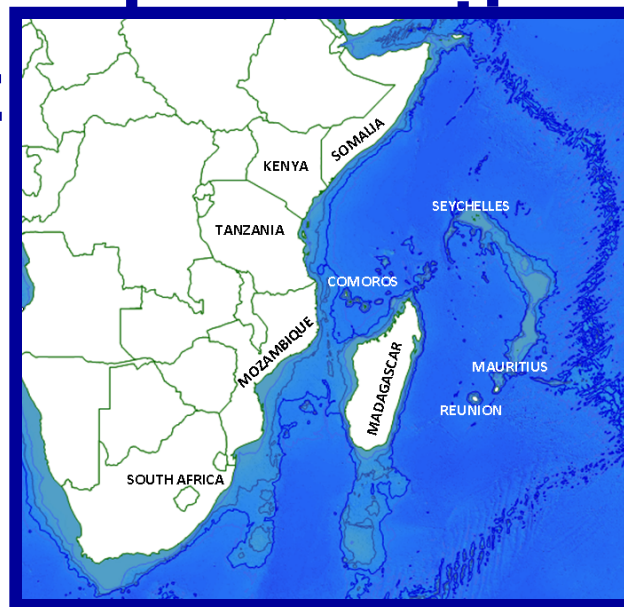


# Long Term Monitoring and Ecosystem Indicators



**Lucy Scott**

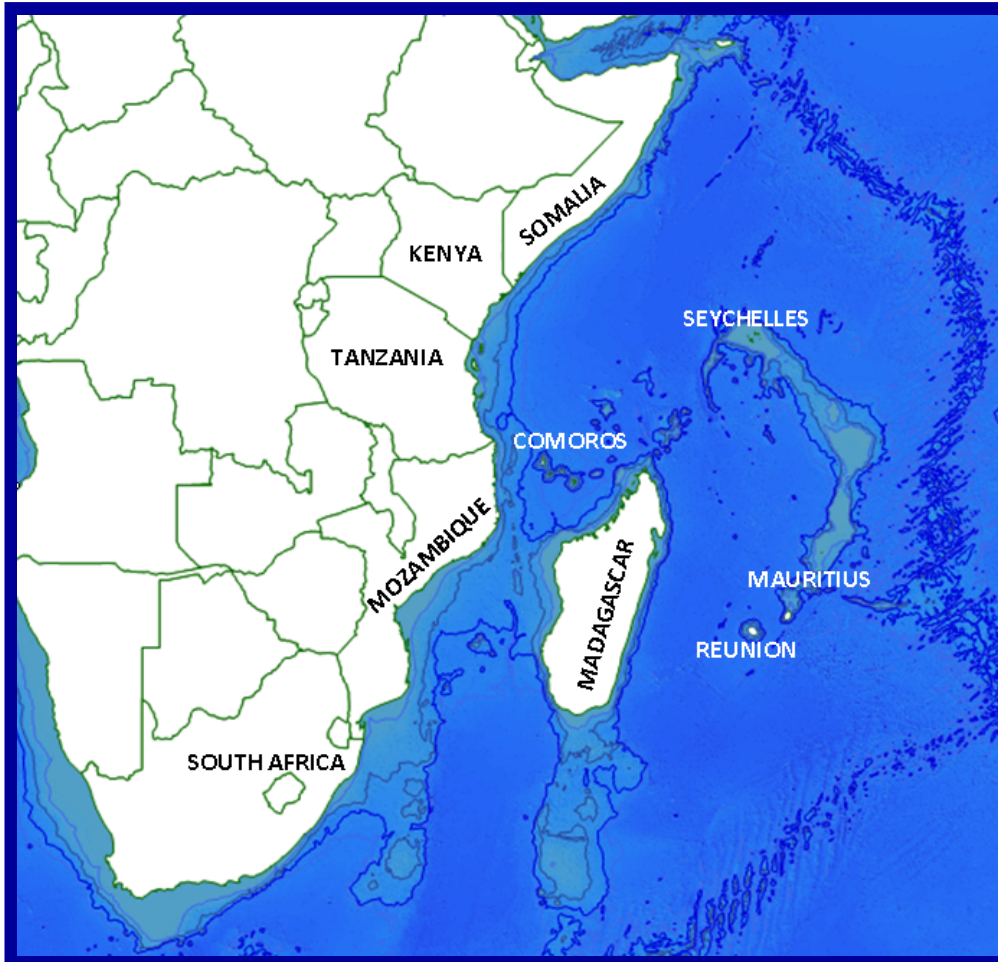
**3rd Latin American & Caribbean Regional Targeted Workshop for GEF IW  
Projects**

**23-25 April 2014**

**Kingston, Jamaica**

# **Agulhas and Somali Currents Large Marine Ecosystem (ASCLME) Project**

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- Somalia
- Kenya
- Tanzania
- Mozambique
- South Africa
- Comoros
- Madagascar
- Seychelles
- Mauritius
- (France)

2008-2014

# GEF Projects in the region

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1. Addressing Land-based Activities in the Western Indian Ocean (WIO-LaB), focusing on the issues relating to land-based sources of pollution and other activities that impact on the marine and coastal environment (UNEP).
2. South Western Indian Ocean Fisheries Project (SWIOFP), addressing the issues related to assessment and shared management of the region's offshore commercial fisheries (World Bank).
3. Agulhas and Somali Currents Large Marine Ecosystem (ASCLME) Project, whose scope is focused on issues relating to ocean dynamics, productivity, artisanal fisheries, coastal livelihoods, marine pollution and invasive species (UNDP).

# Project Objectives

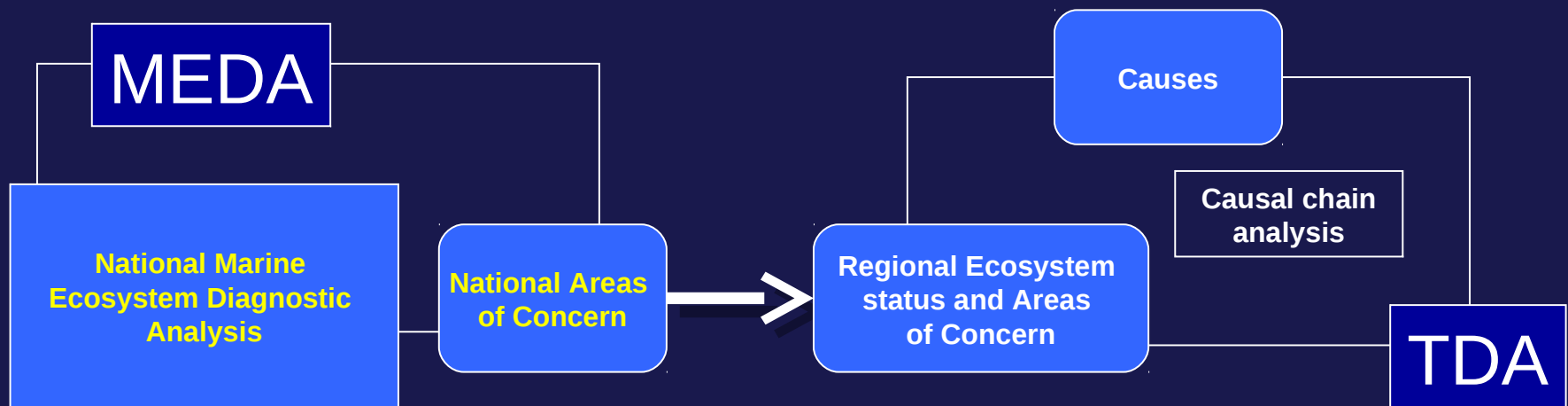
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- 1) A Transboundary Diagnostic Analysis
- 2) A Strategic Action Programme





# TDA / SAP DEVELOPME NT PROCESS



# The Transboundary Diagnostic Analysis (TDA)

## Parallel Policy and Governance Process

- Permanent coordinator for policy-level interaction
- National and regional P&G assessments
- Policy Advisory committee at DG / PS level

MEDA



CCA



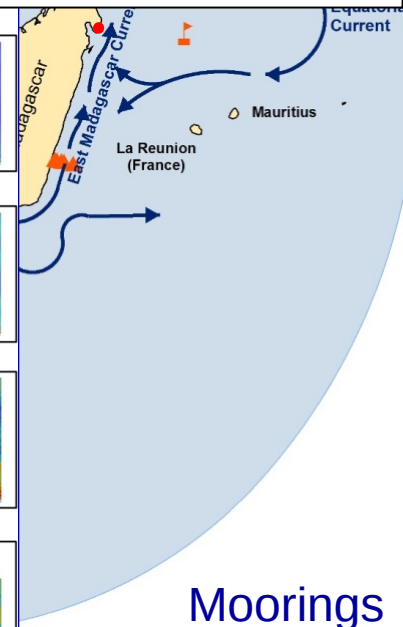
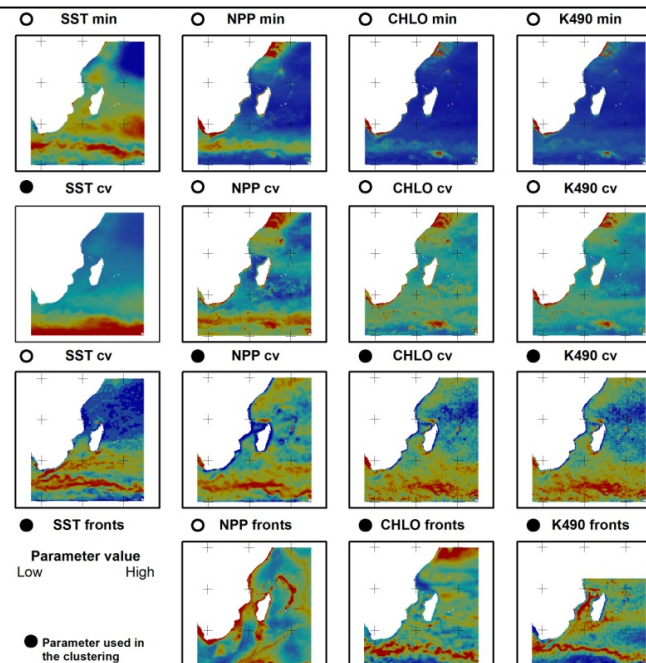
TDA



SAP



Cruises



Moorings

# The Transboundary Diagnostic Analysis (TDA)

MEDA



CCA



TDA



SAP

The four main areas of concern were identified as:

## **Water Quality Degradation**

- Alteration of natural river flow and changes in freshwater input and sediment load
- Degradation of ground and surface water quality

## **Habitat and Community Modification**

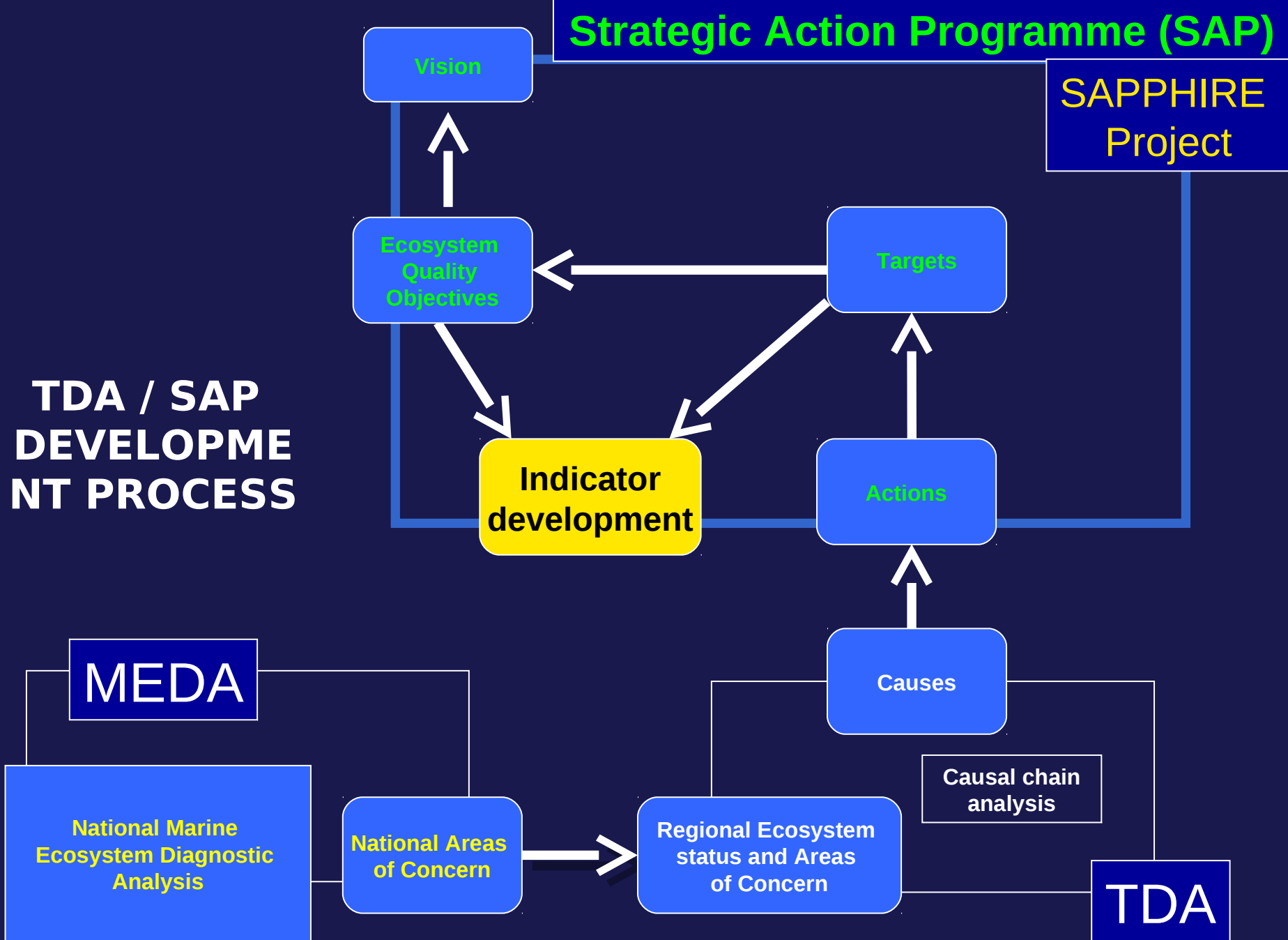
- Shoreline change, land reclamation and coastal erosion
- Disturbance, damage and degradation of open water habitats
- Introduction of alien and invasives species

## **Declines in Living Marine Resources**

- Overexploited fisheries.
- Impacts on other non-target species
- Loss or disturbance of natural habitats
- Excessive by-catch and discards

## **Unpredictable Environmental Variability and Extreme Events**

- Climate hazards and extreme weather events
- Sea level change
- Ocean acidification



## The TDA-SAP Process and the role of ecosystem monitoring

TDA

```
graph TD; TDA[TDA] --> Baseline[Baseline assessment of the ecosystem];
```

A flowchart illustrating the TDA-SAP process. It begins with a blue box labeled 'TDA' at the top left. A horizontal blue line extends to the right from the bottom of this box. A vertical blue arrow points downwards from the line to a larger blue box at the bottom left labeled 'Baseline assessment of the ecosystem'.

Baseline assessment of the ecosystem



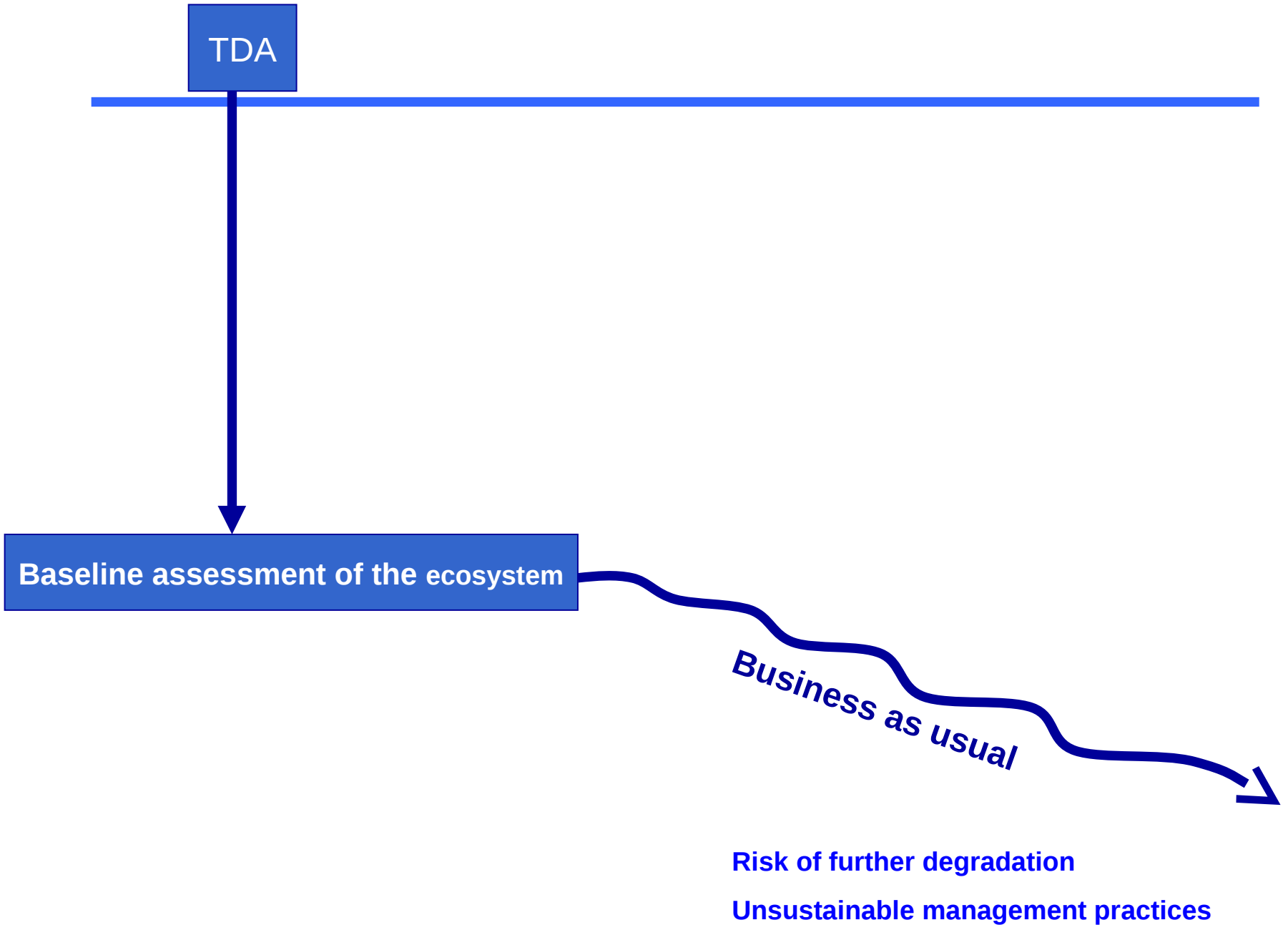
TDA

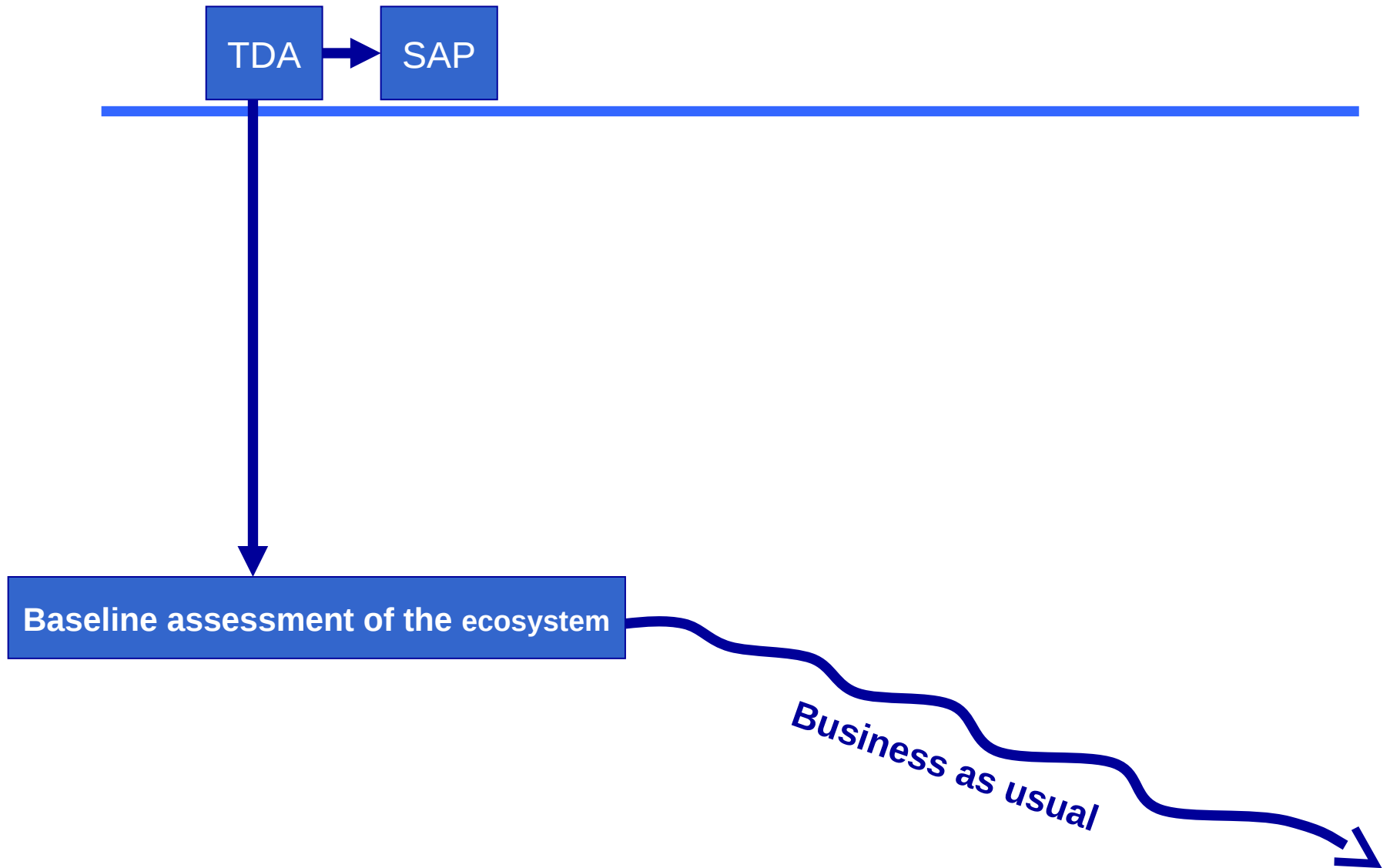
Baseline assessment of the ecosystem

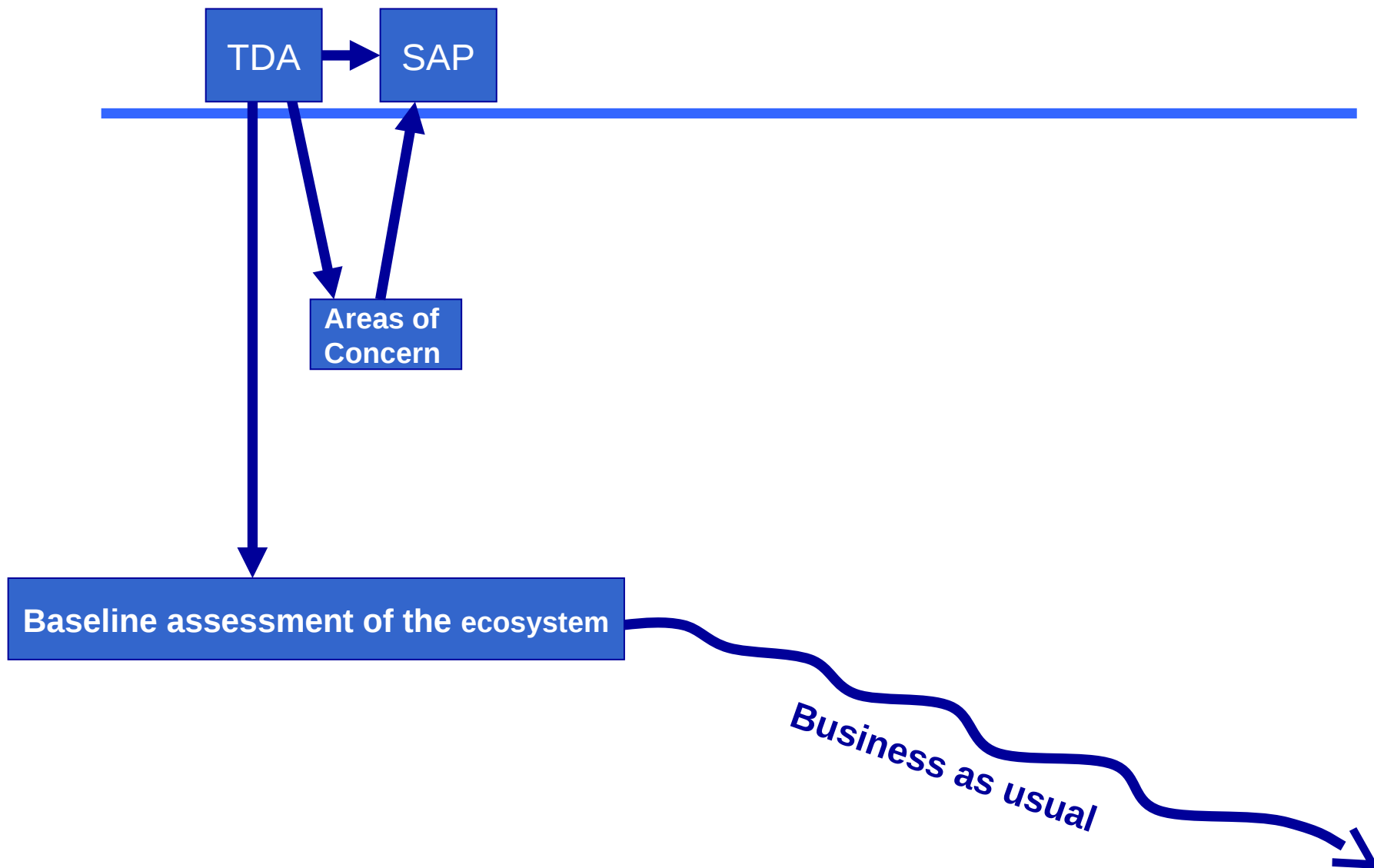
*Business as usual*

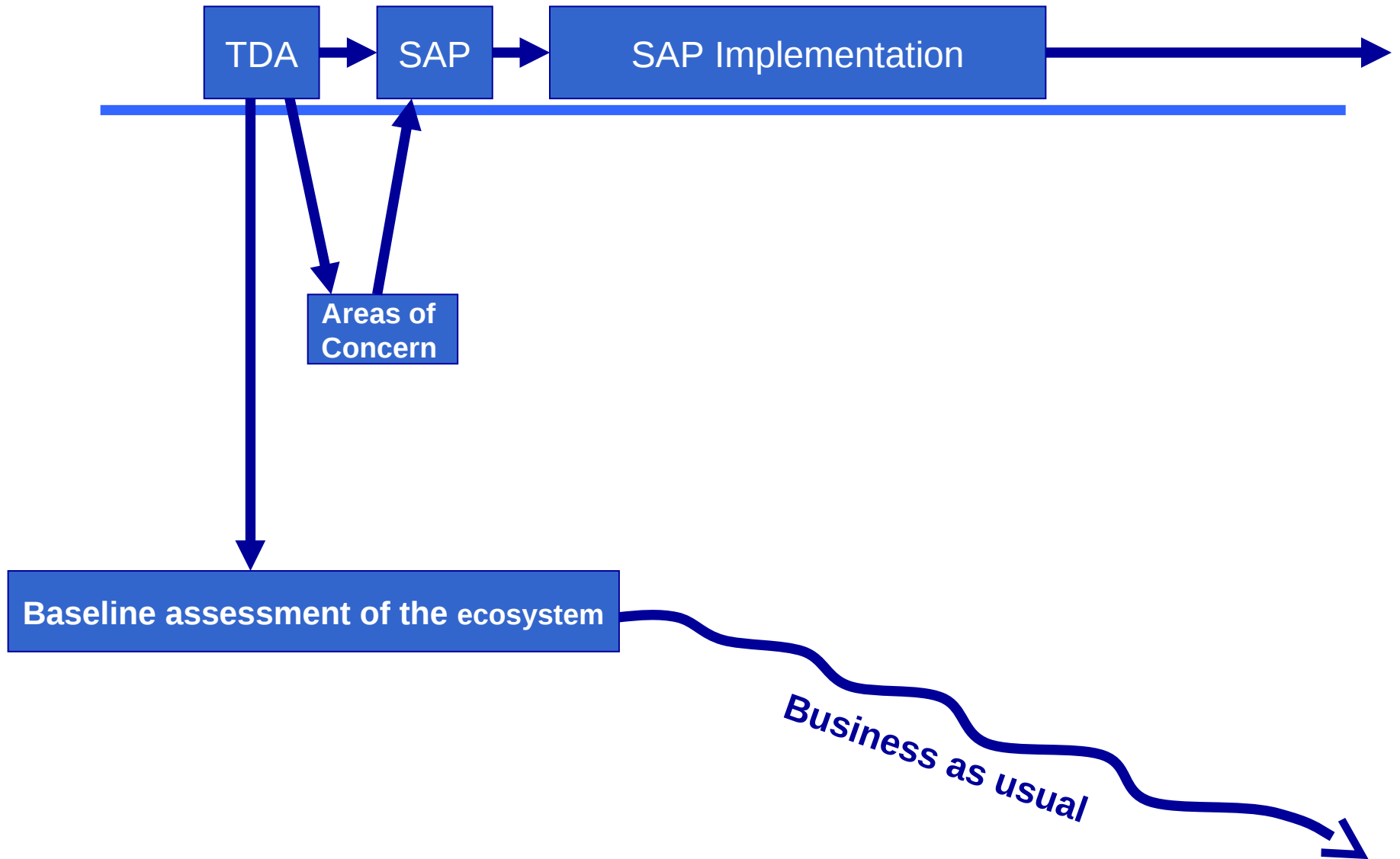
Risk of further degradation

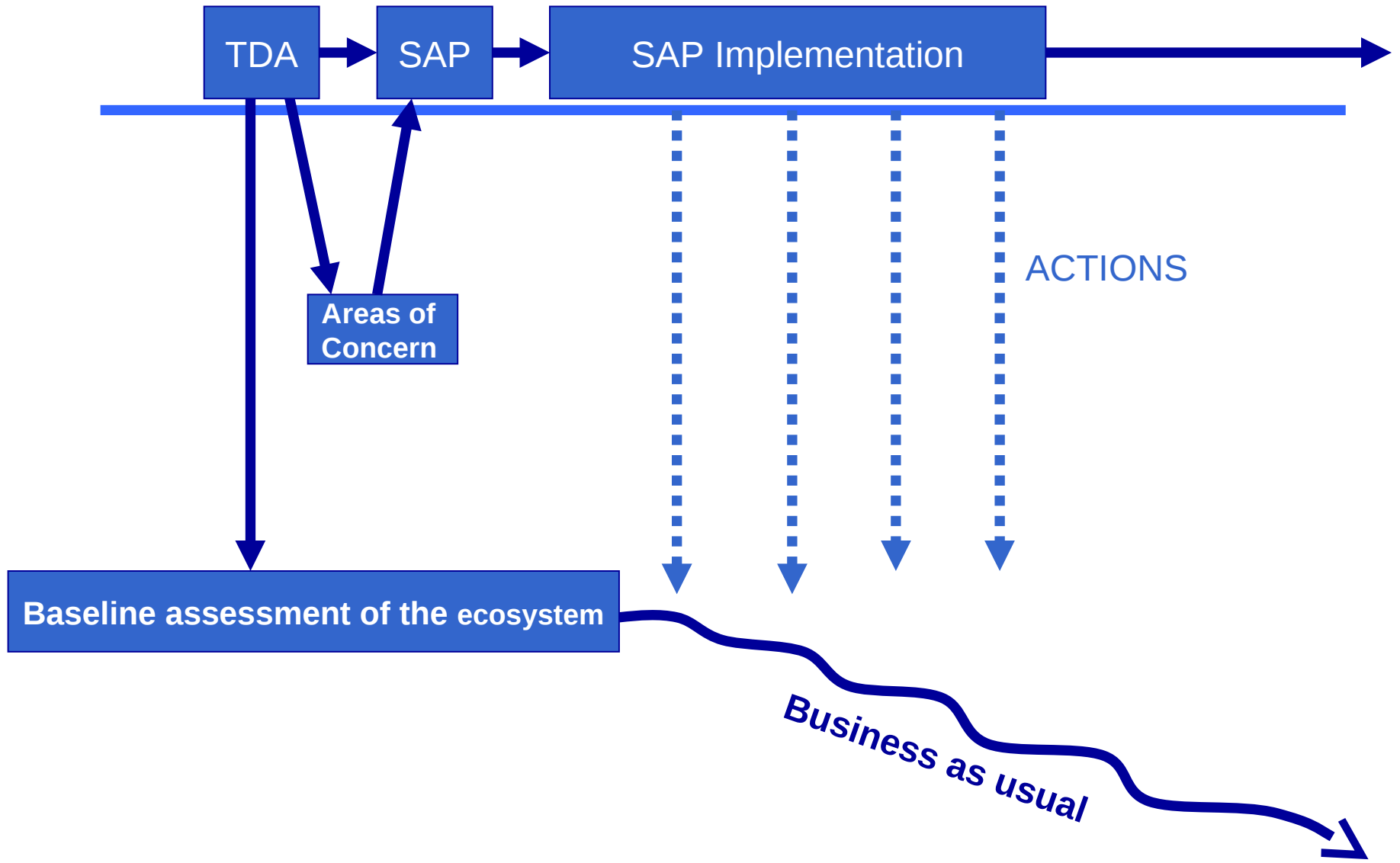
Unsustainable management practices



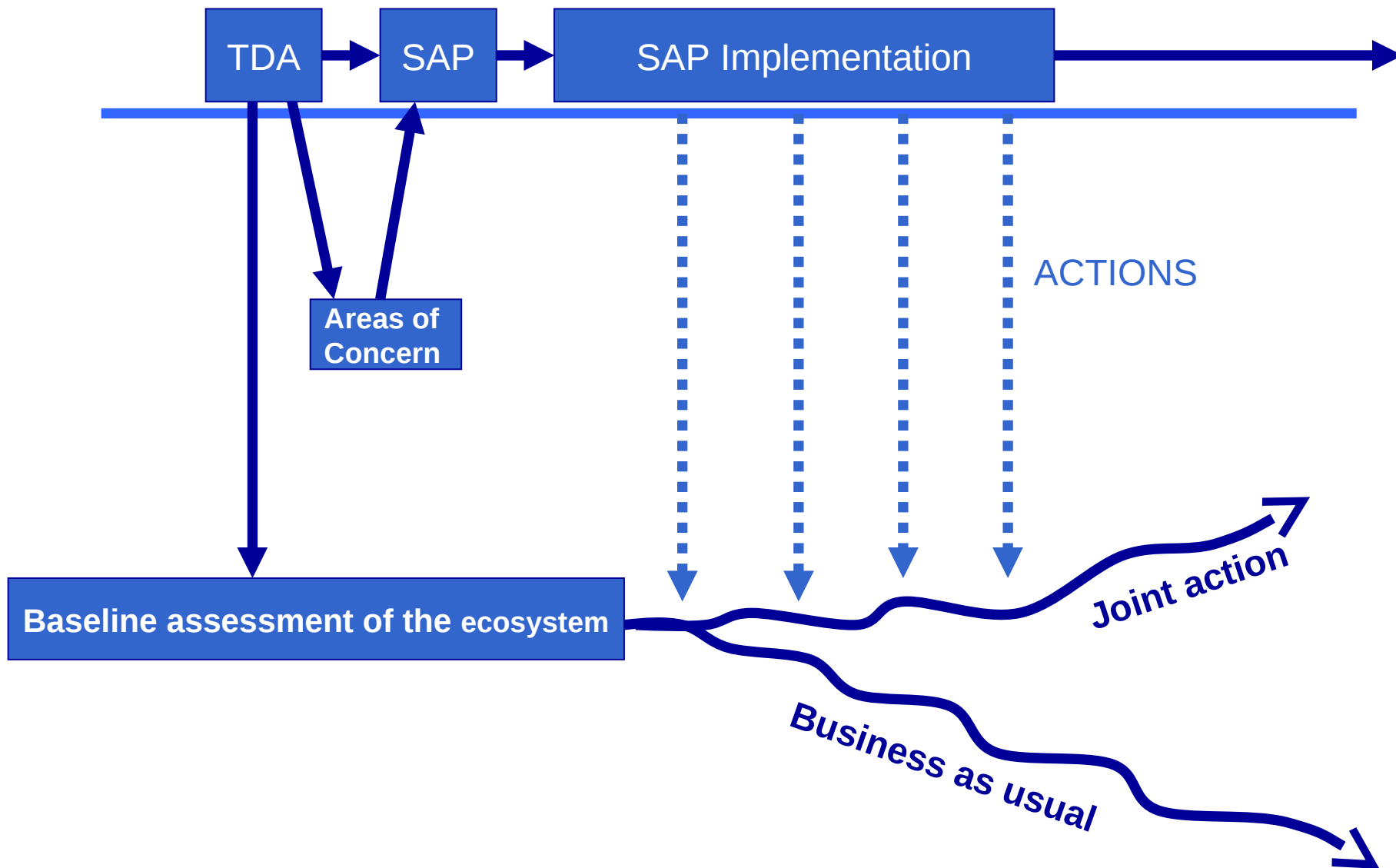


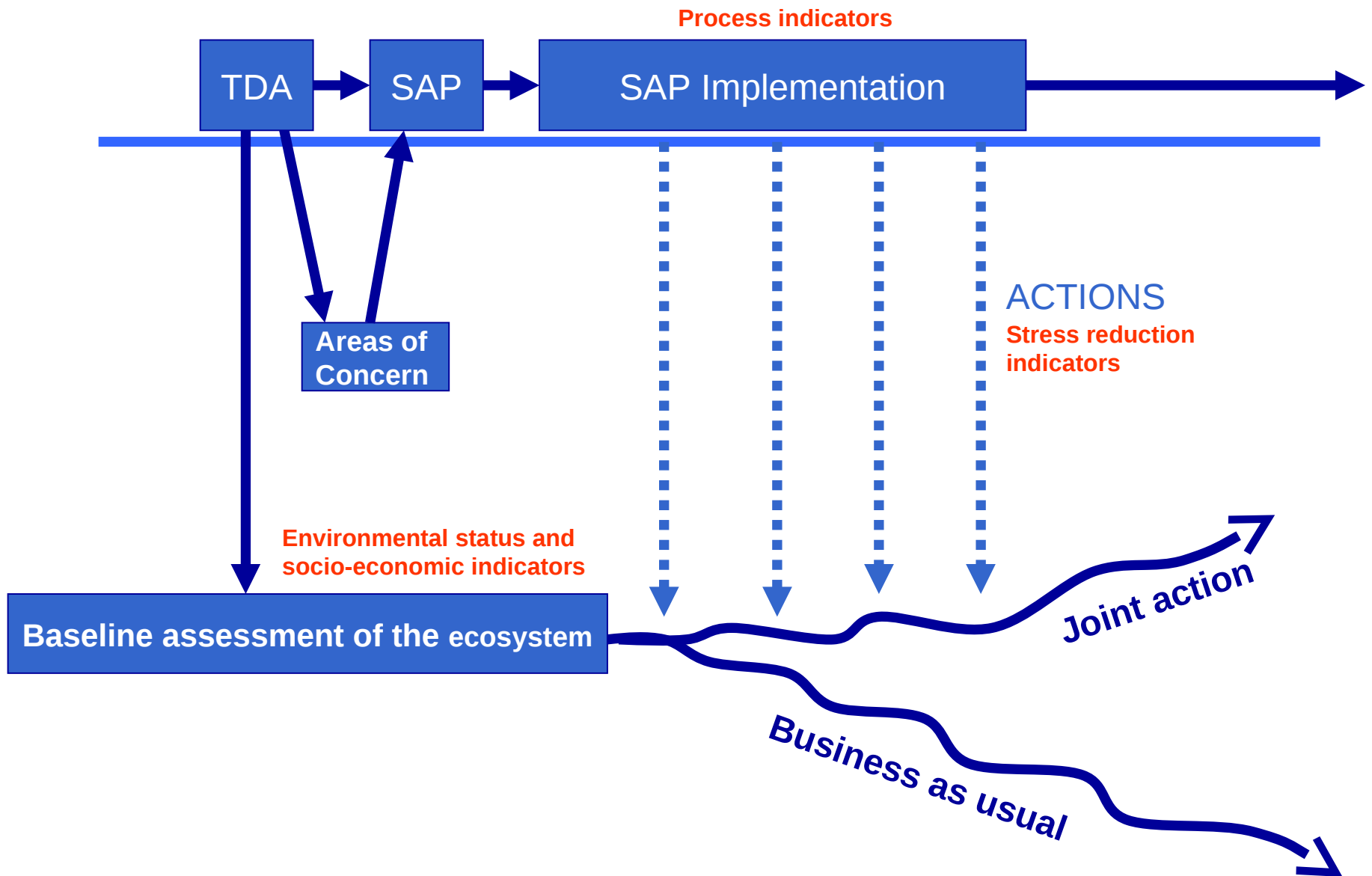


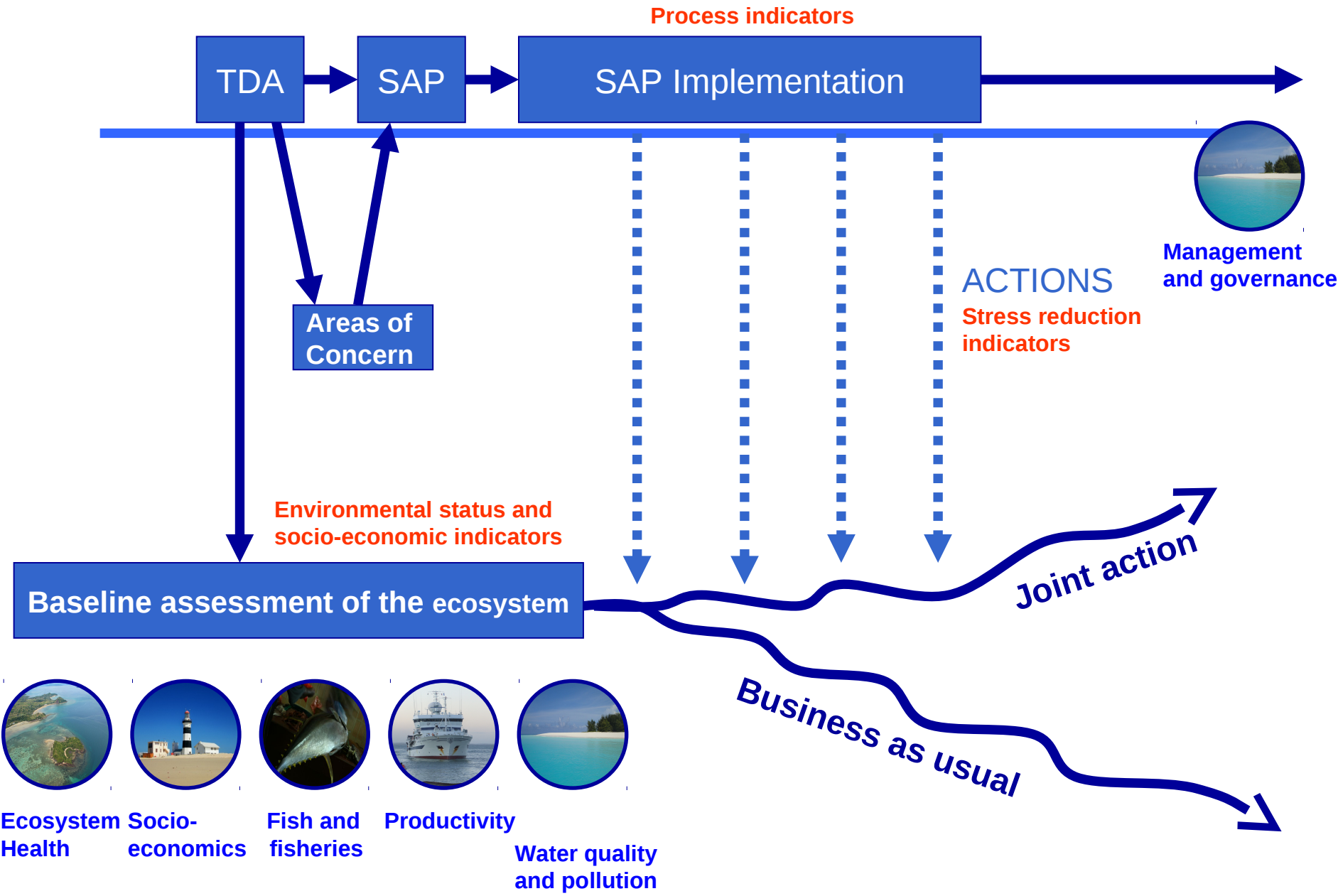


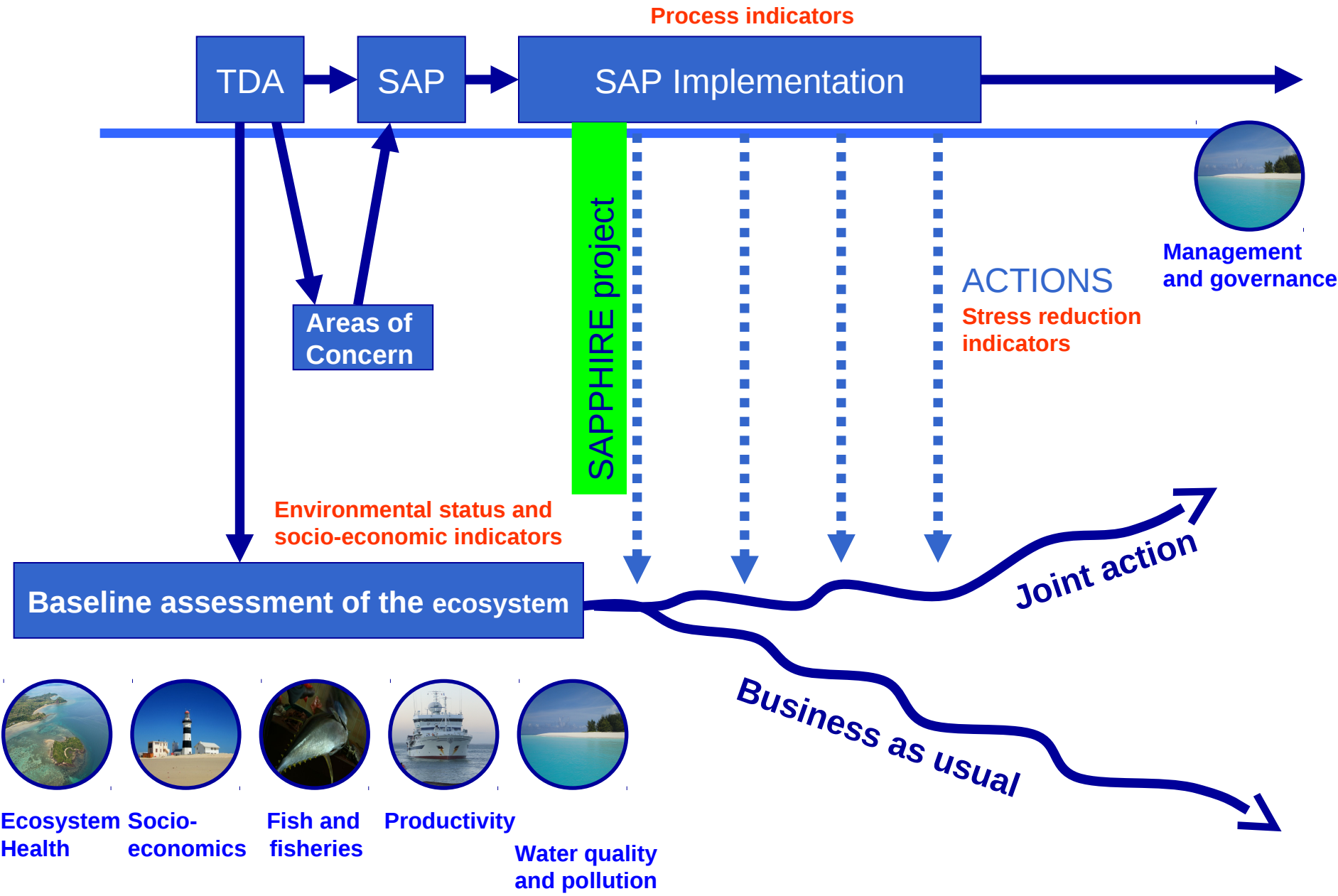












# **The Strategic Action Programme Policy Harmonisation and Institutional Reforms (SAPPHIRE) aims to implement elements of the SAP throughout the WIO region**

The Project has five components

1. Executing Management and Policy Reforms through a Knowledge-Based Governance Mechanism
2. Stress Reduction within the LMEs through Community-Level Stakeholder Engagement and Empowerment in SAP Implementation
3. Stress Reduction in Marine Pollution within the WIO LMEs through Private Sector/Industry Commitment to transformations in their Operations and Management Practices
4. Innovative Management Mechanisms for Extended Continental Shelf and High Seas Areas with the LMEs
5. Capacity Building and Training for Effective SAP Implementation and Long-term Ecosystem Monitoring



# Types of indicators

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1. Process indicators
2. Stress reduction indicators
3. Environmental and socio-economic status indicators



# **1. PROCESS indicators**

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Are indicators of project, institutional, or policy reform.

These are set out in:

- A) the overall regional SAP against 5 and 20 year targets (to meet overall EQOs)
- B) The SAPPHIRE project indicator set (from the logframe, against specific Project targets). This set maps across to the GEF IW Tracking Tool)

## **2. STRESS REDUCTION indicators**

Relate to specific measures implemented by collaborating countries

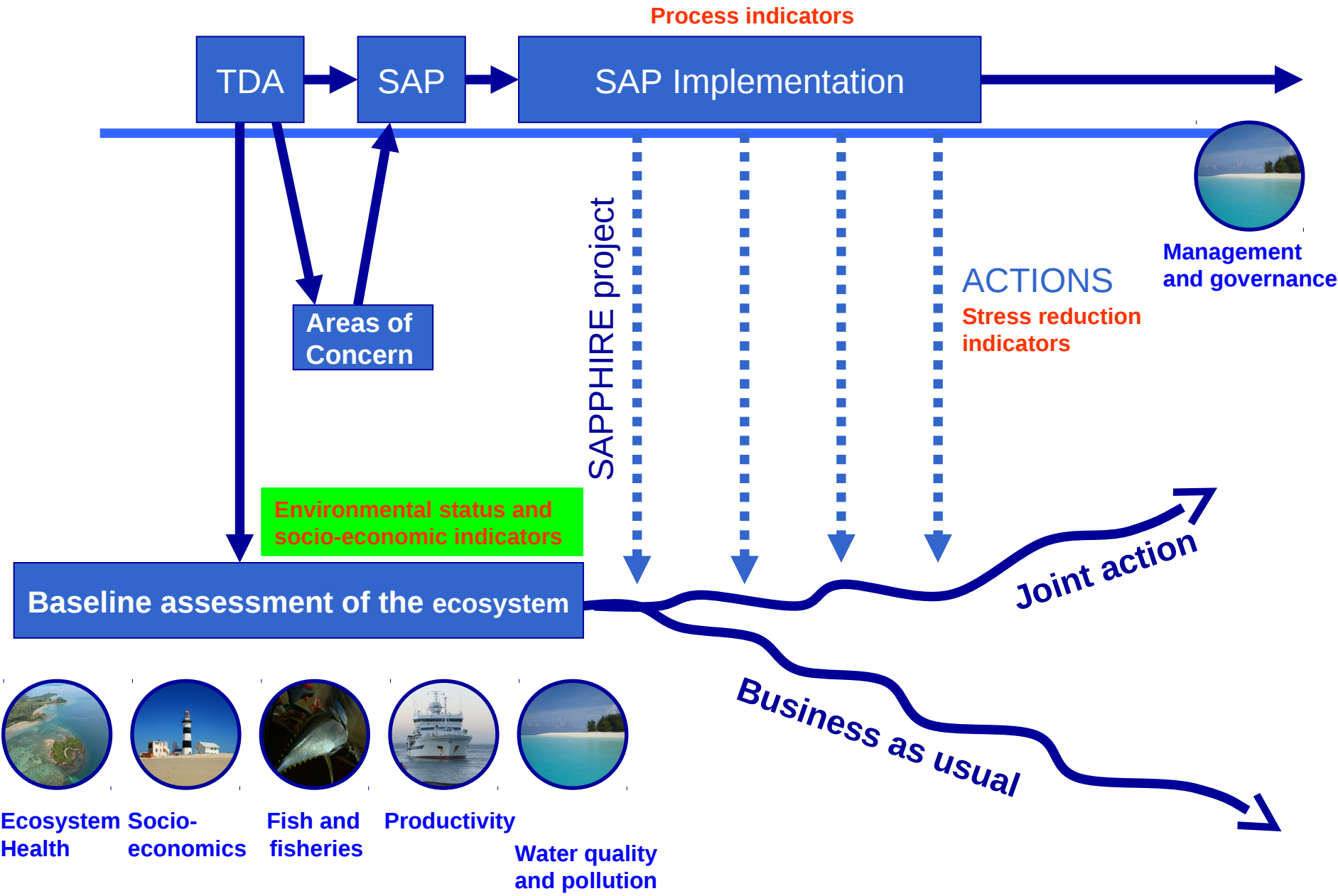
These are set out in:

- A) the overall regional SAP against 5 and 20 year targets (to meet overall EQOs)
- B) The SAPPHIRE project indicator set (from the logframe, against specific Project activities and targets).

# Example from SAPPHIRE Project indicators

## Component 1: Supporting Management and Policy Reforms for SAP implementation through national and regional level collaboration and monitoring

Section	Indicator		Spatial?	Indicator type	Target	Due date
Policy, legislative and Institutional Reforms adopted and coordination and management mechanism established at both national and regional levels to realize LME based management as identified in SAP (in close collaboration and partnership with WIOLAB SAP Implementation)	Regional SAP policy implementation committee established	# countries	yes	Process		
	Regional SAP technical committee established	# countries	yes	Process		
	Evidence of technical committee informing policy committee	# advisories	no	Stress reduction		
	National Level LME SAP Intersectoral Committees established	# countries	yes	Process		
	Revisions and improvements to legislation and policy clearly captured and gazetted through government channels	# countries	yes	Stress reduction		
	Revisions and improvements at regional level clearly documented	# countries	yes	Process		
	New national and regional institutional or administrative arrangements adopted	# arrangements	yes	Process/Stress reduction		
	Effective Knowledge/Science-Based Governance mechanisms adopted	# countries	yes	Process		
	Ecosystem valuation and cost-benefit updates completed	# countries	yes	Process/Stress reduction		
	Marine Spatial Planning framework developed	# countries	yes	Process		
	Marine Spatial Planning framework adopted	# countries	yes	Process		
	Marine Spatial Planning demonstrated at sites	sites - points	yes	Stress reduction		
	National action plans developed	# countries	yes	Process		
	National action plans adopted	# countries	yes	Process		
	MoUs/Ams signed with SAP partners	map of partners	yes	Process		
	Formal adoption of a single WIOSEA Agreement	yes/no	no	Process		
	Single agreement outlining resources for the SAP	yes/no, point data	maybe	Process		
	Regional project coordination forum partners	sites - points	yes	Process		





### 3. ENVIRONMENTAL STATUS + SOCIO-ECONOMIC indicators

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Tracking of the overall ecosystem response to Process/stress reduction interventions.

The objective may be rehabilitation or improvement, or just maintenance of healthy systems.

**Not just ecological; environmental status indicators are also used to measure whether communities/stakeholder benefit**

## **ASCLME approach to defining environmental status indicators**

We have reviewed existing monitoring programmes in the WIO, with additions from the MEDAs, peer review and Causal Chain Analysis Workshops and TDA development process.

Some regional programmes have standardised methods, while country-specific monitoring may employ methods unique to particular countries or institutions

A Panel meeting made up of countries and regional partners further refined indicator sets

The ASCLME project (with countries and partners) has established **47** possible long term monitoring data sets

We have identified national, regional and global

# Long term monitoring of environmental status

Within each of the five themes, the ASCLME and SWIOF Projects have established partnerships for data collection (nearshore and offshore expeditions, remote sensing of the environment, modelling, processing, data management and dissemination).

These partners AND others identified during the first phase of the projects will be involved & responsible for components of the M&I programme.

## Fish & fisheries

- FAO
- IOTC
- SWIOFC
- SIOFA
- IndiSeas



## Socio-economics

- CORDIO
- SocMon WIO



## Ecosystem health

- IOSEA, GEO B
- GCRMN, CBD
- FAO EAF Nansen
- NOAA, NIOZ, WOC
- IOC/UNESCO
- IRD, JAMSTEC
- CORDIO, GOOS
- Seagrass Watch
- IUCN, WWF, CI
- BirdLife International



## Water quality & pollution

- Nairobi Convention
- COI
- IMO



## Productivity

- FAO EAF Nansen
- NOAA, NIOZ, WOC
- IOC/UNESCO
- IRD, JAMSTEC
- CORDIO, GOOS



# Fish and fisheries (28)

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## Lead / partners

- FAO
- IOTC
- SWIOFC
- SIOFA

## Parameters monitored

- Catch
- Bycatch
- Use of bycatch exclusion devices

## Indicators

- Catch rate
- Fishing in balance
- Marine Trophic Index
- % Bycatch reduction



# Ecosystem Health (39)

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## Lead / partners

- IOSEA, GEO BON
- GCRMN, CBD
- Seagrass Watch
- IUCN, WWF, CI
- BirdLife

## Parameters monitored

- Critical habitats (coral reefs, seagrass beds, mangroves)
- Focal species
- Shoreline

## Indicators

- % habitat change
- Condition of habitat
- Change in status of focal species
- Shoreline change



# Productivity (3)

## Lead / partners

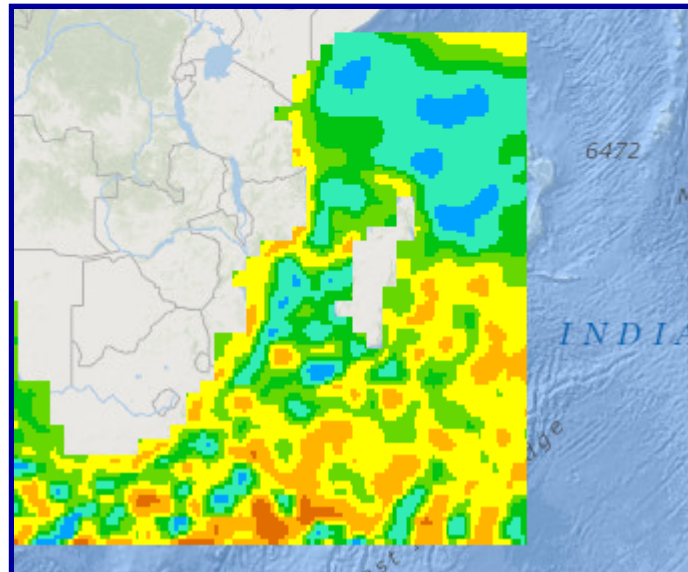
- FAO EAF Nansen
- NOAA, NIOZ, WOC
- IOC/UNESCO

## Parameters monitored

- In-situ ocean (temp, nutr)
- RS ocean (SST, Chlor)
- Currents

## Indicators

- Degrees, % of change
- Monitoring of monsoon events
- Monitoring of mesoscale features



# Water quality and pollution (8)

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## Lead / partners

- Nairobi Convention
- COI
- IMO

## Parameters monitored

- Inshore coastal water quality
- POPs
- River discharge

## Indicators

- Bacterial load
- Incidence of related diseases





# Socio-economics (~29+54)

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## Lead / partners

- CORDIO
- SocMon WIO

## Parameters monitored

- 54 SOC MON variables

## Indicators

- change over time





# Notes for each indicator

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Data Sources

Monitoring data set - source and metadata

Baseline

Whether a complete baseline exists or not, temporal detail

Indicator detail

How it is calculated

Target

Target

Resolution/Scale

Frequency of monitoring

Indicator reporting rate

Notes

Indicator links to / contributes to

Other regional and global programmes (GCRMN, OHI, TWAP etc)

Priority (H/M/L)

National institutions

Regional partners

Data design & collection

Processing

Indicator reporting

Data management

Dissemination

# Crosscutting partners for indicator development

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- IOC/UNESCO's African Marine Atlas
- IndiSeas (Indicators for the Seas ); a SWIOFP partner
- UBC's (University of British Columbia) Seas Around Us Project
- OHI (Ocean Health Index) a global programme; maximising sustainable use
- TWAP (Transboundary Waters Assessment Programme)



# Crosscutting partners for indicator implementation

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- IOC/UNESCO's African Marine Atlas
- The Nairobi Convention
- WIOMSA
- OHI (Ocean Health Index)
- TWAP (Transboundary Waters Assessment Programme)

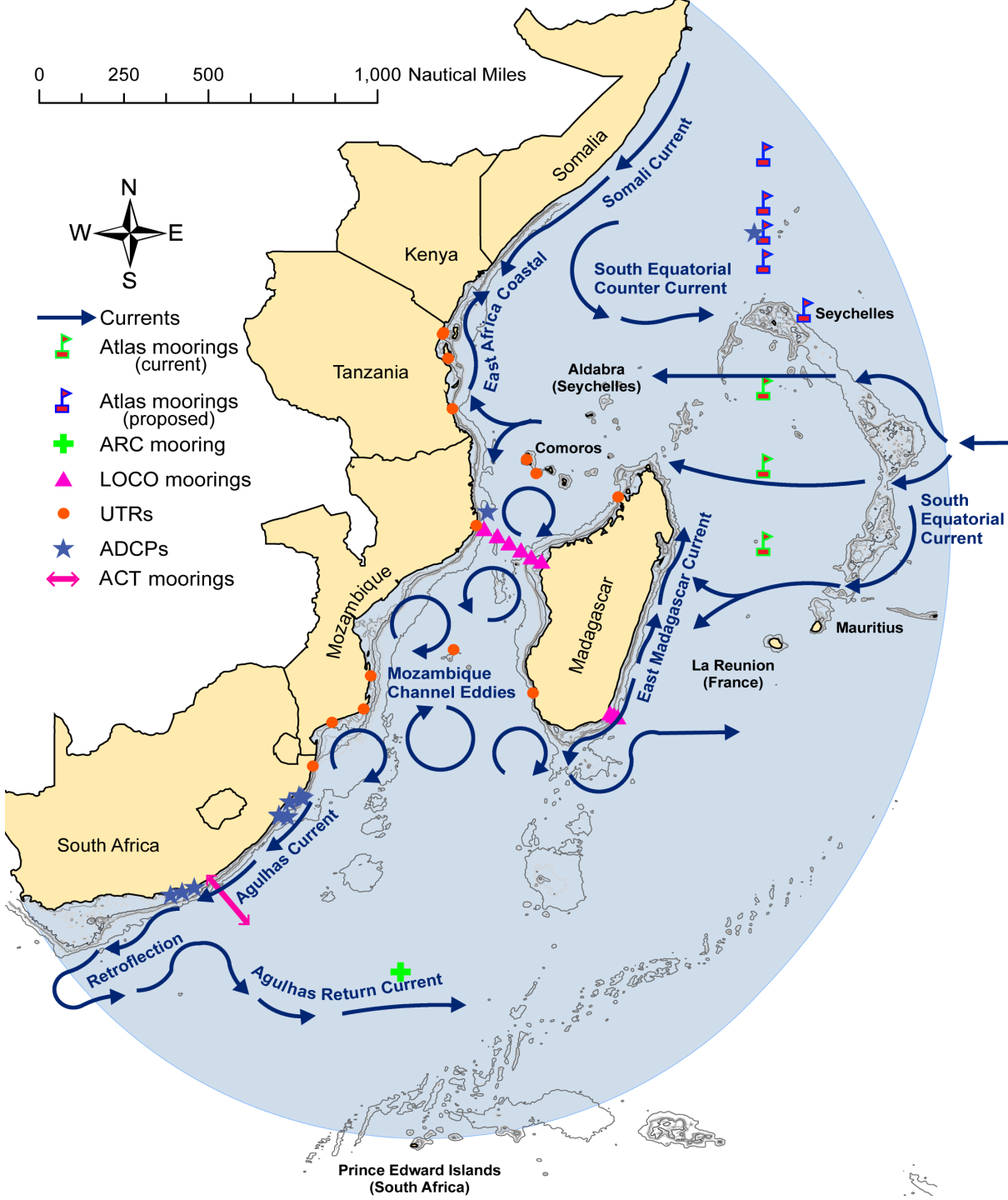


# **A multi-partner Alliance has been established for long term ocean-atmosphere monitoring**

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- Track and understand change and trends in the state of ecosystem processes over the long term
- Understand anthropogenic effects as well as natural change
- Access long term forecasts where reliable and useful for management purposes.
- Understand the effects of transboundary management interventions
- Management and dissemination of data
- Create a link between observations and governance

# Annual Cruises of Alliance Partners



- Ongoing collection of ocean-atmosphere data and servicing of moorings for near-real time data streams.
- Needs to be independent of GEF-investments (sustainable)

# Conclusion

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The final ecosystem monitoring and indicators framework will be defined during the implementation of the SAPPHIRE project

A pragmatic sub-set needs to be chosen based on maximising information derived, and co-funding and support from countries and other programmes.

Indicators must be nested and integrated with national reporting requirements as well as global programmes

Ecosystem monitoring at National level needs to be aligned with other existing reporting requirements (to minimise the burden of time) and will be reflected in the revised MEDAs.

