

Coastal Erosion Risk Mitigation Strategies Applied In A

This comprehensive handbook, prepared by leading ocean policy academics and practitioners from around the world, presents in-depth analyses of the experiences of fifteen developed and developing nations and four key regions of the world that have taken concrete steps toward cross-cutting and integrated national and regional ocean policy. All chapters follow a common framework for policy analysis. While most coastal nations of the world already have a variety of sectoral policies in place to manage different uses of the ocean (such as shipping, fishing, oil and gas development), in the last two decades, the coastal nations covered in the book have undertaken concerted efforts to articulate and implement an integrated, ecosystem-based vision for the governance of ocean areas under their jurisdiction. This includes goals and procedures to harmonize existing uses and laws, to foster sustainable development of ocean areas, to protect biodiversity and vulnerable resources and ecosystems, and to coordinate the actions of the many government agencies that are typically involved in oceans affairs. The book highlights the serious conflicts of use in most national ocean zones and the varying attempts by nations to follow the

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prescriptions emanating from the 1982 UN Law of the Sea Convention and the outcomes of the 1992, 2002, and 2012 sustainable development summits. The interrelationship among uses and processes in the coast and ocean requires that ocean governance be integrated, precautionary, and anticipatory.

Overall, the book provides a definitive state-of-the-art review and analysis of national and regional ocean policies around the world.

Incorporating HC 470-i-iii, 640-i-iii, 599-i-iii, 1064-i, 1202-i, 1194-i of session 2007-08

Managed realignment has been a preferred coastal management strategy in England in the 21st century and has also been increasingly implemented elsewhere. Climate change and environmental and financial concerns have led to a shift from the traditional 'hold-the-line' approach of coastal protection towards more flexible soft engineering options. Managed realignment is a relatively new soft engineering alternative aiming to provide sustainable flood risk management with added environmental and socio-economic benefits by creating space for coastal habitats to develop more dynamically. The natural adaptive capacity of coastal habitats and the ecosystem services they provide underpin the sustainability of managed realignment. However, many definitions of managed realignment exist and the understanding of what the term actually represents in practice has evolved through time and

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varies regionally. This book clarifies the definitions and terminology used in the literature and proposes that managed realignment is used as a general term that encompasses the many different methods of implementation worldwide, including: removal, breach and realignment of defences; controlled tidal restoration (which includes regulated tidal exchange and controlled reduced tide); and managed retreat. These methods of implementation are explained and illustrated with examples from around the world. In addition to a general overview of emerging policies and current practices, specific chapters discuss approaches adopted in different locations, including the Netherlands, the UK and Maui (USA). The UK experience is presented from the perspectives of three sectors: the National Trust (a charity organisation that owns 10% of the coastline of England and Wales), the Environment Agency (the organisation responsible for implementing government policy concerning flood and erosion risk) and a private consultant involved in the planning, design and delivery of managed realignment projects. Taking a wider perspective to consider the range of implementation methods, the viability of managed realignment as a long-term coastal management strategy is discussed. Recent national and regional strategies worldwide give managed realignment an increasing role in climate change and flood risk management. Gaining stakeholders and

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public support is fundamental for the success of emerging coastal management strategies. However, public perception and stakeholders engagement are often cited as a factor limiting the wider uptake of managed realignment. Results from a recent survey are used to benchmark the current thinking about the potential, the performance and the limitations of managed realignment in the UK and elsewhere. Current opinions about managed realignment are often not clearly defined, partly due to many projects being relatively recent. There is a general perception of great potential to provide sustainable flood risk management with added environmental benefits. However, the views of stakeholders are considerably more negative and notably contrast with the views of practitioners and researchers. The only clear and dominant agreement across all groups of respondents is that better understanding about the long-term evolution of sites is needed.

This book comprises the main results of the Scenario (Support on Common European Strategy for sustainable natural and induced technological hazards mitigation) project, funded as a Specific Support Action under the VI FP. This book addresses three main needs: first, it constitutes an assessment of the situation of Europe as far as natural na-tech risks are considered; second, it suggests future research themes to be opened or widened so as to tackle new and emerging threats

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as well as changes in the potential response to risk governance, in order to improve the way scientific and technical expertise informs decision making regarding all fields of mitigation, ranging from structural to non structural measures, such as training, education and land use planning.

The uptake of ecosystem-based approaches for disaster risk reduction (DRR) is slow, however, despite some success stories. There are multiple reasons for this reluctance: ecosystem management is rarely considered as part of the portfolio of DRR solutions because the environmental and disaster management communities typically work independently from each other; its contribution to DRR is highly undervalued compared to engineered solutions and therefore not given appropriate budget allocations; and there are poor interactions between policymakers and researchers, leading to unclear and sometimes contradictory scientific information on the role of ecosystems for DRR. The aim of this book is to provide an overview of knowledge and practice in this multidisciplinary field of ecosystems management and DRR. The contributors, professionals from the science and disaster management communities around the world, represent state-of-the-art knowledge, practices, and perspectives on the topic.

Effective coastal engineering is expensive, but it is not as costly as neglect or ineffective intervention.

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Good practice needs to be based on sound principles, but theoretical work and modelling also need to be well grounded in practice, which is continuously evolving. Conceptual and detailed design has been advanced by new industry publications since the publication of the second edition. This third edition provides a number of updates: the sections on wave overtopping have been updated to reflect changes brought in with the recently issued EurOtop II manual; a detailed worked example is given of the calculation of extreme wave conditions for design; additional examples have been included on the reliability of structures and probabilistic design; the method for tidal analysis and calculation of amplitudes and phases of harmonic constituents from water level time series has been introduced in a new appendix together with a worked example of harmonic analysis; and a real-life example is included of a design adapting to climate change. This book is especially useful as an information source for undergraduates and engineering MSc students specializing in coastal engineering and management. Readers require a good grounding in basic fluid mechanics or engineering hydraulics, and some familiarity with elementary statistical concepts.

Our changing climate and more extreme weather events have dramatically increased the number and severity of floods across the world. Demonstrating

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the diversity of global flood risk management (FRM), this volume covers a range of topics including planning and policy, risk governance and communication, forecasting and warning, and economics. Through short case studies, the range of international examples from North America, Europe, Asia and Africa provide analysis of FRM efforts, processes and issues from human, governance and policy implementation perspectives. Written by an international set of authors, this collection of chapters and case studies will allow the reader to see how floods and flood risk management is experienced in different regions of the world. The way in which institutions manage flood risk is discussed, introducing the notions of realities and social constructions when it comes to risk management. The book will be of great interest to students and professionals of flood, coastal, river and natural hazard management, as well as risk analysis and insurance, demonstrating multiple academic frameworks of analysis and their utility and drawbacks when applied to real-life FRM contexts. This Command Paper (Cm.7319, ISBN 97801017311928), sets out the Government's plans for the future water strategy for England. It provides practical steps that ensure that good clean water is available for people. It also looks ahead to 2030, describing the water supply system the Government wishes to see. Divided into 10 chapters, it covers the following topics: Chapter 1: Future water, looking at water, housing and climate change; Chapter 2: Water demand,

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covering future supply and pressures and household behaviour; Chapter 3: Water supply, including resources today, and a vision for the future; Chapter 4: Water quality in the natural environment; Chapter 5: Surface water drainage; Chapter 6: River and coastal flooding; Chapter 7: Greenhouse gas emissions; Chapter 8: Charging for water; Chapter 9: Regulatory framework, competition and innovation; Chapter 10: Summary of vision and actions.

This book provides an overview of the large and interdisciplinary literature on the substance and process of urban climate change planning and design, using the most important articles from the last 15 years to engage readers in understanding problems and finding solutions to this increasingly critical issue. The Reader's particular focus is how the impacts of climate change can be addressed in urban and suburban environments—what actions can be taken, as well as the need for and the process of climate planning. Both reducing greenhouse gas emissions as well as adapting to future climate are explored. Many of the emerging best practices in this field involve improving the green infrastructure of the city and region—providing better on-site stormwater management, more urban greening to address excess heat, zoning for regional patterns of open space and public transportation corridors, and similar actions. These actions may also improve current public health and livability in cities, bringing benefits now and into the future. This Reader is innovative in bringing climate adaptation and green infrastructure together, encouraging a more hopeful perspective on the great challenge of climate change by exploring both the problems of climate change and local solutions.

This book points out why organisational or governance aspects are essential for implementing a broad and integrated flood risk management approach. It provides key

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conclusions on resilient, efficient and legitimate flood risk governance arrangements in vulnerable urban areas in Europe. These are translated into concrete recommendations and good practices that can give you new insights and inspire you to improve policies and practices. The book is a way of spreading the results of the EU 7th Framework Project STAR-FLOOD. The project investigated strategies for dealing with flood risks in 18 vulnerable urban regions in 6 European countries: England, Belgium, France, the Netherlands, Poland and Sweden. STAR-FLOOD focused on governance aspects, from a combined public administration and legal perspective.

Provides an understanding of the relationship between social-ecological systems and multilevel governance so that readers can properly deal with hydrometeorological extreme events and hazards Based on field investigations from EU research projects, this book is the first to devote itself to scientific and policy-related knowledge concerning climate change-induced extreme events. It depicts national and international strategies, as well as tools used to improve multilevel governance for the management of hydrometeorological risks. It also demonstrates how these strategies play out over different scales of the decision-making processes. Facing Hydrometeorological Extreme Events: A Governance Issue offers comprehensive coverage of such events as floods, droughts, coastal storms, and wind storms. It showcases real-life success stories of multilevel governance and highlights the individuals involved and the resources mobilized in the decision-making processes. The book starts by presenting a synthesis of hydrometeorological extreme events and their impacts on society. It then demonstrates how societies are organizing themselves to face these extreme events, focusing on the strategies of integration of risk management in governance and public policy. In addition, it includes the

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results of several EU-funded projects such as CLIMB, STARFLOOD, and INTERREG IVB project DROP. The first book dedicated to hydrometeorological extreme events governance based on field investigations from EU research projects Offers a “multi-hazards” approach—mixing policy, governance, and field investigations’ main outputs Features the results of EU-funded projects addressing hydrometeorological extreme events Part of the Hydrometeorological Extreme Events series Facing Hydrometeorological Extreme Events is an ideal book for upper-graduate students, postgraduates, researchers, scientists, and policy-makers working in the field. Regulating Coastal Zones addresses the knowledge gap concerning the legal and regulatory challenges of managing land in coastal zones across a broad range of political and socio-economic contexts. In recent years, coastal zone management has gained increasing attention from environmentalists, land use planners, and decision-makers across a broad spectrum of fields. Development pressures along coasts such as high-end tourism projects, luxury housing, ports, energy generation, military outposts, heavy industry, and large-scale enterprise compete with landscape preservation and threaten local history and culture. Leading experts present fifteen case studies among advanced-economy countries, selected to represent three groups of legal contexts: signatories to the 2008 Mediterranean ICZM Protocol, parties to the 2002 EU Recommendation on Integrated Coastal Zone Management, and the USA and Australia. This book is the first to address the legal-regulatory aspects of coastal land management from a systematic cross-national comparative perspective. By including both successful and less-effective strategies, it aims to inform professionals, graduate students, policy makers, and NGOs of the legal and socio-political challenges as well as the better

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practices from which others could learn.

This book assists the reader in determining storm risks, focussing on sandy coasts and cliff coasts in the context of expected sea level rise from littoral transformation and climate change. It examines storm impacts through matrixes concerning physical parameters, socio-economic activities, ecological and historic resources, and it presents the Coastline Risk to Storms Index as a single numerical measure of the risk for a given area. The methodology is described and tested against two coastal areas: one in the Caribbean Sea (Cartagena, Colombia) and the other on the coast of the Atlantic Ocean (Cadiz, Spain). Both areas record an important flow of tourists associated with the “sun, sea and sand market” which represents an economic recourse for the hinterland too. Chapters describe this approach and explore three particular types of variables: i) the forcing variables contributing to storm-induced erosion, ii) dynamic variables that determine the resilience to erosion (Susceptibility) and iii) the vulnerable targets grouped in three different contexts (socio-economic, ecological and heritage). These are combined into two separate indices, the Hazard Index (combining forcing and susceptibility) and the Vulnerability Index, which together constitute the Coastline Risk to Storms Index. Maps created using this semi-quantitative approximation method can help to determine the causes, processes and consequences of storm-related processes. This book is therefore important to anyone considering coastal development programs, especially decision-makers: the work presented here can assist in the development of preventative management strategies for the most vulnerable areas.

This report provides an assessment of the use of, and recommendations for scaling up, Nature-based Solutions to address water-related climate risks.

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A new 'Multi-Coloured Manual' This book is a successor to and replacement for the highly respected manual and handbook on the benefits of flood and coastal risk management, produced by the Flood Hazard Research Centre at Middlesex University, UK, with support from Defra and the Environment Agency. It builds upon a previous book known as the "multi-coloured manual" (2005), which itself was a synthesis of the blue (1977), red (1987) and yellow manuals (1992). As such it expands and updates this work, to provide a manual of assessment techniques of flood risk management benefits, indirect benefits, and coastal erosion risk management benefits. It has three key aims. First it provides methods and data which can be used for the practical assessment of schemes and policies. Secondly it describes new research to update the data and improve techniques. Thirdly it explains the limitations and complications of Benefit-Cost Analysis, to guide decision-making on investment in river and coastal risk management schemes.

This book discusses how to collect data and analyze databases in order to map risk zones, and contributes to developing a conceptual framework for coastal risk assessment. Further, the book primarily focuses on a specific case study: the Bay of Bengal along the southeastern coast of India. The dramatic rise in losses and casualties due to natural disasters like wind, storm-surge-induced flooding, seismic hazards and tsunami incidence along this coast over the past few decades has prompted a major national scientific initiative investigating the probable causes and possible mitigation

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strategies. As such, geoscientists are called upon to analyze the coastal hazards by anticipating the changes in and impacts of extreme weather hazards on the Bay of Bengal coasts as a result of global climate change and local sea-level change.

Coastal Erosion Risk Mitigation Strategy
Coastal Erosion Risk Mitigation Strategy for the Waikato Region
Flood and Coastal Erosion Risk Management
A Manual for Economic Appraisal
Routledge

Background information of Ghana's coast and a practical guide for holistic and integrated process-based coastal management for Ghana. Key concepts and methods for coastal risk and vulnerability assessment, erosion monitoring, shoreline change analysis, capacity building and institutional framework for sustainable coastal management

Floods are of increasing public concern world-wide due to increasing damages and unacceptably high numbers of injuries. Previous approaches of flood protection led to limited success especially during recent extreme events.

Therefore, an integrated flood risk management is required which takes into consideration both the hydrometeorological and the societal processes.

Moreover, real effects of risk mitigation measures have to be critically assessed. The book draws a comprehensive picture of all these aspects and their interrelations. It furthermore provides a lot of detail on earth observation, flood hazard modelling, climate change, flood forecasting, modelling vulnerability, mitigation measures and the various dimensions of management strategies. In addition to local and regional

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results of science, engineering and social science investigations on modelling and management, transboundary co-operation of large river catchments are of interest. Based on this, the book is a valuable source of the state of the art in flood risk management but also covers future demands for research and practice in terms of flood issues.

The interaction between land and sea is controlled by a number of processes that are in general driven by the equilibrium between environmental forcing components (e.g. hydrodynamic - waves, currents, surges), atmospheric (e.g. winds) and terrestrial (e.g. catchment land cover) and sediment dynamics. In the context of the Anthropocene epoch, the equilibrium in many coastal regions is now often altered by the influence of human activities. Successive human activities globally influence (indirectly) these forcing components, helping magnify the negative impact of extreme meteorological events and sea level rise. Directly, human activity can also influence a number of processes at a local scale within and between the catchment, the sea and the coast. For example, misplaced engineered infrastructure inside these naturally dynamic environments can accentuate disequilibrium, destabilizing shores and deltas.

Development in catchments can promote rapid runoff, inducing sometimes-dramatic effects on downstream urbanized areas, the socio-economy as well as on coastal resources and ecosystems. This Research Topic aims to assemble research and review papers that focus on the dynamics of shores and deltas in peril under present conditions as well as in the future context of sea-

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level rise, climate change and adaptation strategies under various scenarios.

This book provides an overview of beach management tools, including carrying capacity, beach nourishment, environmental and tourism awards (like Blue Flag or others), bathing water quality, zoning, beach typologies, quality index, user's perception, interdisciplinary beach monitoring, coastal legislation, shore protection, social and economic indicators, ecosystem services, and coastal governance (applied in beach case studies). Beaches are one of the most intensely used coastal ecosystems and are responsible for more than half of all global tourism revenues, and as such the book introduces a wide range of state-of-the-art tools that can be used to deal with a variety of beach challenges. Each chapter features specific types of tools that can be applied to advantage in beach management practices. With examples of local and regional case studies from around the globe, this is a valuable resource for anyone involved in beach management.

This is a white paper on local economic growth, moving power away from central government to local communities, citizens and independent providers. The Government aims to create a fairer and more balanced economy, one that is not so dependent on a narrow range of economic sectors, is driven by private sector growth and has new business opportunities that are more evenly balanced across the country and between industries. This paper sets out how the Government will put businesses and local communities in charge of their own futures, give greater incentives for local growth and change the way central government supports and maintains growth. There will be investment in a 1.4 billion

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pound Regional Growth Fund over the next three years which will help areas that depend too heavily on the public sector for jobs, helping create more sustainable private sector employment. This Fund has been designed to reflect the views put to the consultation that took place over the summer. The changes in the paper are part of the Government's new approach of decentralisation, creating local enterprise partnerships bringing together business and civic leaders to set the strategy and take the decisions that will allow their area to prosper. Looking at reforming the planning system will also be part of this making it easier for local areas to benefit from the proceeds of development. And the creation of more directly elected mayors will foster growth by giving more power to local areas so decision making will be more accountable and responsive to local economic conditions.

This book presents and discusses a strategy which includes four approaches to dealing with the risk of sea-level rise and other water hazards. It also offers opportunities for cities to explore urban extensions such as marine estates, aquatic food production systems, new sea related industries, maritime transport developments, new oceanic tourist attractions, and the designation of additional coastal ecological zones. The urban interface between Sea and Cities generates, therefore, both burning issues and valuable opportunities and raises the question of whether it is possible to solve the former by exploiting the latter?

The UK Government, the Scottish Government, Welsh Assembly Government and Northern Ireland Executive are taking action to achieve clean, healthy, safe, productive and biologically diverse oceans and seas. A new system of marine planning has been introduced through the Marine and Coastal Access Act 2009 (ISBN 9780105423096), the Marine (Scotland) Act 2010 (ISBN 9780105901518) and proposed

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legislation in Northern Ireland. This marine policy statement (MPS) is the framework for preparing marine plans and taking decisions that affect the marine environment. This consultation document contains the draft MPS, a non-technical summary of the appraisal of sustainability and an impact assessment. These and other documents are available at www.defra.gov.uk/corporate/consult/marine-policy/index.htm. The introduction sets out the purpose, scope and structure of the MPS. Chapter 1 describes the role of the MPS within the wider marine planning system and its interaction with existing planning regimes. Chapter 2 outlines the vision for the UK marine area and the strategic environmental, social and economic considerations that need to be taken into account. Chapter 3 details the policy objectives for the key activities that take place in the marine environment.

Utilizing the coastal problems of South Asia, including sea level rise, Towards Sustainable Coastal Development: Institutionalizing Integrated Coastal Zone Management and Coastal Climate Change Adaptation in South Asia investigates the role of law and regional regimes in facilitating linkages between integrated coastal zone management and coastal climate change adaptation to contribute to sustainable coastal development.

Coastal Towns : Session 2005-06, Vol. 2: Written Evidence Environmental Law: Text, Cases, and Materials has been designed to provide students with everything they need to approach the subject with confidence. Experts in the area, the authors combine clear and insightful commentary with carefully chosen extracts from UK and international sources to offer students a well-rounded view of the subject area. Covering a broad range of topics, the authors introduce discussion on controversies and debates and encourage readers to engage in critical reflection by posing regular

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discussion questions throughout the text. Further reading suggestions point students towards useful resources, guiding their independent research. Online Resources This book is also accompanied by online updates collated by the authors, helping students to stay well-informed.

This book discusses resilience in terms of structures' and infrastructures' responses to extreme loading conditions. These include static and dynamic loads such as those generated by blasts, terrorist attacks, seismic events, impact loadings, progressive collapse, floods and wind. In the last decade, the concept of resilience and resilient-based structures has increasingly gained in interest among engineers and scientists. Resilience describes a given structure's ability to withstand sudden shocks. In other words, it can be measured by the magnitude of shock that a system can tolerate. This book offers a valuable resource for the development of new engineering practices, codes and regulations, public policy, and investigation reports on resilience, and provides broad and integrated coverage of the effects of dynamic loadings, and of the modeling techniques used to compute the structural response to these loadings. Around 469,000 households and business in England are at risk of flooding and this figure is likely to rise of the next century because of factors such as climate change. The Environment Agency is responsible for managing the risk from main rivers and the sea in England and Wales. This report looks at their maintenance of 24,000 miles of flood defences and the construction of new defences. It notes the progress made since the last report in 2001 (HC 299 2000-01) and sets out the areas where there is room for further improvement.

To mitigate, develop, and improve the lives of those vulnerable to intense natural disasters, climate change, and food insecurity, many agencies are funding and implementing

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diverse activities from reconstruction to rehabilitation, and this book presents the lessons and impacts from a collection of these projects. It describes concepts, strategies, processes, and tools in such a way that they can be easily replicated and shared with a wider audience. This study explains that mid- to long-term interventions, strategies, and practical approaches in particular are being designed and adopted to build the resilience of the poor. It describes valuable practical experiences and lessons from the field, capturing a range of interventions from implementing agencies involved in post-disaster rehabilitation. It is comprised of 79 papers grouped into four sections: coastal threats and challenges in South Asia; disaster risk reduction and the combining of resilience, mitigation, and adaptation; pathways for building the capacity of vulnerable communities to withstand and rebuild from natural disasters; and real-life postdisaster rehabilitation and resilience-building projects that have led to positive change at the community level. This is an exceptional resource for anyone concerned with disaster management and rehabilitation work, including students, researchers, policymakers, and members of nongovernmental organizations.

There is an urgent need to ensure that coastal areas are adapting to the impacts of climate change. Risks in these areas are projected to increase because of rising sea levels and development pressures. This report reviews how OECD countries can use their national adaptation planning processes...

With correction slip dated May 2006

Water, policy and procedure -- Water resource availability in Britain -- Institutions and legislation for resource management -- The catchment approach : ways and means -- Sustaining bulk supply : consumption and interference -- Sustaining bulk supply : possible solutions -- Water quality background issues

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-- Environmental issues of water quality and quantity --
Towards solutions : land use and technical fixes -- Framing water policies : emerging governance arrangements -- The USA, Australasia and Europe : lessons to be learned?
Flood and coastal erosion risk in England is expected to increase due to climate change and development in areas at risk. It is not possible to prevent all flooding or coastal erosion, but there are actions that can be taken to manage these risks and reduce the impacts on communities. This strategy builds on existing approaches to flood and coastal risk management and promotes the use of a wide range of measures to manage risk. Risk should be managed in a co-ordinated way within catchments and along the coast and balance the needs of communities, the economy and the environment. This strategy will form the framework within which communities have a greater role in local risk management decisions and sets out the Environment Agency's strategic overview role in flood and coastal erosion risk management (FCERM). The strategy encourages more effective risk management by enabling people, communities, business, infrastructure operators and the public sector to work together to: ensure a clear understanding of the risks of flooding and coastal erosion, nationally and locally; set out clear and consistent plans for risk management; manage flood and coastal erosion risks in an appropriate way, taking account of the needs of communities and the environment; ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond effectively to flood forecasts, warnings and advice; help communities to recover more quickly and effectively after incidents.

Existing coastal management and defense approaches are not well suited to meet the challenges of climate change and related uncertainties. Professionals in this field need a more

