

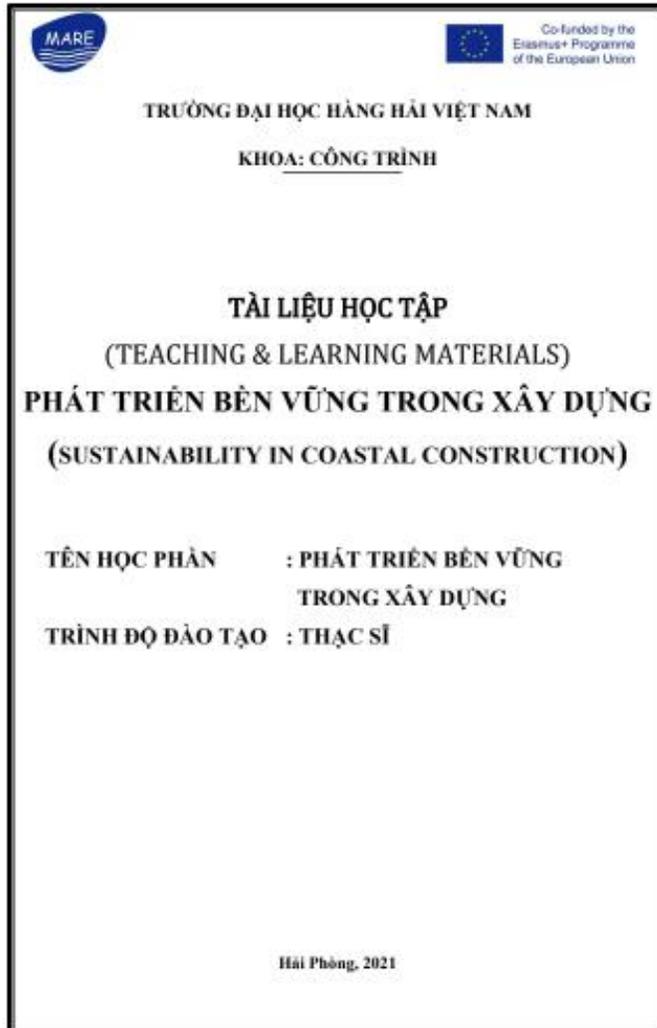
# SUSTAINABILITY IN COASTAL CONSTRUCTION

Lecturers: **Dr. TRAN DUC PHU**





# LECTURE NOTES



- The main material used in the course of Sustainability in Coastal Construction is the Lecture Notes which is created by Faculty of Hydraulic Engineering, Vietnam Maritime University.
- This document is available in Vietnamese.
- Target audience is students in Master program.



# PREFACE

Environmental disruption and usage of energy and resources are two significant issues that have been seriously taken in the construction industry in recent decades. Sustainable construction is about being able to continue building structures without damaging the environment. Consequently, the terms “green construction” and “green building” have appeared as initiatives benefiting the environment. The usage of renewable and recyclable resources and materials, waste and energy consumption reduction to protect the natural environment around the site are also feasible options for sustainable construction. Being engineers in Construction major, it is of great essentials to gain knowledge of sustainability in construction in order to enhance individual awareness of environmental protection responsibility. Also, this guides learners toward “green” and modern views in construction industry.

This document equips students with an overview of changes in climate, climate change scenarios and the impact of climate change on buildings. Furthermore, up-to-date knowledge of climate-adaptable buildings and adaptation approaches for buildings, methods for preparation of adaptation strategies and resilience for a region or a building are also introduced.



# LECTURE NOTE CONTENTS

## **Topic 1. Changes in climate**

In this first chapter, students are provided with fundamental knowledge of sustainability and its relation to environment, challenges to environment and the roles of Governments. Specific insights of climate change in Vietnam is also discussed.

## **Topic 2. Climate change scenarios**

This chapter introduces the various syndromes of climate changes, along with various scenarios of climate change in Vietnam in the next decade. From that, proposals and solutions are suggested to deal with the changes in natural conditions which might occur in our country.

## **Topic 3. The impact of climate change on buildings**

General impacts of climate change on constructions and buildings are discussed.



# LECTURE NOTE CONTENTS

## **Topic 4. Climate-adaptable buildings**

There have been innovative ideas in designing buildings to cope with climate change to be introduced in this part.

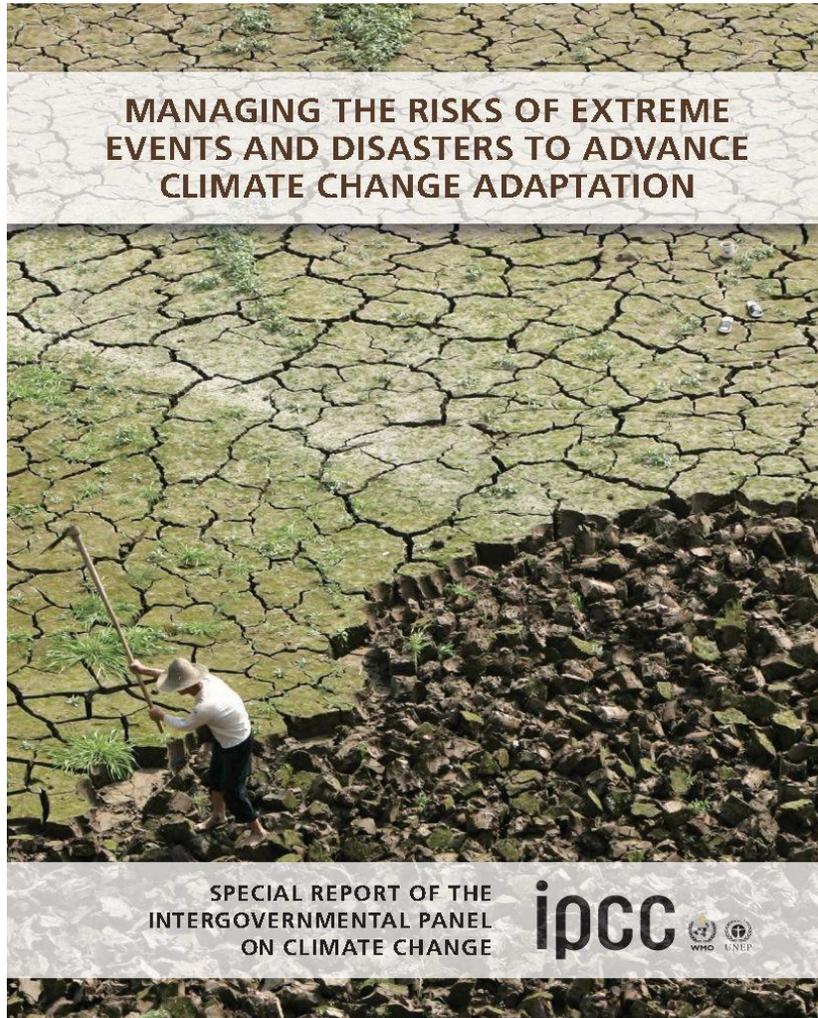
## **Topic 5. Adaptation approaches for buildings**

This chapter introduces the innovations in designing green and sustainable city and zero-carbon buildings.

## **Topic 6. Adaption strategies and resilience**

The roles of government and local authorities in dealing with climate change will be addressed in this chapter. Various solutions are discussed and a case study of Vietnam in coping with climate change will be presented.

# REFERENCES



- Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change
- Created by: IPCC, 2018



# REFERENCE BOOK ABSTRACT

Extreme weather and climate events, interacting with exposed and vulnerable human and natural systems, can lead to disasters. This Special Report explores the challenge of understanding and managing the risks of climate extremes to advance climate change adaptation. Weather- and climate-related disasters have social as well as physical dimensions. As a result, changes in the frequency and severity of the physical events affect disaster risk, but so do the spatially diverse and temporally dynamic patterns of exposure and vulnerability.

Some types of extreme weather and climate events have increased in frequency or magnitude, but populations and assets at risk have also increased, with consequences for disaster risk. Opportunities for managing risks of weather- and climate-related disasters exist or can be developed at any scale, local to international. Some strategies for effectively managing risks and adapting to climate change involve adjustments to current activities. Others require transformation or fundamental change.

The report focuses on the relationship between climate change and extreme weather and climate events, the impacts of such events, and the strategies to manage the associated risks. This Special Report, in particular, contributes to frame the challenge of dealing with extreme weather and climate events as an issue in decision making under uncertainty, analyzing response in the context of risk management. The report consists of nine chapters, covering risk management; observed and projected changes in extreme weather and climate events; exposure and vulnerability to as well as losses resulting from such events; adaptation options from the local to the international scale; the role of sustainable development in modulating risks; and insights from specific case studies.



# REFERENCE BOOK CONTENT

Chapter 1. Climate Change: New Dimensions in Disaster Risk, Exposure, Vulnerability, and Resilience

Chapter 2. Determinants of Risk: Exposure and Vulnerability

Chapter 3. Changes in Climate Extremes and their Impacts on the Natural Physical Environment

Chapter 4. Changes in Impacts of Climate Extremes: Human Systems and Ecosystems

Chapter 5. Managing the Risks from Climate Extremes at the Local Level

Chapter 6. National Systems for Managing the Risks from Climate Extremes and Disasters

Chapter 7. Managing the Risks: International Level and Integration across Scales

Chapter 8. Toward a Sustainable and Resilient Future

Chapter 9. Case Studies.

# Thank you



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Co-funded by the  
Erasmus+ Programme  
of the European Union

