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

HCMC UNIVERSITY OF NATURAL RESOURCES AND ENVIRONMENT
FACULTY OF MARINE RESOURCE MANAGEMENT

MARINE RESOURCES AND ENVIRONMENT MANAGEMENT

Topic 1 - Integration for management of natural resources and environment of the islands

Lecturer: MSc. Dang Thi Thanh Le
MSc. Tran Thi Kim
MSc. Phung Thi My Diem

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

CONTENT

1- Concepts of sea, marine and coastal zone

2- Marine environment

3- Marine environmental issues

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

I. CONCEPTS OF SEA, MARINE & COASTAL ZONE

1. Basic concepts

- Ocean and sea
- Bay - Awkward - Shallow - Lagoon
- Coastal Strip - Coastal Zone
- Other concepts

2. Concept of marine space

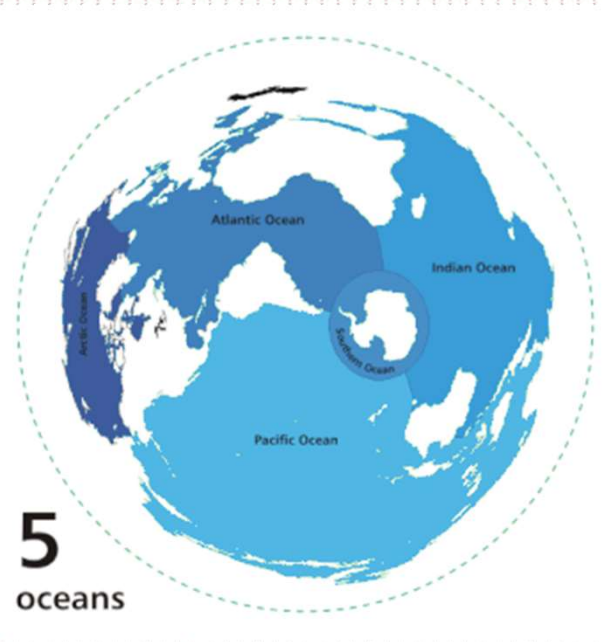
- Inland Sea, territorial waters, adjacent territorial waters, exclusive economic, more continents.

3. Coastal and Marine Environment Concepts

1. Basic concepts

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

Ocean: is a large area of salt water that forms the basic composition of the hydrosphere. About 71% of the Earth's surface (about 361 million square kilometers) is covered by oceans, a mass of water that is constantly customary divided into several key oceans and several small seas. More than half of this area has a depth of over 3,000 meters (9,800 ft).



1. Basic concepts

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

Sea: The sea is generally a vast saltwater sea connected to the oceans, or large reservoirs of salt water that do not have a natural way to the ocean like the Caspian Sea, the Dead Sea.
Each sea has a dominant hydrological, to some extent different from the hydrological mode of the approaching ocean part. The sea can be divided into three main categories: t-tallying sea, natural sea, and artificial sea.

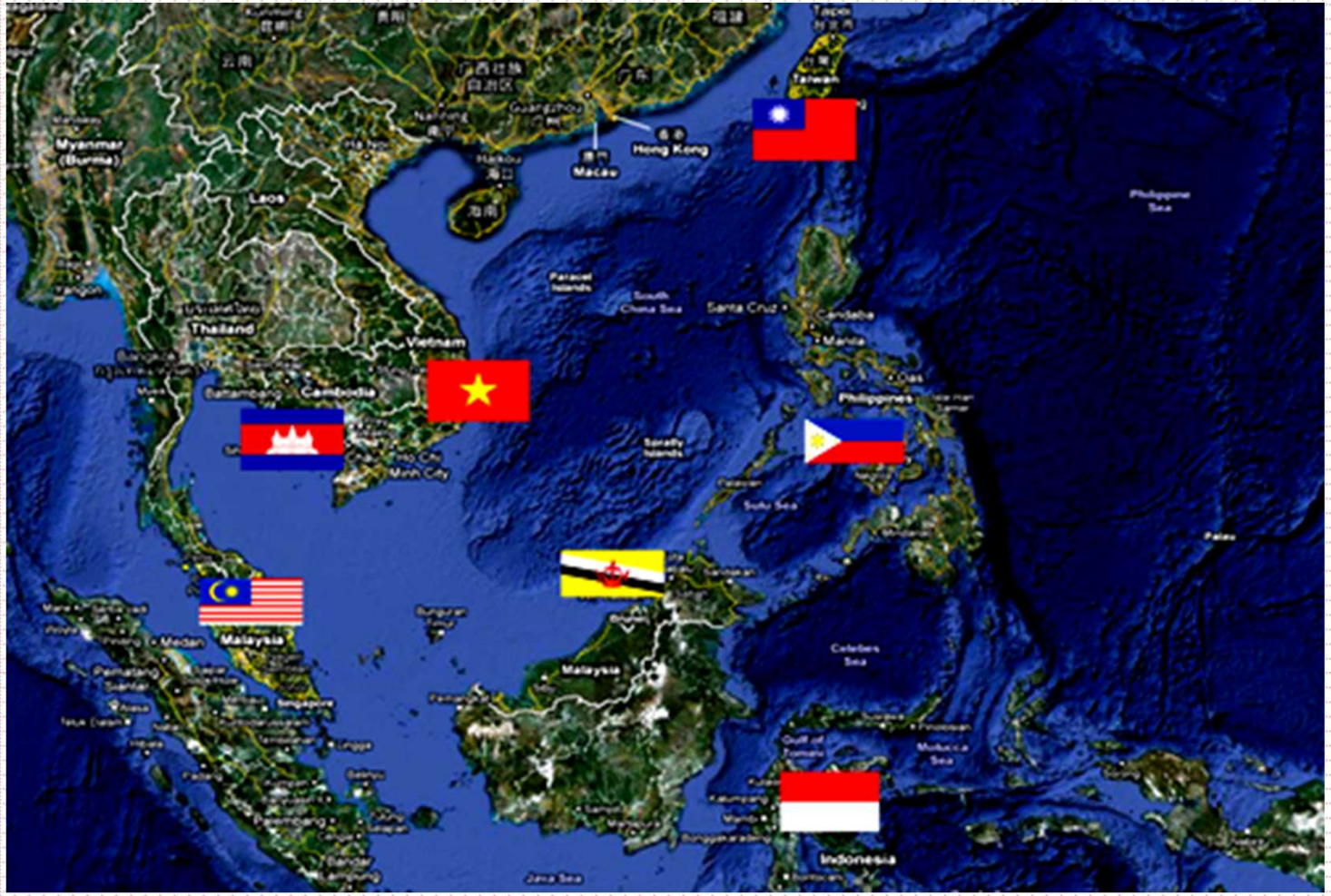
The sea can be divided into three main categories: t-tallying sea, natural sea, artificial sea.

Teodosic seas are the middle sea of the continent that is often ingrained inland, connected to the ocean by narrow straits, not allowing water exchange with the ocean to be easy.

1. Basic concepts

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

The natural sea is the continental sea separated from the ocean by a chain of islands, sometimes by peninsulas.
Some continental seas: Sea of Japan, Bering Sea, South China Sea of Vietnam



1. Basic concepts

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

An Artificial sea is the sea between islands or seas surrounded by thick or sparse islands. There are about 50 seas in the world, some of which are Xelep, Banga, Xulu and Java sea.

1. Basic concepts

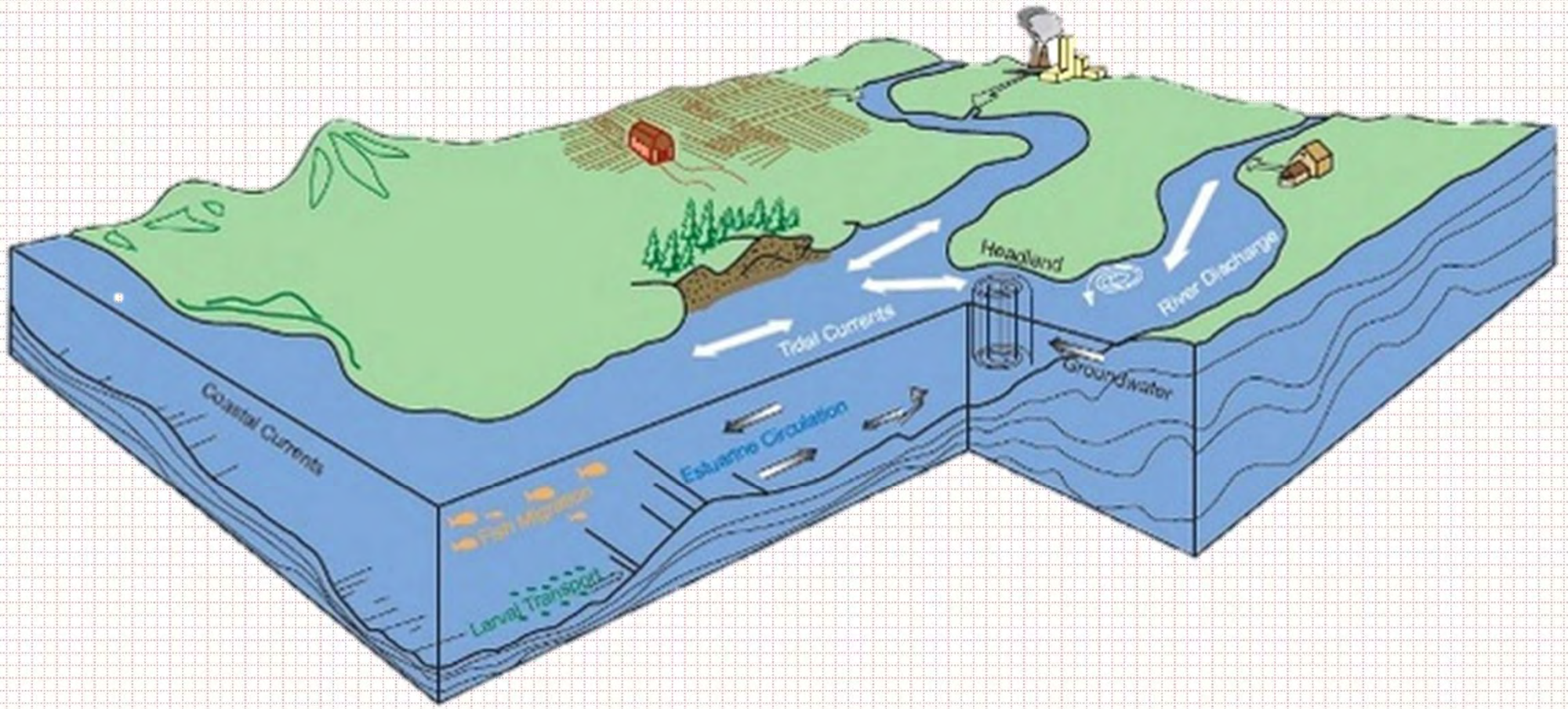
Co-funded by the Erasmus+ Programme of the European Union

Estuary area: An estuary is **an area where a freshwater river or stream meets the ocean**. In estuaries, the salty ocean mixes with a freshwater river, resulting in brackish water

1. Basic concepts

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

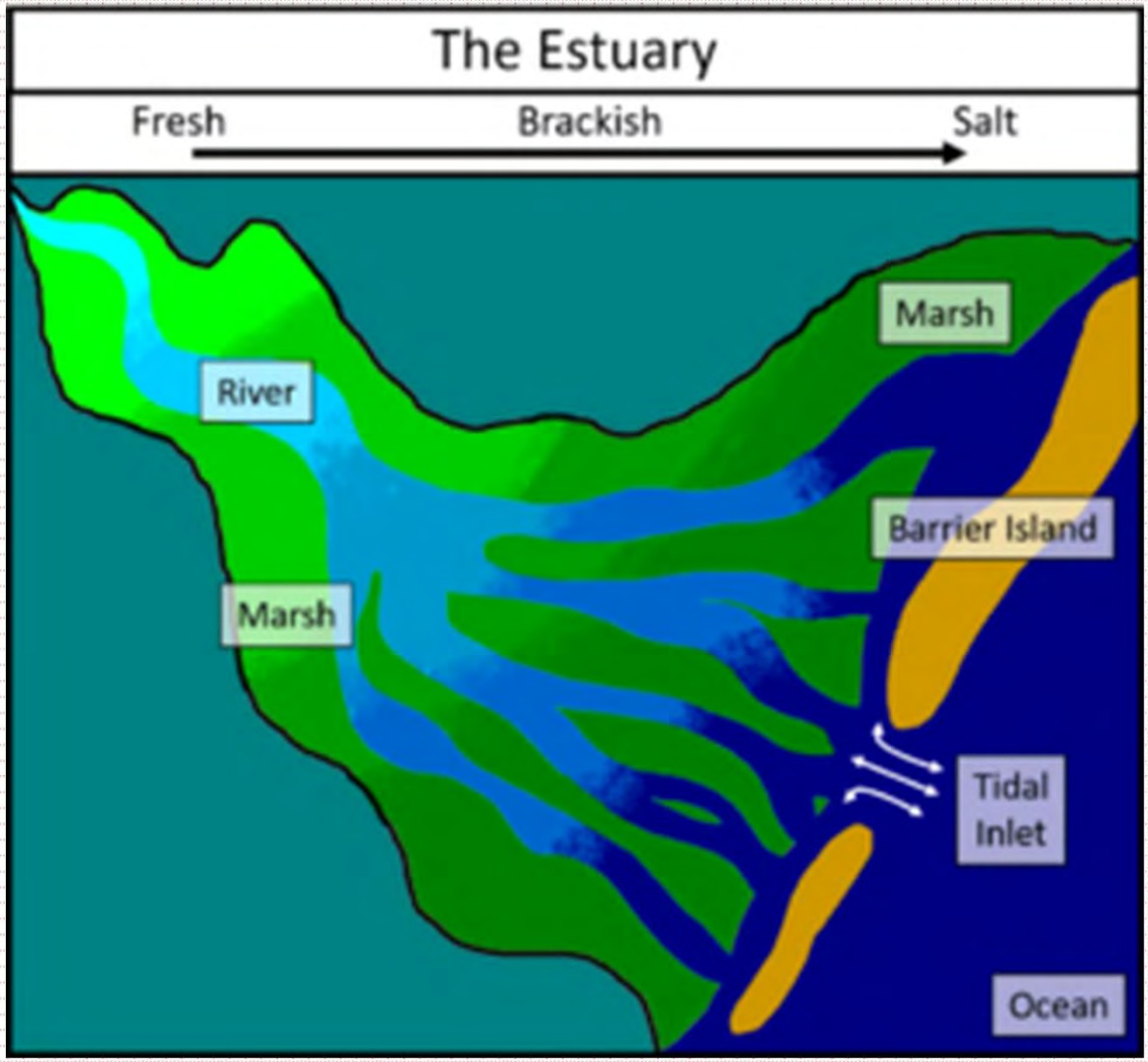
Estuary area:



1. Basic concepts

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

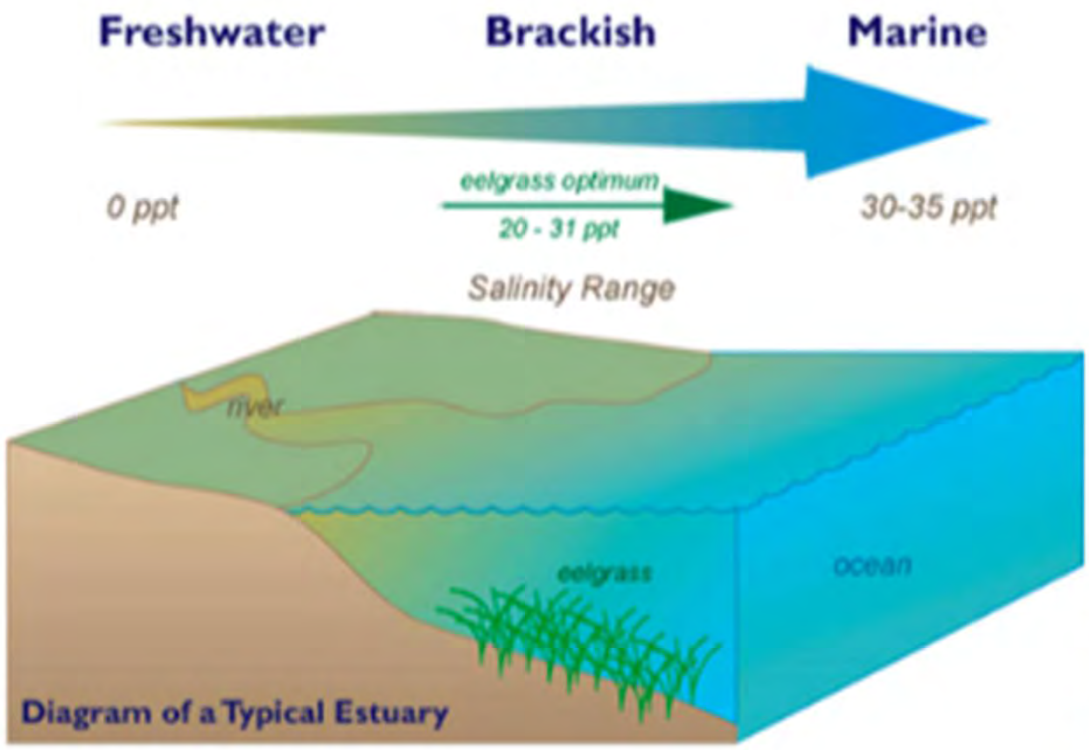
Brackish water: Water has a higher salinity than fresh water but is not as salty as seawater.



1. Basic concepts

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

Brackish water: Water has a higher salinity than fresh water but is not as salty as seawater.

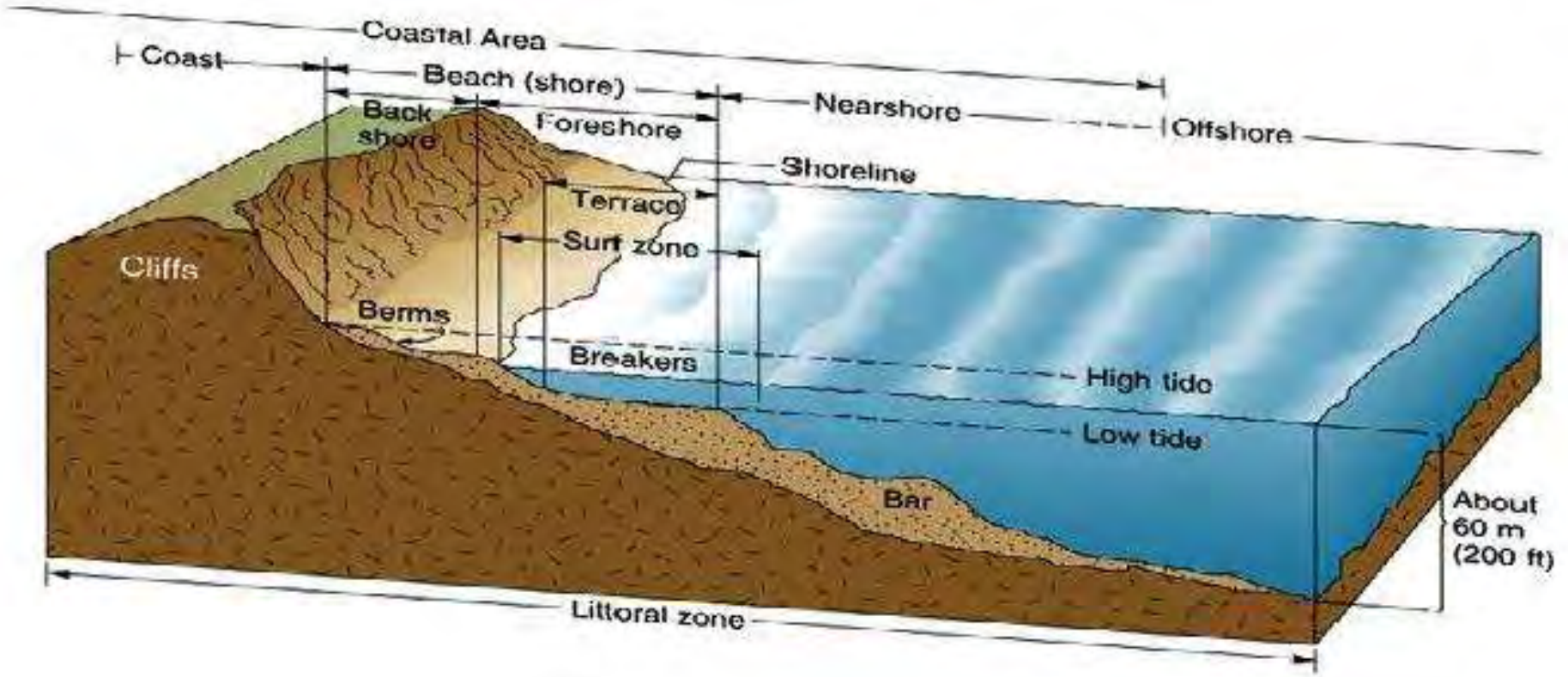


	ppt
FRESHWATER	< 0.5
BRACKISH / ESTUARY	0.5 - 17
BLACK SEA	16
OCEAN RANGE	32 - 37
OCEAN AVERAGE	35

1. Basic concepts

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

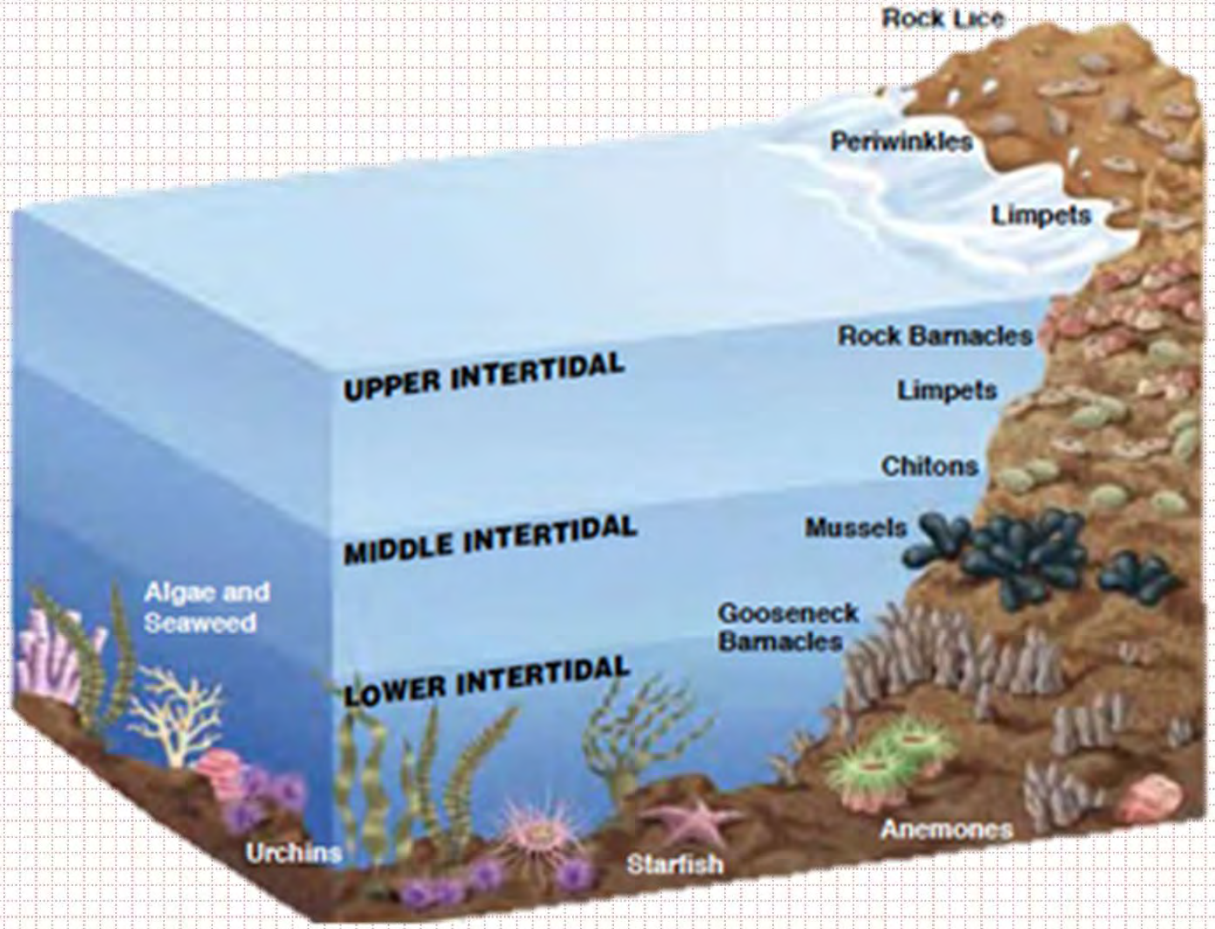
Intertidal zone: the area where tidal water can rise and fall, from the highest and lowest tide levels



1. Basic concepts

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

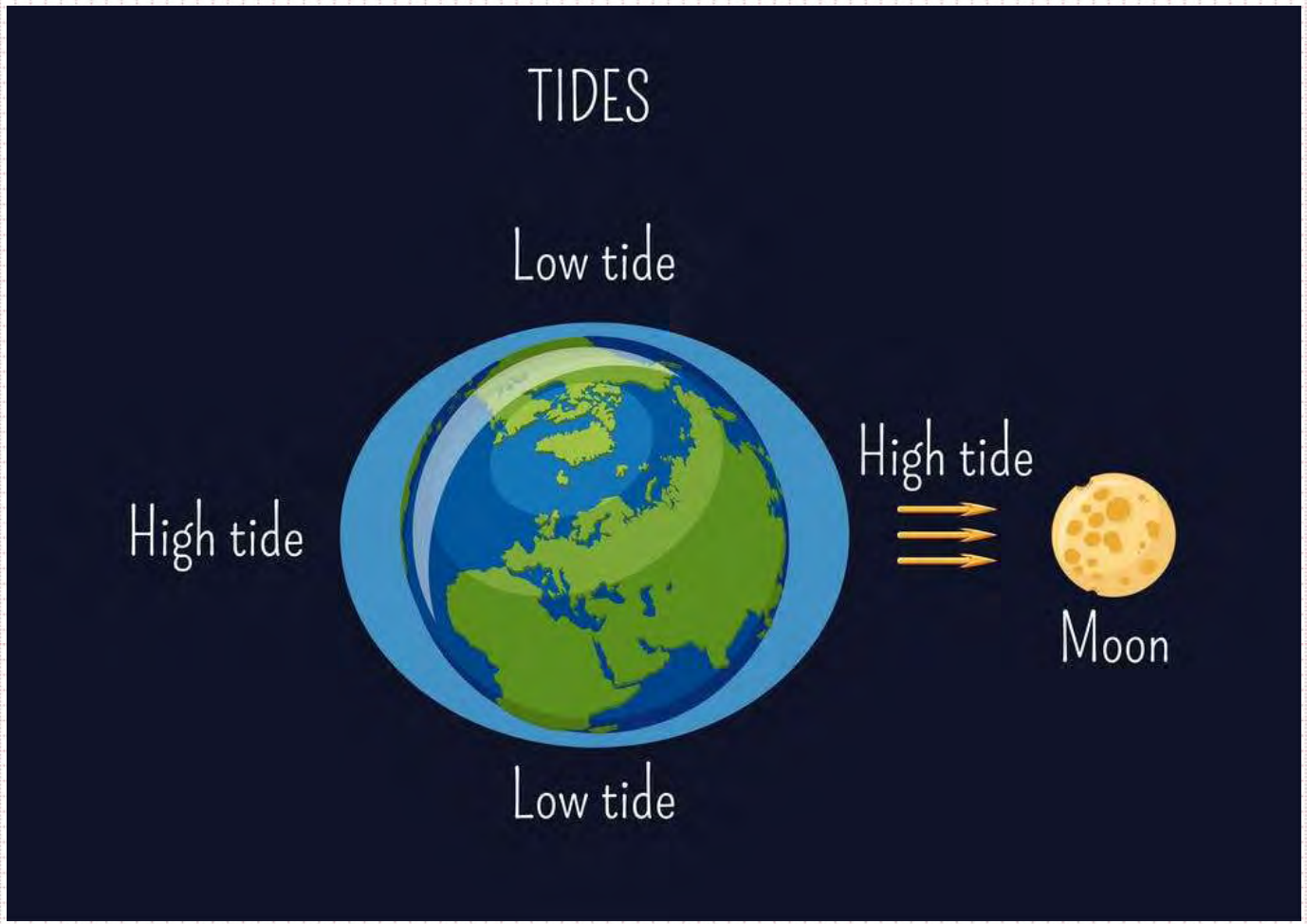
Intertidal zone: the area where tidal water can rise and fall, from the highest and lowest tide levels



1. Basic concepts

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

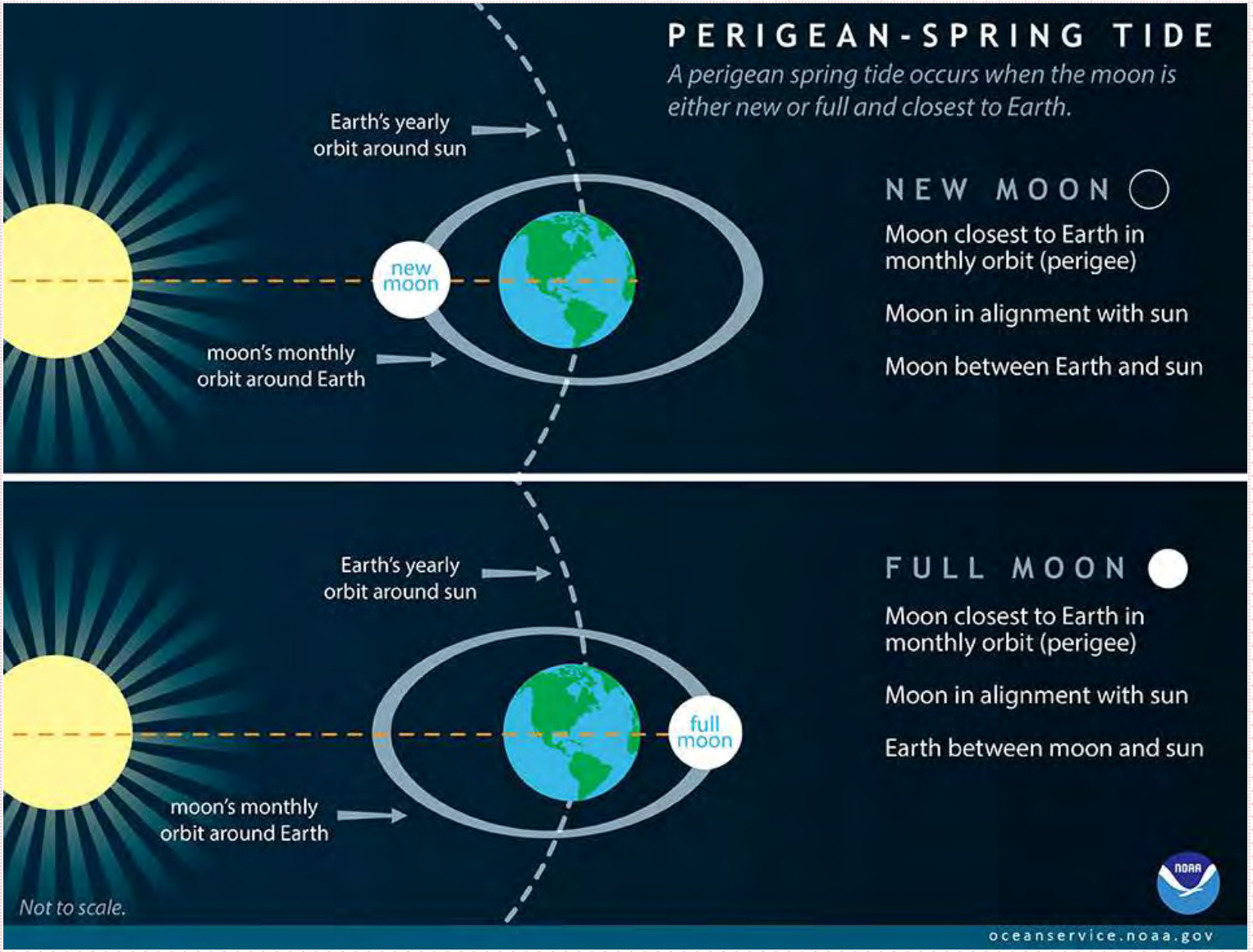
Tides: the surface of the ocean rises and falls cyclically, associated with the gravitational forces of the moon and sun to different parts of the earth



1. Basic concepts

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

Tides



1. Basic concepts

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

Bay: is a deeply concave sea, quite large. The boundaries of the bays are largely determined by convention, either taken by protruding muzzles at the bay gates or taken in a deep line.

Depending on the origin, the composition of the coast, and the form and size of the bay, it is possible to divide those waters into the form of gulf, clumsy (flying), liman, lagoon and fiord.

1. Basic concepts

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

The bays: are not large in size, protected against waves by muzzles protruding into the sea. (Nha Trang Bay, Ha Long Bay)

Shallow puddles: are shallow bays deep indented inland, with land dunes or dune compartments at clumsy gates. Shallow puddles are the valley of the 50-ing or downstream area that is flooded with seawater.

Lagoon: stretching along the coast, is a shallow "bay" containing salt water or brackish water, connected to the sea by not large straits or completely separated from the sea by land. It can also be seawater storage located in the heart of atolls.

1. Basic concepts

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

The coastline is a tangerine between the sea surface at medium tide level and the surface of the continental flank.

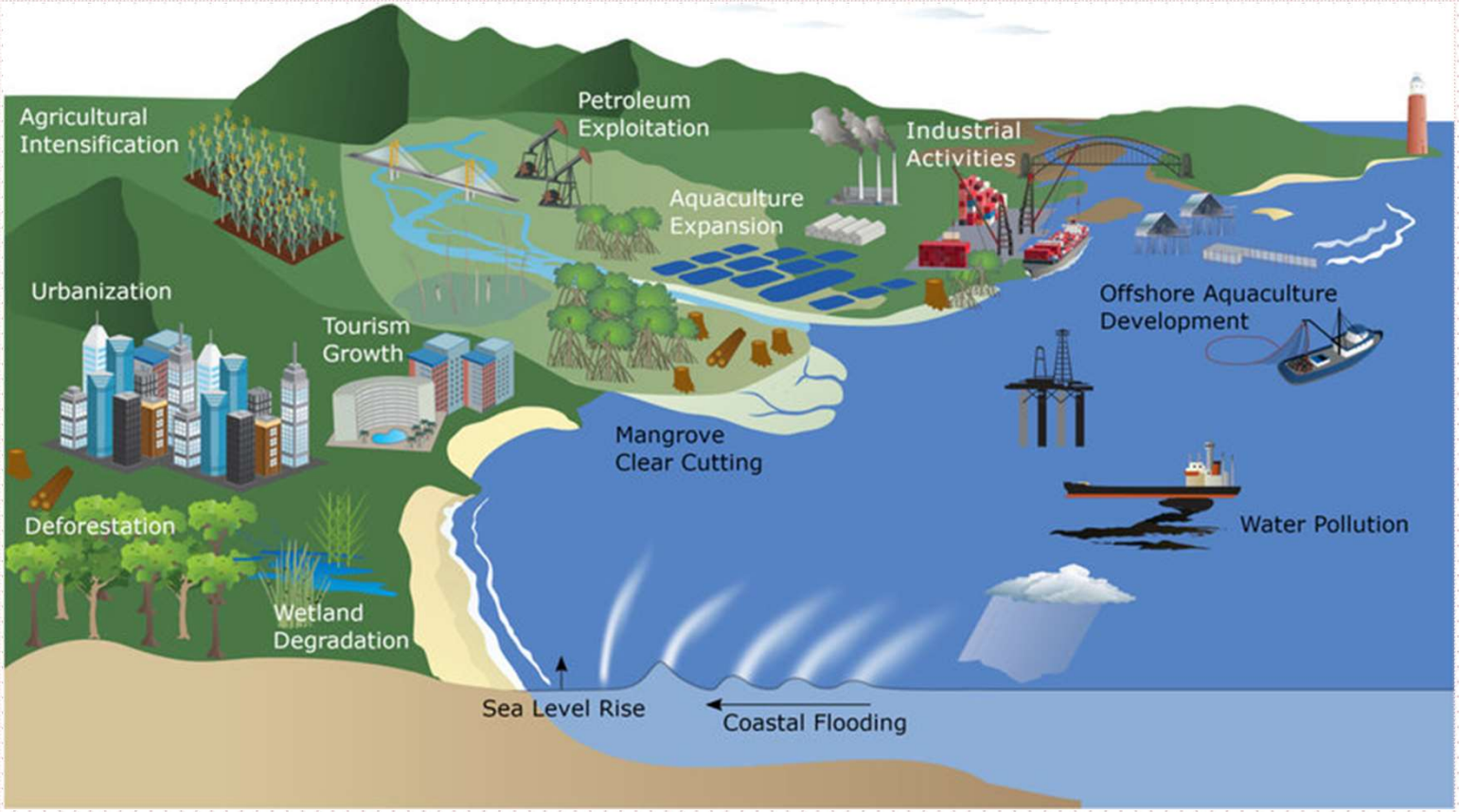
Coastal land is a coastal continental strip, regardless of plains or mountains, from the shoreline back into the continental side to where the sea's influence ends, corresponding to the continental boundary of the coastal zone.

The coastal waters are coastal waters, from the offshore line to the place where the direct influence of continental processes, corresponding to the maritime boundary of the coastal zone, is terminated.

1. Basic concepts

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

The coastal area is a meeting place between land and sea, always subject to the interaction of continental (river) and sea processes (waves, currents and tides), dynamic processes (upwelling, hypocritical decline), and directly from human activities.



1. Basic concepts

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

What is the "coastal zone"?

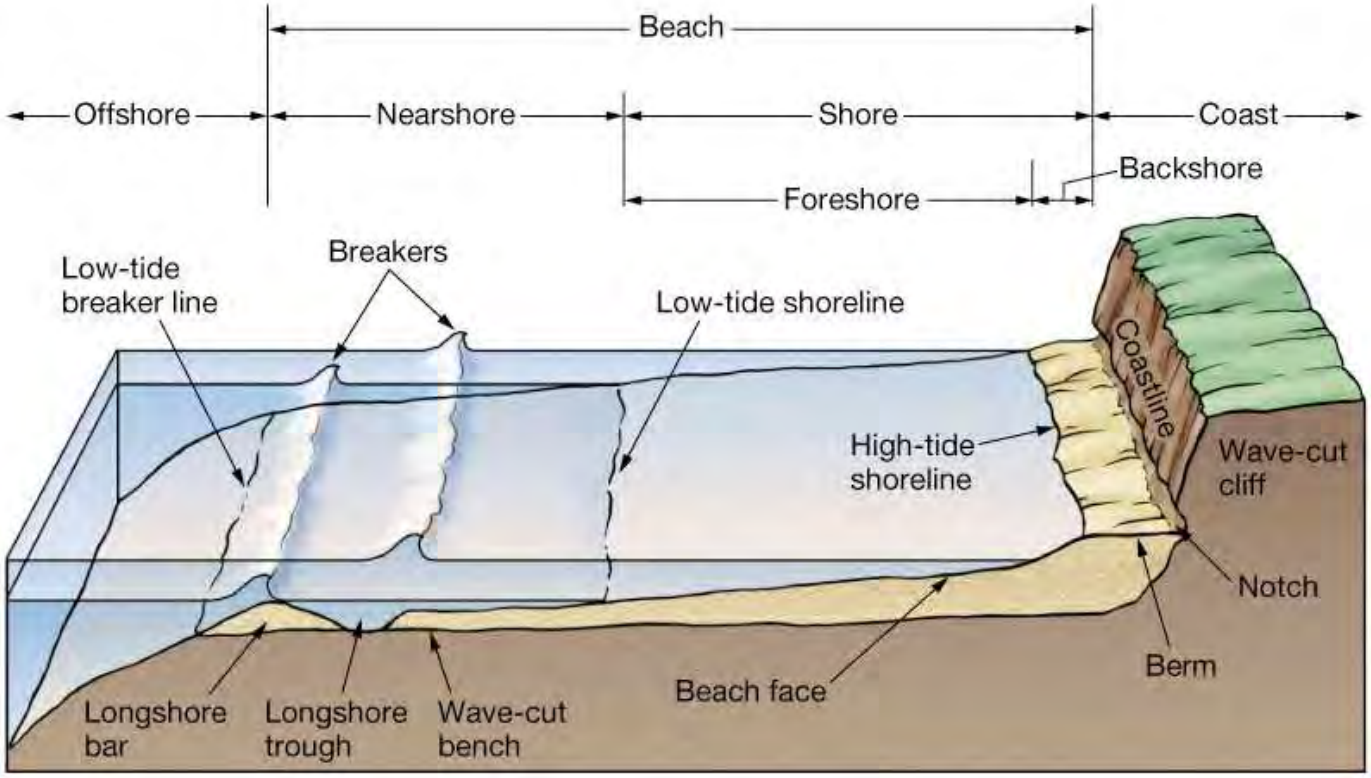
Coast (or coastal, coastal): defined as where land and sea are contiguous. The exact boundary is called the coastline, however, this factor is difficult to determine due to the influence of the tide.

1. Basic concepts

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

What is the "coastal zone"?

Coastal zone: is essentially a planetary-scale natural system, complex and on a par with the surrounding seas and continents. It is characterized by arising, development, evolution and decay, as well as having a distinct resource value that is different from that of the neighbouring continent and sea.



2. The formation and development of a country's sea and island spaces

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

– From 1958 to 1984, coastal states had territorial waters and adjobed waters no more than 12 nautical miles wide, with continental shelves stretching from the sea to no more than 220 meters (according to the 1958 United Nations Conventions on the Law of the Sea).

– Neighbouring countries are either adjacent or opposite each other, based on the law itself, which regulates the scope or boundaries of national waters resulting in overlap and disputes.

– The International law of the sea at that time stipulated that overlapping zones must jointly resolve maritime border lines (including maritime borders in territorial waters, maritime boundaries in contiguity zones and continental shelves) in overlapping areas.

– The principle of border planning at that time was through negotiation on the basis and method of applying the principle of the median line.

2. The formation and development of a country's sea and island spaces

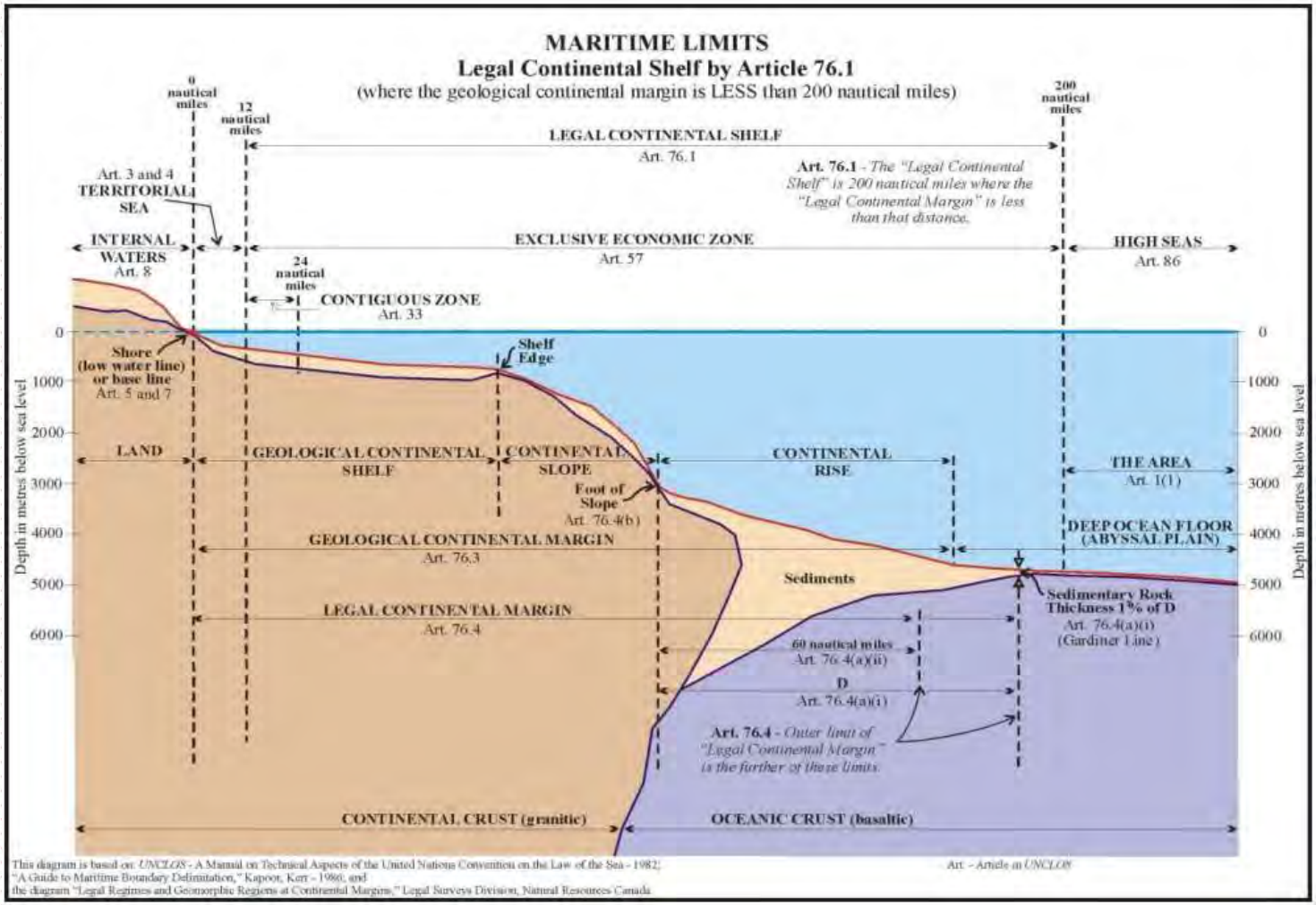
Co-funded by the Erasmus+ Programme of the European Union

In 1982 Convention (United Nations Convention on the Law of the Sea), a coastal country has five (05) seas:

- Inland Water,
- Territorial Waters,
- The area adjacent to the territorial sea,
- Exclusive Economic Zone,
- Extra continental region

2. The formation and development of a country's sea and island spaces

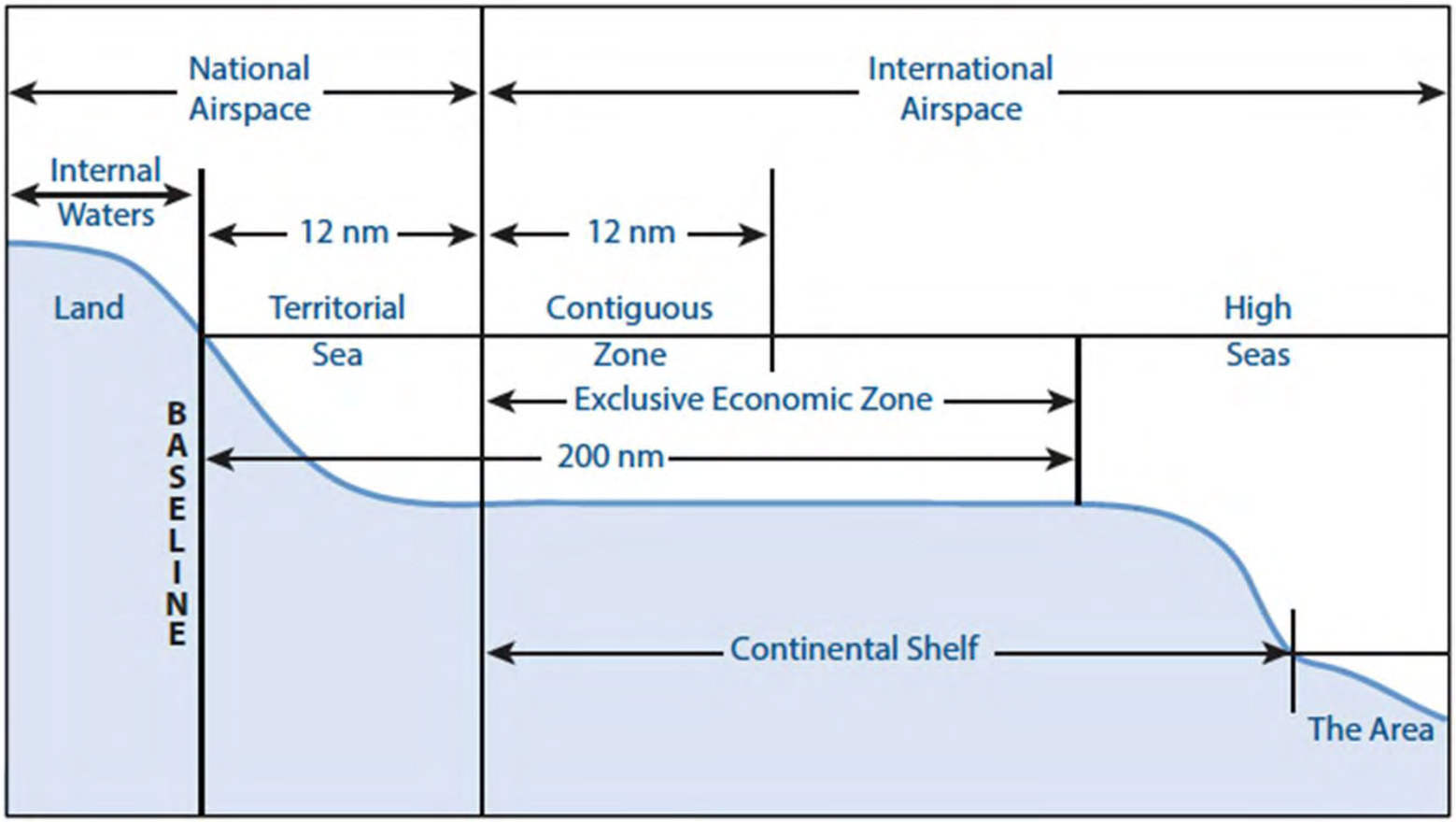
Co-funded by the Erasmus+ Programme of the European Union



Diagrammatic division of the Maritime Zones according to the United Nations Convention on the Law of the Sea 1982

2. The formation and development of a country's sea and island spaces

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



Legal Boundaries of the Oceans and Airspace

nm – nautical mile

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

1.2.2. Vietnam's main waters

Internal water: are the waters located inside the baseline of the Socialist Republic of Vietnam, internal water is considered as land-based territory, placed under the full and absolute sovereignty of the State of Vietnam.

2. The formation and development of a country's sea and island spaces

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

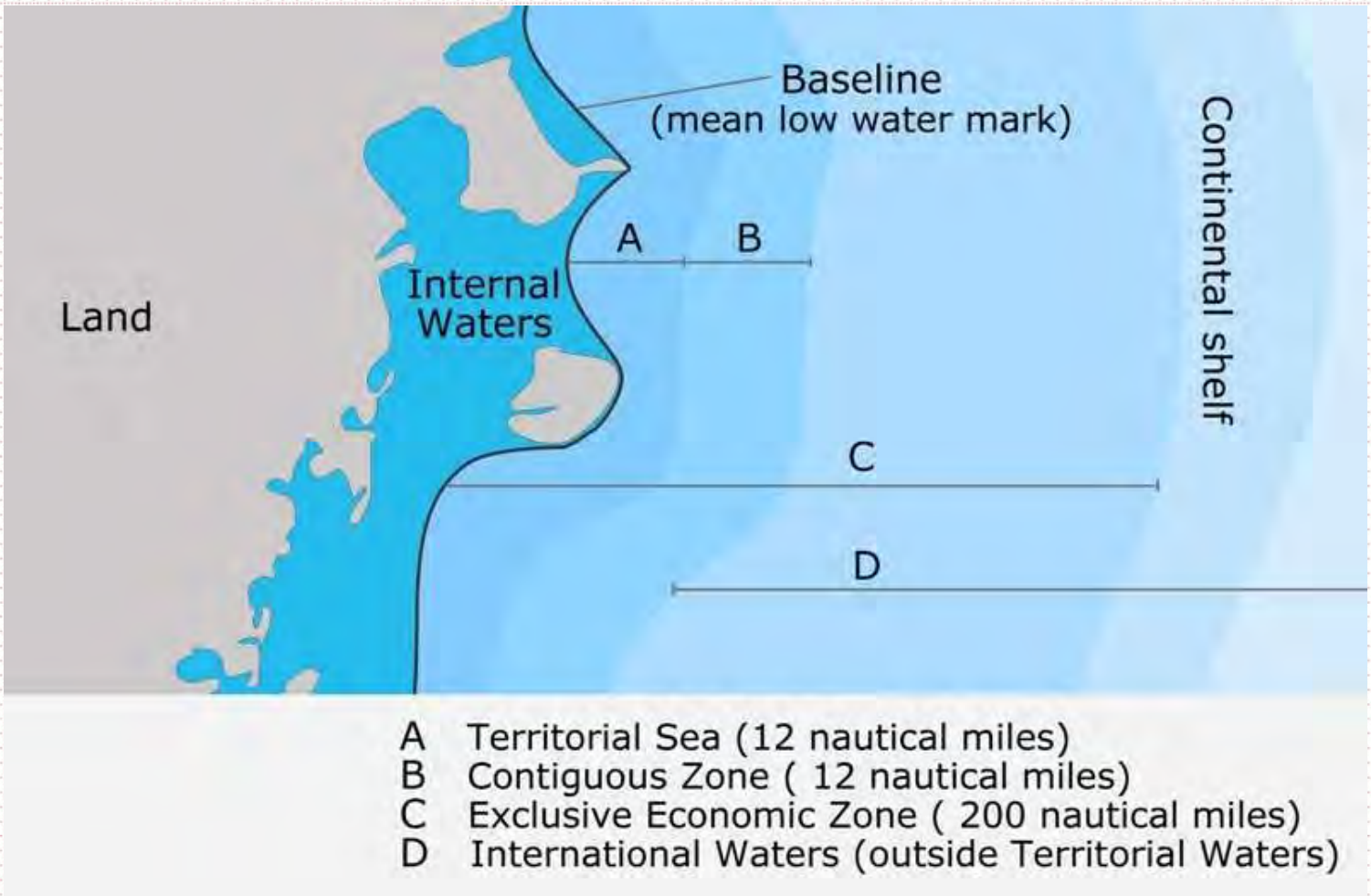
- **Baseline** is the inner and outer boundary of the territorial sea and the outer part of the inland sea, defined by the coastal state or archipelago state by the 1982 United Nations Convention on the Law of the Sea to act as a basis for determining the scope of the waters under national sovereignty and jurisdiction. It is a road used as a base for calculating the width of territorial waters and other seas.
- **There are two types of baselines:**

- *Normal baseline:* Is the road that uses the lowest tide water on the coast or island.

- *A straight baseline* is the line connecting the most protruding points or islands of the continental coast or island. Straight baselines apply when the coastal national coastline is divided or has a chain of islands attached and runs along the coast.

2. The formation and development of a country's sea and island spaces

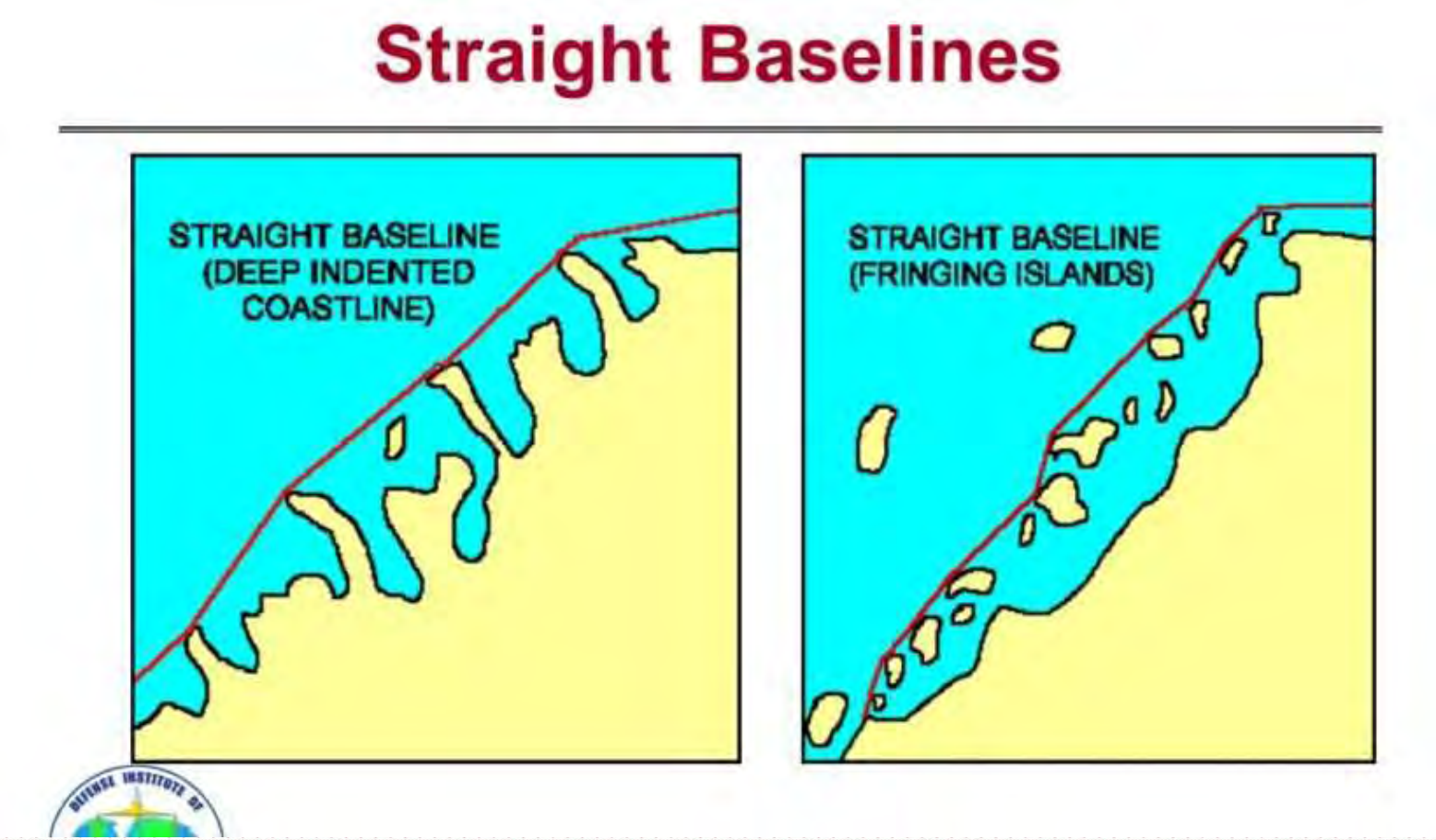
Co-funded by the Erasmus+ Programme of the European Union



Normal baseline

2. The formation and development of a country's sea and island spaces

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



Straight baselines

2. The formation and development of a country's sea and island spaces

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

2. The formation and development of a country's sea and island spaces

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

Territorial Waters: Vietnam's territorial waters are 12 nautical miles wide, outside the baseline.

The outer boundary of the territorial sea is the border of the coastal state.

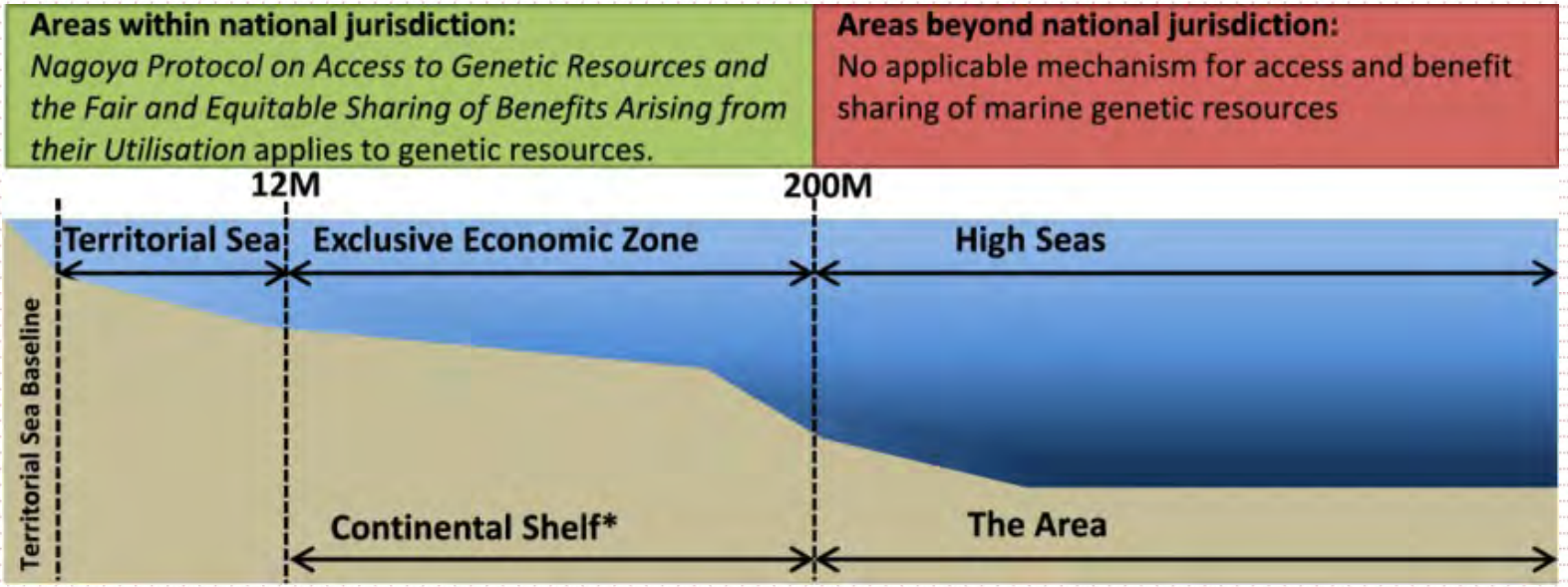
According to the 1982, United Nations Convention on the Law of the Sea, sovereignty over territorial waters is not as absolute as inland waters, ships of other countries are "passing through without harm" in territorial waters.

Coastal States have the right to designate routes and regulate the division of traffic flows for foreign vessels passing through territorial waters to ensure their sovereignty, national security and interests.

2. The formation and development of a country's sea and island spaces

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

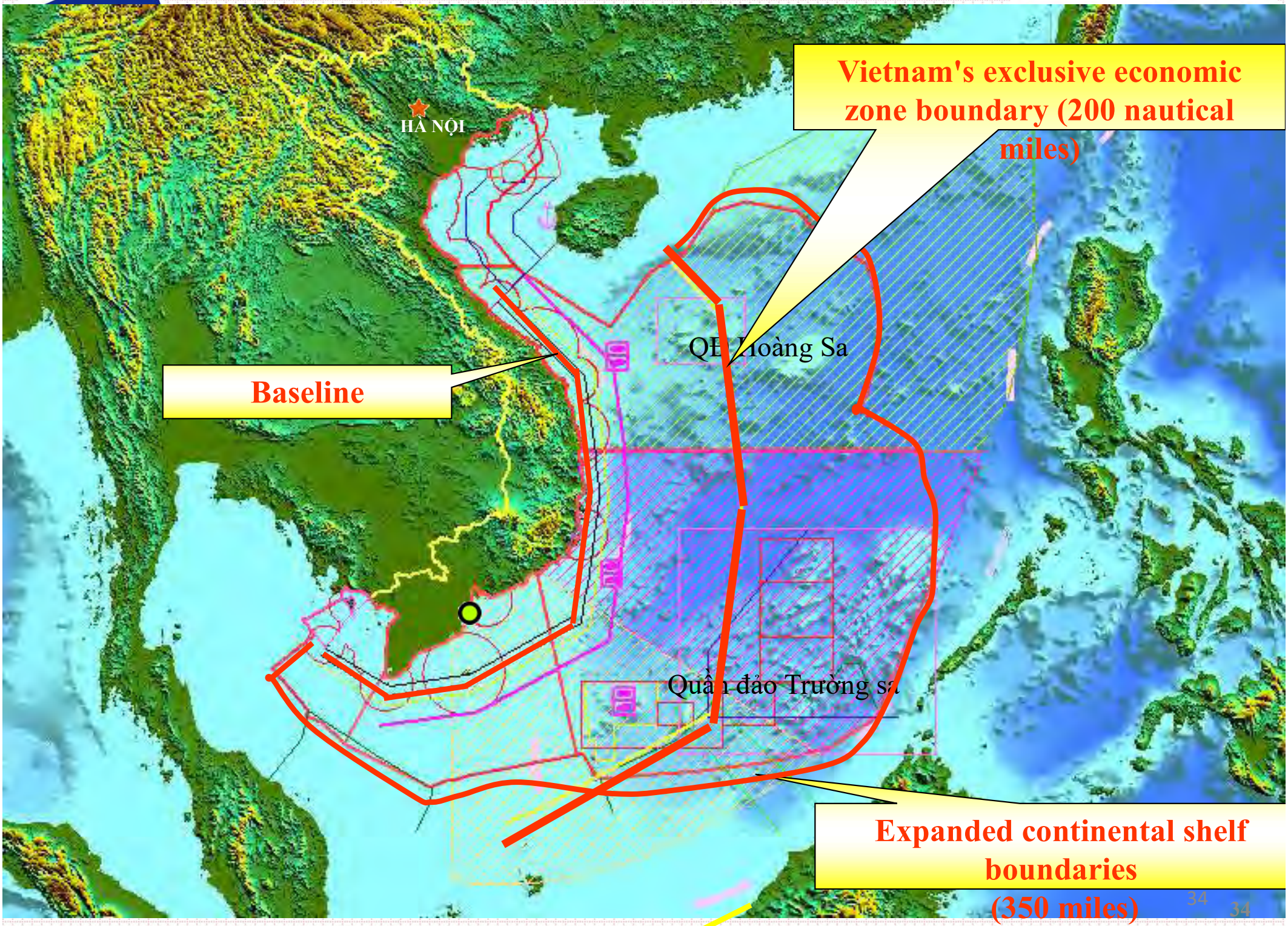
- Contiguous zone of territorial sea is a contiguous sea outside the territorial sea with a width of 12 nautical miles, suitable for the territorial sea into an area of 24 nautical miles from the baseline used to calculate the width of the territorial sea.
- Coastal States are permitted to exercise the necessary control in the contiguity of their territorial waters in order to protect their customs and tax interests, ensuring respect for regulations on health, migration, immigration on their territory or in their territorial waters.



2. The formation and development of a country's sea and island spaces

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

- **Exclusive economic zone:** contiguous territorial waters and in accordance with territorial waters into 200 nautical miles wide from the baseline used to calculate the width of the territorial sea.
- **Coastal States** The Coastal States have full sovereignty over the exploration, exploitation, protection and management of all-natural, biological and non-biological resources in the waters, at the seabed and in the under-seabed of their exclusive economic zones;
- Having separate rights and competencies for other activities for the exploration and exploitation of the exclusive economic zone for economic purposes;
- Having separate competencies on scientific research, environmental protection and anti-pollution in exclusive economic zones; have the right to install artificial works and equipment. Other countries have freedom of flight, freedom of navigation, laying of underground cables and pipes.


HÀ NỘI
Vietnam's exclusive economic zone boundary (200 nautical miles)
Baseline
QĐ Hoàng Sa
Quần đảo Trường sa
Expanded continental shelf boundaries (350 miles)

34

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

What is management?

What is management?

- **Broad definition**
- **Simple**
- **Specific definition**

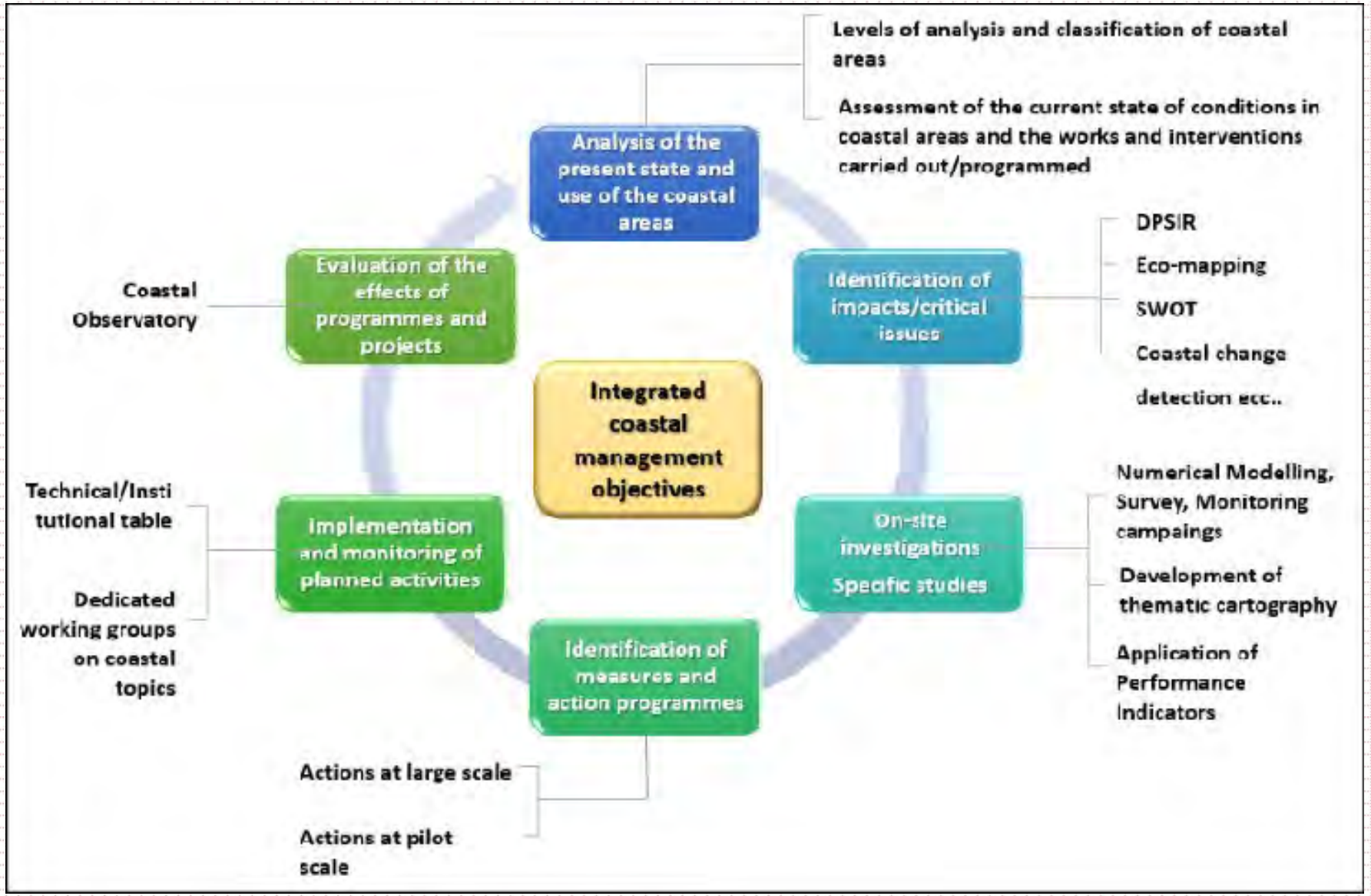
: Is a continuous, repetitive process, adaptation and community participation and consists of a series of related tasks. All of these tasks must be done to achieve a series of desired **Goals and Objectives**

Is "**organizing and controlling** activities according to certain requirements".

Is the characteristic for the process of **controlling and guiding** all parts of an organization, through the establishment and change of resources (human resources, finance, supplies, intellectuals and other values)

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

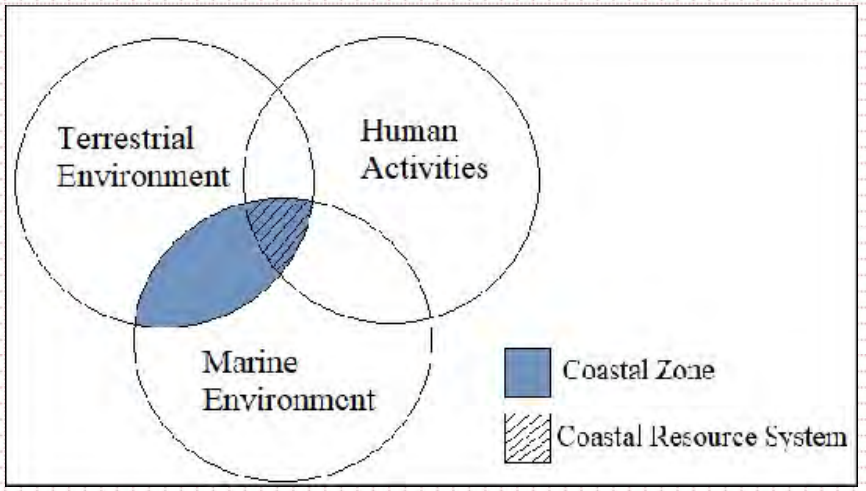
What is management?



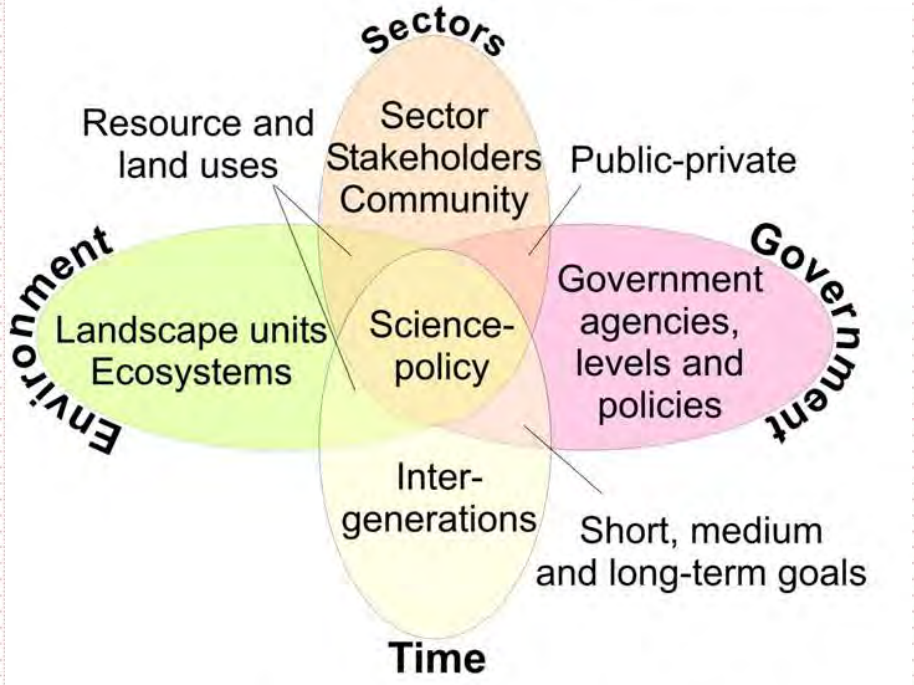
Co-funded by the Erasmus+ Programme of the European Union

Integrated Coastal Zone Management

Integrated Coastal management involves complex issues, desirable (and often conflicting) outputs to coastal resources, the different production possibilities spatially and temporally within each region, close or fragmented linkages with areas upstream and beyond, multiple sectors, and agencies with different responsibilities for management aspects (Bowler, Ehler and Basta, 1994).



M.E. Portman et al. / Science of the Tot



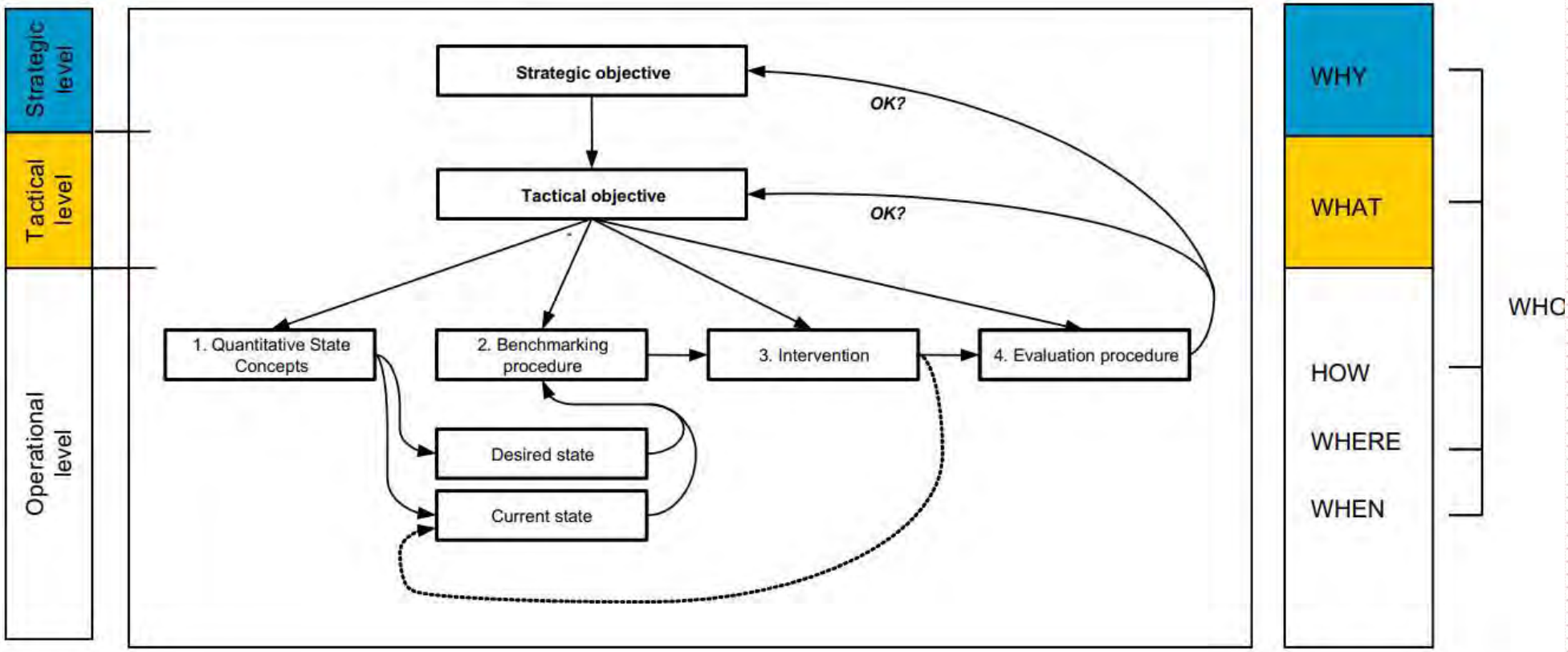
Co-funded by the Erasmus+ Programme of the European Union

Principles of Integrated Coastal Zone Management

1) Think ahead e by thinking beyond traditional planning time frames, to plan for long-term issues such as climate change.
2) Try to see the bigger picture e by taking both the land and marine dimensions of the coastal zone into consideration in planning and management.
3) Be flexible and adaptable e by taking a 'learning by doing' approach to management.
4) Work with nature rather than against it e by recognising the limitations of the coastal systems for assimilating pollution and the negative impacts of development and human activity.
5) Use a combination of tools - by using techniques such as awareness raising, technology, legal and policy instruments to achieve management objectives.

3. Basic concepts of coastal and marine management

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



Generic Frame of Reference for coastal management

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

The actual management process regarding interventions can be formulated through four steps, namely:

1. Quantitative state concept: a means of quantifying the problem in hand. Coastal state indicators (CSIs) (i.e. specific parameters that play a role in decision-making) are relevant at this stage of the process.
2. Benchmarking process: a means of assessing whether or not action is required. CSIs are compared to a threshold value at this stage.
3. Intervention procedure: A detailed definition of what action is required if the benchmark values are exceeded.
4. Evaluation procedure: Impact assessment of the action taken. If the action was not successful it may be necessary to revise the strategic/operational objectives

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

II. MARINE ENVIRONMENT

Marine environment

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

Marine environment: a region consisting of oceans, seas and coastal regions that form a whole, a fundamental part of the global life maintenance system and a useful asset that creates opportunities for sustainable development.

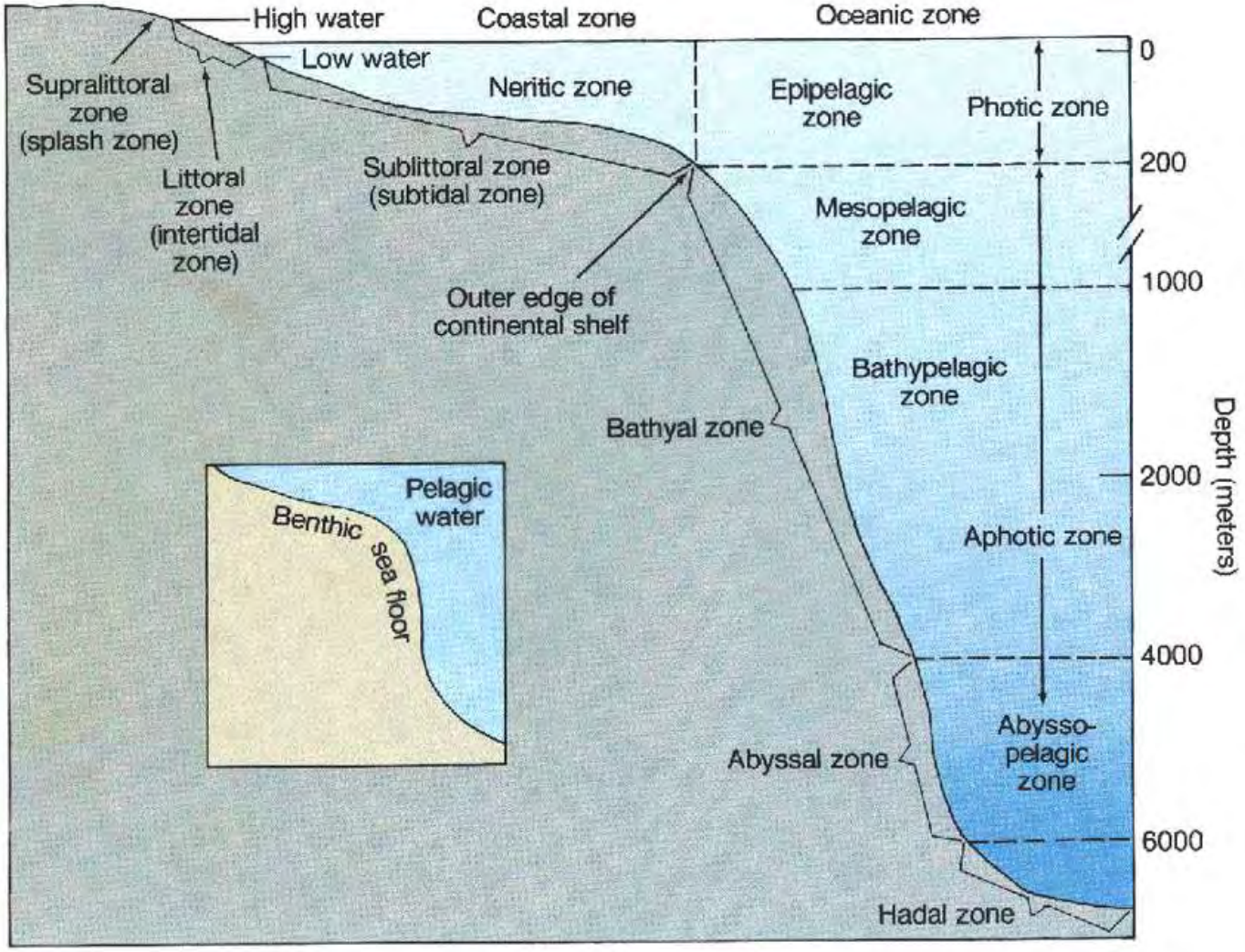
Characteristics of the marine environment

(i) is a space, a part of the earth consisting of seawater, seabed and sub-seabed of oceans, seas and coastal regions forming a unified, interactive relationship;

(ii) the important function and value of the marine environment are to maintain global life as well as a valuable resource to ensure sustainable development. However, this concept does not specify the components of the sea including the entire living organism, the species of animals, plants and ecosystems, landscapes and non-biological resources found in these waters.

Marine environment

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



Marine Environment Zones from Duxsbury and Duxbury, 1994.

Protecting the marine environment

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

- Marine living resources are of vital importance for mankind because they constitute an important source of protein and so their conservation is to be considered a common interest of the international community. Marine living resources are also important for the international trade and industry of many countries. Hence, conservation is not only a pure scientific or biological concept but involves also economic, political and social elements.

- Despite its vital importance and the danger that marine pollution represents, the need to regulate it has attracted little attention until recently as the law of the sea focused on the use of the oceans not on the protection of them.

Protecting the marine environment

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

- It is only since World War II that international regulation of marine pollution has begun to develop and moved slowly until 1950s.
- In 1958, Geneva Convention of the High Seas covered a few sources of marine pollution, as discharge of oil from ship and the resulting from exploitation and exploration of seabed and its subsoil.
- in 1967, the incident of Torrey Canyon raised public and international the attention for vessel source pollution and in 1969 the first international Convention of Civil Liability for Oil Pollution Damage was adopted.
- in 1970s and 1980s were concluded some treaties about regulation of marine pollution as Marpol 1973, modified by 1978 Protocol, providing the key instruments for regulating pollution from ships till the 1982's LOSC.

Protecting the marine environment

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

The UN Convention on the Law of the Sea (LOSC) established a general framework for marine environment protection stating that "States have the obligation to protect and preserve the marine environment" as in the oceans as in the High Seas. The framework covers all sources of marine pollution and obliges States to take all measures that are necessary to prevent, reduce and control pollution and constitutes a uniformity of rules.

LOSC defines "marine pollution" as "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects for living resources and marine life, hazards for human health, hindrance to marine activities".

Protecting the marine environment

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

Protection of the marine environment is the prevention of the negative impact of human and natural activities on the marine environment, polluting and degrading the marine environment and coastal marine areas.

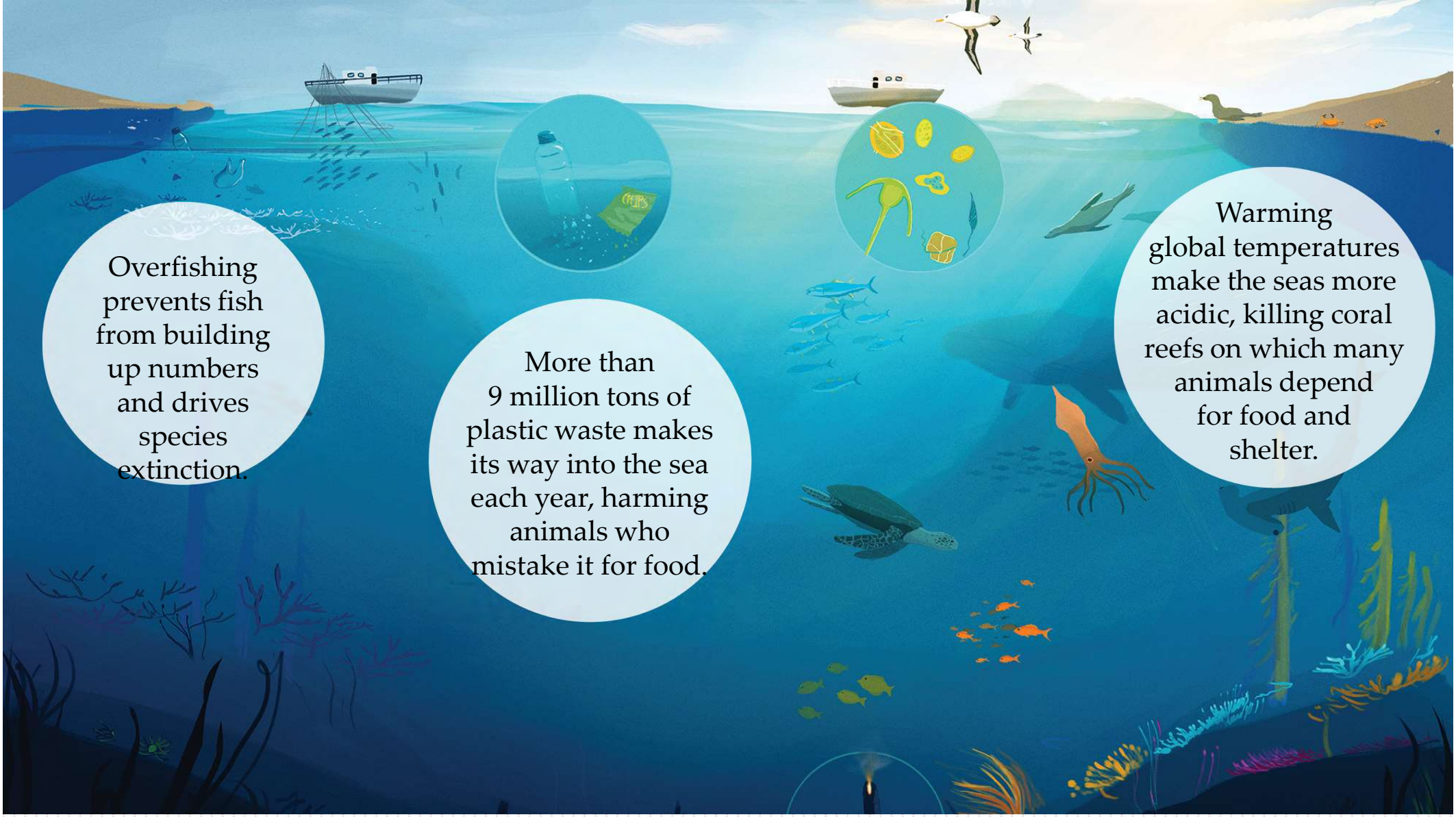
The definition indicates:

- Firstly, the nature of environmental protection is to prevent negative effects on the marine environment, specifically polluting activities and degradation of the marine environment;
- Second, polluting activity is caused by humans or natural causes. However, the author does not mention the mechanism which includes ways and measures to prevent negative effects on the marine environment.

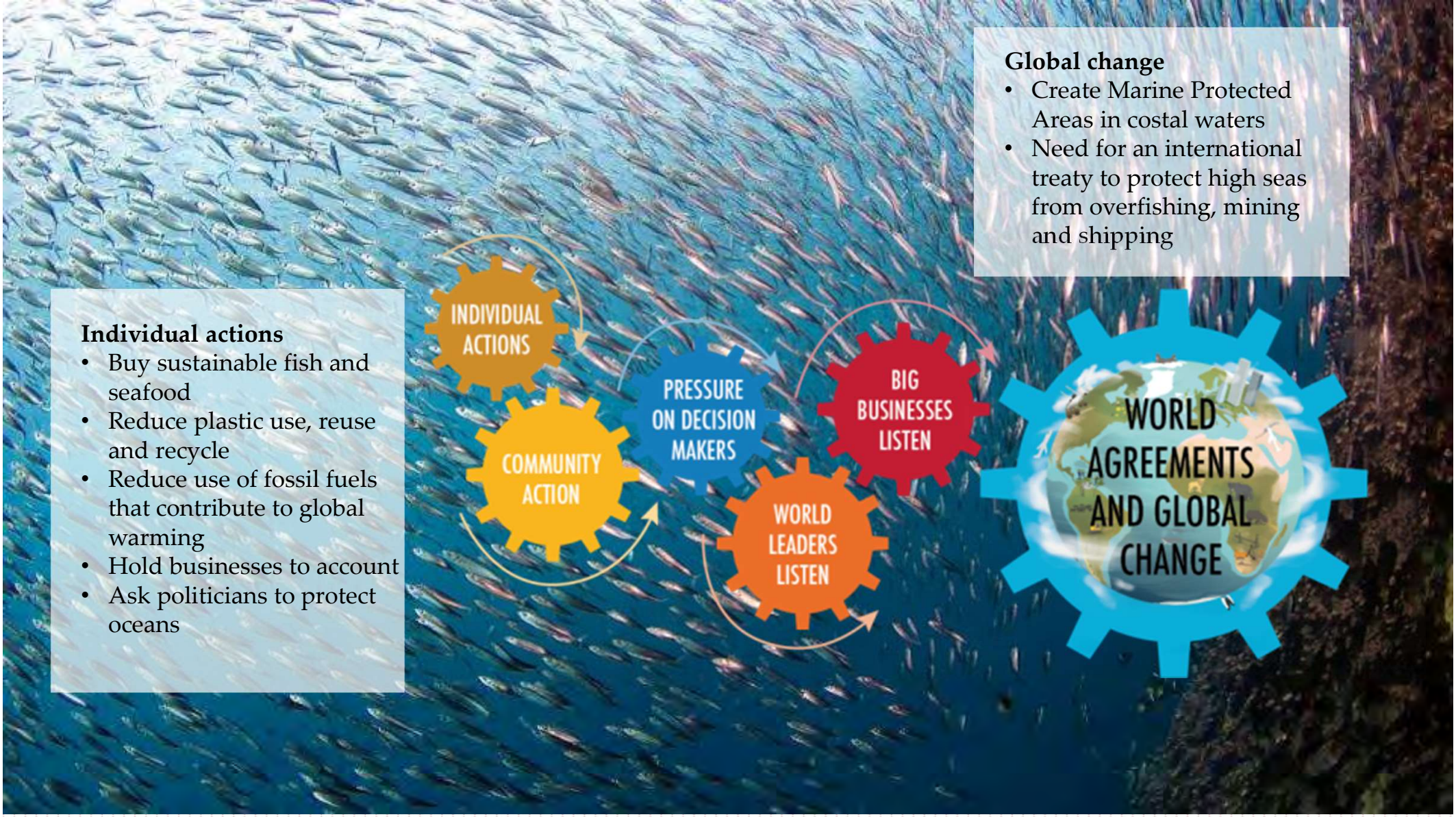
Protecting the marine environment

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

- Two major pollution types:
  - **Point sources**: From an identifiable "point" such as a factory
  - **Nonpoint sources**: Not from a single "point"; Carried to water by runoff from various sources
- Sources of marine pollution:
  - Runoff, sewage treatment plants, factories, oil spills, accidents, ocean dumping, offshore drilling, airborne emissions
  - Example: Deepwater Horizon Drilling Rig Explosion (2010)
  - Can you think of others?
- Some effects of pollution:
  - Seafood and water contamination, loss of marine organisms, beach closures, economic losses, eutrophication



What's the problem?



Global change

- Create Marine Protected Areas in costal waters
- Need for an international treaty to protect high seas from overfishing, mining and shipping

Individual actions

- Buy sustainable fish and seafood
- Reduce plastic use, reuse and recycle
- Reduce use of fossil fuels that contribute to global warming
- Hold businesses to account
- Ask politicians to protect oceans

What can we do?

Marine environmental issues

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

- Marine pollution: Quality of sea water, sea litter
- Degradation of marine biodiversity, typically coral ecosystems

Marine environmental issues

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

- Marine life requires habitat for survival and growth
- Habitat loss may impact species dependent upon these areas
- Sources of habitat destruction include natural and human factors
- Examples
  - Coastal development that results in wetlands loss
  - Hurricanes may damage barrier islands and seagrass beds
  - Dams may block salmon from reaching freshwater habitats

Photo: NOAA

Mangroves, vital nursery habitat for many tropical species, used to cover around 60-75% of the earth's tropical coastline. By 2010, about 50% of mangroves had been destroyed.

Marine environmental issues

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

Destruction and extinction of some species, seafood near the shore

Marine environmental issues

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

- Waste, polluted wastewater lose beauty, causing the revenue of the tourism industry to be severely damaged

Marine environmental issues

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

- Damage machinery, resource extraction equipment and waterway transportation.
- Impacting and holding back the development of the marine economy,... Due to the loss of chi
- Environmental troubleshooting fees

Marine life in Central Vietnam dies from Formosa pollution

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

REVIEW QUESTIONS

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

RUNG CHUÔNG VÀNG

Which side of the South China Sea is our coast located:

A. Eastern.

B. West.

C. Southern.

D. Northern.

1

RUNG CHUÔNG VÀNG

Which of the following countries is not located on the East Coast:

A. Mianma.

B. Campuchia.

C. Brunay.

D. Thái Lan.

2

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

RUNG CHUÔNG VÀNG

How many millions of square kilometers of our waters:

A. 0.5 million square kilometers.

B. 1 million square kilometers.

C. 3 million square kilometers.

D. 3.5 million square kilometers.

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

RUNG CHUÔNG VÀNG

4

How many kilometers of coastline does our country have:

A. 1260 km.

B. 2260 km.

C. 3260 km.

D. 4260 km.

RUNG CHUÔNG VÀNG

The sea is seen as a part. land-based territory and having a regime The legality of the land is called:

A. Inland Water.

B. Territorial waters.

C. The area adjacent to the territorial sea.

D. Continental shelf.

RUNG CHUÔNG VÀNG

On his continental shelf,
Coastal water has the privilege of:

A. Installation of underground cables and pipes.

B. Exploration and exploitation of natural resources.

C. Maritime.

D. It's all right.

RUNG CHUÔNG VÀNG

13

Inland water is:

A. The waters are adjacent to the territorial sea.

B. The water is 12 nautical miles from the coast.

C. The water is located inside the baseline and adjacent to the coast.

D. The waters range from the coast to the coastal islands.

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

THE END