



# WWF-Hong Kong

## A Sustainable Use of Our Sea - Marine Spatial Planning

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*Solutions for a Living Planet*

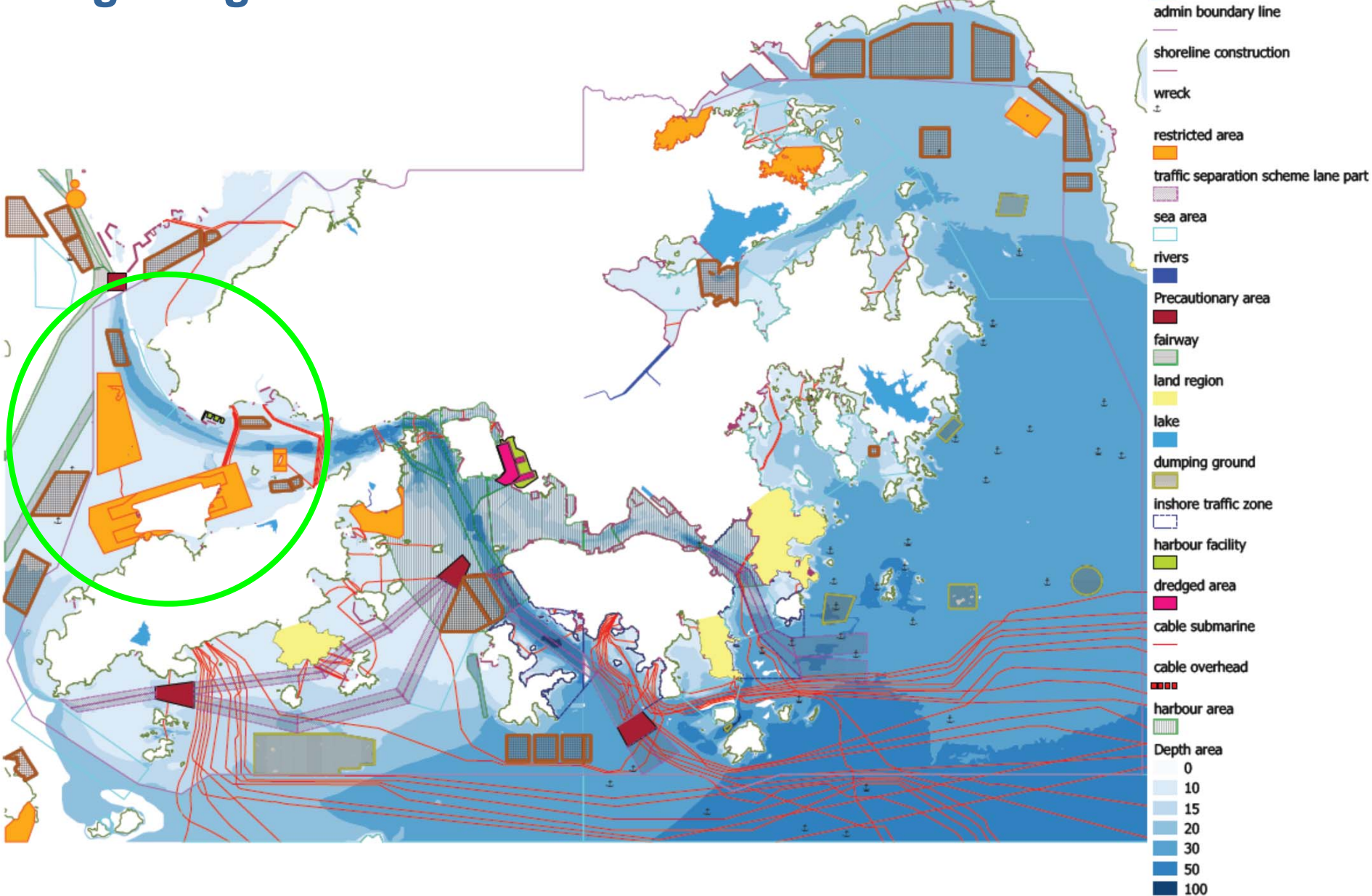


# 海寶圖 Marine Biodiversity Map

- 珊瑚群落 Coral Communities**
  - 石珊瑚 Hard Coral
  - 八放珊瑚 (軟珊瑚、柳珊瑚) Octocoral (Soft Coral, Gorgonian)
  - 黑珊瑚 Black Coral
- 海岸帶的生境 Intertidal Habitats**
  - 紅樹林 Mangrove
  - 潮間帶泥灘 Intertidal Mudflat
  - 馬蹄蟹 Horseshoe Crab
  - 海草床 Seagrass
- 海洋哺乳動物 Marine Mammals**
  - 中級白海豚分布密度 Chinese White Dolphin Distribution Density
    - 低至中 Low to Medium
    - 高 High
  - 江豚分布密度 Finless Porpoise Distribution Density
    - 低至中 Low to Medium
    - 高 High
- 海鳥 Seabird**
  - 白腰海鵰繁殖地 White-bellied Sea Eagle Nesting Site
- 其他「海寶」 Other Precious Species**
  - 海龜產卵地點 Green Turtle Nesting Site
  - 文昌魚生境 Amphioxus Habitat
- 海洋保護區 Marine Protected Area**
  - 海洋公園 Marine Park
  - 海洋保護區 Marine Reserve



# Hong Kong's coastal infrastructure





# MAP OF THREATS TO THE CHINESE WHITE DOLPHIN



### HONG KONG AIRPORT THIRD RUNWAY

Adding a third runway to the airport would require dredging and land reclamation, will directly affect approximately 650 ha of seabed.

### EAST SHA CHAU CONTAMINATED MUD PIT FACILITY (CMP)

The original seabed was excavated, and then filled with contaminated mud from other construction projects affecting at least 600 ha of seabed.

### URMSTON ROAD FAIRWAY

High-speed ferries make 100 trips a day through these waters, running next to Sha Chau and Lung Kwo Chas Marine Park, the only dolphin sanctuary in Hong Kong.

### PERMANENT AVIATION FUEL FACILITY (PAFF)

Fuel is shipped to the facility by marine vessels and transferred to the airport via a submarine pipeline. Building the PAFF required dredging, filling and pipelaying, affected 12.5 ha of seabed.

### AVIATION FUEL RECEIVING FACILITY (AFRF) AT SHA CHAU

Dredging, percussive piling, pipelaying for this interim fuel-receiving facility affected 300 ha of seabed.

### TUEN MUN - CHEK LAP KOK LINK

The new connection will require dredging, reclamation and bored piling, which will affect 46.7 ha of seabed.

### MARINE BORROW AREA AT NORTH OF THE BROTHERS

This is an open sea disposal site for contaminated sediment that affects 170 ha of seabed.

### PENNY'S BAY DEVELOPMENT (STAGE 1 & 2)

This Disneyland site required dredging and reclamation during its construction, affecting 200 ha of seabed.

### HONG KONG INTERNATIONAL AIRPORT (HKIA)

The HKIA is located on the biggest area of land reclamation (938 ha) in Hong Kong's history. Its construction required levelling Chek Lap Kok Island, dredging, filling and percussive piling.

### HKIA'S NEW SKYPIER

This ferry service runs 122 trips a day through waters inhabited by dolphins.

### SOUTH BROTHERS CONTAMINATED MUD PIT FACILITY

As other mud pits reach capacity, another 133 ha of seabed will be excavated to receive contaminated mud.

### INCREASED MARINE VESSEL TRAFFIC

High-speed ferry traffic between Hong Kong and Macau has increased 77% from 1999 to 2010 in Hong Kong's western waters, threatening dolphin habitats.

### POTENTIAL IMPACTS

The frequency of high-speed ferries travelling in these waters increases the risk of vessel injury or killing dolphins. The increased marine vessel traffic may obscure sounds and acoustic communication, interfering with echolocation.

### HONG KONG-ZHUHAI-MACAO BRIDGE (HZMB) - LINK ROAD (HKLR) AND BOUNDARY CROSSING FACILITIES (HKBCF)

The bridge will pass through the Pearl River Estuary Chinese White Dolphin National Nature Reserve. The dredging, reclamation and piling are affecting the waters that the dolphins heavily use. About 200 ha of seabed will be affected.

### TUNG CHUNG REMAINING DEVELOPMENT

Land reclamation to extend Tung Chung New Town will affect another 100 ha of seabed.

## IMPACTS TO DOLPHINS

### PERMANENT LOSS OF HABITAT

### TEMPORARY LOSS OF HABITAT

### WATER POLLUTION

Suspended solids and other pollutants, posing impact to the fish stock (dolphin's prey) and marine benthic fauna in adjacent areas

### ACOUSTIC DISTURBANCE FROM PERCUSSIVE PILING

Underwater noise generated by percussive piling

### ACOUSTIC DISTURBANCE FROM BARGES AND VESSELS

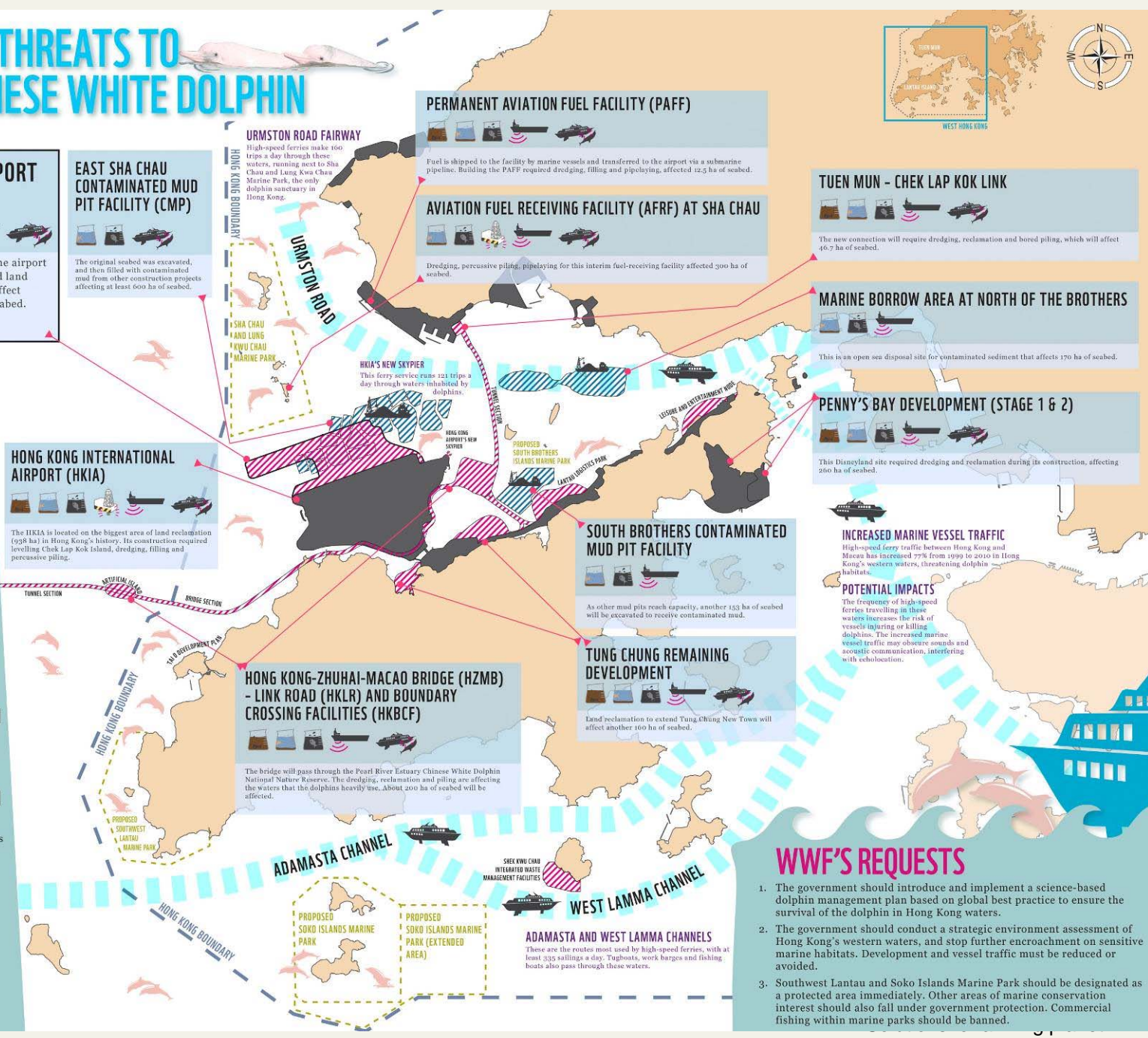
Underwater noise generated by work barges and vessels

### MARINE TRAFFIC DISTURBANCE

Project status symbol

- Construction completed
- Proposed or approved project
- Ongoing project

FOR DETAILS, PLEASE VISIT: [WWF.ORG.HK/THREATMAP](http://WWF.ORG.HK/THREATMAP)



## WWF'S REQUESTS

- The government should introduce and implement a science-based dolphin management plan based on global best practice to ensure the survival of the dolphin in Hong Kong waters.
- The government should conduct a strategic environment assessment of Hong Kong's western waters, and stop further encroachment on sensitive marine habitats. Development and vessel traffic must be reduced or avoided.
- Southwest Lantau and Soko Islands Marine Park should be designated as a protected area immediately. Other areas of marine conservation interest should also fall under government protection. Commercial fishing within marine parks should be banned.

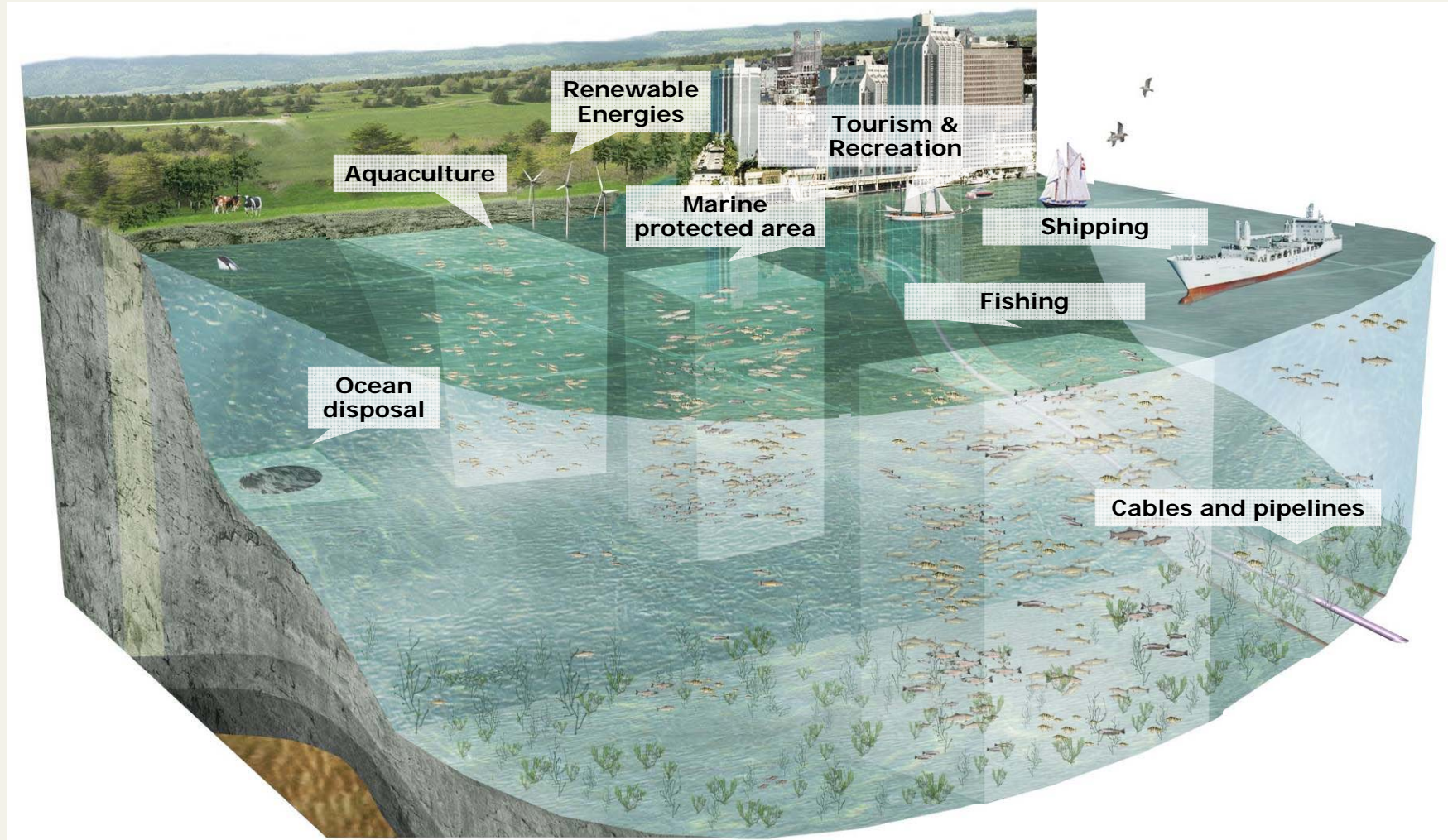


# Differences between Terrestrial and Marine Planning

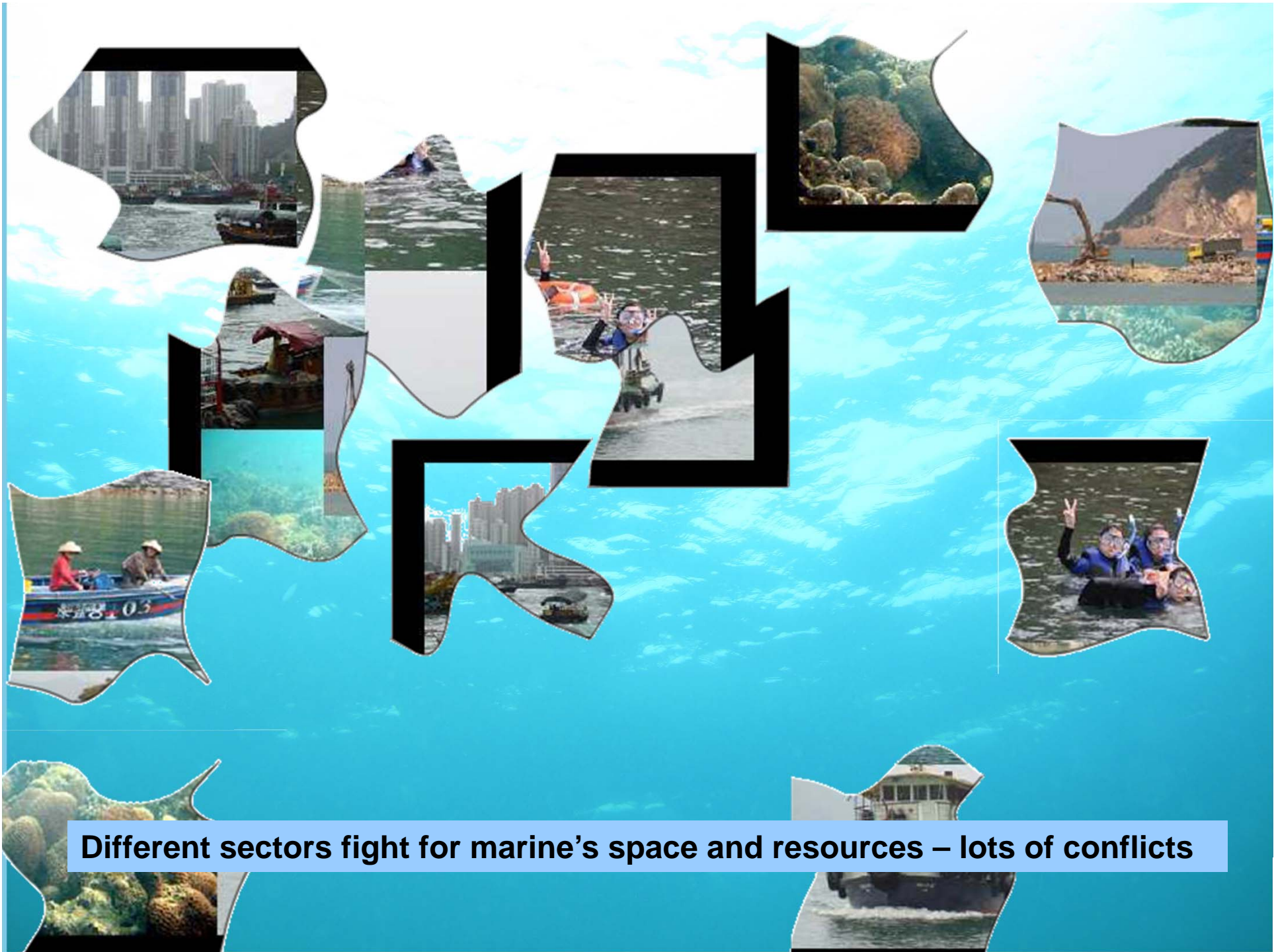
|                                       | Terrestrial  | Marine   |
|---------------------------------------|--|--|
| Ownership                             | Fragmented ownership – between private and public ownership          | Held as one piece in trust by the government                                   |
| Mobility of activities and ecosystems | More contained, more stable distribution of habitats                 | Ocean is a fluid and highly mobile environment                                 |
| Dimensionality                        | 2-D; based on a grid system  | 4-D; above surface, on surface, in water column, on/under seabed               |
| Maps, information and understanding   | Most land areas have been surveyed and mapped                        | Ocean is not well mapped or even understood                                    |
| Population and communities            | Local communities have a major influence on land-use decision making | Disconnect between local communities and decisions on use                      |
| Transportation                        | Fixed roads and linear routes  | More open frontier for vessels to move around on                               |
| Monitoring and enforcement            | Easier   | More difficult due to geographic context and variable environmental conditions |



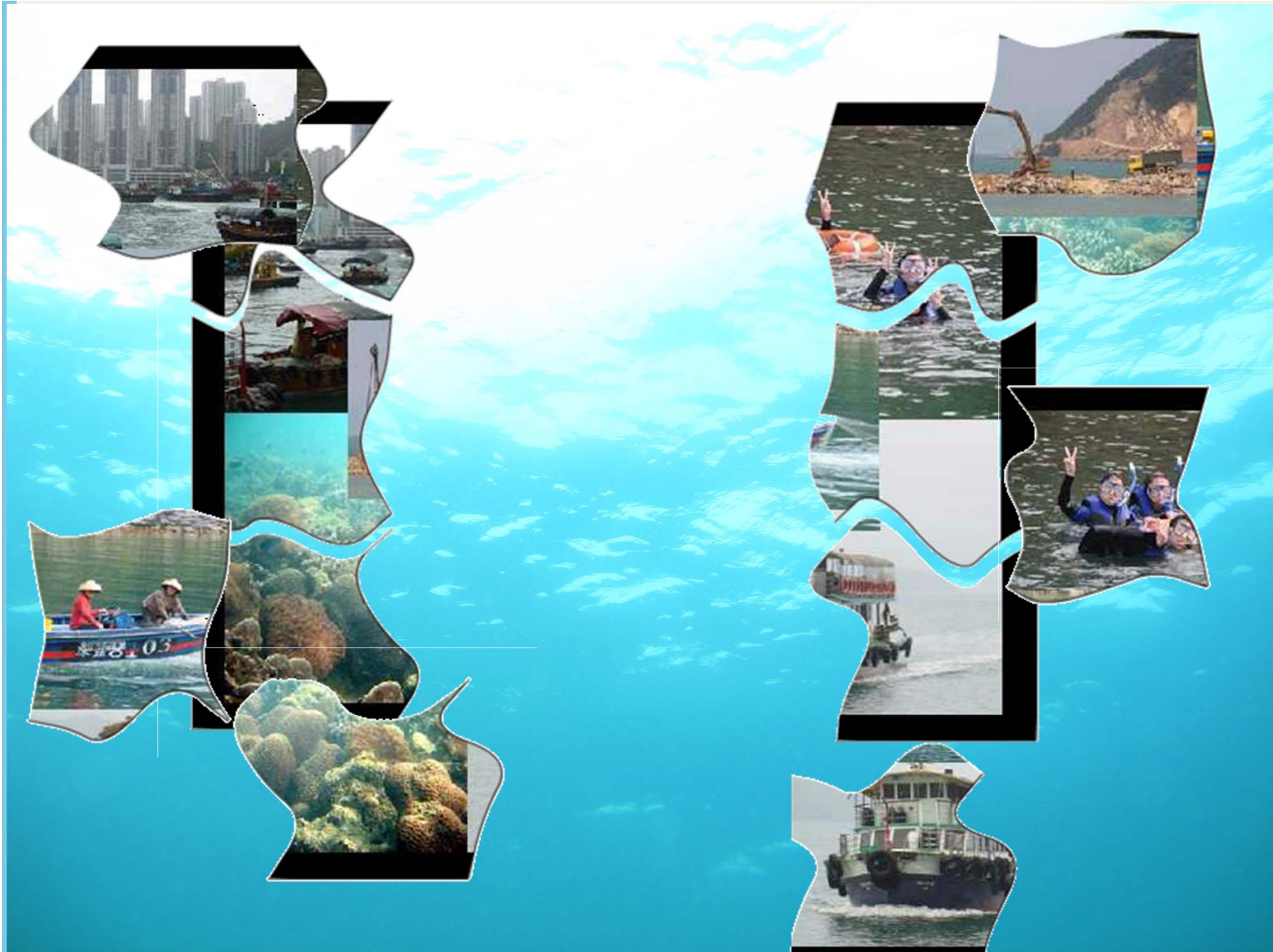
# Different Usages of the Sea



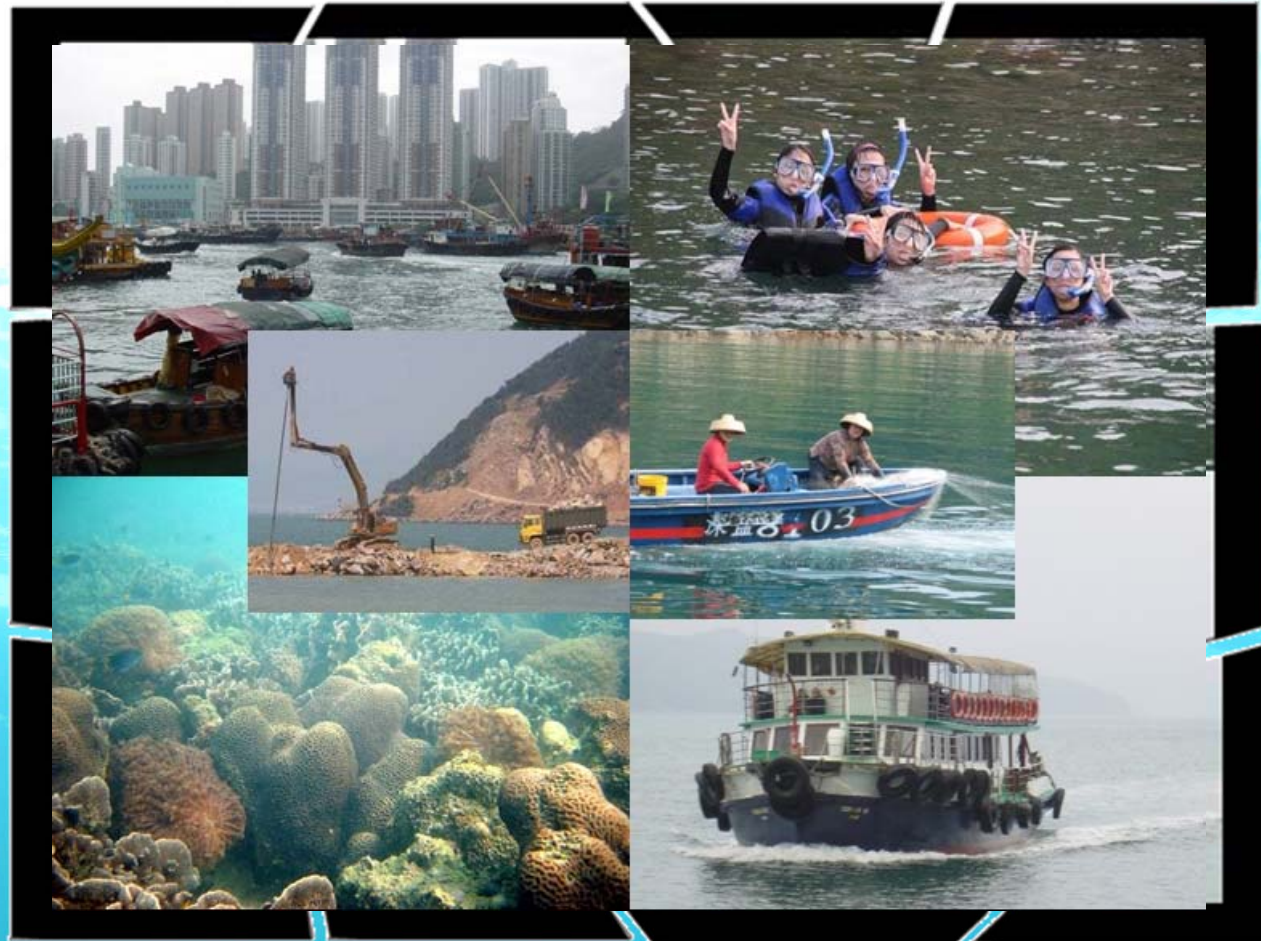
Source: Andrew Dumbrille/ WWF Canada



**Different sectors fight for marine's space and resources – lots of conflicts**







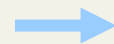
**Find synergies among sectors, considers their existing and future needs – compatible and sustainable use of sea**



## Time for a CHANGE

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- The growth will increase demand for the limited space and resources of the sea
- Conflicts and disputes between Development and Conservation escalate in recent years
- The sea-use approach – fragmented; Solutions (EIA) - reactive



**Marine Spatial  
Planning**



## What is Marine Spatial Planning (MSP)

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- MSP is a process of **analyzing and allocating space and resources** in the most appropriate way to **minimize conflicts and find synergies** among sectors
- **Participatory Approach** - Provide **long term foundations** for **participation** among sectors and levels of management to achieve more integrated decision making and more efficient and sustainable use of resources
- To **achieve ecological, economic and social objectives**

Ports

Commercial fishing

Nature conservation

Pipelines and cables

Shipping and transportation

Tourism and recreation

Wind energy

Aquaculture

Civil works

Coastal residents

Sector representatives

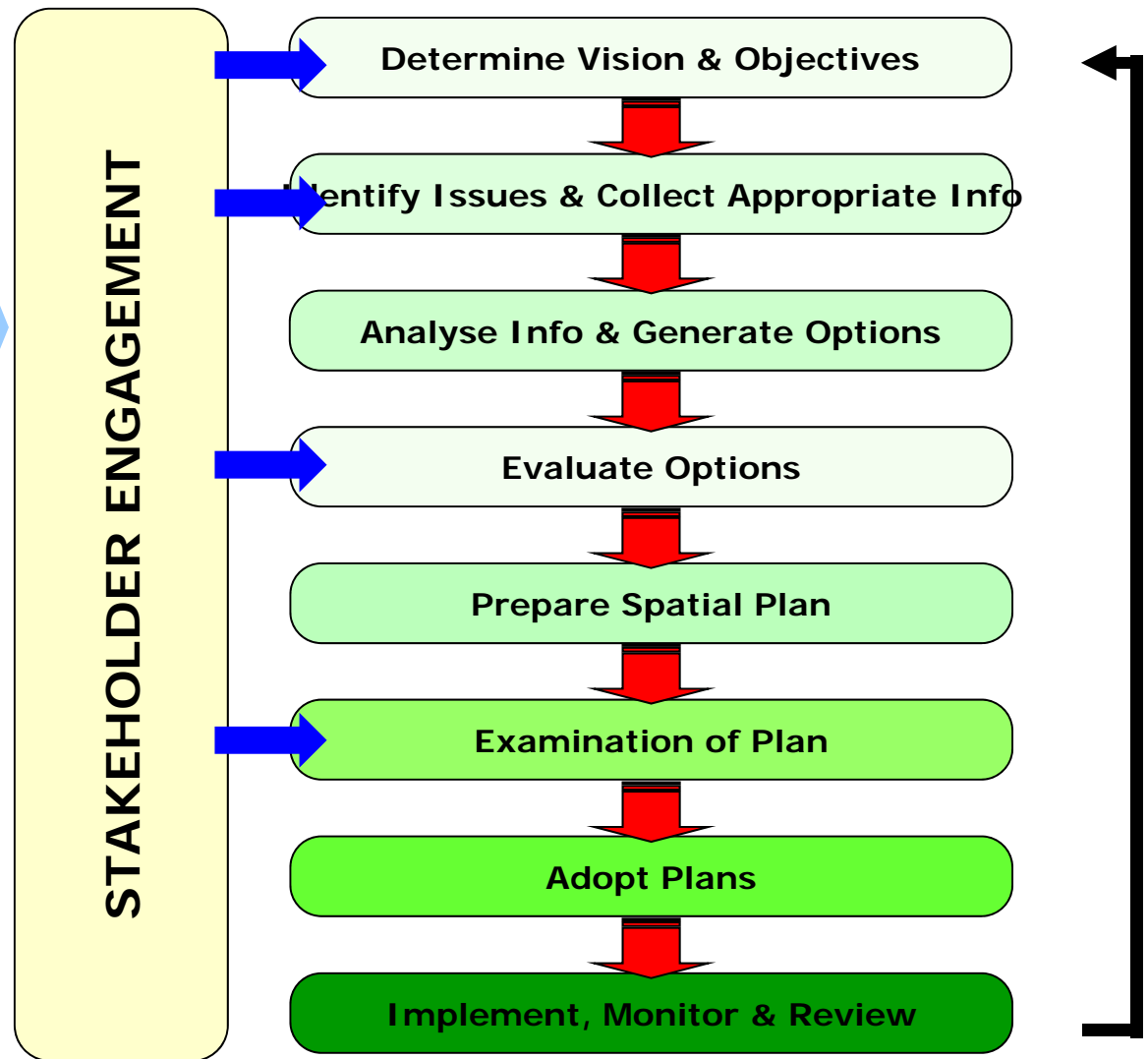
Business representatives

Academics

NGO

Officials

General public



Plan production process and stakeholder engagement (Gilliland PM & Laffoley D 2008)



## General Benefits

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- Involve open dialogues of sectors in the beginning
- Protect nature and reduce fragmentation of marine habitats
- High degree of stakeholder participation
- Identify compatible uses
- Increase transparency in decision making
- Reduce conflicts

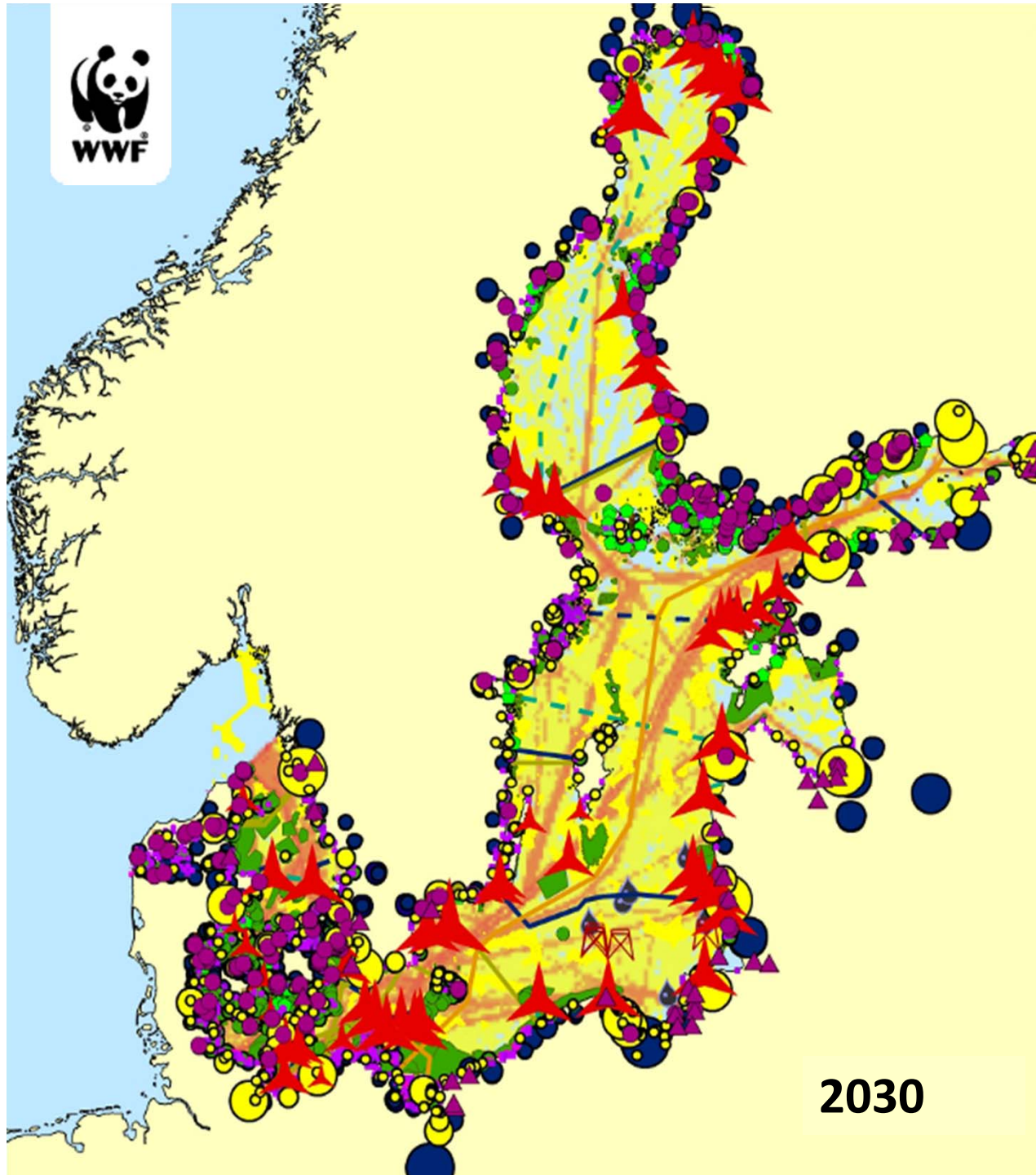


## Economic Benefits

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- Reduces transaction costs (administration fees, legal advice or fees, even costs associated with environmental assessments)
- Improve certainty and predictability for government/ private investment
- Improve attractiveness of coastal regions
- Reduce co-ordination costs for authorities





## Baltic Sea's Sea Use Future Trend

Commercial Fishing

Shipping

Dredging

Oil and Gas Extraction

Pipelines and Cables

Physical Exploitations

Marine Protected Areas

Aquaculture

Agricultural Runoff

Nitrogen

Phosphorous

Tourism and Recreation

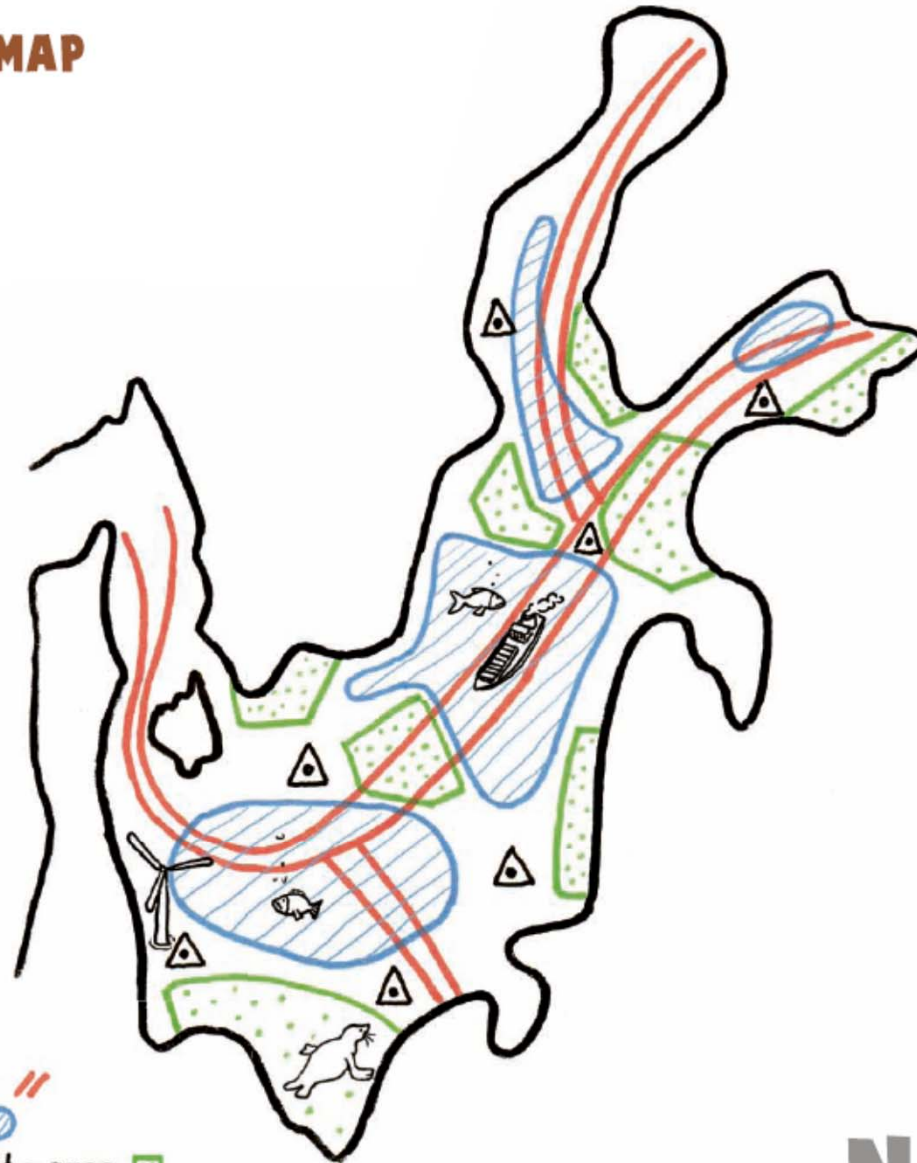
Ports

Wind Energy

Industrial Pollution



## BALTIC SEA SUITABILITY MAP



### Legend

- Best shipping route //
- Fish distribution ●
- Valuable biodiversity area ■
- Priority areas suitable for windfarms ▲







## BALTIC SEA USES & CONFLICT MAP



### Legend

- Shipping route //
- Fishing site ●
- Biodiversity site ■
- Wind power area ▲
- Conflict area/zone ⚡





# BALTIC SEA MARITIME SPATIAL ZONING PLAN

## Legend

- Shipping route //
- Fishing site
- Biodiversity site
- Windpower

- General Use Zone
- Priority Use Zone
- Exclusive Use Zone



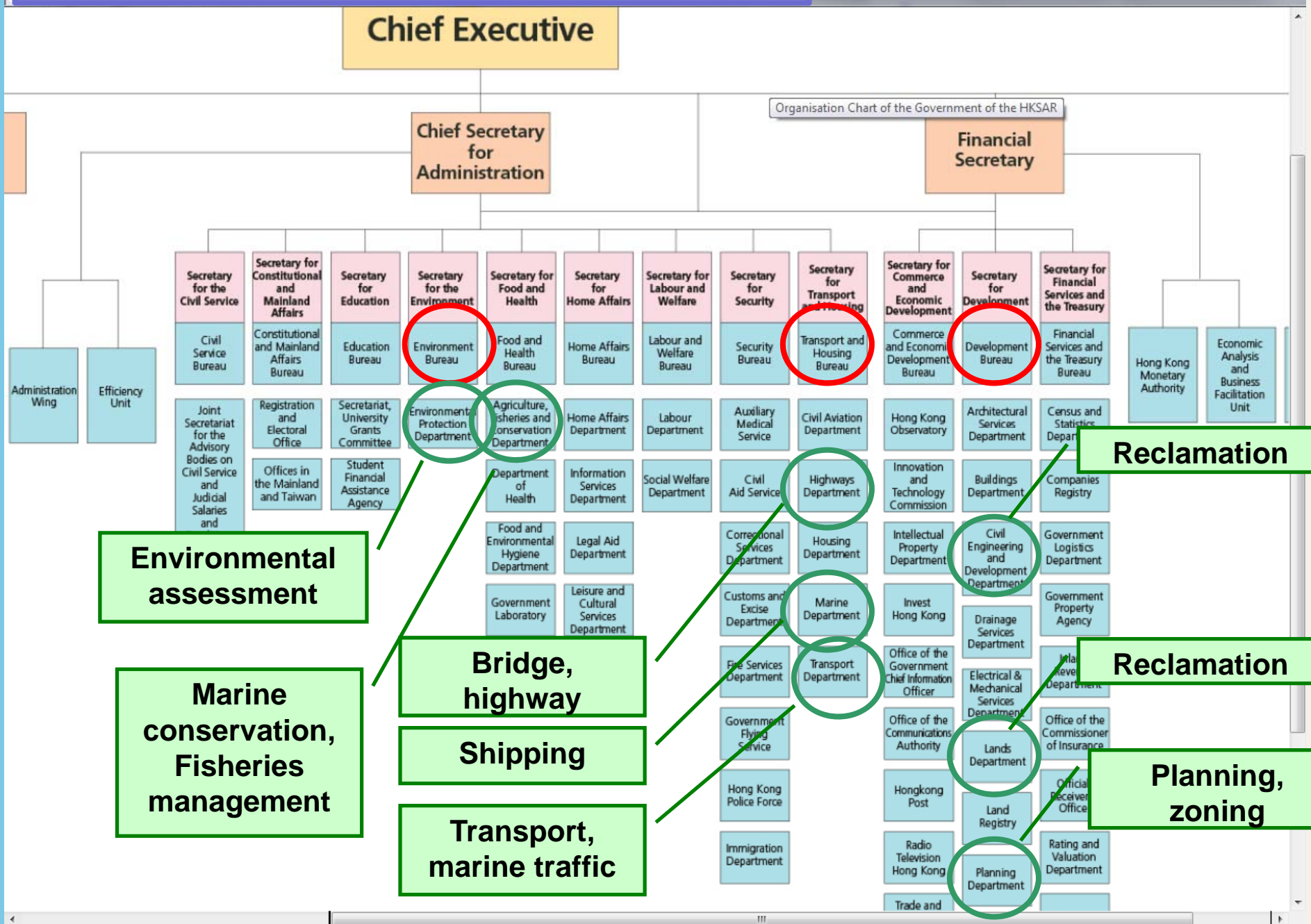


## MSP Around the World

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- Around 40 countries (Germany, Australia, Belgium, US, UK etc) have completed or are in process of completing national spatial plans for part or all of their EEZs – MSP no longer a concept!
- MSP is likely to cover 10% of the world's EEZ by the end of 2012 and 25% by 2020
- Most countries rely on existing legislation
- Undertake at a range of scale from 3,600km<sup>2</sup> to 1.5 million km<sup>2</sup>
- Usually take 3-4 years to complete
- Most plans are advisory and strategic not regulatory
- Rely on central government funding

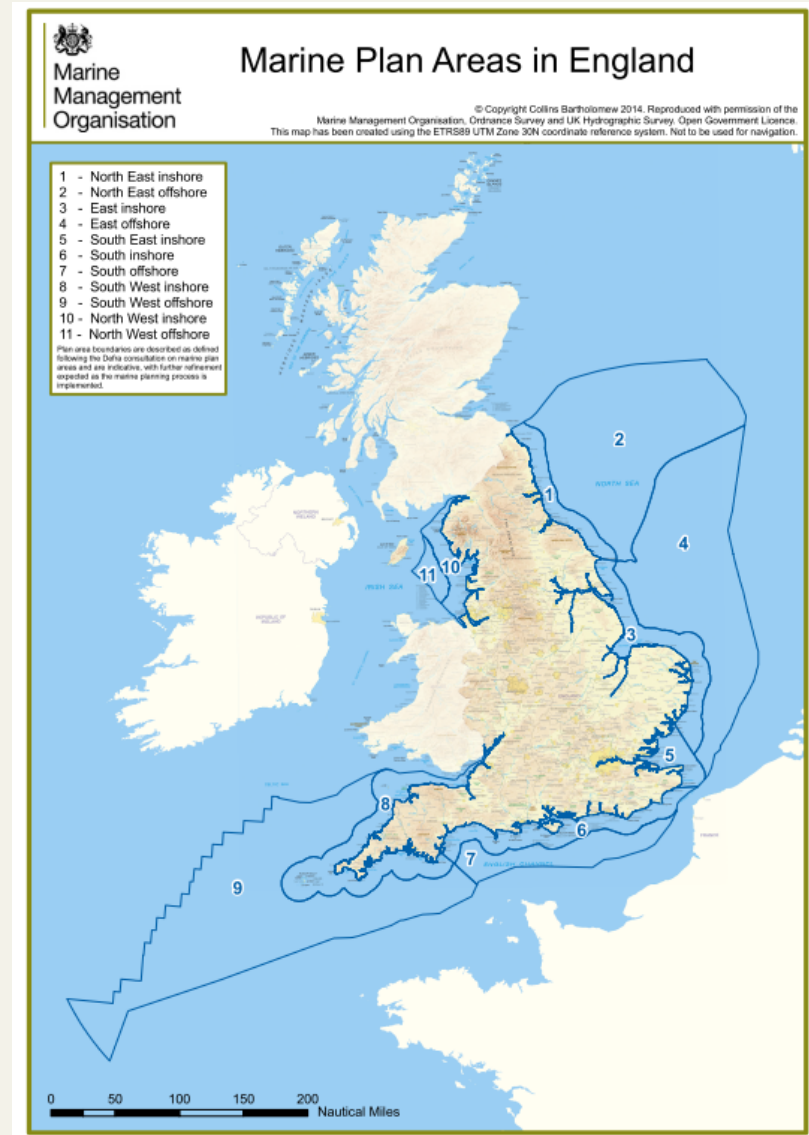
# Key Issue of Adopting MSP in Hong Kong





# UK's Marine Management Organisation

- Created by the Marine and Coastal Access Act 2009
- Executive non-departmental public body
- Key Responsibilities on MSP:
  - publish the MSP plans and guidance
  - work with other regulators and government bodies to coordinate marine and coastal development, using marine plans as a basis for decisions
  - ensure that our stewardship of MPAs contributes to a well-managed network, bringing together conservation authorities and other regulatory bodies





## Key Success Factors for MSP

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- Clear authority to undertake MSP
- Strong political leadership
- Adequate financing to complete at least the first round of MSP
- Effective stakeholder engagement
- Clear, measurable management objectives
- Use of best available information
- A focus on the future, including development of alternative spatial scenario
- Effective performance monitoring and evaluation of management measures
- Adaptive management



**Sustainable Use of Sea – a clean, safe, healthy, productive and biologically diverse sea**



Hong Kong Digital Vision  
<http://hkdigit.blogspot.com>





# Thank you

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[wwf.org.hk](http://wwf.org.hk)





## WWF-HONG KONG

**+100**

WWF is in over  
100 countries, on  
5 continents

**1961**

WWF was founded  
In 1961



**+35,000**

WWF-Hong Kong has  
over 35,000 individual  
financial supporters

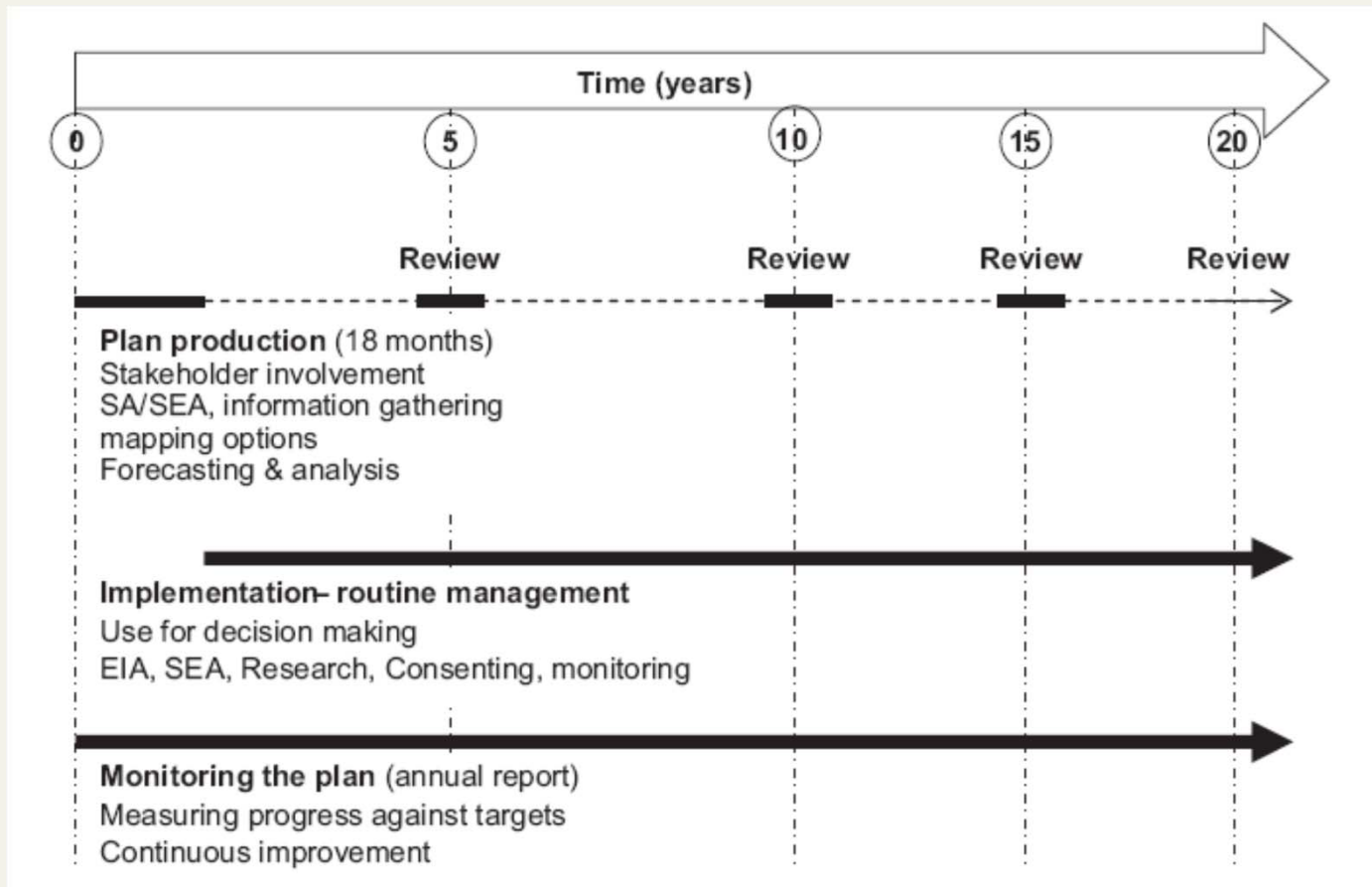
**1981**

WWF-Hong Kong was  
established in 1981, to  
deliver solutions for a  
living planet

Photo: © NASA



# WWF Timeframe 時間表



Suggested timeframe for a MPS programme (Gilliland PM & Laffoley D 2008)



## Costs

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- Cost, eg (Whole UK over 20 year period)
  - Information collation: £0.1 million [\$0.2 m] per annum
  - Statutory plan: £3.2 million [\$6.1 m] per annum