

# STATE OF THE MARINE ENVIRONMENT

## ***BENGUELA CURRENT LARGE MARINE ECOSYSTEM***

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# INTRODUCTION TO SOMER

## Purpose?

- To provide a comprehensive overview of the current and potential situation in the BCLME, including the economic and social benefits of the ecosystem, the key problems, and what remains to be done to tackle the issues.

## Audience?

- Produced for a broad audience, with the intention to provide easily accessible information to anyone with an interest in the marine environment.

# OVERVIEW OF PRESENTATION

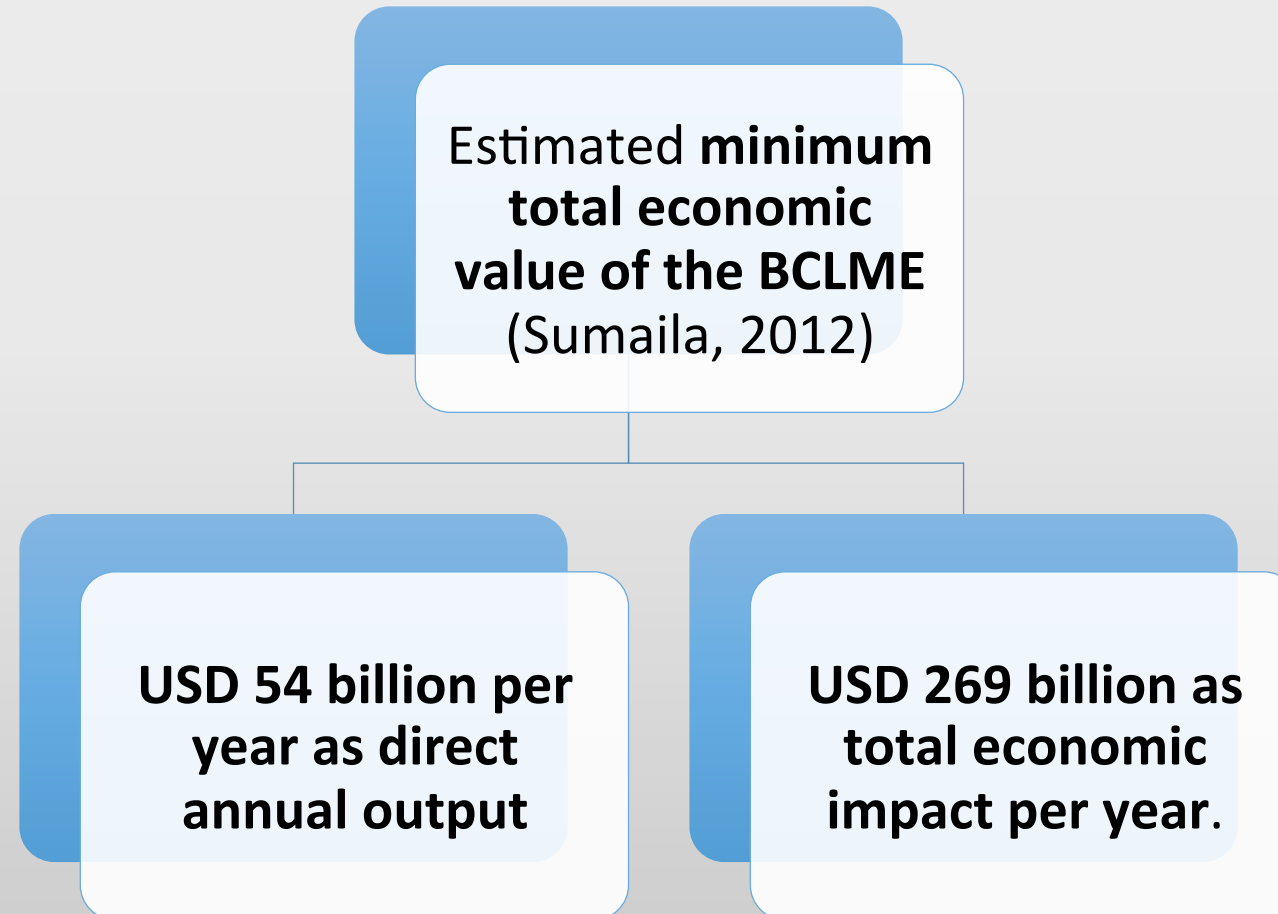


# ECONOMIC & SOCIAL BENEFITS

- Government revenue
- Employment
- Food security



## ECONOMIC & SOCIAL BENEFITS CONTINUED...



## ECONOMIC & SOCIAL BENEFITS CONTINUED...

### Petroleum

- **Angola** dominates.

### Coastal mining

- **Namibia** accounts for over 95 % of the economic benefit.

### Fisheries

- **Namibia and South Africa** account for 80 % of the economic benefit.

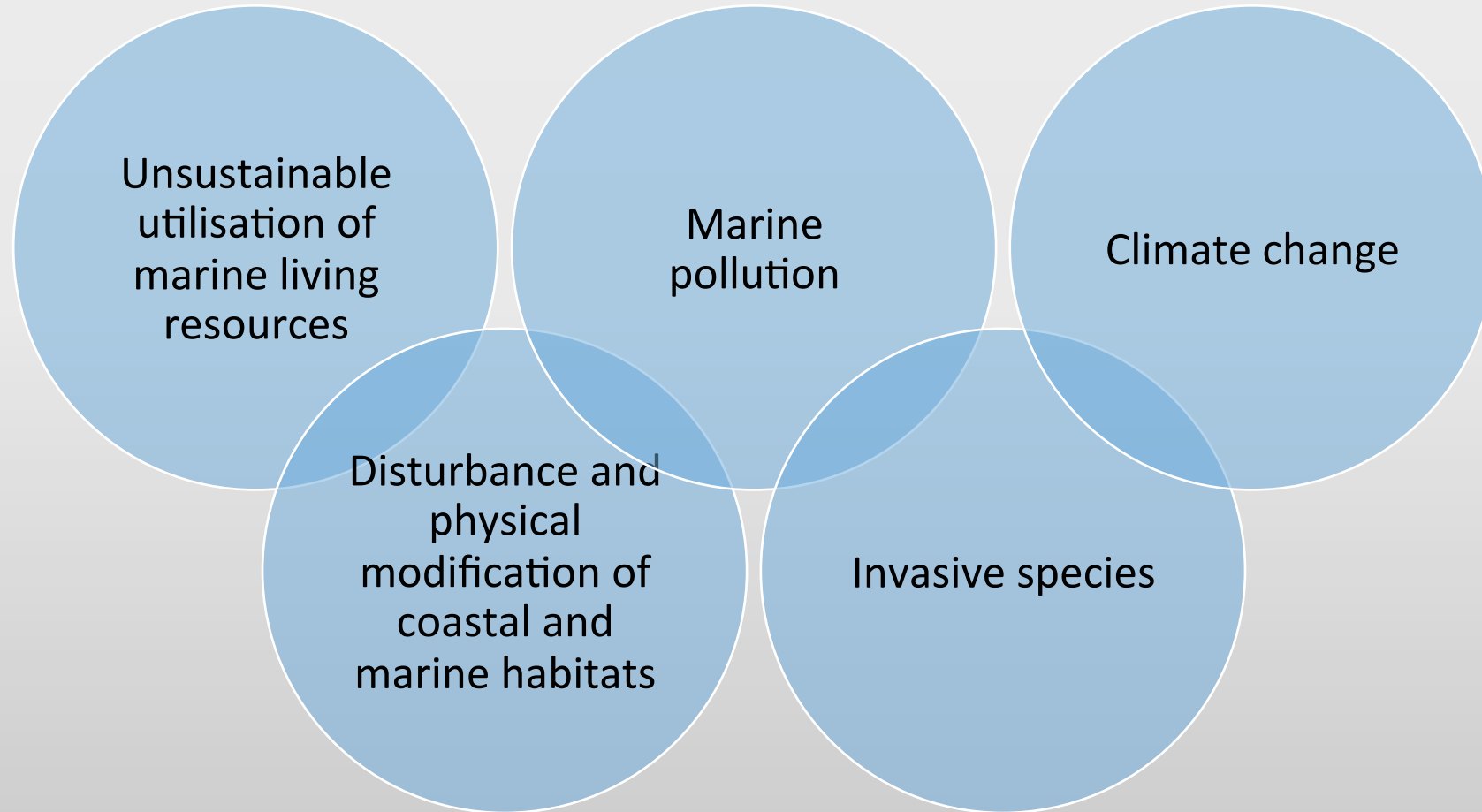
### Mariculture

- **South Africa** dominates with over 75 % of the economic benefit.

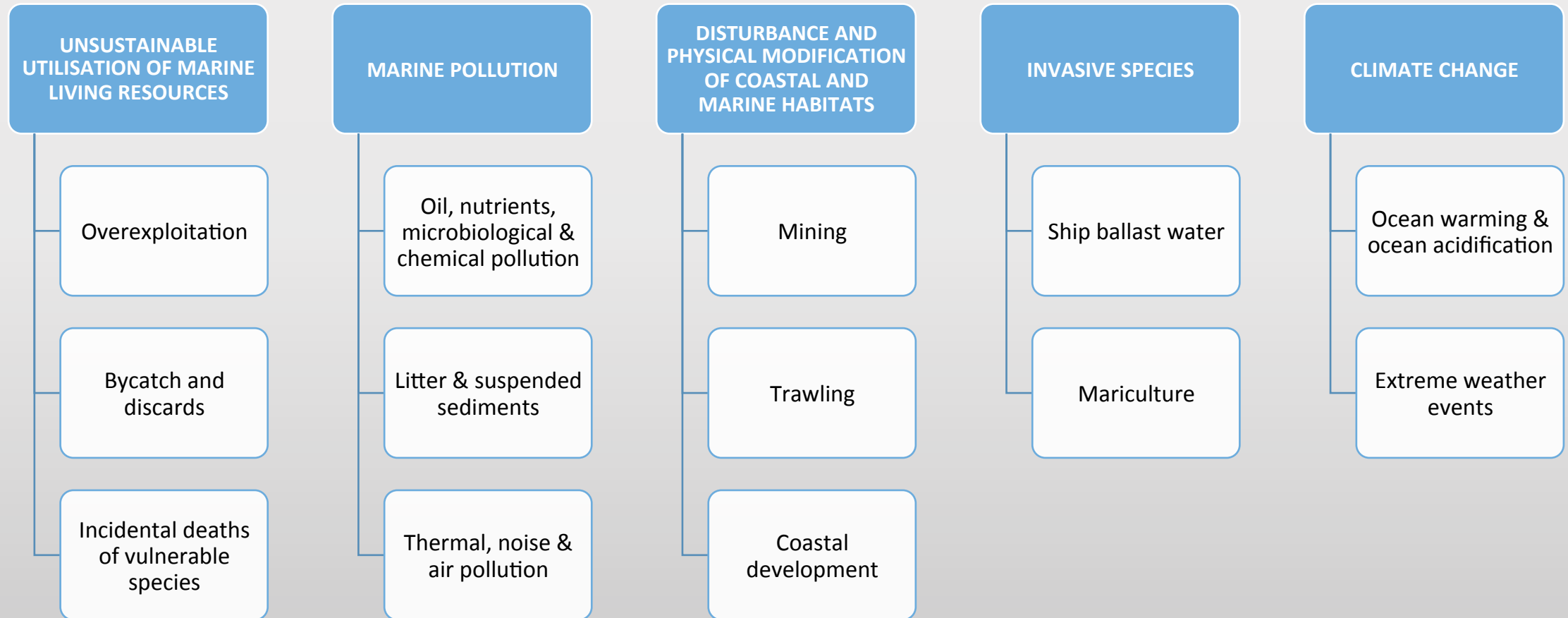
### Tourism and recreation

- **South Africa** dominates with almost 75 % of the economic benefit.

# MAJOR PRESSURES



# MAJOR PRESSURES CONTINUED...





# STATE & TRENDS

## Variability and productivity

- Benguela Niños
- Regime shifts
- Climate change
- Phytoplankton
- Zooplankton
- Recent changes in oceanographic and biological processes

## Water quality

- Hypoxia
- Sulphur eruptions
- Harmful algal blooms
- Pollution

## Biodiversity

- Species health
- Habitat health

## Human dimension

- National development
- General human well-being

## STATE & TRENDS CONTINUED...

# *Variability and productivity*

### Benguela Niños

- Major Benguela Niños warming events occurred in 1963, 1973, 1984 and 1995.

### Regime shifts

- In the last decades a regime shift to a new, warm regime in the northern Benguela and Angola.
- A number of ecological regime shifts have affected fishing and been effected by fishing

### Climate change

- The interannual and decadal environmental signals are strong so distinguishing long term trends is difficult.
- Human activities, e.g. fishing, also contribute to dynamics.

### Phytoplankton & zooplankton

- Primary production measurements show variability but no clear long term trends.
- Long-term increases in biomass and shifts in zooplankton community structure may be due to changes in predation pressure or large-scale environmental effects (or both).

### Recent changes in oceanographic and biological processes

- A number of oceanographic and biological processes have been changing since a turning point around 1990, e.g. strengthening of the flow of the Agulhas Current.

## STATE & TRENDS CONTINUED...

# *Water quality*

### Hypoxia

- No trends but considerable commercial losses – e.g. rock lobster walkouts, oyster mortalities, and the loss of almost an entire year-class of young hake.

### Sulphur eruptions

- Inshore regions are impacted by the formation of hydrogen sulphide.
- In 2001, 9 hydrogen sulphide eruptions occurred, with the largest covering 22 000 km<sup>2</sup> of ocean.
- Their relevance to the fishery resources, including lobsters, are not known but likely to be high.

### Harmful algal blooms

- The frequency of occurrence, spatial extent, and duration of HABs appears to be increasing, can be due to nutrient loading.
- Primarily in inshore regions, fisheries, mariculture industries, and nursery areas for commercial and recreational species.

### Pollution

- Contamination by petroleum-related chemicals has been documented from oilrigs.
- Sediment plumes from diamond mining are blamed for a localised deterioration in rock lobster habitat.
- A rapidly expanding urban population poses a serious pollution threat.

## STATE & TRENDS CONTINUED...

# *Biodiversity*

### Species health

- Nine confirmed alien species along the South African part of the BCLME that have well-established populations, e.g. the Mediterranean mussel
- Vulnerable/threatened species include seabirds, sharks, skates, rays, guitarfishes, turtles, cetaceans
- Harvested species include Cape hakes, horse mackerels, sardine & sardinella, Cape fur seal, the status in respect to MSY variable with rebuilding success also variable but in many cases earring towards optimism.

### Habitat health

- Modification to habitats, including the seabed and coastal zone is severe in localised areas, but generally large areas of the BCLME are in a near-pristine form.
- The 2011 national biodiversity assessment for SA - 47 % of marine and coastal habitat types are threatened – more coastal than offshore
- Vulnerable habitats: e.g. estuaries, lagoons, wetlands, some intertidal zones, mangrove swamps, rocky offshore islands, etc.

## STATE & TRENDS CONTINUED...

# *Human dimension*

### National development

- The three BCLME countries are at different stages of human and economic development
- Population – Angola 21, Namibia 2 and South Africa 53 million
- Projected GDP growth 2014 Angola 5%, Namibia 4% and South Africa 2%
- Carbon dioxide emissions (t/capita) Angola 2, Namibia 1 and South Africa 9

### General human well-being

- **Angola** - improvements in urban centres (electricity, water and sanitation) in the rural coastal communities many social challenges including unemployment are still prevalent.
- **Namibia** has a very small coastal population (3 towns), fishing is an important employer, however due to the decline in fisheries new focus on the tourism sector.
- **South Africa**, many west coast settlements suffer from low levels of income and employment. Access to basic household services varies considerably.

Unsustainable  
utilisation of marine  
living resources

Marine pollution

Disturbance and physical  
modification of coastal  
and marine habitats

Invasive species

Climate change

## RESPONSES

What is being done to  
tackle the major  
pressures?

What responses have  
been taken?

# RESPONSES CONTINUED...

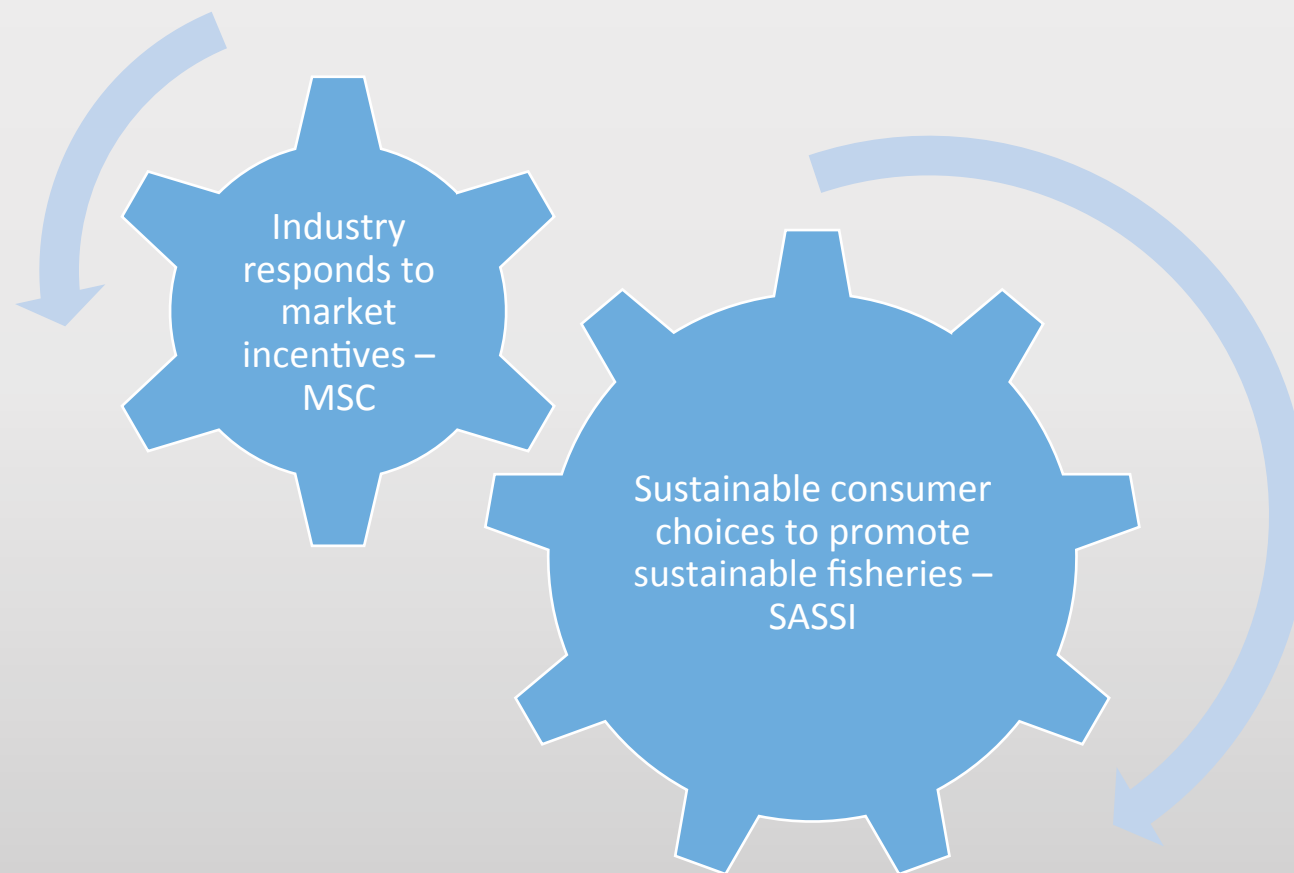
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- **Improved governance framework**
    - International best practices
    - Regional cooperation & preparedness
      - Policy
      - Legislation
    - Management approach – ecosystem

- **Improved capacity**
  - Science
  - Monitoring & control

- **Public involvement**
  - Awareness
  - Direct involvement

RESPONSES  
CONTINUED...

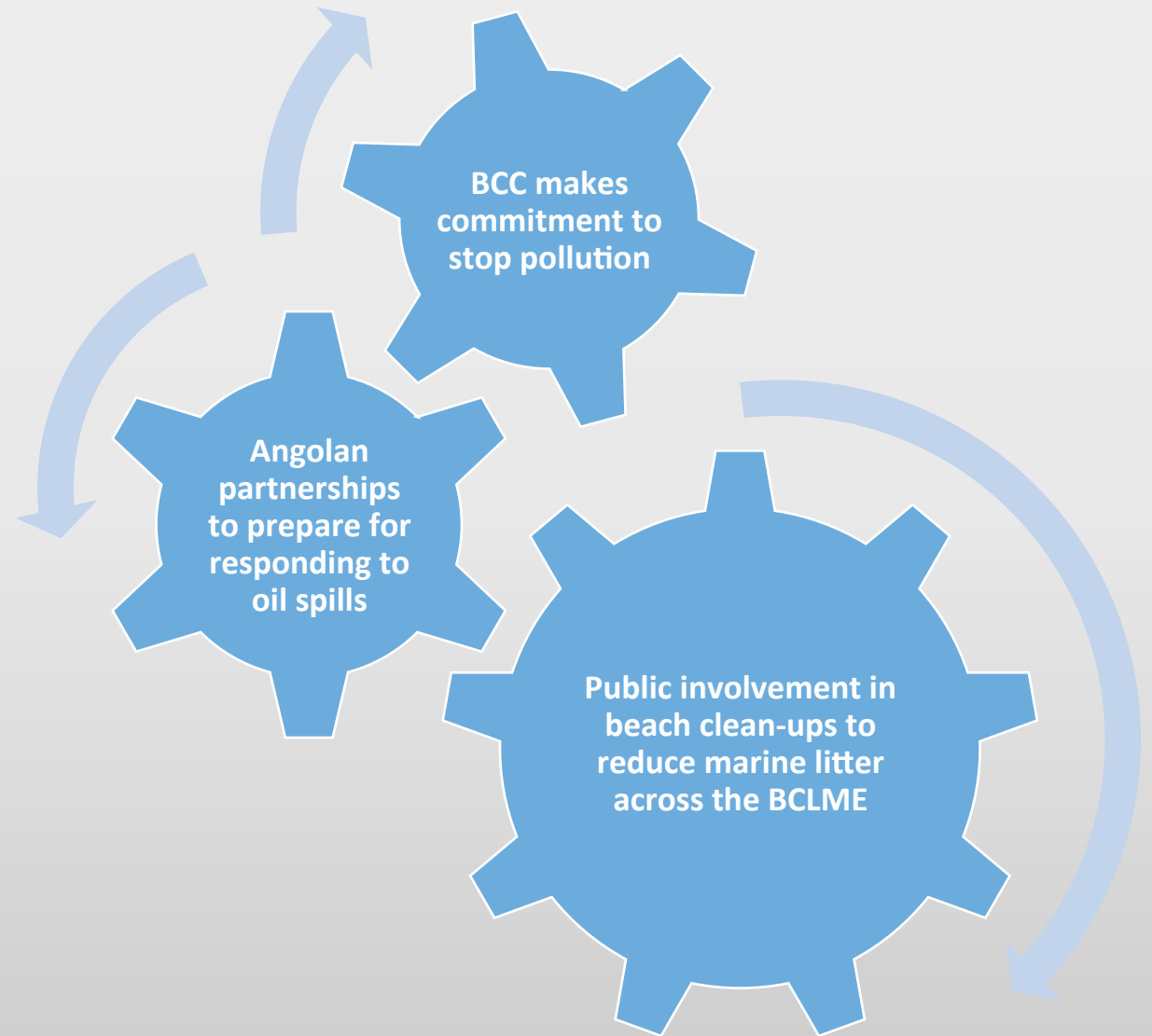
*Unsustainable  
utilisation of marine  
living resources*





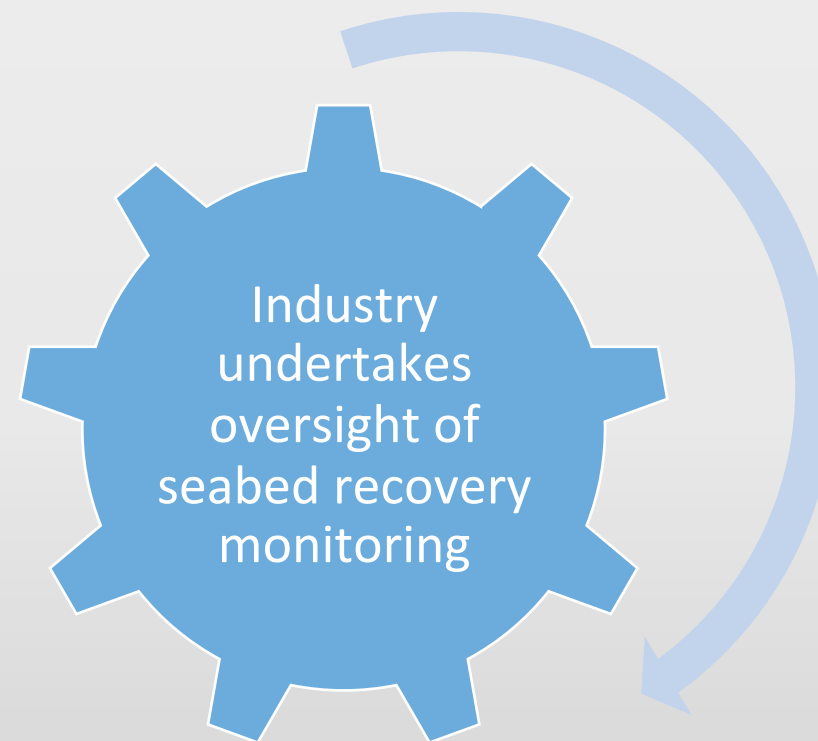
RESPONSES  
CONTINUED...

## *Marine pollution*



RESPONSES  
CONTINUED...

*Disturbance and  
physical modification  
of coastal and  
marine habitats*



RESPONSES  
CONTINUED...

*Invasive  
species*



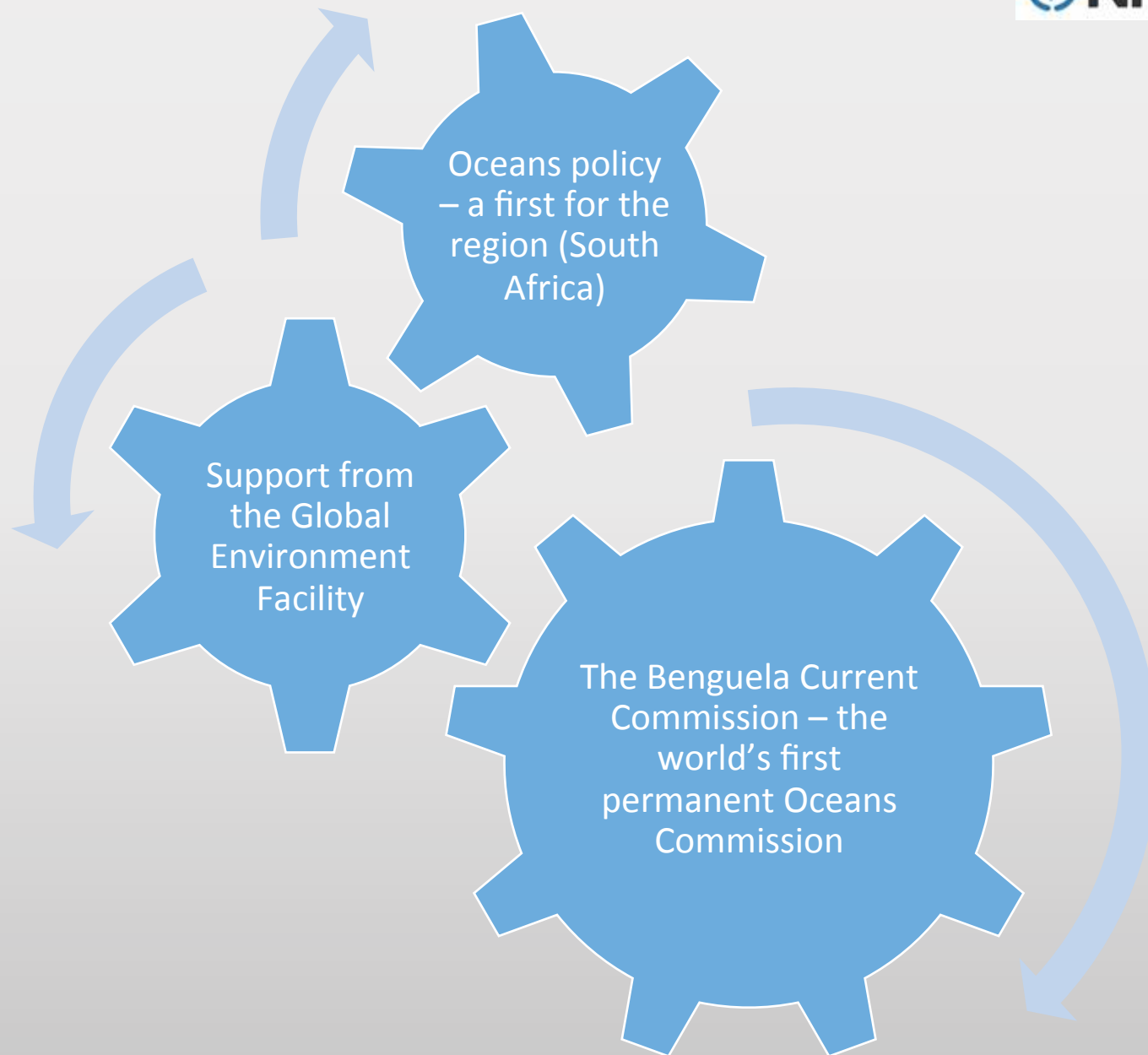
RESPONSES  
CONTINUED...

# *Climate change*

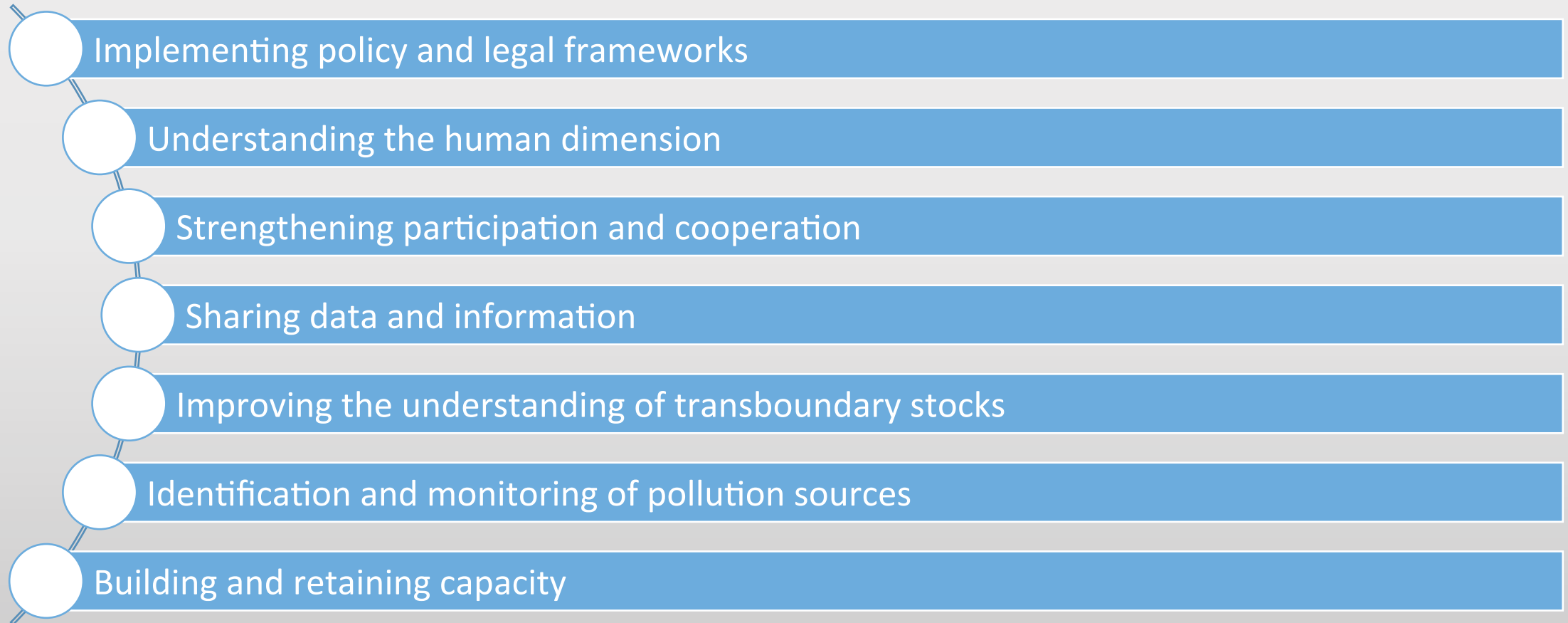


RESPONSES  
CONTINUED...

*Interaction  
between  
pressures*



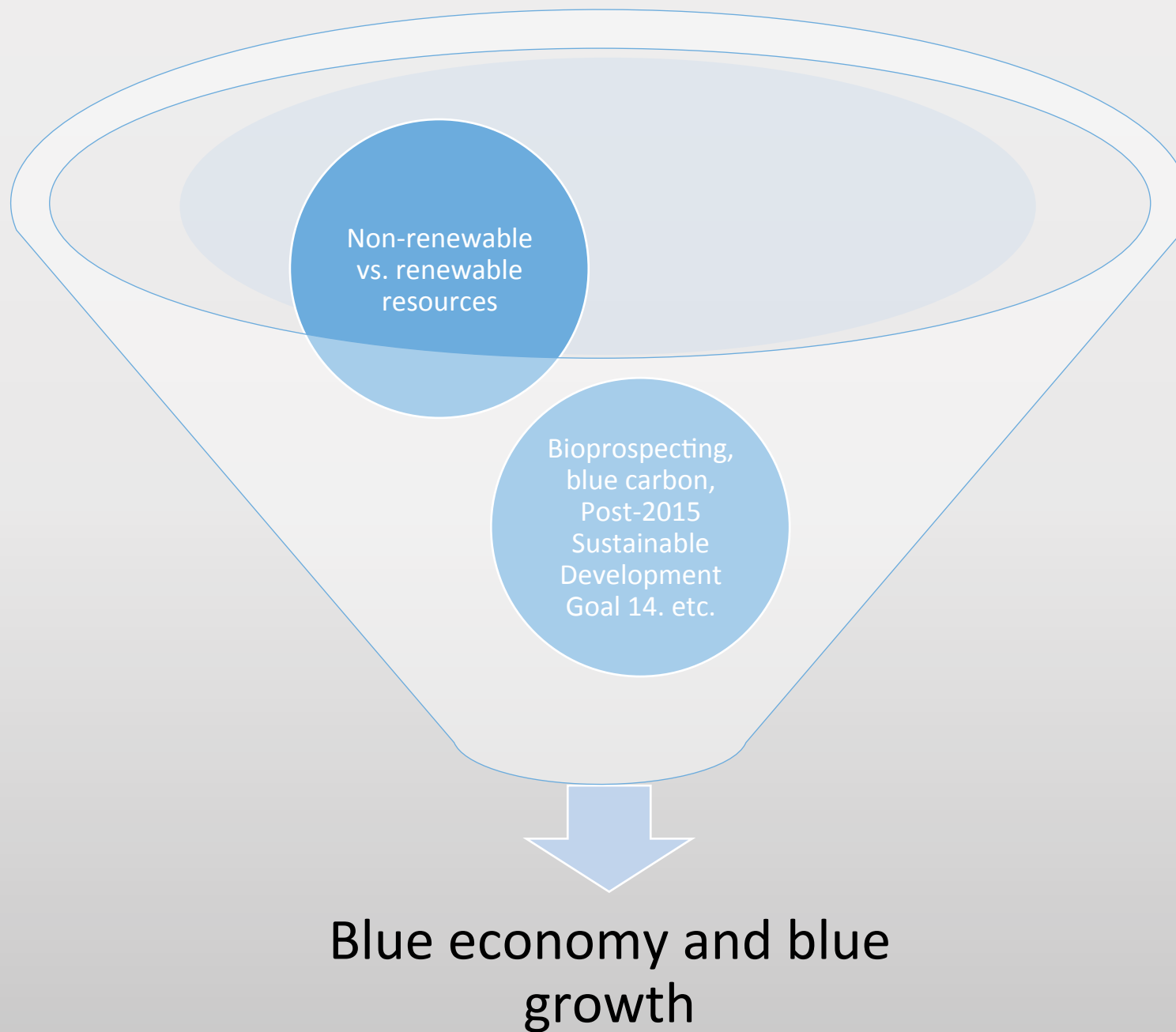
# GAPS IN RESPONSES

- 
- A vertical list of seven items, each consisting of a white circle on the left and a blue horizontal bar extending to the right. The items are connected by a thin grey line that curves around the circles. The text inside each bar is white and centered.
- Implementing policy and legal frameworks
  - Understanding the human dimension
  - Strengthening participation and cooperation
  - Sharing data and information
  - Improving the understanding of transboundary stocks
  - Identification and monitoring of pollution sources
  - Building and retaining capacity

# FUTURE OUTLOOK



# FUTURE OUTLOOK... Continued





# WHAT IS A SOMER?

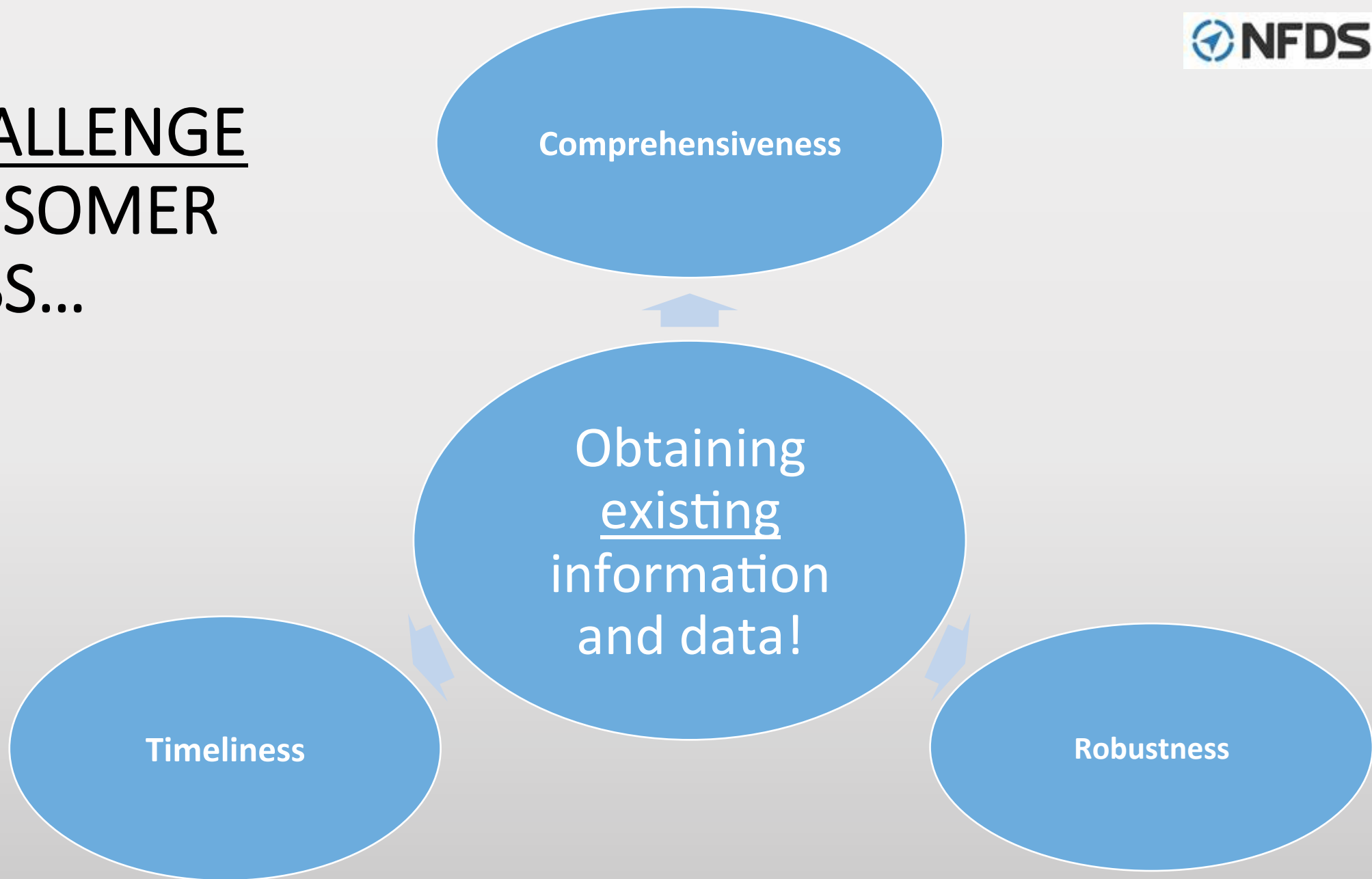
An attempt to collect, collate and publicise key information about the ecosystem

- Economic and social contributions of an ecosystem
- Current and potential future pressures impacting on the ecosystem
- State and trends of some key ecosystem health indicators
- Past, current and potential future responses to these pressures
- Reflection on the future outlook of the ecosystem

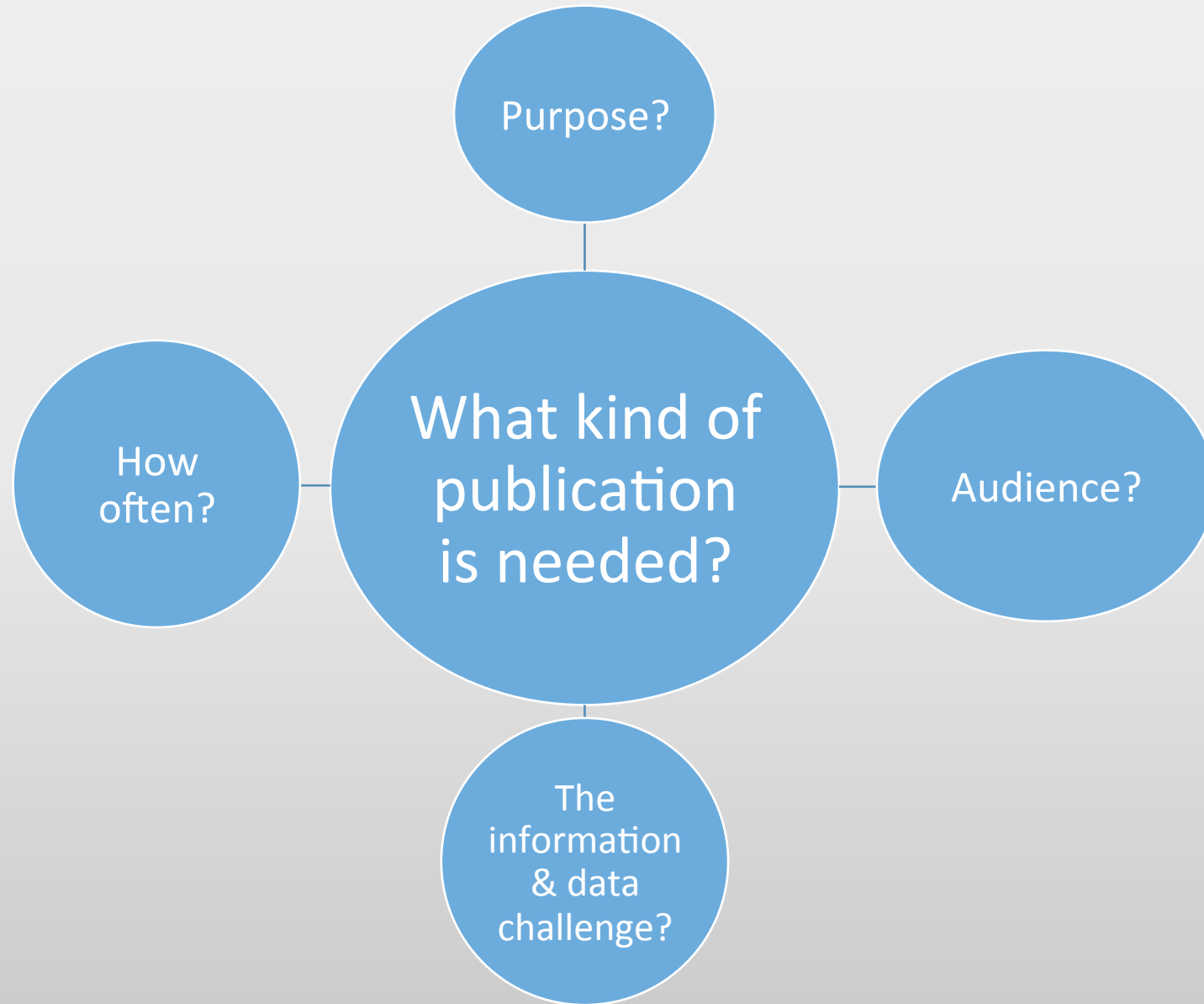
Ideally...

- Standardised process
- Building on relevant national and regional data and information made available through studies, reports and impact assessments on a timely basis

KEY CHALLENGE  
IN THIS SOMER  
PROCESS...



# THE SOMER PROCESS... Continued



**THANK YOU FOR LISTENING!**