

1. Record Nr.	UNINA9910502999803321
Autore	Biswas Asit K
Titolo	Water Security under Climate Change
Pubbl/distr/stampa	Singapore : , : Springer Singapore Pte. Limited, , 2021 ©2022
ISBN	981-16-5493-X
Descrizione fisica	1 online resource (393 pages)
Collana	Water Resources Development and Management Ser.
Altri autori (Persone)	TortajadaCecilia
Soggetti	Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	<p>Intro -- Foreword by The Right Honourable Nicola Sturgeon MSP, First Minister of Scotland -- Foreword -- Preface -- Contents -- Contributors -- Part I Perspectives -- 1 Ensuring Water Security Under Climate Change -- Abstract -- 1.1 Introduction -- 1.2 Water Security -- 1.2.1 Water Security for Domestic Sector -- 1.2.2 Water Security for Industrial Sector -- 1.2.3 Water Use for Agricultural Sector -- 1.2.4 Circularity and Water Security -- 1.3 Climate Change -- 1.4 Concluding Remarks -- References -- 2 Water Security in the Face of Climate Change: Singapore's Way -- Abstract -- 2.1 Climate Change -- 2.2 Suffer Little Singapore? -- 2.3 No Retreat -- 2.4 How to Build a Seawall -- 2.5 Taming Stormwater -- 2.6 Scarcity and Fickle Rains -- 2.7 A Smaller Footprint -- 2.8 Conscientious Consumption -- 2.9 Conclusion -- References -- 3 Consequences of Declining Resources on Water Services: The Risks if We Do not Act! -- Abstract -- 3.1 Consequences of Climate Change on Water Distribution Services -- 3.2 Implementing Adaptation Measures: Desalination or Reuse (a Little), Reduce Consumption (a Lot) -- 3.2.1 Adaptation Through New Resources -- 3.2.2 Much Better: Adapt by Reducing Consumption -- 3.3 Mobilise and Support the Water Services Who Must Manage Intermittent Water Supply -- Reference -- 4 Resilience Through Systems Thinking for Water Infrastructure -- Abstract -- 4.1 State of the Water Sector Under Climate Pressure -- 4.2 What Future Do We Seek? -- 4.3 Immediate Actions for Mitigation -- 4.4 Intermediate Future Actions for Mitigation -- 4.5 Resilient Water Infrastructure and Systems is a Journey -- 4.6</p>

The Time to Act is Now -- References -- 5 Water Security and Climate Change: Hydropower Reservoir Greenhouse Gas Emissions -- Abstract -- 5.1 Introduction -- 5.1.1 Hydropower and Water Security -- 5.1.2 Resilience and Adaptation.

5.1.3 Sustainability Assessment Tools -- 5.1.4 Climate Mitigation -- 5.1.5 Greenhouse Gas Footprint -- 5.2 Materials and Methods -- 5.2.1 Approach -- 5.2.2 Tool -- 5.2.3 Methodology -- 5.3 Data -- 5.3.1 Installed Capacity -- 5.3.2 Climatic Zone -- 5.3.3 Surface Area -- 5.4 Results -- 5.5 Discussion -- Acknowledgements -- Annex -- References -- 6 Climate Change and Its Implications for Irrigation, Drainage and Flood Management -- Abstract -- 6.1 Introduction -- 6.2 Climate Change and Water -- 6.3 Impact and Opportunities for Agriculture Water Management -- 6.3.1 Availability and Consumption Patterns -- 6.3.2 Role of Irrigation in Achieving Global Food Security -- 6.3.3 Land Drainage Requirements -- 6.4 Flood Management -- 6.4.1 Close Coupling with Land Management -- 6.4.2 Structural and Non-structural Measures -- 6.4.3 Safety and Sustainability of Water Infrastructure -- 6.4.4 Adaptive Flood Risk Management -- 6.5 Role of Real-Time Data and Forecasting -- 6.6 Efforts at ICID -- 6.6.1 ICID Vision 2030 -- 6.6.2 Global Footprint -- 6.6.3 Promoting and Disseminating Knowledge on Water Saving Techniques -- 6.6.4 Understanding Effects of Climate Change -- 6.6.5 Water Heritage and Sustainability -- 6.7 Conclusions and Way Forward -- References -- 7 Designing Research to Catalyse Climate Action -- Abstract -- 7.1 Introduction -- 7.2 Recent Directions in Research -- 7.3 Designing Research for the Next Decade -- 7.3.1 Cross-Scale -- 7.3.2 Cohorts -- 7.3.3 Capacity -- 7.4 Conclusion -- References -- Webpages -- Part II Case Studies -- 8 Water-Resilient Places-Developing a Policy Framework for Surface Water Management and Blue-Green Infrastructure -- Abstract -- 8.1 Introduction -- 8.2 Scotland's Water Environment -- 8.2.1 Context-Scotland, The Hydro Nation: Strategy and Structure -- 8.2.2 Hydro Nation: Strategy and Structure -- 8.3 Scotland's Water Sector Vision.

8.4 The Hydro Nation Chair -- 8.5 Infrastructure Investment and Climate Change Action -- 8.6 Surface Water Management and Climate Change -- 8.7 Water-Resilient Places-Developing a Policy Framework for Surface Water Management and Blue-Green Infrastructure -- 8.7.1 Background -- 8.7.2 Background to the Water-Resilient Places Policy -- 8.7.3 Managing Surface Water in Scotland in 2020 -- 8.7.4 Vision for the Future -- 8.7.5 A Framework for the Delivery of Water-Resilient Places -- 8.8 Recommendations -- 8.9 Hydro Nation International -- 8.9.1 Scotland and Malawi -- 8.10 Looking to the Future -- Annex 1: Current Responsibilities for Surface Water Management in Scotland -- Annex 2: Legislation, Regulations and Guidance -- References -- 9 Supporting Evidence-Based Water and Climate Change Policy in Scotland Through Innovation and Expert Knowledge: The Centre of Expertise for Waters (CREW) -- Abstract -- 9.1 Introduction -- 9.2 The Water Resources of Scotland -- 9.3 The Water Policy Landscape in Scotland -- 9.4 CREW's Operational Model -- 9.5 Creating Impact: Supporting Policy Outcomes -- 9.6 Future Direction and Closing Remarks -- Acknowledgements -- References -- 10 Building A Resilient and Sustainable Water and Wastewater Service for Scotland -- Abstract -- 10.1 Introduction -- 10.2 Climate Change Projections in Scotland -- 10.3 Adaptation-Serving Customers in a Changing Climate -- 10.4 Planning and Adapting to Extreme Rainfall -- 10.5 Building Sponge Cities -- 10.6 Smart Canals-A Low-Carbon Surface Water Management Adaptation Measure -- 10.7 Mitigating Our Impact on the Environment -- 10.8 Operational Emissions -- 10.9 Investment

Emissions -- 10.10 Net Zero Emission Challenge -- 10.11 Reducing Our Demand -- 10.12 Generating Renewable Energy -- 10.13 Reducing the Greenhouse Gas Intensity of the Electricity Grid -- 10.14 Heat from Sewers.

10.15 Peatland Restoration -- 10.16 Investment Emissions -- 10.17 Summary -- References -- 11 What Are the Key Enablers in Pursuing Both Disaster Risk Reduction and Climate Change Adaptation? Practical Lessons from Asian River Basins -- Abstract -- 11.1 Introduction -- 11.1.1 What About Water? -- 11.2 Review of Past Experiences to Manage River Basins for DRR: Indonesia -- 11.2.1 DRR in Indonesia: The Case of the Downstream Solo Flood Control Project -- 11.2.2 DRR in Indonesia, the Case of Semarang Flood Control Project -- 11.3 Review of Past Experiences to Manage River Basins for DRR and Additionally for Extreme Climate Events: Japan Under Hagibis 2019 -- 11.4 Review of Past Experiences to Manage River Basins for DRR and Additionally for Extreme Climate Events: The Philippines -- 11.4.1 Downstream Pasig-Marikina (KAMANAVA) Flood Control Project -- 11.5 What Are the Baseline Enablers for Joint Realisation and Spreading Out of DRR and Climate Adaptation? -- 11.6 The Way Forward -- References -- 12 The Great Glacier and Snow-Dependent Rivers of Asia and Climate Change: Heading for Troubled Waters -- Abstract -- 12.1 Introduction -- 12.2 Warming in the HKH Mountains -- 12.3 Changes in Precipitation -- 12.4 Impact on the Cryosphere -- 12.5 Cumulative Impact on River Hydrology -- 12.6 Impact of Hydrological Changes on the Uses of Water -- 12.7 Societal Impacts in Mountains -- 12.8 Societal Impacts in Hills -- 12.9 Climate-Induced Migration in Hills and Mountains -- 12.10 Societal Impacts in the Plains -- 12.11 Flooding in the Plains -- 12.12 Key Actions -- Acknowledgements and Disclaimer -- References -- 13 Assessment of and Adaptation Measures to the Impacts of Climate Change on Water Resources in China -- Abstract -- 13.1 Introduction -- 13.2 The Effect of Climate Change on Water Resources in China in 1961-2019.

13.2.1 Temperature Change in 1961-2019 by Basin -- 13.2.2 Precipitation Changes in 1961-2019 by Basin -- 13.2.3 Changes in Water Resources in 1961-2019 by Basin -- 13.2.4 The Effect of Climate Change on Water Resources -- 13.3 The Effect of Climate Change on Water Resources Under Future Climate Scenarios -- 13.3.1 Future Temperature Change -- 13.3.2 Future Precipitation Change -- 13.3.3 Assessment of the Effect of Future Climate Change on Water Resources -- 13.4 Adaptation Measures for the Impact of Climate Change on Water Resources -- 13.4.1 Active Scientific Research -- 13.4.2 Planning for Water Security Under Changing Environment -- 13.4.3 Innovation of Mechanisms for Adapting to Climate Change -- 13.4.4 Investment -- Acknowledgements -- References -- 14 Using Waternomics to Develop and Avoid Systemic Shocks to the Economy -- Abstract -- 14.1 Key Waternomic Challenges in Asia -- 14.2 Cross-Cutting Waternomic Strategies for "Development Unusual" -- 14.3 Waternomic Lessons from China -- 14.4 Magnitude to Threats Pose Systemic Risks to Countries and Global Financial Systems -- 14.5 Central Banks and the Financial Sector Are Acting, but Piecemeal Assessment of Water Risks Points to Their Undervaluation -- 14.6 Waternomics Can Provide a Way Forward to Develop and Avoid Systemic Shocks to the Economy -- References -- 15 Managing Risks on Egypt Water Resources Security: Climate Change and Grand Ethiopian Renaissance Dam (GERD) as Challenging Aspects -- Abstract -- 15.1 Introduction -- 15.2 Hydrological Regime of the Nile River Basin -- 15.3 Water Resources in Egypt -- 15.4 Risks and Impacts of Climate Changes on Egypt and Adaptation Measures -- 15.5 The Transboundary Dimension in Egypt's

Policy -- 15.6 Impact of GERD -- 15.6.1 Main Characteristics of the GERD -- 15.6.2 Trilateral Negotiations on GERD -- 15.6.3 Potential Impacts of the GERD.

15.7 Conclusions and Recommendations.
