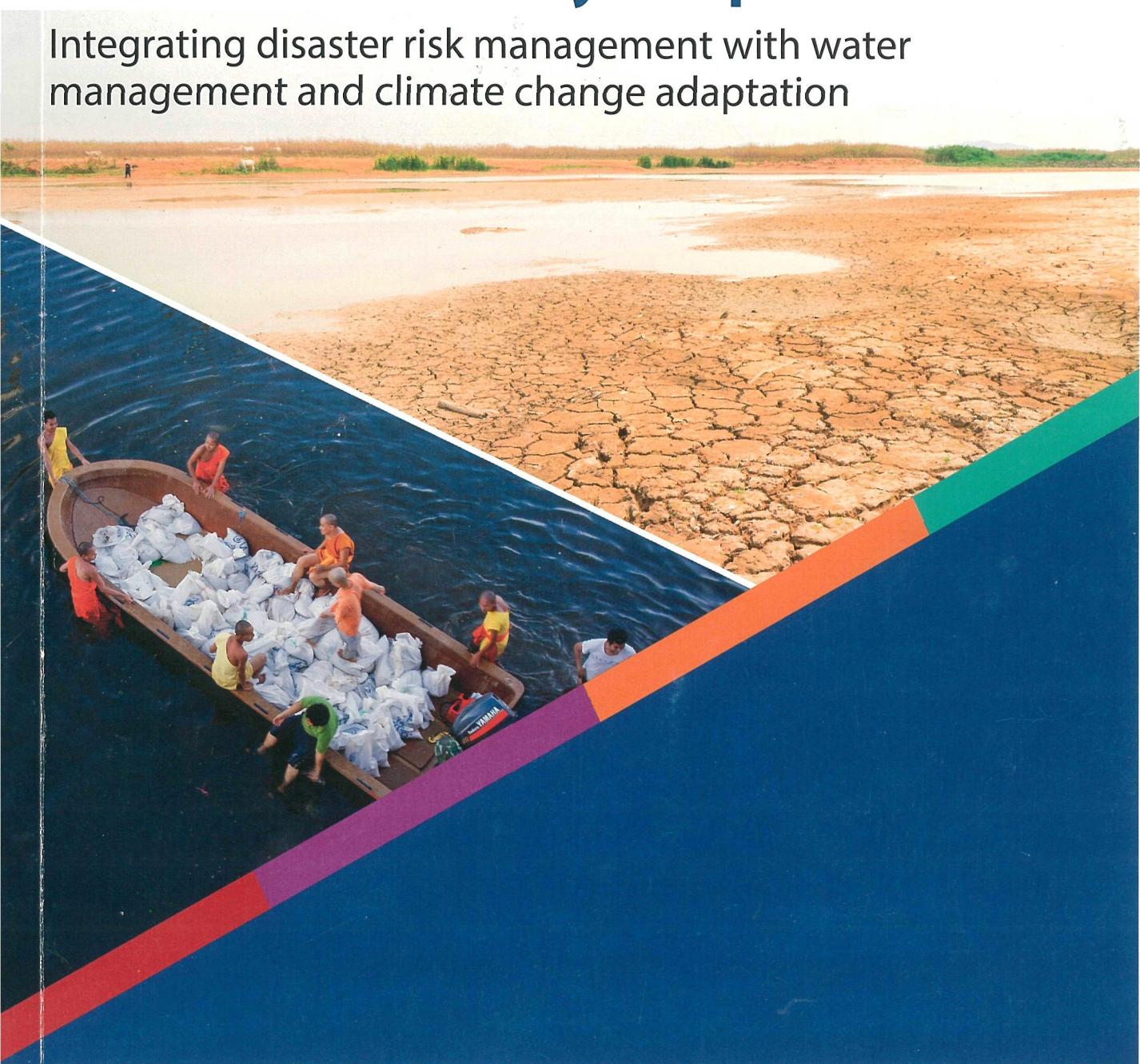


# Words into Action Guidelines Implementation Guide for Addressing Water-Related Disasters and Transboundary Cooperation

Integrating disaster risk management with water  
management and climate change adaptation



In support of the

**SENDAI FRAMEWORK**  
FOR DISASTER RISK REDUCTION 2015-2030



# Contents

|   |             |
|---|-------------|
| <b>Foreword .....</b>   | <b>iii</b>  |
| <b>Acknowledgements.....</b>  | <b>iv</b>   |
| <b>List of tables, graphs and boxes .....</b>   | <b>viii</b> |
| <b>List of abbreviations and acronyms .....</b>   | <b>ix</b>   |
| <b>Key messages .....</b>   | <b>x</b>    |
| <b>1. Introduction .....</b>  | <b>1</b>    |
| 1.1 Context and rationale .....   | 2           |
| 1.2 Aims and scope .....  | 3           |
| 1.3 Target audience .....   | 4           |
| 1.4 Structure of the guide .....  | 4           |
| <b>2. International commitments and legal frameworks .....</b>  | <b>7</b>    |
| 2.1 Sendai Framework for Disaster Risk Reduction.....   | 8           |
| 2.2 Sustainable Development Goals.....  | 10          |
| 2.3 The Paris Agreement .....   | 10          |
| 2.4 Water Convention .....  | 11          |
| 2.5 United Nations Watercourses Convention.....   | 13          |
| 2.6 Ramsar Convention.....  | 13          |
| 2.7 Industrial Accidents Convention.....  | 14          |
| 2.8 United Nations Convention to Combat Desertification.....  | 15          |
| 2.9 Espoo Convention.....   | 16          |
| <b>3. Main principles and approaches .....</b>  | <b>19</b>   |
| 3.1 Governance principles .....   | 20          |
| 3.2 Mainstreaming DRM measures in (transboundary) basins.....   | 23          |
| 3.3 IWRM approach towards DRR.....  | 24          |
| 3.4 Ecosystem based approaches .....  | 27          |
| 3.5 Nexus: links to related sectors like agriculture, energy, industry, land use and ecosystems ..... | 28          |
| <b>4. Responsibilities and stakeholders .....</b>   | <b>31</b>   |
| 4.1 Responsible institutions .....  | 32          |
| 4.2 River basin organizations/joint bodies .....  | 33          |
| 4.3 The role of cities.....   | 35          |
| 4.4 Gender issues.....  | 37          |
| 4.5 Poverty and inequality.....   | 37          |
| 4.6 Consultation and participation.....   | 37          |
| 4.6.1 Stakeholder mapping.....  | 38          |
| 4.6.2 Stakeholder involvement.....  | 39          |
| 4.6.3 Capacity development .....  | 39          |

|                        |  |           |
|------------------------|--|-----------|
| <b>5.</b>              | <b>Understanding the risks and hazards .....</b>                         | <b>41</b> |
| 5.1                    | Dealing with different types of hazards.....                             | 42        |
| 5.2                    | Information collection and sharing among riparian states.....            | 42        |
| 5.3                    | Early warning systems .....  | 45        |
| 5.4                    | Identification and assessment of transboundary impacts of disasters..... | 49        |
| 5.4.1                  | Basin-wide disaster risk assessment .....                                | 49        |
| 5.4.2                  | General considerations in disaster risk assessment.....                  | 51        |
| 5.4.3                  | Steps in assessing disaster risks.....                                   | 52        |
| <b>6.</b>              | <b>Developing strategies to reduce risk.....</b>                         | <b>55</b> |
| 6.1                    | Disaster risk phases.....  | 56        |
| 6.1.1                  | Prevention and mitigation of disasters.....                              | 57        |
| 6.1.2                  | Preparedness for disasters .....   | 57        |
| 6.1.3                  | Response measures .....  | 57        |
| 6.1.4                  | Recovery measures.....   | 58        |
| 6.2                    | Identify measures .....  | 59        |
| 6.3                    | Different types of measures.....   | 59        |
| 6.4                    | Prioritizing measures in transboundary basins.....                       | 64        |
| 6.4.1                  | Cost-benefit analysis .....  | 66        |
| 6.4.2                  | Multi-criteria analysis .....  | 67        |
| <b>7.</b>              | <b>Implementation.....</b>   | <b>69</b> |
| 7.1                    | Considerations for implementation.....                                   | 70        |
| 7.1.1                  | The role of pilot projects.....  | 70        |
| 7.2                    | Exchange of experience and knowledge.....                                | 71        |
| 7.3                    | Financing risk management measures .....                                 | 71        |
| 7.4                    | Insurance and reinsurance.....   | 72        |
| <b>8.</b>              | <b>Monitoring and evaluation .....</b>                                   | <b>75</b> |
| 8.1                    | How is it implemented? .....   | 76        |
| 8.2                    | Reporting under the Sendai Framework and the SDGs.....                   | 77        |
| 8.3                    | Sound evaluations .....  | 77        |
| <b>Glossary</b>        | <b>.....</b>   | <b>79</b> |
| <b>References.....</b> | <b>.....</b>   | <b>89</b> |

## List of tables, graphs and boxes

### Tables

|         |   |    |
|---------|---|----|
| Table 1 | OECD Principles on Water Governance .....   | 21 |
| Table 2 | Organizations typically involved in disaster risk reduction (DRR) and water management..... | 32 |
| Table 3 | Overview of possible risk management measures.....  | 62 |

### Figures

|          |  |    |
|----------|--|----|
| Figure 1 | Transboundary cooperation elements for the typical disaster risk management steps.....   | 5  |
| Figure 2 | Main steps of the Early Warning System chain .....   | 45 |
| Figure 3 | Risk as a function of hazard, exposure and vulnerability .....   | 49 |
| Figure 4 | Linkages between disaster risk assessment and development of measures.....   | 53 |
| Figure 5 | Example of an Integrated Flood Risk Management Cascade with potential integrated flood management measures and associated policy and management fields ..... | 56 |
| Figure 6 | Cost-benefit analysis, the principle of marginal benefits equal to marginal costs for dike increase as an intervention.....                                  | 66 |

### Boxes

|        |   |    |
|--------|---|----|
| Box 1  | Developing an adaptation strategy in the Lower Mekong Basin.....                      | 22 |
| Box 2  | Mainstreaming climate change in the forest and biodiversity sector in Kyrgyzstan..... | 23 |
| Box 3  | Challenges for Integrated Water Resources Management in the Niger River Basin .....   | 26 |
| Box 4  | Technical cooperation on shipping in the Scheldt River.....                           | 33 |
| Box 5  | How Lake Titicaca Authority was established after major floods .....                  | 34 |
| Box 6  | Cities working together to protect the Mississippi River.....                         | 36 |
| Box 7  | Flood management in the Lower Mekong Basin .....                                      | 44 |
| Box 8  | Sava River hydrologic and hydraulic model.....  | 44 |
| Box 9  | Manual on Flood Forecasting and Warning.....  | 45 |
| Box 10 | European Flood Awareness System.....  | 46 |
| Box 11 | Internationally coordinated water management in the Rhine River Basin .....           | 46 |
| Box 12 | Multilayer safety in the Netherlands.....   | 58 |
| Box 13 | Implementation of the EU Floods Directive in the Danube .....                         | 60 |
| Box 14 | Climate change adaptation in the Dniester River Basin.....                            | 61 |