attractiveness of payment rates. However, critical decisions need to be made about how good outcomes will be evaluated and rewarded. It will be extremely difficult to attribute specific actions to objective measures of risk reduction (especially given the accumulative benefit of different actions), therefore, proxy measures will be required. There is also a temporal dimension to consider given that many NFM approaches take time to establish and provide public benefits. In addition to actions taken, payments will also need to factor in the quality of outcomes generated and consider how additional benefits (for example, biodiversity gains, carbon sequestration) might be rewarded. Different options are currently being explored within the Test and Trials[84], such as Payment by Results (PbR) and market-based pricing mechanisms in the form of reverse auctions[85], which appear promising, both in terms of achieving environmental gains and incentivising collaboration across landowners/managers.

Success will further depend on the ability to locate and prioritise actions in specific areas to maximise public good (Defra, 2020a). This will require both national and local input (including community knowledge), as well as the availability of data and evidence to underpin decision making. Effective governance will be essential for negotiating potentially

[84] Test and Trials were established in 2018, with some expected to run until 2028 depending on the subject matter and objectives of the trial.

[85] The reverse auction process is currently being trialled by the South West Farming and Wildlife Advisory Group (FWAG) to incentivise solutions to flooding in the Somerset Levels. In a reverse auction, the buyer (the government) sets out the goods it is looking to purchase, to which sellers (land managers) make a bid to undertake the work (Defra, 2020a: 29).

conflicting priorities and different interests. The Test and Trials and 3-year National Pilot (scheduled to begin late 2021) will be essential for resolving these issues.

5.6.3 The Sustainable Farming Scheme, Wales

In Wales, a slightly different approach is outlined through the Sustainable Farming Scheme (SFS), which adopts the principles of sustainable land management (SLM) to support "the use of land for production, while ensuring its long-term productive potential and maintenance of key environmental services" (Welsh Government, 2019d). Upon successful completion of a Farm Sustainability Review and a Farm Sustainability Plan (co-developed with an advisor), active farmers and other land managers will be able to access 2 types of complementary financial support, including the 'Sustainable Farming Payment' and 'Business Support' payment. The former focuses on new and existing farming practices that achieve SLM outcomes not rewarded by the market (for example, biodiversity gains), while the latter is intended to support business capacity and skills, capital investment to enhance sustainability, and knowledge transfer and specialist skills.

In contrast to ELMS, the Sustainable Farming Scheme has not set out a tiered approach to distinguish different types/scales of actions that might be financed under the scheme. Instead, the SLM framework links actions and outcomes with economic, social and environmental benefits. Indicative examples of actions are grouped into 6 categories[86] (nutrient management, soil husbandry, habitat and woodland, land management, animals and livestock, and business support); flood management is presented as an action under land management. To identify the scale of opportunity, Welsh Government intends to draw from existing spatial products, such as the Environment & Rural Affairs Monitoring and Modelling Programme (ERAMMP) environmental outcomes opportunity maps[87] and NRW Area Statements. These data sets will be useful for directing actions to appropriate locations. However, similar to ELMS, further clarity is required about how (and the extent to which) national and local priorities will steer actions on the ground, and how these will be reconciled if conflicts arise.

There has been general support for the approach and application of the SLM framework, as well as emphasis on supporting both new and existing practices (Welsh Government, 2020b). Another welcomed feature of the scheme has been Welsh Government's decision to bear the risk should actions taken not result in expected outcomes. This is seen to be a fairer approach to providing outcome-based payments – "If a farmer consistently implements the appropriate actions but the outcome does not arise for a reason beyond the farmer's control, it would be unfair for the farmer not to be paid" (Welsh Government,

[86] Each action is categorised according to the farm resource the action has the most direct and evidenced effect on.

[87] Environment & Rural Affairs Monitoring and Modelling Programme (commissioned by Welsh Government).

2019d, p8). However, while some have welcomed this, others have cautioned that rewarding actions could reduce ownership for outcomes and diminish innovation (Welsh Government, 2020b). Further clarity is required about the exact circumstances where Welsh Government might bear this risk.

Other issues require clarification. For instance, crucial decisions still need to be made about eligibility criteria and how to ensure fair outcome-based payments, with mixed views on the advantages and disadvantages of potentially capping payments. Although the scheme will offer outcome-based payments, the initial proposal is rather ambiguous about the extent to which payments might reflect actions taken or outcomes achieved (or a combination of both). For instance, Welsh Government (2019d: 8) states that "the more 'outcomes' a farmer delivers, the greater their payment", but equally proposes that Sustainable Farming Payments are based on the amount of each 'action' implemented. It is also not clear if the scheme will help incentivise and support opportunities for collaboration across land managers in order to maximise environmental outcomes. As currently stated in the consultation, it seems that this may be excluded from the scheme itself ("the advisors would signpost you [the land manager] to various services, funding, resources or support for collective working": Welsh Government, 2019d: 16). This would severely limit the capacity of this scheme to steer landscape scale change. Further co-design and pilot work will be essential for developing the structures and delivery mechanisms of the scheme[88].

5.6.4 Findings

Maximising opportunities for FCERM through land use management and agricultural policy reform

Finding 27 - Payment rates need to be attractive to facilitate uptake of the Environmental Land Management Scheme (ELMS: England) and Sustainable Farming Scheme (SFS: Wales). However, these will need to carefully consider how good outcomes are judged and rewarded, taking into account the quality (not just quantity) of outcomes generated, as well as multiple and accrued benefits over time. Innovative approaches are currently being examined through England's Test and Trials. Continued research will be required to examine the feasibility and transferability of these approaches to different contexts. Opportunities for cross-border learning and knowledge sharing should be promoted.

Finding 28 - Payments within the proposed land management schemes should help support ongoing management and maintenance works (not just construction). Moreover,

[88] The consultation proposed a co-design programme to be launched in autumn 2020. However, this has been altered due to COVID-19. Consultation and engagement will rely on a survey and one-to-one interviews and virtual workshops.

existing sites/actions where land managers have already undertaken actions to mitigate flood and erosion risks should continue to be supported.

Finding 29 - There is a need to consider how the governance of these schemes will incentivise coordination (and help negotiate potentially conflicting priorities) between land managers and other local interests, in order to provide public FCERM goods at scale.

Finding 30 - Potential liabilities associated with certain actions need to be fully understood and outlined in future Environmental Land Management Scheme/Sustainable Farming Scheme agreements to provide certainty and clarity for parties involved, as well as the necessary transparency to ensure accountability.

Finding 31 - There is a need to set out the boundaries between different finance streams (for example, ELMS/SFS payments, FCERM grant-in-aid, the Nature for Climate Fund and other public sector contributions), and to consider how (and for what type of activity/level of action) blended funding will be allowed and encouraged.

5.7 Aligning nature recovery and FCERM agendas

There is a strong consensus that enhancing ecosystem resilience and investing in nature's recovery is essential for addressing the declared climate emergency and protecting against increased future risks, such as flooding.

The relationship between FCERM and environmental policy is one that has evolved and shifted over time, with these policy areas becoming increasingly aligned in the past decade. In light of the UK's exit from the European Union, we reflect on the potential influence of recently introduced or proposed governance instruments, and their implications for the effectiveness of FCERM governance. To conclude, the section summaries the main findings related to the continued alignment and implementation of multi-beneficial approaches, through which the declared climate and nature emergencies may be addressed hand-in-hand.

5.7.1 Environmental policy in Wales

Significant policy changes were introduced in Wales through a new portfolio of legislation in 2015 to 2016, including the Well-being of Future Generations (Wales) Act 2015[89], the Planning (Wales) Act 2015 and the Environment (Wales) Act 2016 (table 4.3). With the implementation of the Environment (Wales) Act 2016, new governance mechanisms have

[89] For an in-depth evaluation of FCERM governance and the wellbeing agenda in Wales the reader is referred to Alexander and others (2019).

been introduced in Wales which promise to forge greater coordination and collaboration between FCERM and environment policy areas.

The Environment Act specifies the principles for the **Sustainable Management of Natural Resources** (SMNR[90]) and amends the general purpose of NRW to pursue SMNR[91] (National Assembly for Wales, 2019). The Act further places 'a **biodiversity and resilience of ecosystems duty'** (referred to as the Section 6 duty[92]) on public authorities to maintain and enhance biodiversity in exercising their functions, requiring them to prepare a plan and publish progress reports every 3 years[93]. In this regard, the Act is crucial in shifting institutionalised cultures and practices, and promoting actions to enhance ecosystem resilience among a wider range of actors. This has included examples of nature-based approaches to water and flood risk management, such as the local application of SuDS (Rhondda Cynon Taf CBC, 2019) and use of natural flood management (NFM) funding to support habitat restoration schemes (Snowdonia National Park Authority, 2019). The Section 6 duty is proving a useful governance mechanism for leveraging different pots of funding to support the design and implementation of multi-benefit approaches. Moreover, the statutory nature of this duty and reporting requirements means that public authorities must demonstrate compliance.

At the national scale, the Act mandates that Welsh Ministers establish a national **Natural Resources Policy** (NRP), outlining the main priorities, risks and opportunities for SMNR. This was published in 2017 (Welsh Government, 2017a) and is underpinned by the State of Natural Resources Report (SoNaRR; NRW, 2016b). The NRP advocates a holistic, joined-up approach to SMNR and cross-sectoral working to support 'win wins' and multi-beneficial schemes, with nature-based solutions identified as a national priority (Welsh Government, 2017a). In this regard, there is a clear synergy with the NFM policy agenda in FCERM and mutual **policy reinforcement** between FCERM and environmental policy, which provides a strong strategic steer towards the enhancement of ecological resilience in Wales and clear line of sight between national to local scales. This alignment also unlocks opportunities for funding and the potential for providing schemes with flood-related benefits outside the traditional FCERM programme.

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[90] Defined as using natural resources in a way, and at a rate, that maintains and enhances the resilience of ecosystems and the benefits they provide (Part 1(3)).

[91] This amends the Natural Resources Body for Wales (Establishment) Order 2012 (S.I. 2012/1903).

[92] Part 1, 6(1) specifies that "A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions." This amends the duty to conserve biodiversity under the Natural Environment and Rural Communities Act 2006.

[93] Section 6 Plans are available from: Hyperlink to Biodiversity Wales page: Section 6 Biodiversity Duty Reporting.

Another strength of the new legislation is the introduction of powers to enable NRW to conduct **experimental schemes**[94]. This includes schemes to develop or apply new or modified methods, concepts or management techniques, or to develop proposals for regulatory change. To support this, the Act further grants Welsh Ministers the powers to suspend or relax certain statutory requirements for a limited time. These provisions are a welcome feature in the governance arrangement and provide a mechanism for removing statutory restrictions, which can often be a barrier to innovation. In this aspect, the Environment Act provides greater scope for experimentation and innovation in governance and a means through which adaptive capacity may be enhanced.

The Environment Act also introduces requirements for NRW to produce place-based **Area Statements**. A total of 7 Area Statements have been produced, which coincide with NRW's existing terrestrial operational areas, as well as a Marine Area Statement[95]. Each statement provides an overview of natural resources, the benefits they provide, alongside the priorities, risks and opportunities for SMNR, and outlines how these will be addressed by NRW, as well as specifying where other public bodies may assist. The intention is that Area Statements will provide the necessary evidence for place-based decision-making and achieving ecosystem-based management in practice; indeed, public authorities must have regard to Area Statements. However, in addition to being a useful resource, Area Statements also have significant potential as a governance '**bridging mechanism'** in terms of identifying and facilitating opportunities for collaborative, joined-up working across public sector bodies and promoting multi-benefit approaches. This was highlighted by interviewees as a key strength.

However, there are some recognised potential constraints. Firstly, there is no mandatory requirements for public authorities to use Area Statements (unless otherwise directed by Welsh Ministers), although NRW is required 'to encourage' others to take steps in this regard. It is also not clear how Area Statements might be used to support activities outside the public sector and help facilitate wider involvement of other actors. Ultimately, it will be important to monitor and evaluate how Area Statements are performing in practice, and assess the extent to which integration, collaboration and delivery is enhanced.

To support the area-based approach, NRW has recently undergone an internal restructuring, which means that teams now cut across job functions. While it is hoped that this will "deliver place-based working more efficiently" (interviewee from NRW), interviewees also expressed concerns about stretched resources and the potential downside of isolating specialists from one another – "it's still going to need that kind of matrix management to make sure that those individuals are supported and they're working

[94] Part 1, section 22 and 23 of the Environment (Wales) Act 2016.

[95] Area Statements were published in spring 2020 and are available from: Hyperlink to Natural Resources Wales Page: Area Statements: Building a healthier environment together.

consistently as well" (interviewee from NRW). It will therefore be necessary to monitor the effectiveness of this organisational restructuring as it matures.

5.7.2 Environmental policy change in England

In England, the **Environment Bill 2019-2021** will establish a new domestic framework for environmental governance[96]. This will embed environmental principles into future policy making and provide a framework for establishing legally binding environmental targets within statutory Environmental Improvement Plans[97] – the first of which was the **25 Year Environment Plan** (YEP) introduced in 2018[98] (25 YEP: HM Government, 2018). The 25 YEP outlines 10 overarching goals[99], including the reduced risk of harm from environmental hazards (such as flooding and droughts) and mitigating and adapting to climate change.

A specified aim of the 25 YEP is to establish a **Nature Recovery Network**, with corresponding targets for restoring protected sites to favourable condition as well as habitat and woodland creation beyond protected sites. Building nature recovery into existing (and planned) policies has been identified as a central pathway, such as the Environmental Land Management Scheme (section 5.6.2). From a FCERM perspective, the nature recovery agenda could further help to unlock sources of funding for schemes that provide additional flood mitigation benefits. This includes the new Nature for Climate Fund and Nature Recovery Fund, as well as efforts to secure private sector investment in natural capital (HM Government, 2019b; 2020b). FCERM outcomes could also be enhanced through various other governance mechanisms and policy instruments outlined in the Environment Bill.

Firstly, new mandatory requirements for **biodiversity net gain** have been proposed in spatial planning[100], which would require planning applications to be submitted with a

[96] The Environment Bill 2019-21 had its Third Reading in the House of Lords on 26 May 2021.

[97] Environmental Improvement Plans will be subject to an annual report and must be reviewed at least every 5 years.

[98] When the Environment Bill 2019-21 is adopted, the 25 Year Environment Plan will have statutory status as an Environmental Improvement Plan.

[99] Ten goals are outlined in the 25 Year Environment Plan, including clean air; thriving plants and wildlife; reduced risk of harm from environmental hazards (such as flooding and droughts); using resources from nature more sustainably; enhanced beauty, heritage and engagement with the natural environment; mitigating and adapting to climate change; minimising waste; managing exposure to chemicals; and enhancing biosecurity.

[100] The biodiversity value attributable to the development must exceed the pre-development biodiversity value of the onsite habitat by at least 10% (in accordance with the biodiversity metric).

biodiversity gain plan, either for on-site habitat enhancements or off-site enhancements if this is not achievable. The intention is that this will help stimulate private sector investment in habitat creation and, in turn, support the delivery of wider ecosystem services and benefits, such as flood risk mitigation (HM Government, 2019a). Habitat enhancement would either be secured through planning obligations, or through the establishment of conservation covenants between the landowners and a designated responsible body (such as an environmental NGO or public body). As a legal mechanism, conservation covenants would establish legal certainty and durability of environmental actions taken, while equally offering the flexibility to tailor agreements to different circumstances at the local scale (Defra, 2020d). This has the potential to be a highly useful governance instrument for promoting not only biodiversity gains, but also related benefits for flood mitigation and surface water management.

However, there are some important caveats to consider. Firstly, the stipulation is related to biodiversity net gain, as opposed to wider environmental net gain, which could lead to a restricted approach to habitat enhancement (NCC, 2020). Secondly, entry into a conservation covenant would be voluntary rather than standardised practice, therefore, effectiveness will depend on the degree of uptake and nature of individual agreements (for example, duration of the agreement and transferability to future landowners). Finally, although the planning reforms proposed in the 'Planning for the future' white paper emphasise 'net gain' ambitions, it is not clear how this will be assessed or planning obligations enforced within the new zoning approach (see section 5.4.2).

Another crucial policy instrument will be the establishment of **Local Nature Recovery Strategies[101] (LNRS)**. As outlined in Part 6 of the Bill, LNRSs must include a statement of biodiversity priorities (including opportunities and proposals of potential measures to achieve these), and a local habitat map(s)[102]. In turn, public authorities will be expected to 'have regard to' any relevant local nature recovery strategy. Overall, our analysis reveals the considerable potential of LNRS as an important governance bridging mechanism – by i) helping to embed nature recovery into wider land use decision making, ii) identifying opportunities for collaborative, joined-up working, and iii) potentially informing the spatial prioritisation and delivery of ELMS (Defra, 2020a; Section 5.6.2). In turn, this could increase opportunities for implementing schemes with FCERM benefits. There are notable parallels between LNRS and the Area Statements established in Wales (section 5.7.1).

[101] Authorities responsible for preparing and publishing LNRS include the (a) local authority, (b) the Mayor of London, (c) the mayor for the area of a combined authority, (d) a National Park authority in England; (e) the Broads Authority, (f) Natural England.

[102] Local habitat maps must include national conservation sites, nature reserves and other areas which, in the opinion of the responsible authority, (i) are, or could become, of particular importance for biodiversity, or (ii) are areas where the recovery or enhancement of biodiversity could make a particular contribution to other environmental benefits (Environment Bill 2019-2021, Part 6, 97(3).

However, it will be vital that effective governance arrangements and sufficient capacity is established to maximise the full potential of LNRSs and the corresponding benefits for FCERM. Learning from the LNRS pilot studies will be essential[103].

The Environment Bill further strengthens the **duty placed on public authorities to conserve and enhance biodiversity**[104]. This is similar to the biodiversity and resilience of ecosystems duty in Wales, although biodiversity reports are anticipated on a 5-yearly basis (rather than every 3 years). These reports will provide a mechanism for monitoring actions taken and updating the LNRS, although it is unclear how (and to what extent) this information might be used to ensure accountability. There are also some notable weaknesses in the wording of the Bill; for instance, public authorities are required to 'from time to time' consider what actions they can take to further the general biodiversity objective and take such action(s) as it considers appropriate. Moreover, duties to regard LNRS are restricted to only public authorities.

New **accountability and enforcement** mechanisms will also be introduced through the establishment of a new governance body, the **Office for Environmental Protection[105]** (OEP). The principal objective of the OEP is to contribute to both the 'improvement' and the 'protection' of the natural environment. In meeting this objective, the OEP will have powers to monitor, report and advise on the implementation of environmental law. In instances where public authorities have failed to comply, the OEP may carry out investigations (whether or not it receives a formal complaint) from which it may apply for environmental review, judicial review or statutory review. The creation of a new environmental review process in the Upper Tribunal addresses concerns raised about the slowness and inflexibility of the judicial review process and subsequent calls for a bespoke enforcement procedure (EAC, 2019). It is also understood that environmental targets/standards, once established, will fall within the remit of environmental law and therefore within the enforcement functions of the OEP (House of Commons, 2019). Although the independence of the OEP has been called into question (EAC, 2019), the Bill now specifies that that Secretary of State must have regard for the need to protect the independence of OEP (Schedule 1(17)), with further provisions requiring the OEP to report to Parliament (including annual progress reports on the progress of the Environmental

[103] The LNRS pilot areas were announced on 14 August 2020 and include Buckinghamshire, Cornwall, Greater Manchester, Northumberland and Cumbria.

[104] The Environment Bill 2019-21 will amend the Natural Environment and Rural Communities Act 2006 with regards to duties to conserve biodiversity.

[105] Outlined in Chapter 2 and Schedule 1 of the Environment Bill 2019-21. The OEP will be established in law as a non-Crown body corporate, with the intention that it will be classified as a non-departmental public body. The OEP is being established during 2021.

Improvement Plan). Ensuring independence of the OEP will be essential for the legitimacy of this new governance arrangement[106].

Accountability will be further achieved by establishing legally-binding **environmental targets**[107]. The Bill gives powers to the Secretary of State to set long-term environmental targets (that is, no less than 15 years) and mandates that this power is exercised to establish at least one long-term target in 4 priority areas, including air quality, water, biodiversity, resource efficiency and waste reduction. These must be accompanied by a specified standard and date of achievement, be informed by independent expert advice, and accompanied by interim (non-statutory) targets. Moreover, these must be subject to periodic review and the 'significant improvement test' every 5 years (with the first review due by 31 January 2023). This will be accompanied by the annual progress reports made by the Secretary of State on the Environmental Improvement Plan ('Section 8 report'; HM Government, 2020b), and the corresponding scrutiny of the OEP once established[108].

Monitoring the implementation of the 25 YEP (and subsequent Environmental Improvement Plans) will be essential for determining policy effectiveness. However, significant weaknesses currently exist. The **Outcome Indicator Framework** (OIF) aims to provide a transparent and consistent approach for assessing progress across 66 indicators, yet further development is required for most (Defra, 2020c). In its interim response, the Natural Capital Committee has raised serious concerns about the absence of 'appropriate metrics to measure environmental performance' or a natural capital baseline for monitoring the extent to which progress has been made[109] (NCC, 2020). This includes the goal for 'reducing risk of harm from environmental hazards', where indicators related to FCERM are broadly related to the i) disruption or unwanted impacts from flooding or coastal erosion, and ii) community resilience. The application of these indicators and specification of targets will require careful consideration, including opportunities for alignment with measures and objectives outlined within the Environment Agency's National FCERM Strategy. Nonetheless, their inclusion within the 25 YEP and corresponding statutory monitoring and reporting requirements will be beneficial to the

[106] Although the OEP will be a governance body in England, the Environment Bill outlines certain provisions to facilitate collaboration with devolved administrations, including Wales. This includes powers to share information with an equivalent 'devolved environmental protection body' and duties to consult (for example, on transboundary issues). It will also be possible to transfer executive competence if required (House of Commons, 2019).

[107] The initial scope of the mandatory targets was outlined on 19 August 2020, with further research and public consultation set to inform the final targets by October 2022 (Defra, 2020e).

[108] In the interim, scrutiny is being provided by the Natural Capital Committee.

[109] A £5 million pilot to establish a new Natural Capital and Ecosystem Assessment was launched on 20 July 2020, with the aim of improving data collection on how nature and biodiversity are used, to help provide a baseline understanding.

FCERM governance arrangement both in terms of i) monitoring policy effectiveness and impact, and ii) providing an additional layer of accountability to FCERM governance.

Moreover, FCERM benefits are likely to be achieved through activities related to the other goals, particularly mitigation and adaptation to climate change, and biodiversity (and vice versa). This reinforces the importance of taking a systemic and integrated approach to assessing progress. However, as highlighted by the Natural Capital Committee, this appears to be lacking. To address this, the NCC calls for cross-governmental reporting on the 25 YEP and greater policy integration in order to maximise the delivery of co-benefits and steer a green economic recovery (NCC, 2020). We echo the NCC's concerns and suggest that further development of the OIF, and future progress reporting, adopt a systemic approach to better reflect the linkages across indicators and goals.

A final point to note with regards to the Environment Bill is the new statutory requirement that will be placed on water companies to establish Drainage and Sewerage Management Plans (commonly referred to as **Drainage and Wastewater Management Plans or DWMPs**), to support integration and enable 'more resilient solutions to drought and flooding' (Villiers, 2020). The DWMPs will apply to England and Wales and are intended to promote integrated water management and catchment-based thinking (Atkins, 2019). Once adopted, the legislation will require each sewerage undertaker to prepare, publish and maintain these plans, outlining how it will manage and develop both its drainage and sewerage systems, addressing issues of capacity, future demand, resilience and mitigation of relevant environmental risks. This is seen as a revolutionary change in the water sector and means of 'unlocking organisational funding constraints' to help enable joint funding and opportunities for developing collaborative solutions to surface water flooding (Welsh Water, 2018). Further alignment will be sought between strategic planning areas[110] and the catchment areas of River Basin Management Plans and Flood Risk Management Plans, as well as Area Statements in Wales (section 5.7.1). In theory, this should facilitate partnership working at more appropriate scales than the overarching DWMP (Atkins, 2019; Water UK, 2019). In this regard, DWMPs offer significant potential as an additional governance mechanism for enhancing cross-sectoral integration.

5.7.3 Findings

Aligning nature recovery and FCERM agendas

Finding 32 - There is a need to monitor and evaluate how Area Statements in Wales are performing in practice, and assess the extent to which integration, collaboration and delivery is enhanced.

[110] DWMPs will be compiled from Action Plans developed for strategic planning areas, for each wastewater area in England and Wales (see overview in Atkins, 2019).

Finding 33 - Effective governance arrangements and sufficient capacity should be established to maximise the full potential of Local Nature Recovery Strategies in England to inform - i) agreements within the Environmental Land Management Scheme and ii) facilitate joined-up working across/between strategy areas and the implementation of multi-benefit approaches.

Finding 34 – The UK government should consider opportunities to mandate 'environmental net gain' obligations in spatial planning (as recommended by the NCC, 2020) in order to maximise opportunities for achieving wider benefits (including flood mitigation) through the planning system. Planning reforms should establish how 'net gain' ambitions will be achieved and enforced within the new zoning approach proposed in the white paper 'Planning for the future'. This would help to ensure that nature recovery is embedded in the growth agenda and help realise a 'green recovery' from the coronavirus (COVID-19) pandemic.

Finding 35 - The application of FCERM indicators within the Outcome Indicator Framework for monitoring the 25 Year Environment Plan must be carefully considered, including opportunities for alignment with measures and objectives outlined within the National FCERM Strategy.

6 Summary of findings

Effective governance for flood and coastal erosion risk management (FCERM) is essential for building and maintaining national resilience, wellbeing and sustainable development, and driving adaptation in response to ever-increasing risks posed by climate change. However, while the importance of adopting diversified, holistic approaches to FCERM has long been recognised, the ability to achieve this in England and Wales is constrained by a number of different elements of the current governance arrangements. On the basis of an in-depth evaluation exercise, this research identifies a number of findings which could help to enhance governance effectiveness and ensure that it is fit for the future. These are summarised below.

6.1 Reconciling complexity through coherent governance arrangements

Finding 1 - Consideration should be given to where regional governance mechanisms might enhance the effectiveness of FCERM. In England, this should include the extent to which formal representation of Coastal Groups' members within Regional Flood and Coastal Committees is needed to maintain an integrated approach to flood and coastal erosion risk management. In Wales, there may be scope to strengthen the role of the Regional Flood Groups and their ability to support strategic activities in FCERM, and link FCERM with wider regional agendas. The Flood and Coastal Erosion Committee could identify how the Regional Flood Groups could be supported in this regard.

Finding 2 - There is a need to examine whether the revised national FCERM strategies have successfully clarified roles and responsibilities, particularly in terms of supporting operational delivery of FCERM, or whether existing or new governance mechanisms could support this further (such as the establishment of regional Memoranda of Understanding).

Finding 3 - A legislative review (including the Coast Protection Act and Flood and Water Management Act) could be used to identify potential conflicts, ensure consistency and improve clarity across legislation. Attention should be given to where changes would support more effective operational delivery in FCERM and improve resource efficiency. We support the recent commitments of Defra and Welsh Government to undertake a legislation review, although we encourage Defra to broaden its review beyond coastal erosion risk management authorities. Given the shared nature of this legislation, we urge a combined approach to legislative review.

Finding 4 - There is an opportunity to clarify and establish the legal remit of roles and responsibilities pertaining to climate change adaptation. Improved coordination and shared problem ownership across government departments is essential. Integrative governance could be supported by introducing new bridging mechanisms to resolve fragmentation and siloed working. This could include establishing cross-departmental funding mechanisms and recent/proposed reforms to environmental policy and land use management, as well as the involvement of Public Service Boards in Wales.

Finding 5 - Further resources are required to better embed partnership working into institutional cultures and practices to ensure this is treated as 'business as usual' and not overly reliant on specific individuals. Methods should be developed to provide evidence of the benefits of joint working (for example, efficiency savings made or achieving better outcomes) in order to gain support for partnership working.

6.2 Resourcing effective FCERM governance

Finding 6 - Long-term (and sufficient) settlements for resource/revenue funding are essential to maintain the standards of protection of existing defences where appropriate, as well as to support the wider remit of FCERM activities and ambitions of the national FCERM strategies.

Finding 7 - Private sector involvement is essential for keeping pace with climate change. A systematic and coherent strategy for involving the private sector and incentivising private finance should be established in England and Wales. Further research is required to better understand the barriers/enablers to private sector input and inform appropriate governance mechanisms for facilitating this.

Finding 8 - New opportunities exist for diversifying public sector contributions and aligning FCERM with other socio-economic and environmental agendas (for example, through Environmental Land Management Scheme in England or Sustainable Farming Scheme in Wales). However, there is a need to set out the boundaries between different finance streams and clarify mechanisms for blended funding. Cross-departmental buy-in will be essential.

Finding 9 - There is a need to address the high transaction costs involved in partnership funding (England) to improve resource efficiency. Lessons could be drawn from Welsh FCERM governance and the Small Scale Works Grant, which has enabled Lead Local Flood Authorities to more easily access funding for maintenance/upgrading works and natural flood management projects (NFM).

Finding 10 – FCERM funding inadvertently tends to favour defences to the disadvantage of NFM, adaptation and multi-benefit approaches. Promising changes have been introduced through reforms to partnership funding in April 2020, but it will be important to monitor the extent to which these unlock funding for a wider range of schemes. Various approaches have been taken in Wales to support the uptake of NFM in particular (including the Small Scale Works Grant and upcoming trial of ring-fenced funding). However, the representation of 'wider benefits' within the scoring methodology for FCERM funding remains limited. Welsh Government should consider how multiple benefits might be better reflected and rewarded in FCERM funding, to both incentivise and maximise implementation of multi-benefit schemes.

Finding 11 - Funding should be allocated in a consistent and transparent way to ensure a socially equitable and efficient approach to FCERM. In this regard, we caution against reactive, politically-judged commitments of funding in the wake of significant flood events

unless a consistent governance framework/approach is established for such instances, which takes into account the scale of impacts and adopts consistent criteria for determining how additional funding should be allocated.

6.3 Addressing governance barriers to adaptation

Finding 12 – To address the adaptation funding gap, consideration should be given to whether further revisions might be needed within FCERM funding formulae and opportunities explored for establishing a cross-departmental/sectoral funding mechanisms and leveraging alternatives forms of finance.

Finding 13 - Existing governance mechanisms are considered insufficient for implementing adaptation. A multi-sectoral approach will be essential. Further research is required to establish how governance arrangements could be expanded, such as alternative forms of (blended) financing, spatial planning/building regulations and insurance mechanisms.

Finding 14 - A greater sense of urgency is needed to support adaptation planning and implementation at the local scale. Strategic and practical guidance for implementing adaptation initiatives (such as roll back, equity-release and relocation options) is necessary (including, for example, funding options, legal implications and advice for community engagement). It is essential that collaboration begins now to ensure the timely provision of promised guidance/toolkits for adaptation in 2022 (Wales) and 2025 (England), if not sooner.

Finding 15 - The Highways Act 1980 and duties to maintain public rights of way can at times hinder adaptation. There may be a need to better bridge FCERM with highways planning and Access Forums in order to enhance awareness of current and future issues (in consultation with Shoreline Management Plan policies), and help align priorities. Legal consideration should also be given to how provisions for diverting and extinguishing rights of way may be amended to better reflect the dynamic nature of the coastline and enable future adaptation.

Finding 16 - There is a need to raise the profile of Shoreline Management Plans (SMPs). This is likely to require both top-down and bottom-up approaches. At the national scale, greater signposting in relevant national policies (outside the FCERM remit) could help to promote SMPs as essential evidence for long-term decision-making. Local scale engagement should be supported by the Coastal Groups Network and Wales Coastal Group Forum, who should help in developing communication and engagement materials; this will also help ensure consistency across Coastal Groups. Accessibility to SMPs must also be improved. We welcome the Environment Agency's announcement to develop a web-based tool to improve the access and use of SMPs, and Welsh Government's decision to extend this to Wales.

Finding 17 - A proactive approach to long-term planning for adaptation should be taken now and actively involve communities in shaping their own futures. This will require

additional resources and capacity building to support meaningful and sustained community engagement. Consideration should be given to how local communities can be involved in adaptive pathways visioning and planning.

6.4 Establishing climate resilient places through spatial planning and resilient design

Finding 18 – In order to avoid locking-in potentially unsustainable patterns of development, the planning horizon for strategic policies within Local (development) Plans could be extended beyond the 15-year minimum and aligned with the 100-year planning horizon of Shoreline Management Plans to ensure policy cohesion.

Finding 19 – There are opportunities to strengthen governance capacity to ensure adherence to Environment Agency/Natural Resources Wales advice and enforce compliance. Further consideration should be given to mandating that Environment Agency/NRW advice on planning applications is followed. Crucially, current shortfalls in resources must be addressed in order to shift from reactive to proactive compliance checking.

Finding 20 - Developers could be made more accountable for potential flood risks created or exacerbated by new developments and longer-term insurability. Mechanisms through which responsibility and liability could be ensured should be examined further, such as the introduction of new statutory requirements (for example, in building regulations) (as outlined in Finding 21) or issuing bonds, for example.

Finding 21 - Governance mechanisms for promoting property flood resilience could be enhanced by extending the coverage of building regulations. Part C (Schedule 1, Building Regulations 2010) could be broadened to 'Site preparation and resistance to contaminants, moisture and flooding' to establish a legally enforceable expectation for flood resilient and resistant construction. Furthermore, strengthening the wording within Part H (Drainage and water disposal) could establish a stronger expectation for the use of sustainable drainage systems (not legally required in England), and foster flood resilient design at site level.

Finding 22 – Welsh Government (planning and FCERM divisions) should review the current approach to monitoring planning applications approved in high flood risk areas and consider whether Local Planning Authority self-returned information should be made mandatory (with dedicated resources to support this) or alternatively, whether there is a need to establish a new approach.

Finding 23 - Access to property flood resilience grants could be increased. This grant could be made available as part of the core package of the Flood Recovery Framework in England to maximise reactive opportunities for resilient repair and recovery following major flood events, while ensuring a consistent policy trigger. An equivalent grant scheme could also be introduced in Wales. Further research and public debate is warranted to examine the extent to which such grants should be made available to incentivise the proactive

uptake of property-level measures, taking into account the considerations of public versus private gain and social justice concerns.

Finding 24 - Planning reforms in England must ensure that the speedy provision of housing does not come at the expense of creating resilient places. Consideration should be given to how proposed design codes outlined in the white paper 'Planning for the future' could incentivise and maximise climate mitigation and adaptation in order to address the climate emergency at the pace required.

Finding 25 - Governance capacity could be enhanced with regards to monitoring the uptake of sustainable drainage systems in new developments and ensuring compliance with planning conditions. A proactive (rather than reactive) approach will require resource constraints within local authorities to be addressed in both England and Wales. In England, consideration should be given to the commencement of Schedule 3 of the Flood and Water Management Act 2010, drawing lessons from Wales.

6.5 Facilitating socially-just recovery and building back better through flood insurance

Finding 26 - Monitoring the transition to risk-reflective pricing will be essential. This could be supported through clear targets/milestones that are clearly outlined in the National Adaptation Programme to avoid potential drift. Particular attention should be paid to lower income households to ensure inequalities are not exacerbated with the transition to risk-reflective pricing. Insurance mechanisms (such as reduced premiums and flood performance certificates) have the potential to facilitate wider uptake of property-level measures. However, these must be carefully thought out and implemented as part of a wider package of cross-sectoral initiatives.

6.6 Maximising opportunities for FCERM through land use management and agricultural policy reform

Finding 27 - Payment rates need to be attractive to facilitate uptake of the Environmental Land Management Scheme (ELMS: England) and Sustainable Farming Scheme (SFS: Wales). However, these will need to carefully consider how good outcomes are judged and rewarded, taking into account the quality (not just quantity) of outcomes generated, as well as multiple and accrued benefits over time. Innovative approaches are currently being examined through England's Test and Trials. Continued research will be required to examine the feasibility and transferability of these approaches to different contexts. Opportunities for cross-border learning and knowledge sharing should be promoted.

Finding 28 - Payments within the proposed land management schemes should help support ongoing management and maintenance works (not just construction). Moreover, existing sites/actions where land managers have already undertaken actions to mitigate flood and erosion risks should continue to be supported.

Finding 29 - There is a need to consider how the governance of these schemes will incentivise coordination (and help negotiate potentially conflicting priorities) between land managers and other local interests, in order to provide public FCERM goods at scale.

Finding 30 - Potential liabilities associated with certain actions need to be fully understood and outlined in future Environmental Land Management Scheme/Sustainable Farming Scheme agreements to provide certainty and clarity for parties involved, as well as the necessary transparency to ensure accountability.

Finding 31 - There is a need to set out the boundaries between different finance streams (for example, ELMS/SFS payments, FCERM grant-in-aid, the Nature for Climate Fund and other public sector contributions), and to consider how (and for what type of activity/level of action) blended funding will be allowed and encouraged.

6.7 Aligning nature recovery and FCERM agendas

Finding 32 - There is a need to monitor and evaluate how Area Statements in Wales are performing in practice, and assess the extent to which integration, collaboration and delivery is enhanced.

Finding 33 - Effective governance arrangements and sufficient capacity should be established to maximise the full potential of Local Nature Recovery Strategies in England to inform - i) agreements within the Environmental Land Management Scheme and ii) facilitate joined-up working across/between strategy areas and the implementation of multi-benefit approaches.

Finding 34 – The UK government should consider opportunities to mandate 'environmental net gain' obligations in spatial planning (as recommended by the NCC, 2020) in order to maximise opportunities for achieving wider benefits (including flood mitigation) through the planning system. Planning reforms should establish how 'net gain' ambitions will be achieved and enforced within the new zoning approach proposed in the white paper 'Planning for the future'. This would help to ensure that nature recovery is embedded in the growth agenda and help realise a 'green recovery' from the coronavirus (COVID-19) pandemic.

Finding 35 - The application of FCERM indicators within the Outcome Indicator Framework for monitoring the 25 Year Environment Plan must be carefully considered, including opportunities for alignment with measures and objectives outlined within the National FCERM Strategy.

7 Future research needs

This research provides a broad assessment of the overarching governance arrangements for FCERM in England and Wales, as opposed to an in-depth study of specific aspects or individual mechanisms. However, certain areas of FCERM governance merit further attention. In particular, interviewees highlighted the need to examine the effectiveness of regional arrangements (including the role of the RFCCs), internal drainage boards and groundwater governance, as well as local strategic governance for climate change adaptation more broadly.

Moreover, certain policy areas and sectors were outside the primary remit of this study, including critical infrastructure, economic growth and water management. The relationship between these and FCERM governance, and the effectiveness and impact of current bridging mechanisms, should also be subject to further research.

New modes of governance are increasingly promoted in FCERM, with greater emphasis on 'bottom-up' approaches and partnership working across public-private bodies, NGOs and communities themselves. This brings greater variation to local and sub-national levels of FCERM governance. As such, it will be vital to understand how different configurations of governance are enabled or constrained through current structures, as well as the extent to which these new collaborative arrangements result in better outcomes for FCERM and promote significant change on the ground. These questions are partially addressed through the second report associated with this research ('Supporting flood and coastal erosion risk management through local partnerships' in Priest and others, 2021), which identifies good practices and principles of effective governance across different types of FCERM partnerships. However, further social science research will be essential for expanding on these insights.

As highlighted by this report, a number of changes may be required in FCERM governance to increase effectiveness and climate readiness. While some of these changes might be described as 'low hanging fruit' or quick wins, others require deeper, systemic transformations in policy and practice. However, transformative change is often hindered by path dependencies, policy inertia and self-reinforcing 'lock-in' dynamics, which reinforce the status-quo and 'business-as-usual' (Harries and Penning-Rowsell, 2011; Biesbroek and others, 2014). It will be vital to understand the enablers and barriers to change, and identify whether (and to what extent) lock-in dynamics may be present within FCERM governance and how these could be overcome.

Looking outside FCERM, there are opportunities for cross-sectoral learning. For instance, partnership approaches established in different sectors may provide fruitful lessons for informing the design and implementation of FCERM partnerships or formation of cross-sectoral partnerships in the future. Examples might include Catchment Based Approach (CaBA) Partnerships focused on collaborative water management or Local Nature Partnerships in England.

FCERM is entering an interesting, transitional period. The national strategies and Defra's Policy Statement reinforce the need to strengthen flood resilience and adaptation. Concurrently, significant reforms to land use and environmental management promise to bring about transformative governance change in allied policy areas, forging closer alignment with FCERM and increasing opportunities for joined up working. Effective governance will be the cornerstone for success.

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*All website links were checked as of September 2020.

* References also include those listed in Appendices B, C and D.

Abbreviations

ASC	Adaptation sub-committee of the Committee on Climate Change
CAP	Common Agricultural Policy
CaRR	Communities at Risk Register
CBA	Cost-benefit analysis
CCC	Committee on Climate Change
CCMA	Coastal Change Management Area
CGN	Coastal Groups Network
CRMP	Coastal Risk Management Programme
Defra	Department for Environment, Food and Rural Affairs
DLUHC	Department for Levelling Up, Housing and Communities (formerly the Ministry of Housing, Communities and Local Government (MHCLG))
DWMP	Drainage and Wastewater Management Plans
Efra	Environment, Food and Rural Affairs Committee
ELMS	Environmental Land Management Scheme
FCERM	Flood and coastal erosion risk management
GiA	Grant-in-aid
LDP	Local Development Plan
LGA	Local Government Association
LLFA	Lead Local Flood Authority
LNRS	Local Nature Recovery Strategies
LPA	Local Planning Authority
NFM	Natural flood management
NRW	Natural Resources Wales
PAC	Public Accounts Committee
RMA	Risk management authority

SAB	SuDS Approving Body
SFS	Sustainable Farming Scheme
SMNR	Sustainable Management of Natural Resources
SMP	Shoreline Management Plan
SuDS	Sustainable drainage systems
WCGF	Wales Coastal Group Forum
WLGA	Welsh Local Government Association

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