



Overview of the Essential Ecosystem Approach to Fishery Management (EAFM) Course

SEAFDEC 2019



CORAL TRIANGLE INITIATIVE
ON CORAL REEFS, FISHERIES AND FOOD SECURITY



Norad

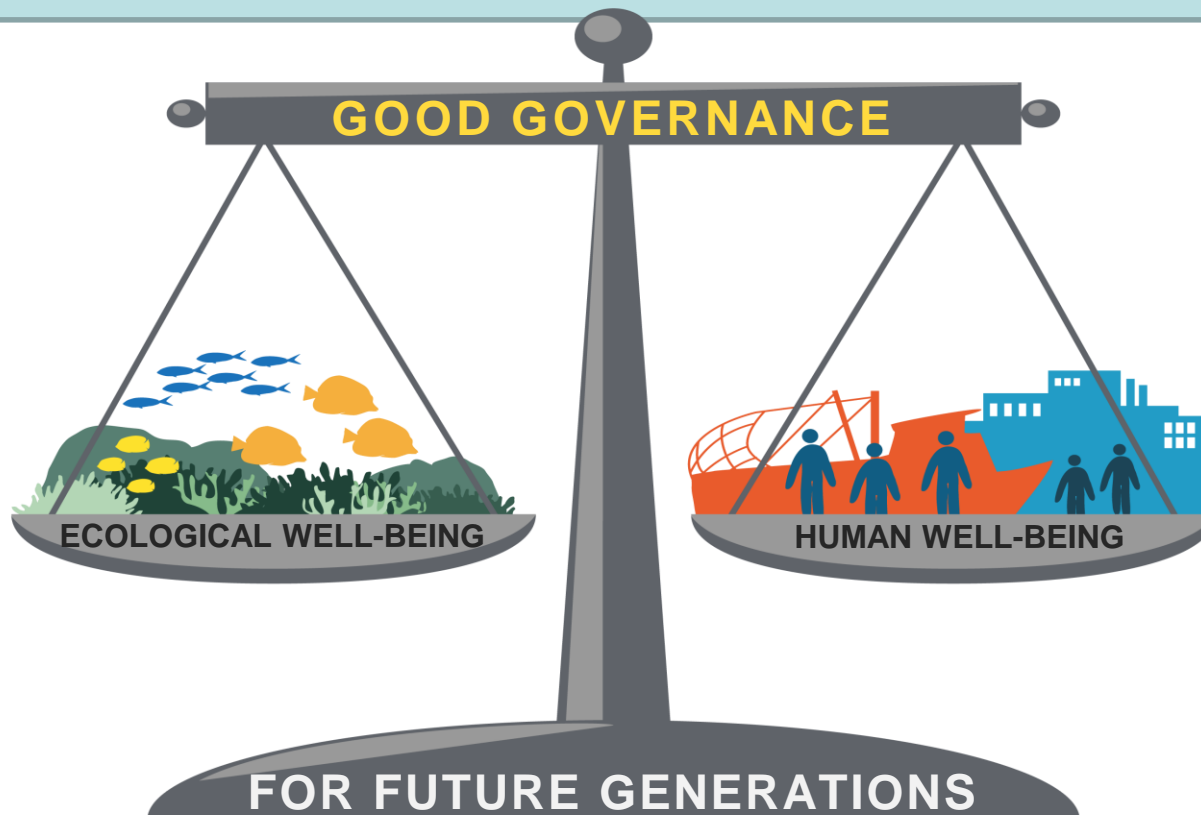


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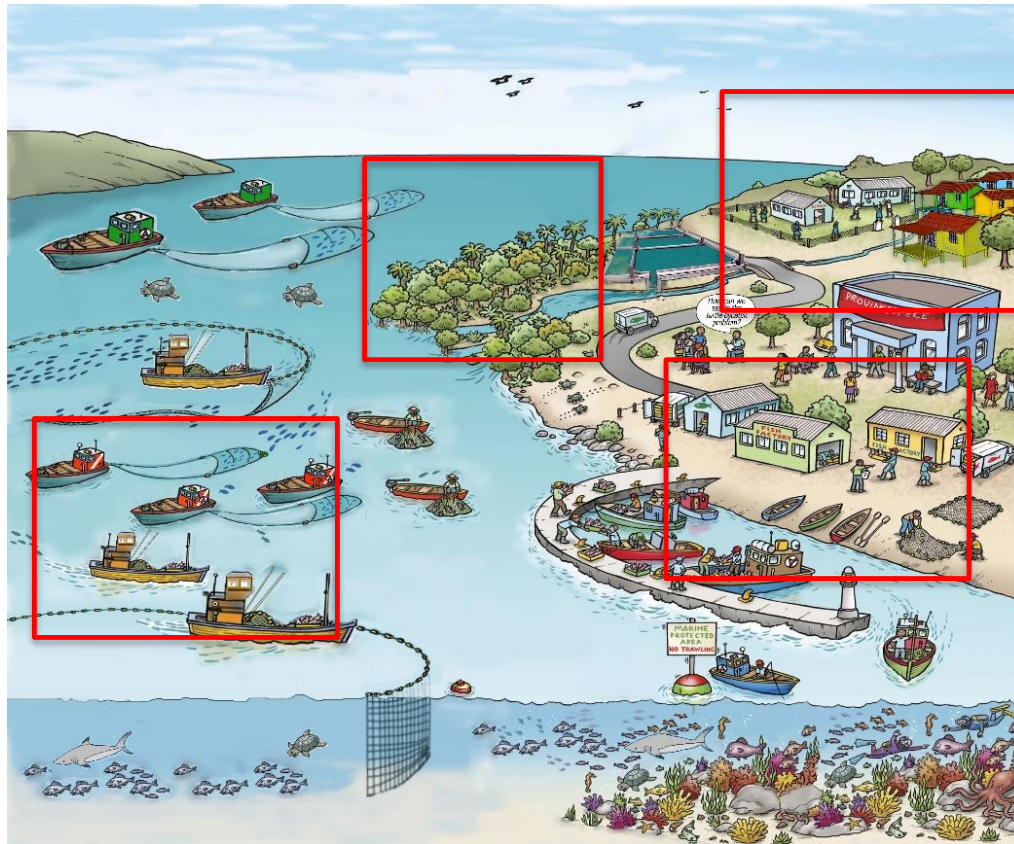
What is EAFM?

- EAFM promotes sustainable development in the fisheries sector
- Balances ecological well-being and human well-being through good governance
- For future generations (our sons and daughters)



What are we trying to achieve?

EAFM provides a practical way to sustainably maximize ecosystem benefits



- Fish for food
- Livelihoods
- Income
- Employment
- Coastal protection

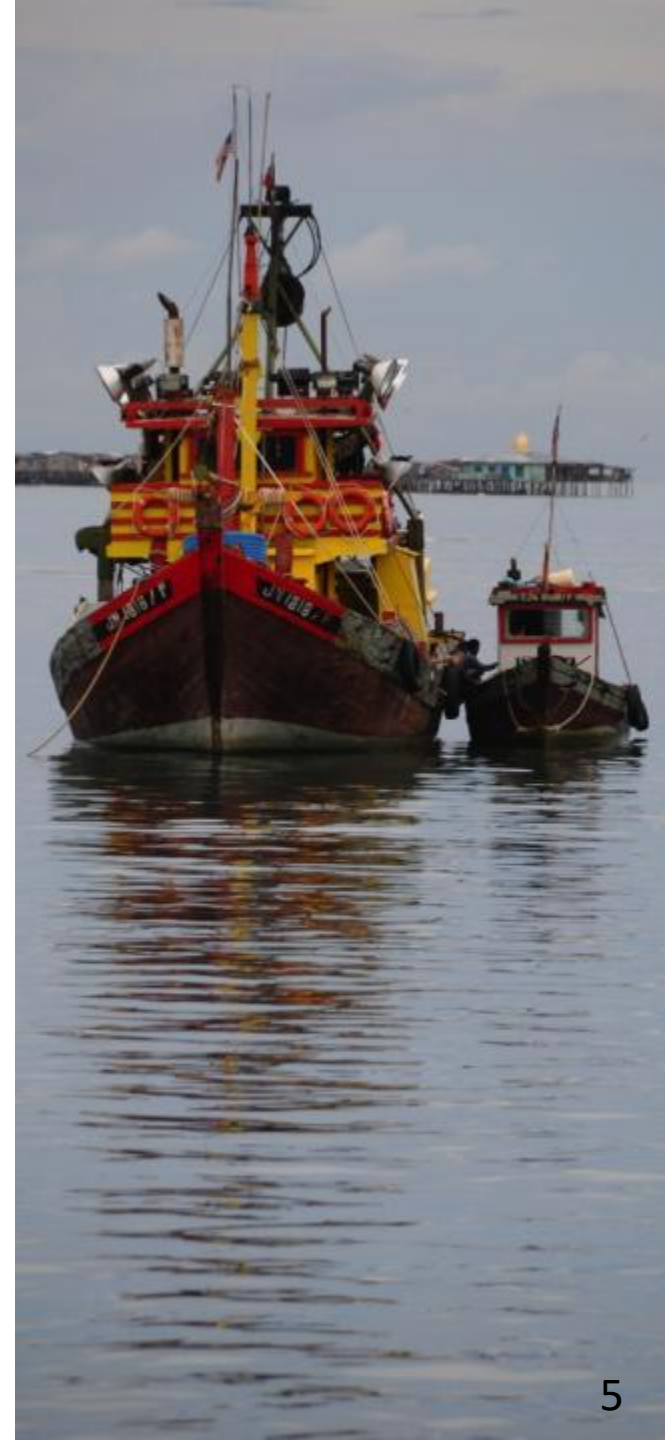
Why is EAFM different from existing fisheries management?

- **Broader management approach**
 - Existing fisheries management usually covers a restricted number of issues and threats
 - Managing this narrow set of issues often misses important causes of problems in the fishery

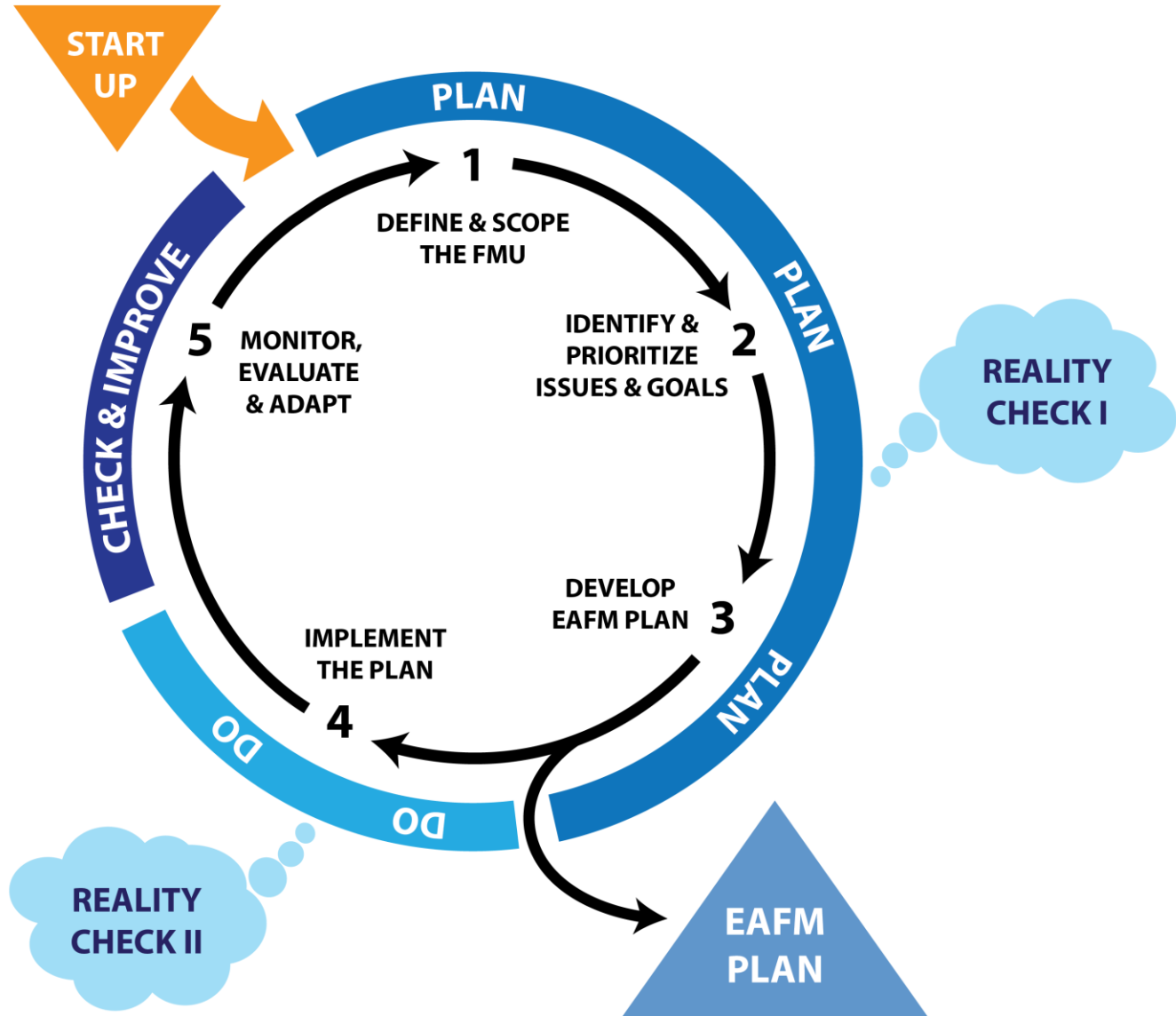


Key characteristics of EAFM

- **Recognizes that there are different stakeholders in a fishery**
 - stakeholders need to be included in all stages of the process and work together (co-management)
- **Uses adaptive management**
 - management starts before we have all the answers and learns by controlled trial and error
- **Balances multiple objectives**
 - requires effective governance



The 5 steps of EAFM



Linking policy to action

Example:

Healthy environment

Policy

```
graph TD; Policy[Policy] --> EAFM[EAFM Plan]; EAFM --> Actions[Actions];
```

Objective:

Protect seagrass

EAFM Plan

Action:

Allocate a no-take area to prevent fishing in seagrass areas

Actions

Note: policies by themselves do not result in change

This may sound complicated!

Don't worry!.....If you follow the process, an EAFM plan can be quite straightforward

Importantly it only focuses only on a few priority issues and management actions

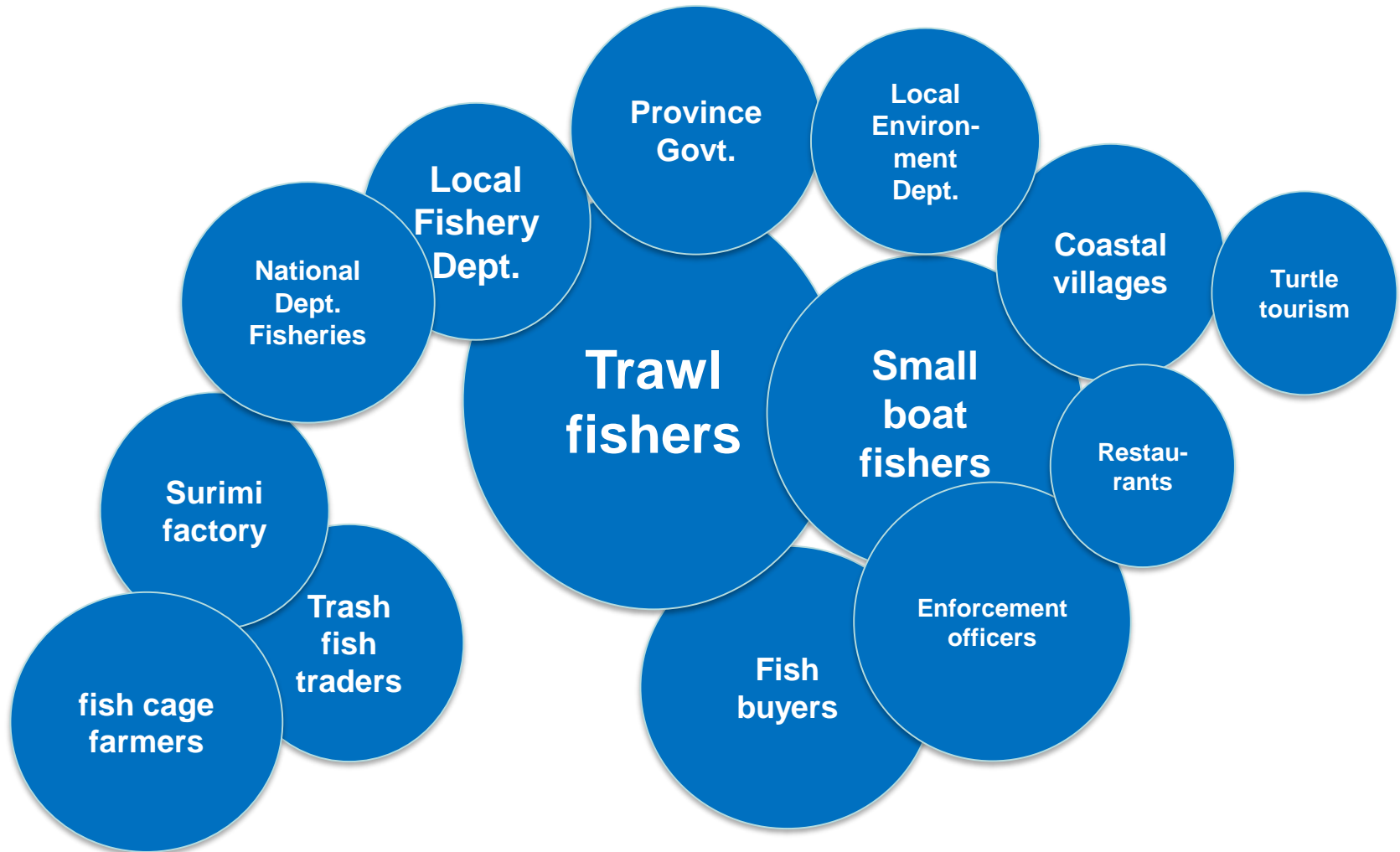


Let us look at a worked example that goes through the steps

Trawl fishery in Thailand



Start-up: Identify & engage stakeholders



1.1 Define the Fishery Management Unit (FMU)

What are you trying to manage?

- In this worked example: Trawl fishery along the coast of Thailand, covering 2 Provinces



1.2 Agree on a vision for the FMU

Stakeholders developed this vision:

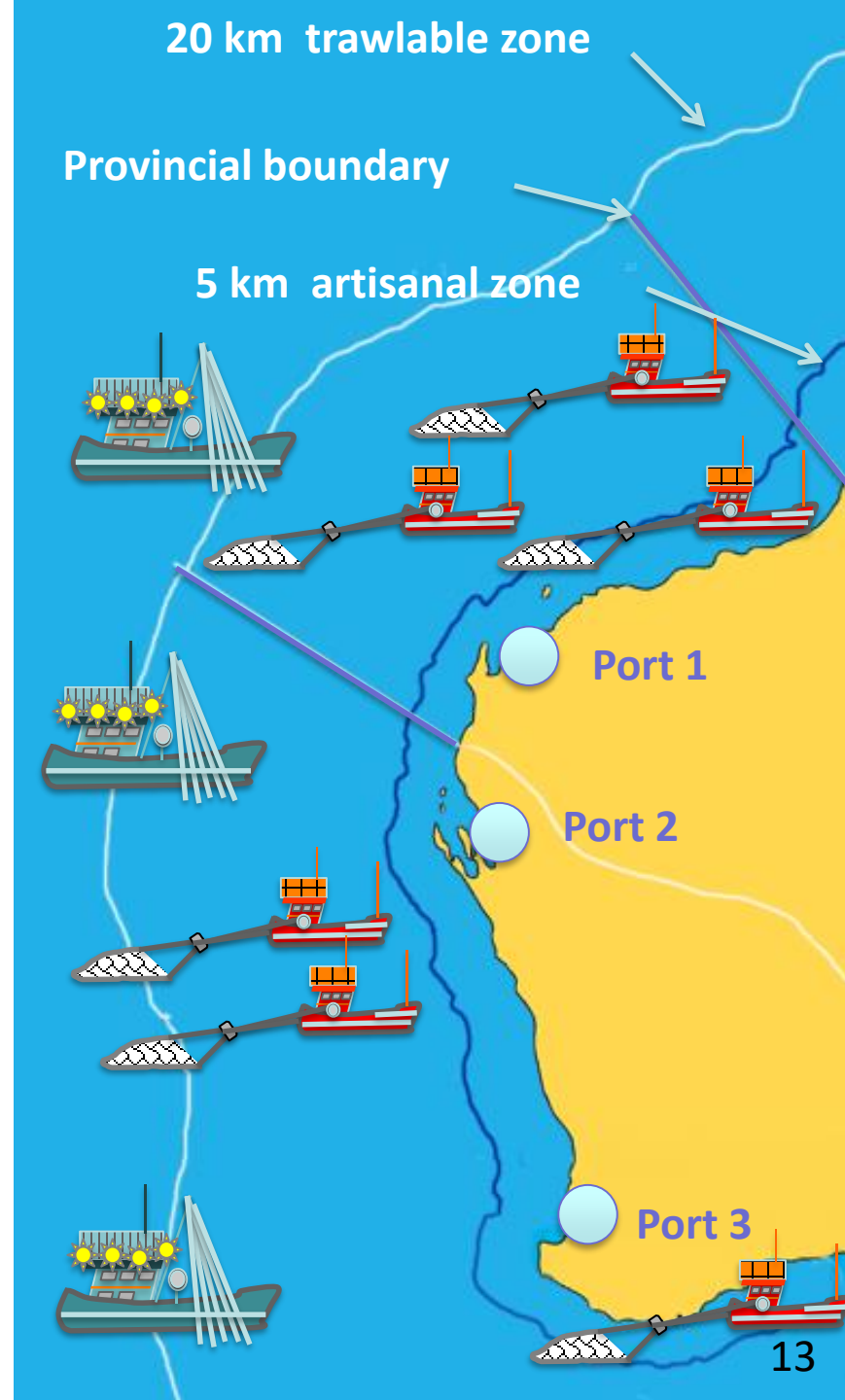
“A profitable trawl fishery that has little impact on the environment and other marine resource users”



1.3 Scope & profile the FMU

Provide some background to the fishery

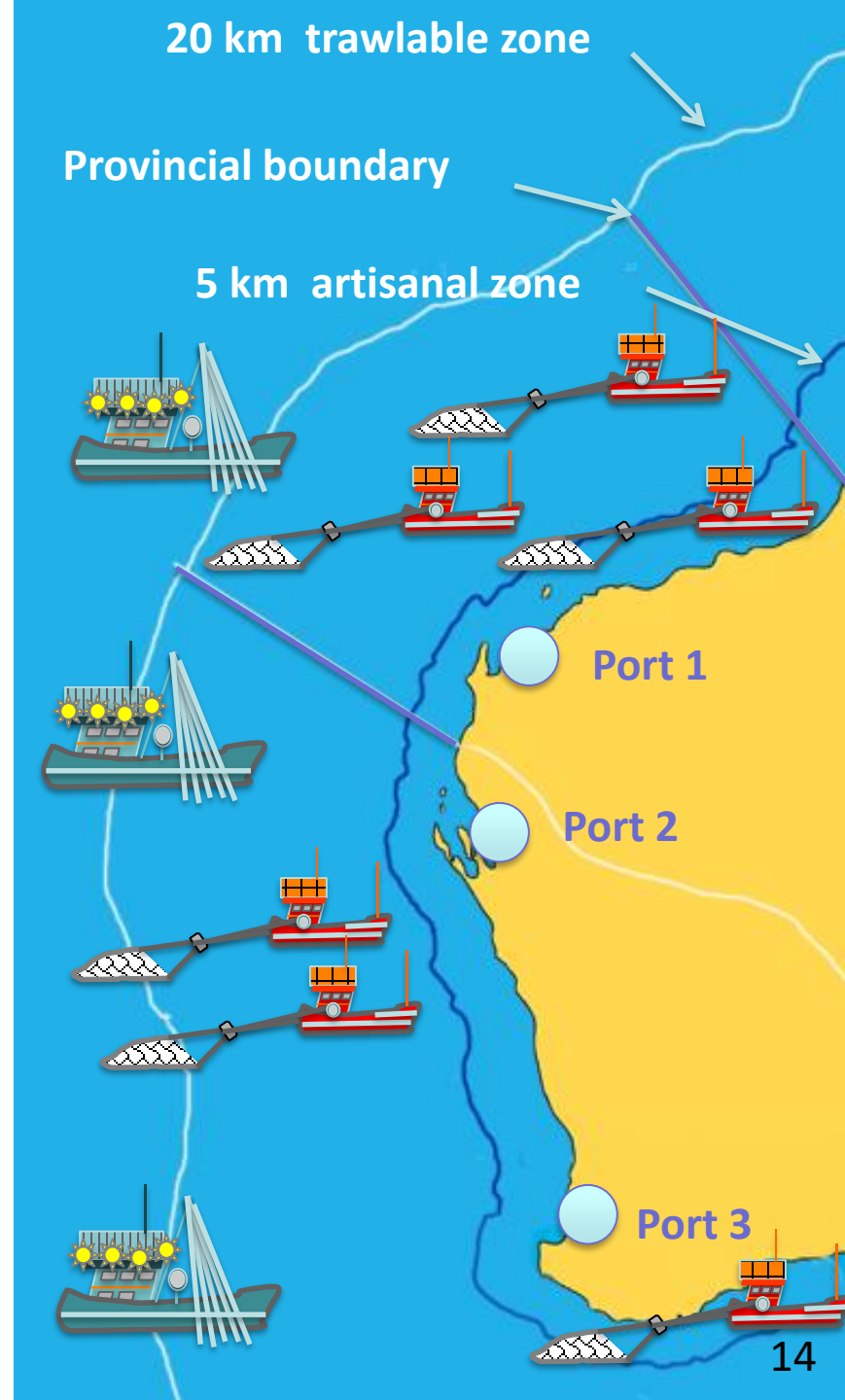
- **A coastal trawl fishery**
 - operates in two provinces
 - trawling occurs up to 50 km from shore
 - three major ports
- **Interacts with other fishers**
 - artisanal gillnet fishery
 - light attracting squid fishery
- **Encroaching trawlers from other provinces**



1.3 Scope & profile the FMU (cont.)

Some management and enforcement in place:

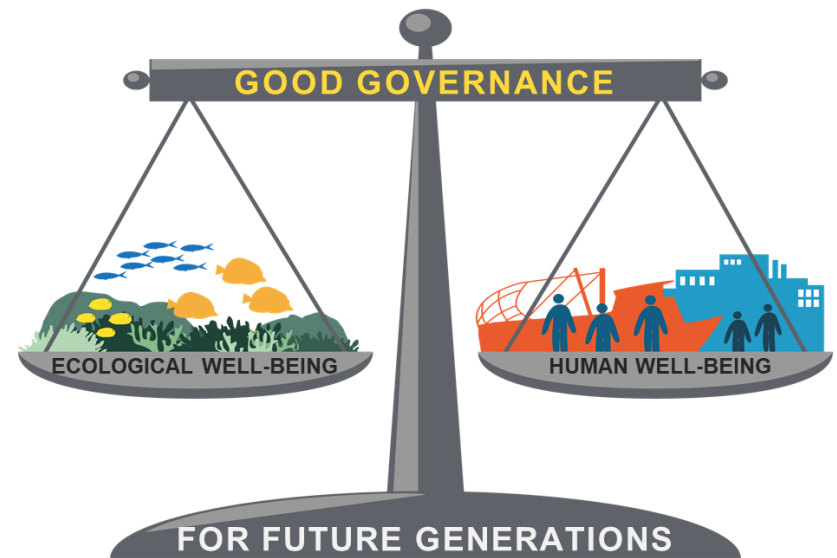
- Trawling banned from a 5 km artisanal fishery zone
- Closed season to protect the spawning fish
- 3.5 cm minimum mesh size for the cod end
- One fishery patrol vessel



Step 2.1: Identify issues & threats

EAFM is about balancing ecological well-being with human well-being through good governance

- **Ecological issues**
 - fisheries resource related
 - environment related
- **Human issues**
 - social
 - economic
- **Governance issues**
 - enforcement and compliance
 - working together



Ecological Fishery

Overfishing

Catching too many juvenile fish

Shift to low value, fast recruiting species

Small scale fishers cannot catch high value fish

Ecological Other

Reduction in mangrove fringes

Benthos disruption by trawling

Turtle egg collection

Nutrient/sediment run off

Tourism demands for protection

Human

Demand for trash fish by cage aquaculture

Tourism (beach/turtles)

Low income in small scale fishery

Trawler profits depend on trash fish landing

Employment of local women in surimi factory

Markets, restaurants want higher quality fish

Governance

Encroachment of trawlers

Conflicts with small-scale

Weak enforcement of mangrove protection

Vessel registration/licensing inefficient

Fishery Subsidy (fuel/other)

Fishery enforcement underfunded

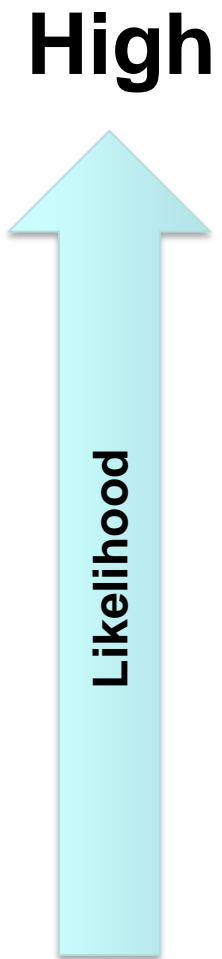
Limited engagement with SSF, co-management weak

Many issues

2.2 Prioritize the issues & threats

- **Prioritize issues through stakeholder discussions**
 - stakeholder interests and priorities often differ, and may conflict
- **Evaluate relative importance of the issues**
 - using a risk-based approach
 - issues that are very likely to occur and will have a serious impact





Aquaculture demand for feed

**Low impact
Very likely**

Unregistered vessels

Encroaching trawlers in closed season

**Low impact
Unlikely**

Discards

Too many trawlers

Juvenile bycatch

Conflict between trawlers and others

**High impact
Very likely**

Fuel subsidy

Degradation of coastal habitat

Trawler encroachment into 5km zone

Catch value declining

Turtle bycatch

**High impact
Not likely**

Migrant labour rights

Low



High

Priority ecological issues

- **Fishery**
 - too many trawlers (overcapacity)
 - bycatch: Large percentage of juveniles of commercial species
 - high volume of low value/trash fish
- **Other non-fishing ecosystem effects**
 - degradation of mangroves (nursery area)



Priority human issues

- **Conflicts**
 - trawlers conflict with small-scale fishers
- **Decreasing profitability**
 - because of the low value of overall catch, trawlers must land juvenile and trash fish to cover costs (break even)



Priority governance issues

- **Poor compliance with regulations and few incentives**
- **Encroachment**
 - artisanal fishery zone set at 5 km, but regular IUU by trawlers
- **Vessel licensing and registration system ineffective**



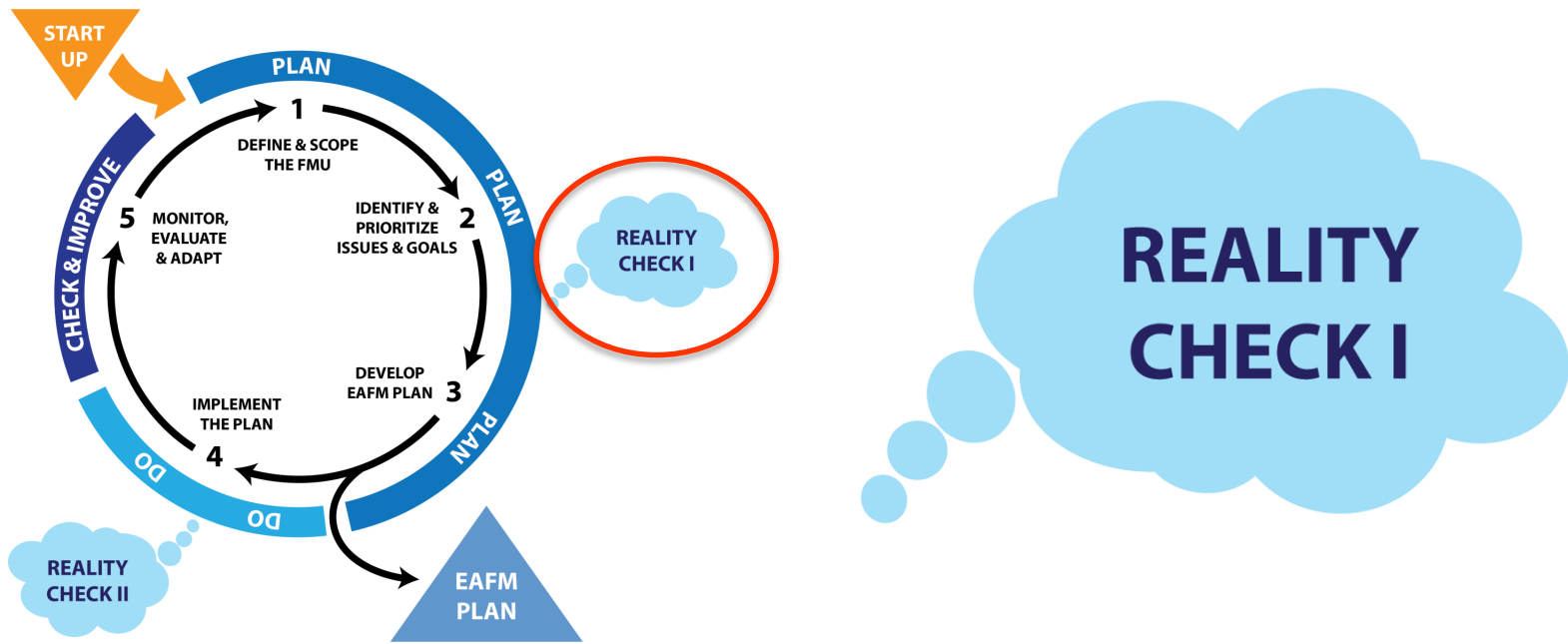
2.3 Define the goals for the EAFM plan

Goal 1: Fisheries and critical habitats have been restored and sustained

Goal 2: The trawl fishery is profitable with minimum conflict with other users

Goal 3: The compliance and enforcement of illegal activities are effective and efficient





Are the goals achievable?

- Have we engaged with the right stakeholders?
- Do we have enough money?
- Do we have enough human capacity?
- Do we have political support?
- Do we have support from our agency/department?

3.1 Develop the management objectives

Goal 1: fisheries and critical habitats are restored and sustained

1. Reduce the catch of juvenile fish
2. Increase the area of mangroves

Goal 3: compliance and enforcement of illegal activities is effective and efficient

3. Reduce encroachment of trawlers

For this talk, only use 3 examples. In reality we would have at least one objective for each issue



3.1 How do we know if we are meeting the objectives

- **For each objective,**
 - develop an indicator
(measures where you are)**and**
 - compare the indicator with a benchmark
(where you want to be (target)
or where you have come from
(baseline) or where you don't
want to be (limit))



3.1-3.3 Develop indicators, benchmarks & management actions

Vision: A profitable trawl fishery that has little impact on the environment and other marine resource users

Goal 1: Fisheries and critical habitats have been restored and sustained

Management objective 1.1	Reduce the catch of juvenile fish		
Indicators	Percentage of juvenile fish at sample landing sites		
Benchmark	Target: Reduce the percentage to 20% in 5 years (currently 50%)		
Management actions	Expand no-trawl zone	Increase the mesh size of the cod end	Extend the closed season

3.1-3.3 Develop indicators, benchmarks & management actions

Goal 1: Fisheries and critical habitats have been restored and sustained

Management objective 1.2	Increased mangrove area	
Indicator	Hectares of mangroves	
Benchmark	Target: Mangrove coverage restored to 80% of 1970 area (currently 50% of 1970s mangrove coverage lost/degraded)	
Management actions	Cutting of mangroves restricted to legal user groups	Encourage and support local communities to plant mangroves

3.1-3.3 Develop indicators, benchmarks & management actions

Goal 3: The compliance and enforcement of illegal activities are effective and efficient

Management objective 3.1	Reduce encroachment of trawlers	
Indicators	Number of encroachments into artisanal zone reported by small-scale fisher group	Number of prosecutions for illegal fishing
Benchmark	Reduce to 10 incidences per month in two provinces	Currently zero per year
Management actions	Establish reporting system for small scale fishers (community watch)	Form an enforcement and compliance team to include the police, navy and coast guard

What data and information do we need for the indicators?

- ***Percentage of juvenile fish at sample landing sites***
 - monitored by research institute through visiting the ports every 3 months
- ***Hectares of mangroves***
 - Monitored by remote sensing
- ***Number of encroachments into artisanal zone reported by small-scale fisher group***
 - Monitored by communities
- ***Number of prosecutions for illegal fishing***
 - Data from legal agency



Finalizing the plan

3.3b Consider enforcement and compliance

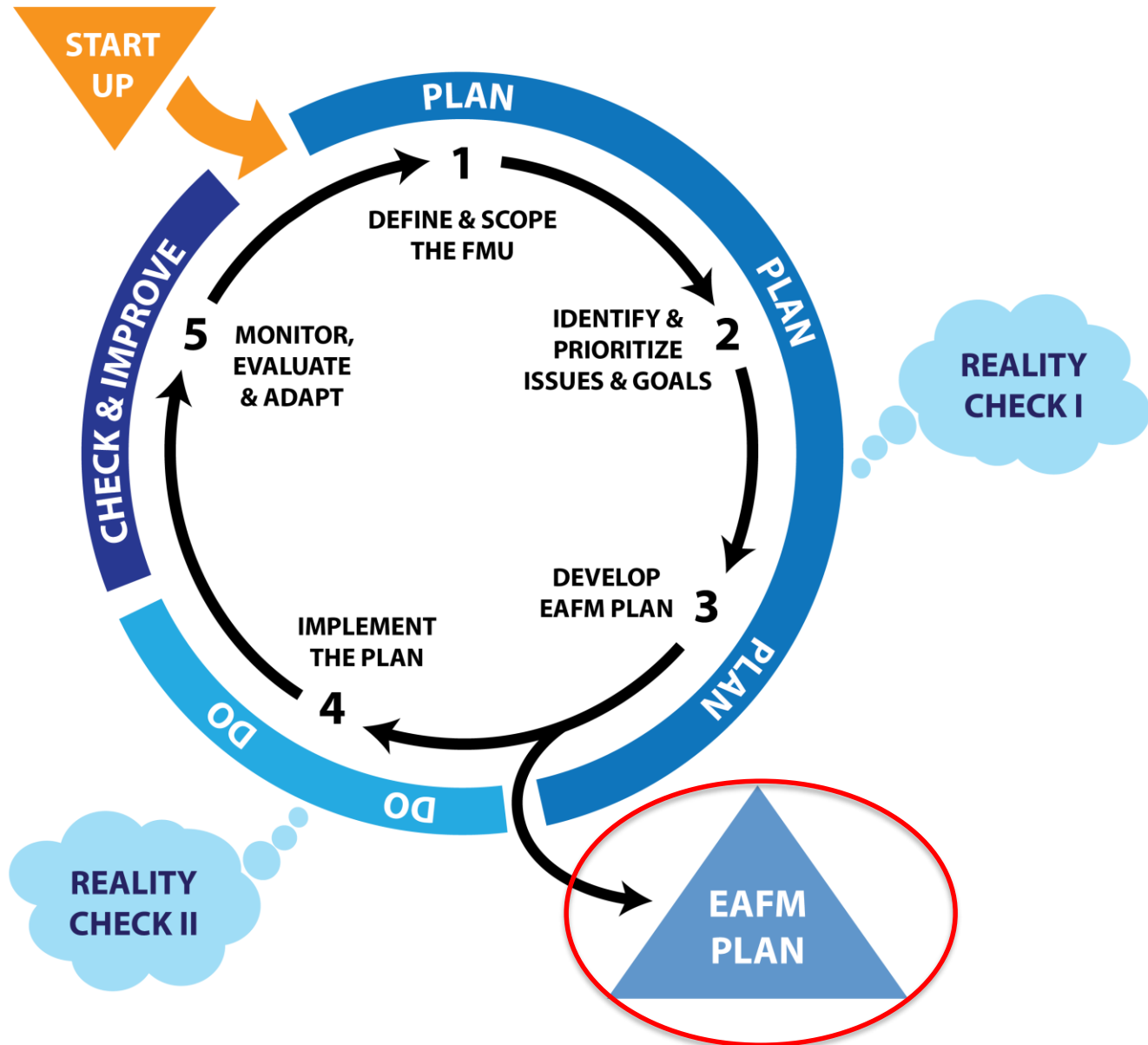
- How do you get stakeholders to comply - Monitoring, Control & Surveillance (MCS)?

3.4 Identify sustainable financing

- Where the finances will come from?
- Stakeholders to share the costs?



The 5 steps of EAFM



The EAFM plan template

EAFM Management Plan for FMU XX

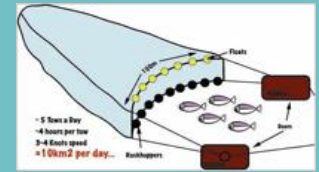
1. Vision (Step 1)
2. Background (Step 1)
3. Major threats and issues (Step 2)
4. Goals (Step 2)
5. Objectives, indicators and benchmarks (Step 3)
6. Management actions (Step 3)
7. Compliance (Step 3)
8. Data and info needs – source of data, etc. (Step 3)
9. Financing (Step 3)
10. Communication – link to communication strategy
11. Review of the plan

Implementation of the plan

4.1. Formalize, communicate & engage

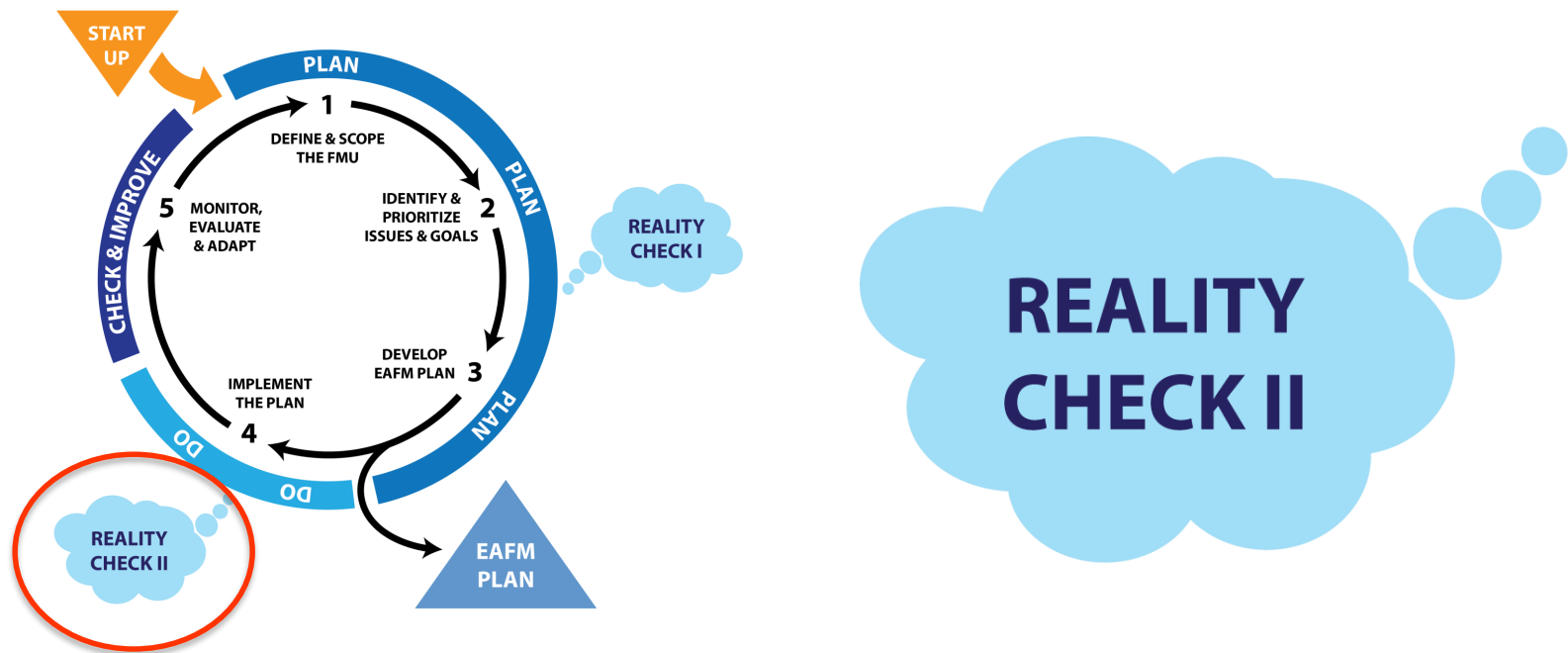
- high level support – decree or proclamation
- present to local government authority for endorsement and formal recognition
- awareness raising for fishers and stakeholders (posters, announcement, meeting with organizations)
- communicate the plan to other users of the ecosystem

Trawl Regulations



- Trawl Areas/zones
- Trawl seasons
- Mesh size regulation





What stands in the way of implementing the plan?

- Is the legal framework adequate?
- Is management at the correct geographic scale to include all the relevant components that will affect the EAFM goals?
- Do we have sufficient coordination and cooperation to be able to work with others?
- Are we prepared to start managing and learn by doing?

5.1 Monitor and evaluate (M&E)

- **Monitor the indicators**
 - participatory monitoring
 - supporting information from other sources
- **Evaluate how well management is meeting the objectives and goals**
 - compare the indicators with the benchmarks
 - stakeholder perceptions



5.2 Review and adapt

- At regular intervals review the plan against the M&E results
- Adapt the plan
 - every year
 - adjust the management actions
 - examine why MCS is not working
 - every 5 years
 - revisit goals
 - revisit objectives
 - adjust the management actions
 - examine why MCS is not working



