Apply EAFM for the Fisheries Management of Neritic Tunas

Isara Chanrachkij
Capture Fisheries Technology Division
SEAFDEC/TD

Workshop on Ecosystem Approach to Fisheries Management (EAFM):
Risk Assessment of the Longtail Tuna and Kawakawa in Southeast Asian Region
19-21 December 2016
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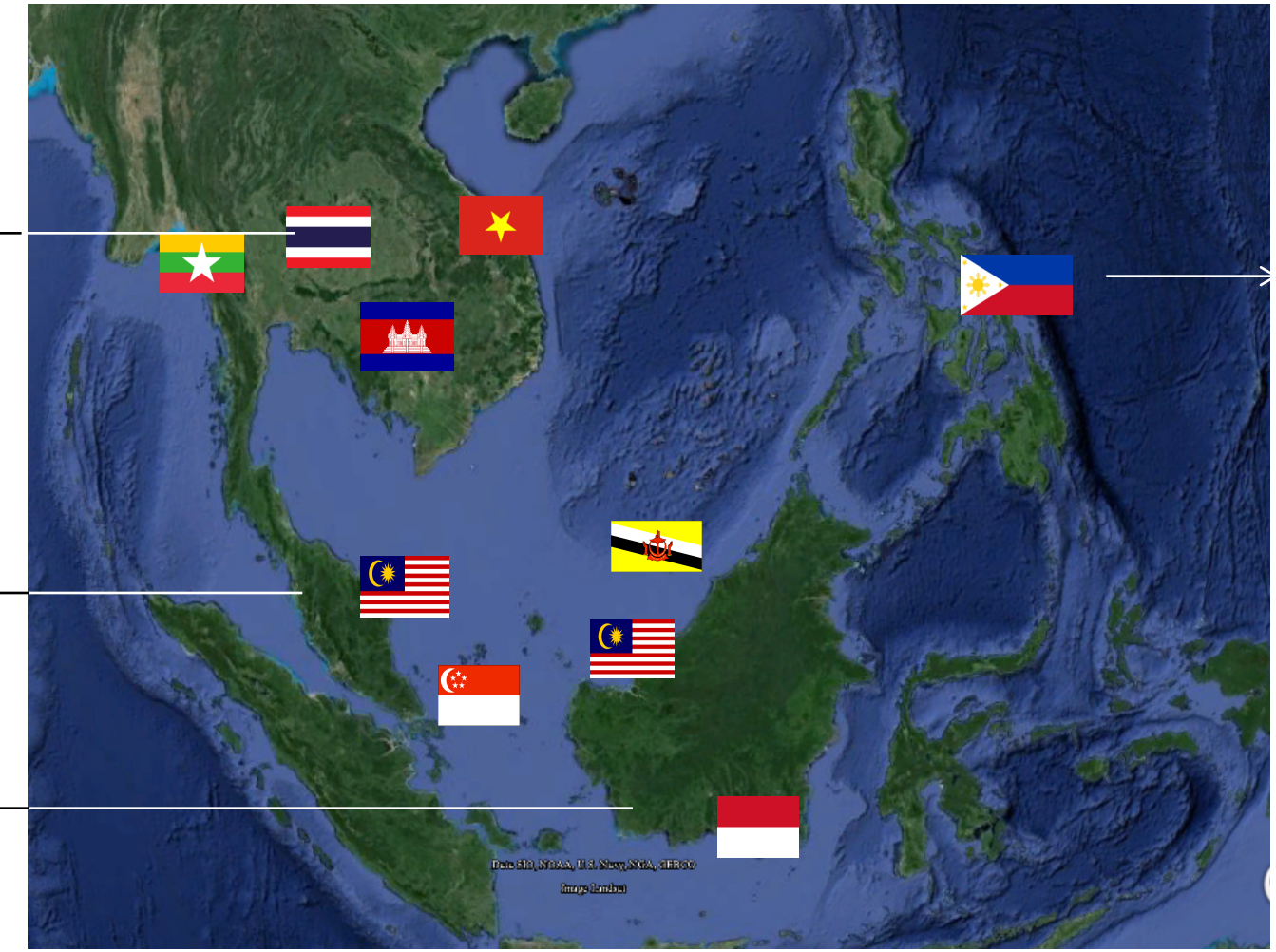
References

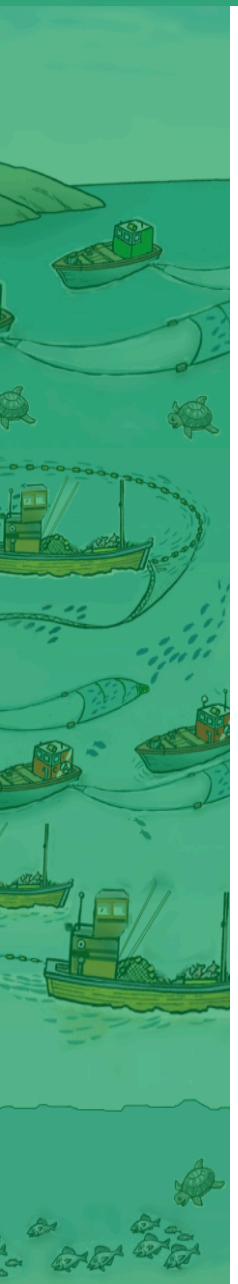
- Essential Ecosystem Approach to Fisheries Management Training Course Volume 1 – for Trainees (FAO, 2014)
- A Guide to Implementing an Ecosystem Approach to Fisheries Management (EAFM) for the tuna fisheries of the Western and Central Pacific Region (Dr Rick Fletcher: Pacific Islands Forum Fisheries Agency, 2008)

Country Level



Ecosystem System Approach to Fisheries Management

- Principle of EAFM
- EAFM Process



The ecosystem approach is

"a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way" (CBD 2000)

EA is an holistic approach to achieve sustainable development

What do you prefer?

- **Sustainable neritic tuna resources**
- **Long term neritic tuna utilization**
- **Neritic tuna fisheries governance**
- **Maximize benefit of neritic tuna resources**

What is EAFM

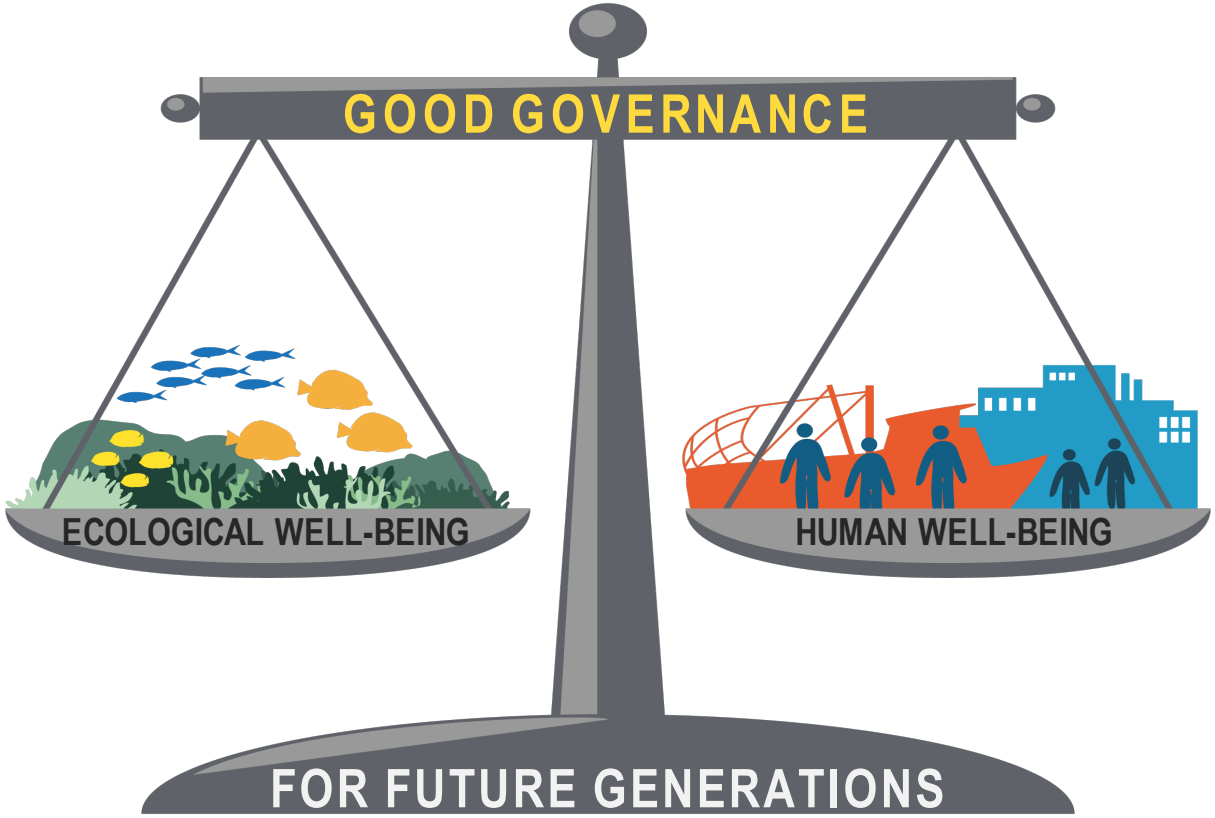
EAFM is simply the ecosystem approach (EA) applied to fisheries management (FM)

EAFM = EA + FM

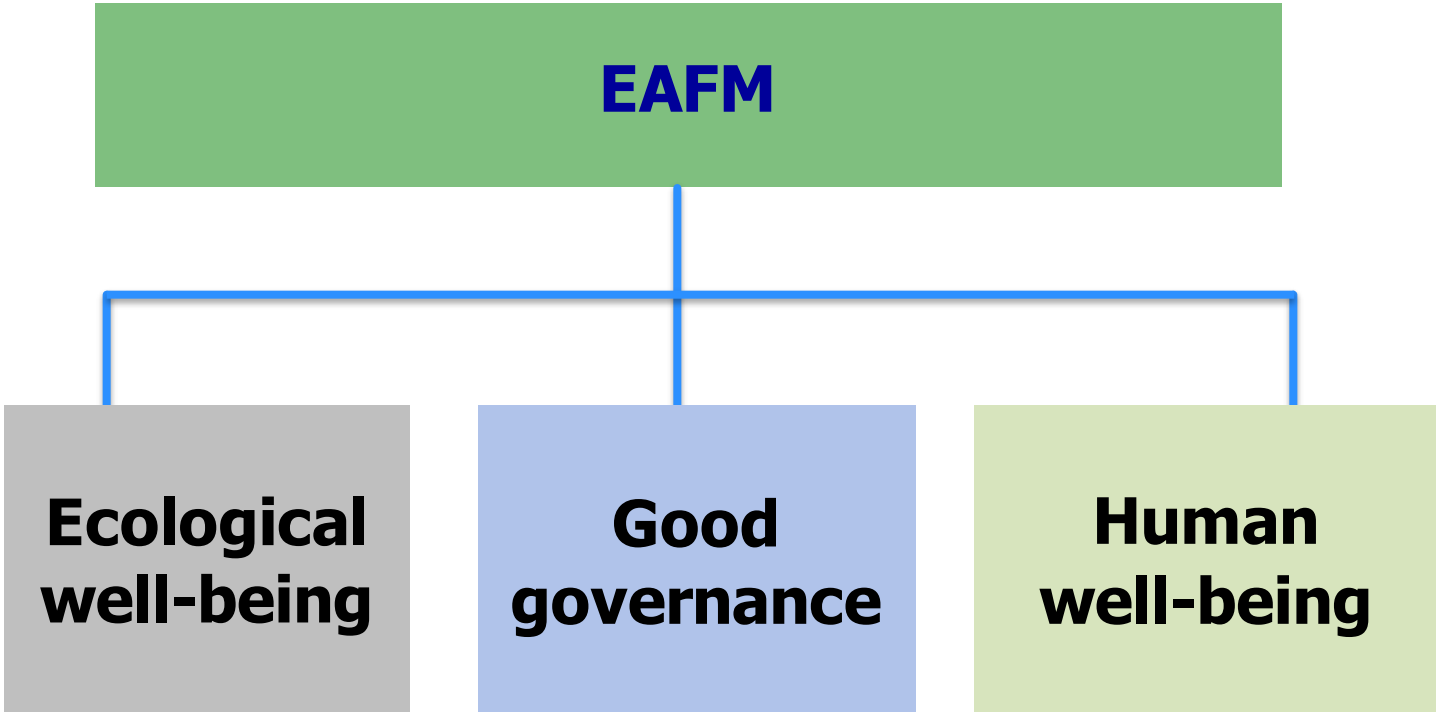
i.e. a practical way to implement sustainable development and sustainably maximize the ecosystem benefits of a fishery system

Principle of EAFM

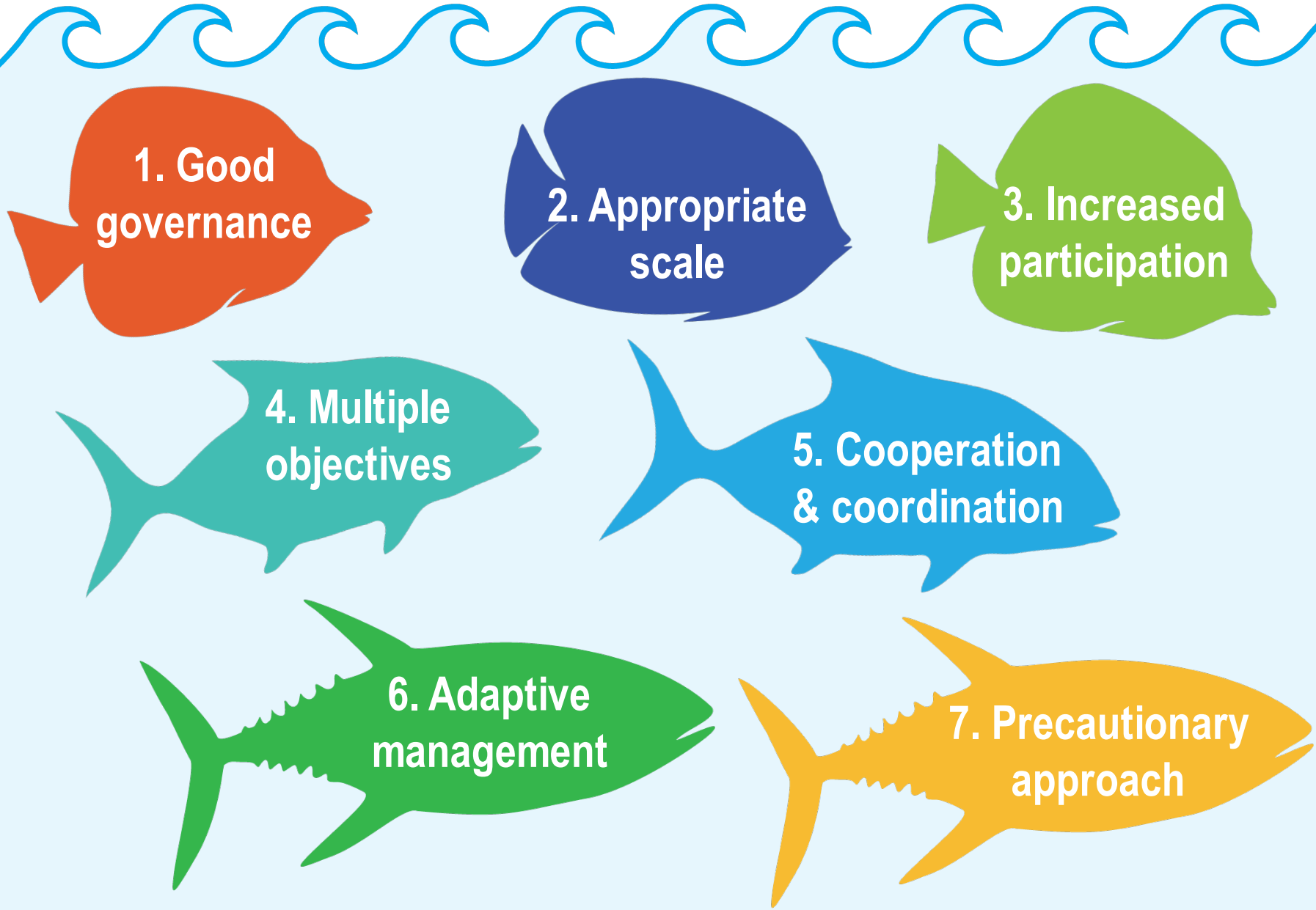
EAFM is the Ecosystem Approach (EA) applied to Fisheries Management (FM)
EA + FM = EAFM



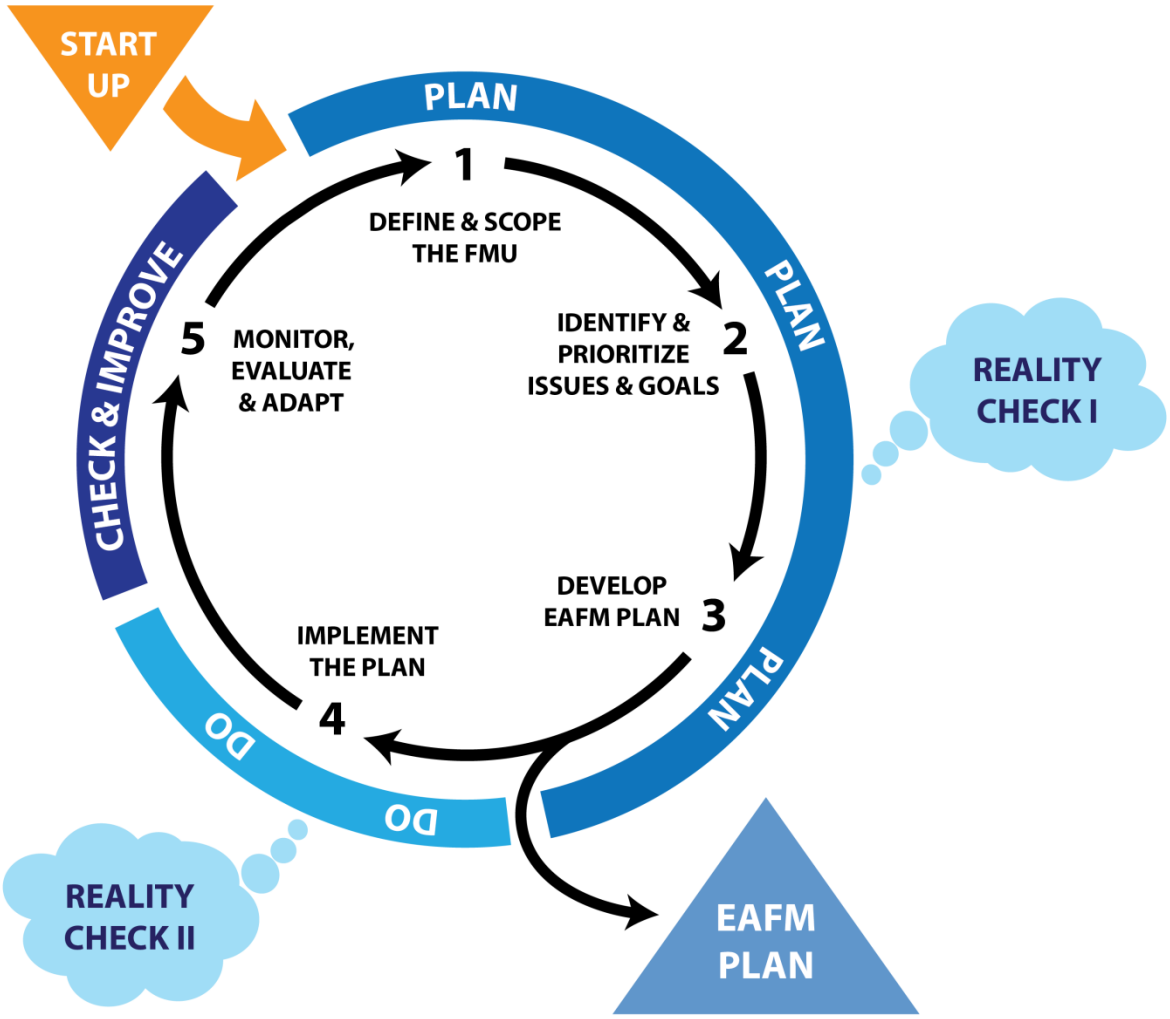
3 Components of EAFM

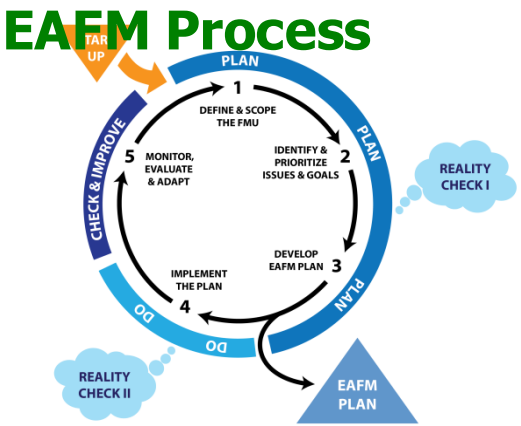


Key principles of EAFM



Process of EAFM





EAFM Startup A/B: Prepare the Ground/Stakeholder Engagement

1. Decide on the general location
2. Identify who should be involved (Stakeholder)
3. What is planned to happen (plan for the process)

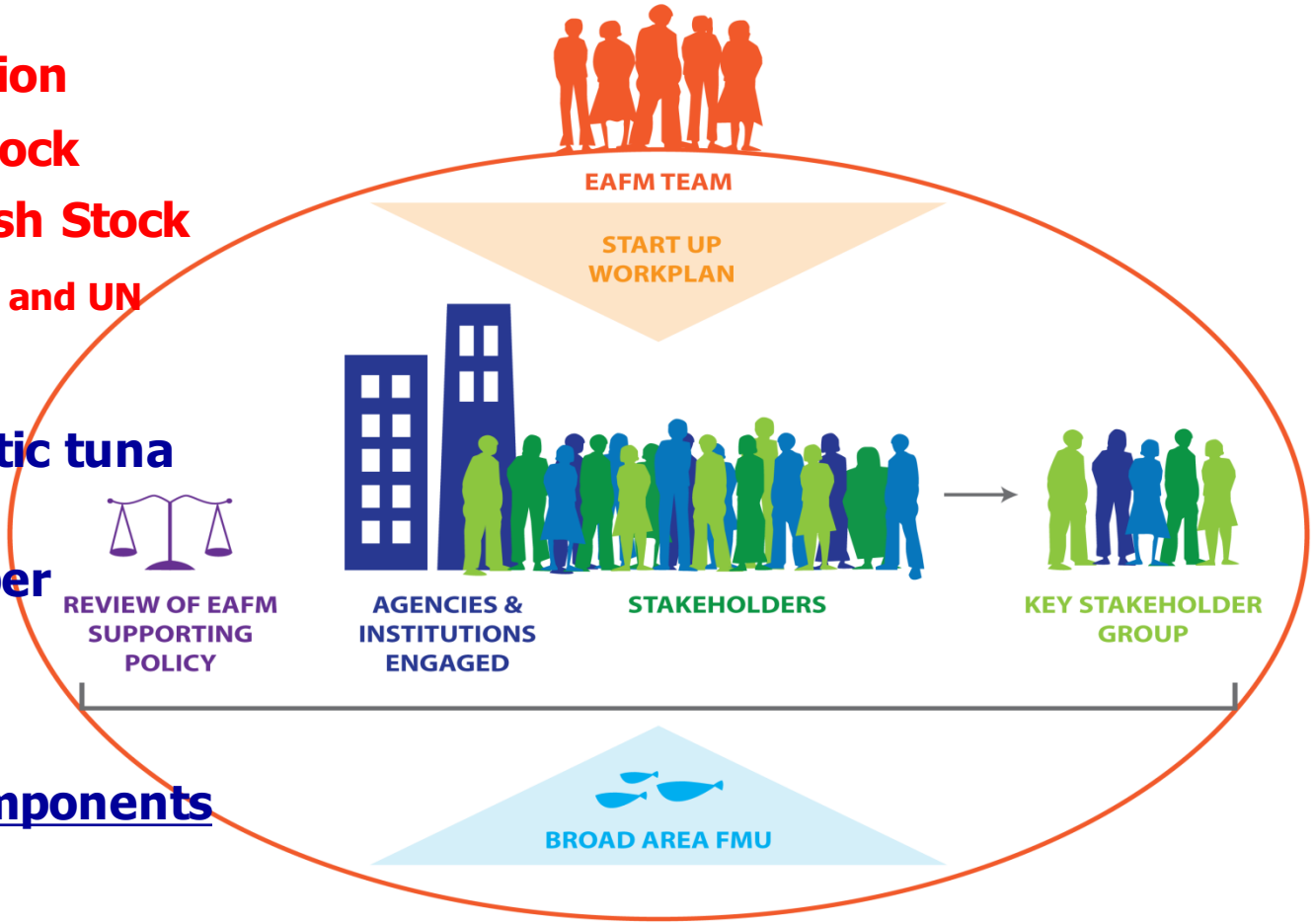
Resources and Location

- Straddling Fish Stock
- High Migratory Fish Stock

Refer to UNCLOS 1982 and UN 1995

Who will involve neritic tuna fisheries

- EAFM Team member
- Stakeholders / Representatives
- Consider the 3 components of EAFM



Highly migratory tuna and tuna-like species in UNCLOS Annex 1

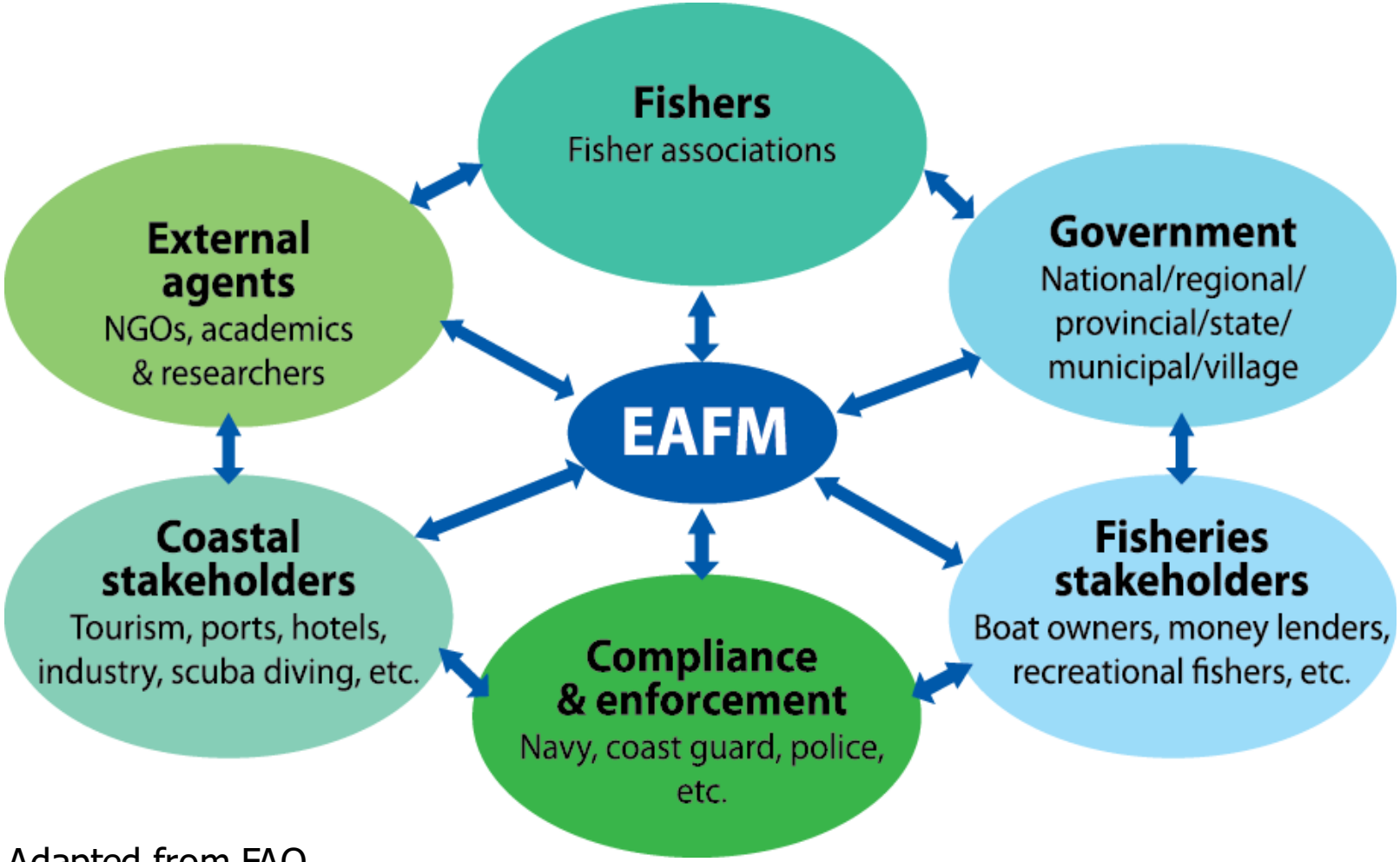
1. Albacore tuna (*Thunnus alalunga*)
2. Bluefin tuna (*Thunnus thynnus*)
3. Bigeye tuna (*Thunnus obesus*)
4. Skipjack tuna (*Katsuwonus pelamis*)
5. Yellowfin tuna (*Thunnus albacares*),
6. Blackfin tuna (*Thunnus atlanticus*)
7. Little tuna (*Euthynnus alleteratus* and *E. affinis*),
8. Southern bluefin tuna (*Thunnus maccoyii*)
9. Frigate mackerel (*Auxis thazard* and *A. rochei*)

1-8. Marlin species (Tetrapturus angustirostris, T. belone, T. pfluegeri, T. albidus, T. audax, T. georgei, Makaira indica, M. nigricans),

9 -10. Sailfish species (Istiophorus platypterus and I. albicans)

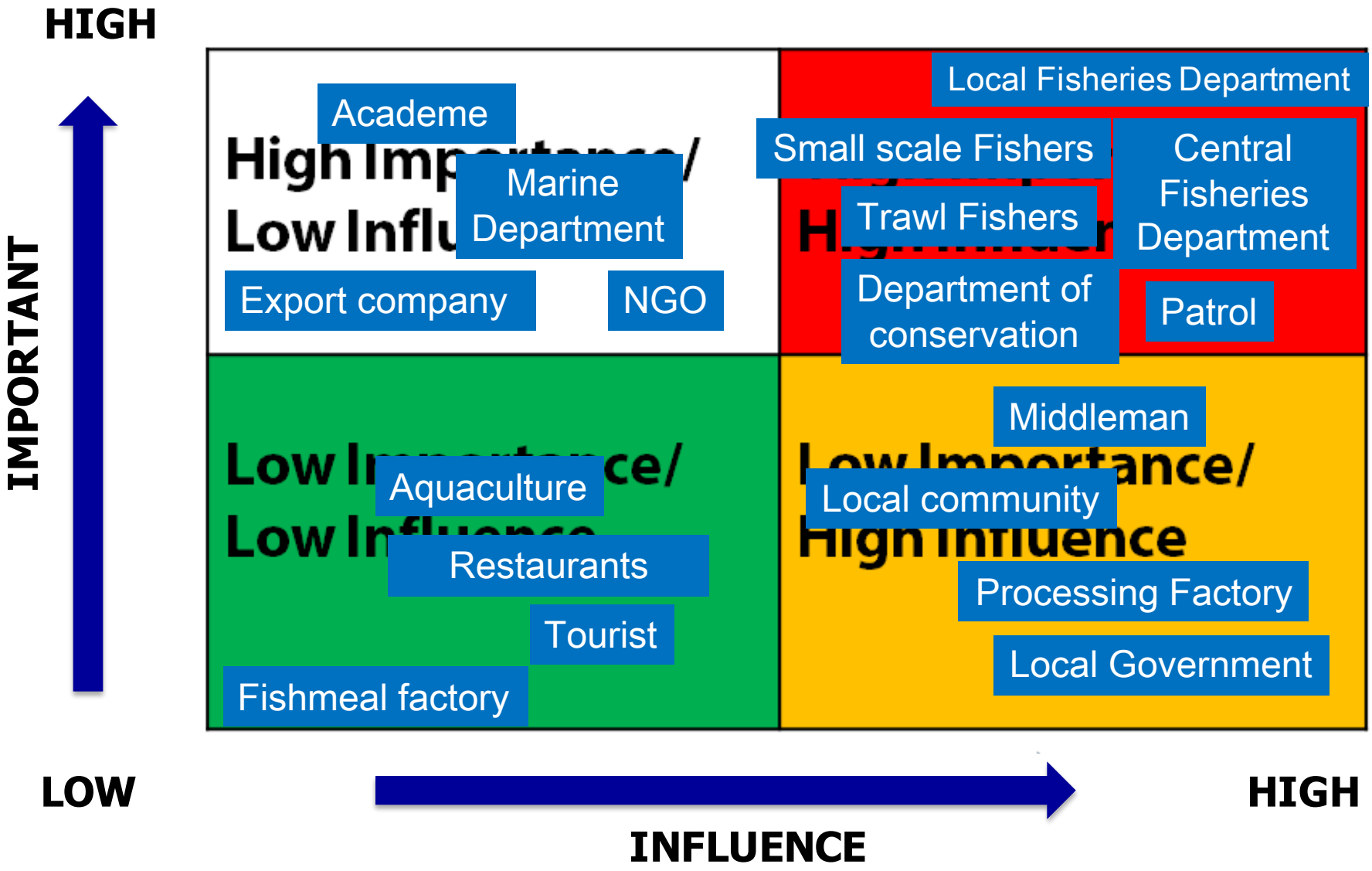
11. Swordfish (Xiphias gladius)

Possible stakeholders in General Fisheries (in National Level)



Source: Adapted from FAO

Stakeholder Prioritization



Identify & engage stakeholders

Example in Trawl Fisheries

Consideration

Who are stakeholders in neritic tuna fisheries?

Process for stakeholders consultation - Participation Approach?

- **National Level**
- **Sub-Regional Level**

Source: Adapted from FAO

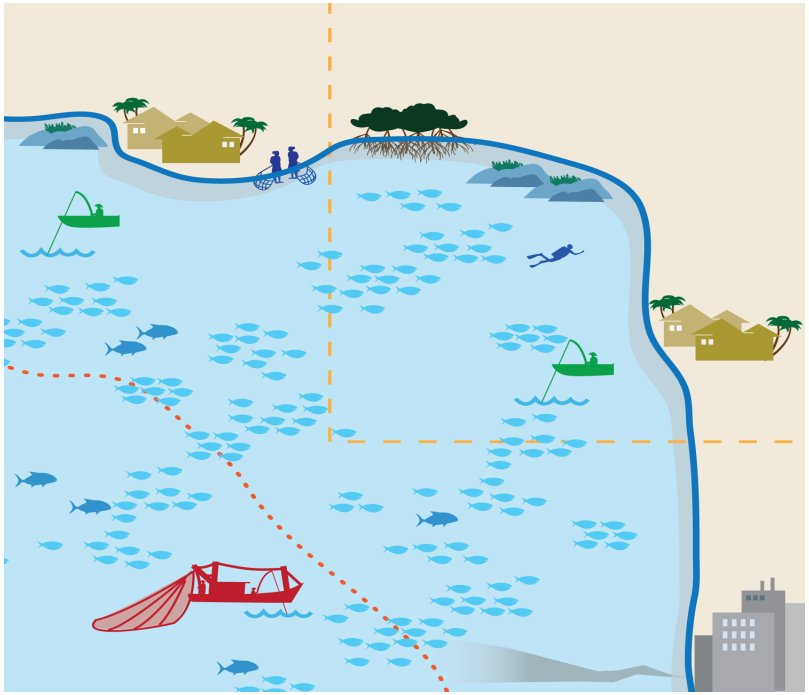
Step 1

Define and scope the Fisheries Management Unit (FMU)

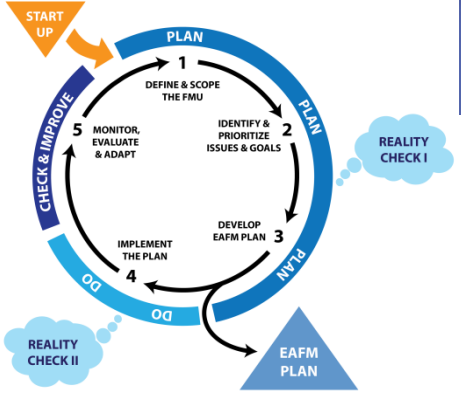
1.1 Define the FMU

1.2 Agree the FMU vision

1.3 Scope the FMU



Provides background information and a vision



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1. Define the FMU
2. Agree the FMU Vision
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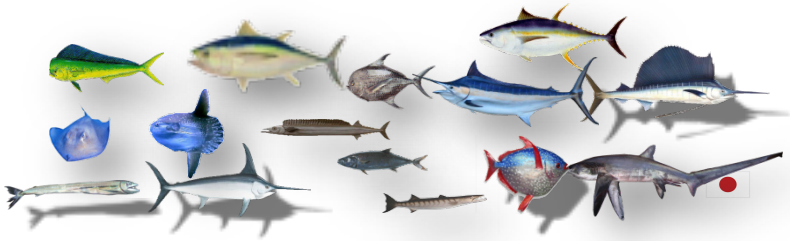
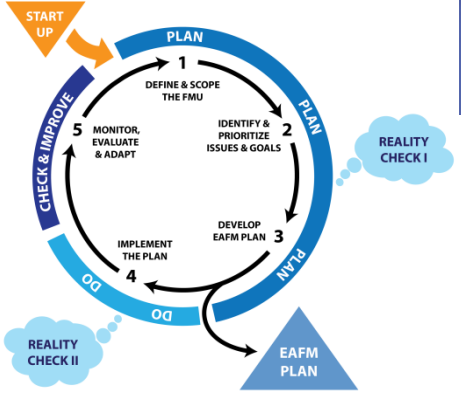


Define the FMU

- Species-based e.g. Tuna fishery
- Based on species group e.g. Pelagic fishery
- Gear-based e.g. Trawl fishery
- Area-based e.g. Southeast Asia, Indian Ocean
- Combination of all of these



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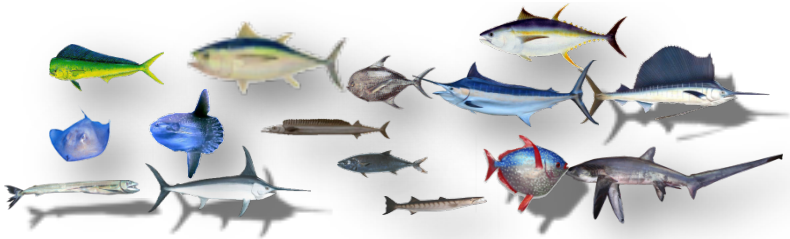
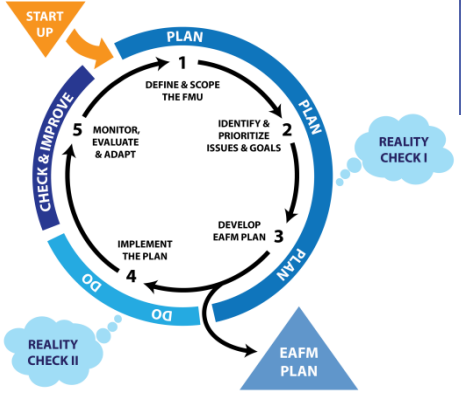


Agree the FMU Vision - Three components

- Increased benefits to stakeholders
- Sustainable use of the resources
- Increased ecosystem services



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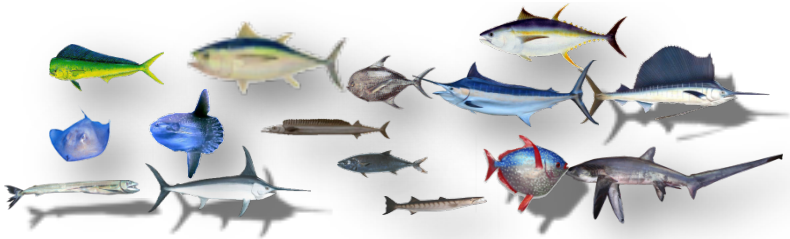


Scope the FMU

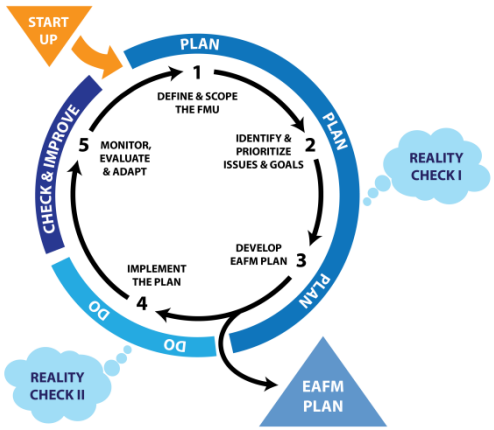
Scoped for relevant and useable information ,i.e.

- **Fishery data – catch, effort, stock assessment, economics**
- **Ecosystems** – biological/ecological, habitat, environment
- **Resource use activities** – who and how people use the resource and how they benefit (socio-economic)
- **Governance** – what the current governance arrangements are

Basis for planning and management activities and Baseline for future M&E

Step 2
Identify & prioritize issues & goals

Identifies the high priority issues and sets goals

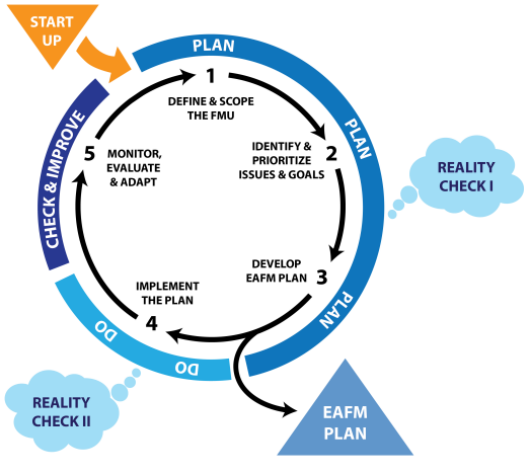


2.1 Identify threats & issues

2.2 Prioritize issues

2.3 Define goals for EAFM plan

Step 2
Identify & prioritize issues & goals



2.1 Identify threats & issues

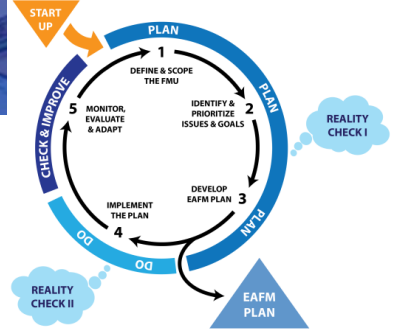
2.1 Prioritize issues

2.3 Define goals for EAFM plan

✓ **Cover 3 components**

Ecological well-being	Human well-being	Good governance

✓ **The best conduct by relevant stakeholders**



Step 2
Identify & prioritize issues & goals

2.1 Identify threats & issues

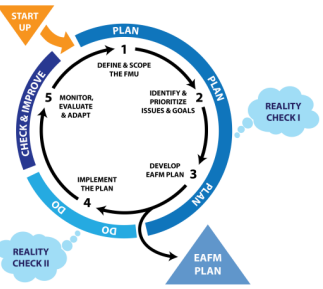
Ecological well-being

Example of resources

- **Target**
- **Non-target**
- **Bycatch**
- **Discard**
- **ETP and**
- **etc**

Example of ecosystem effect (Impact to Environment)

- **Ecosystem Structure**
  - Ghost fishing
  - Discarding and Provisioning
  - Translocation
  - Community Structure
- **General Environment**
  - Water quality
  - Waste Disposal

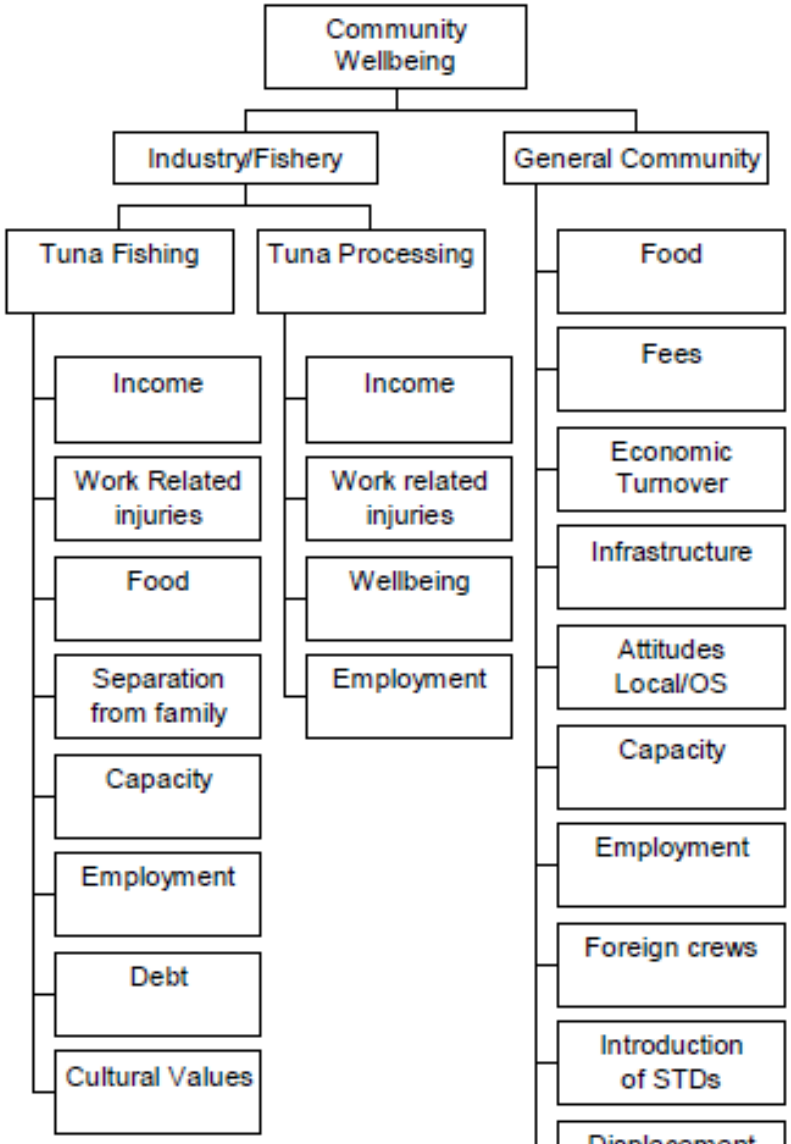


Step 2 Identify & prioritize issues & goals

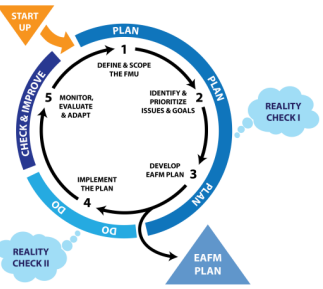
2.1 Identify threats & issues

Human wellbeing

The 'Human well-being or **Community Wellbeing'** covers the potential social and economic impacts (both good and bad) of the fishery on the wellbeing of the local or regional communities associated with that fishery.



EAFM Guidelines for WCPFC

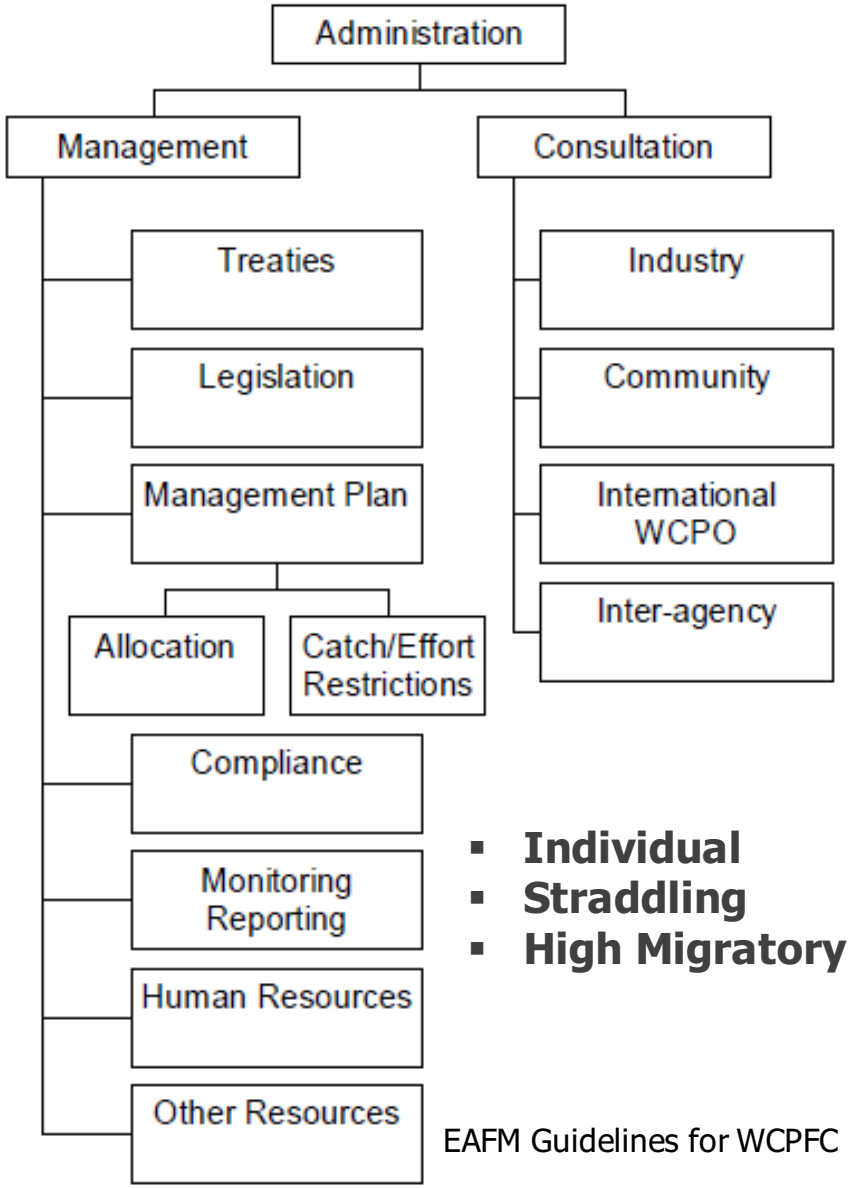


Step 2 Identify & Prioritize issues & Goals

2.1 Identify threats & issues

Governance

The 'Governance / Administration / Managing' covers all the legislative, administrative and bureaucratic processes that need to be completed to enable the issues in the previous four trees to be dealt with effectively. These issues may cover a number of levels of government and the industry.



- **Individual**
- **Straddling**
- **High Migratory**

EAFM Guidelines for WCPFC

Issues in trawl fisheries

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

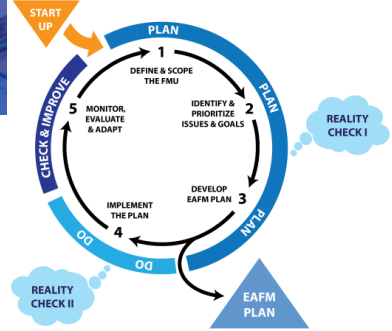
- Reduction in mangrove fringes
- Benthos disruption by trawling
- Turtle egg collection
- Nutrient/sediment run off
- Tourism demands for protection

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/licen-sing inefficient
- Fishery Subsidy (fuel/other)
- Fishery enforcement underfunded
- Limited engagement with SSF, co-management weak



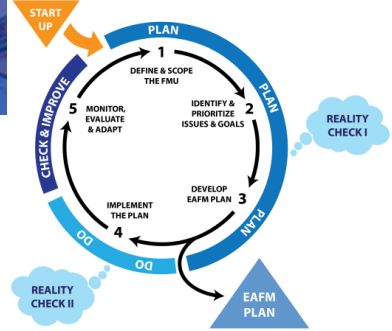
Step 2
Identify & prioritize issues & goals

2.2 Prioritize issues

- Need to prioritize these as they cannot all be managed at once
- Stakeholders will generate a long list of threats and issues
- Different stakeholders provide different threats and issues
- Lack of stakeholder >> Less holistic

Realistic

- There is a practical limit to the number of issues that can be dealt with by a management system
- Prioritization of specific issues is usually conducted using a risk assessment



Step 2
Identify & prioritize issues & goals

2.2 Prioritize issues by Risk Assessment

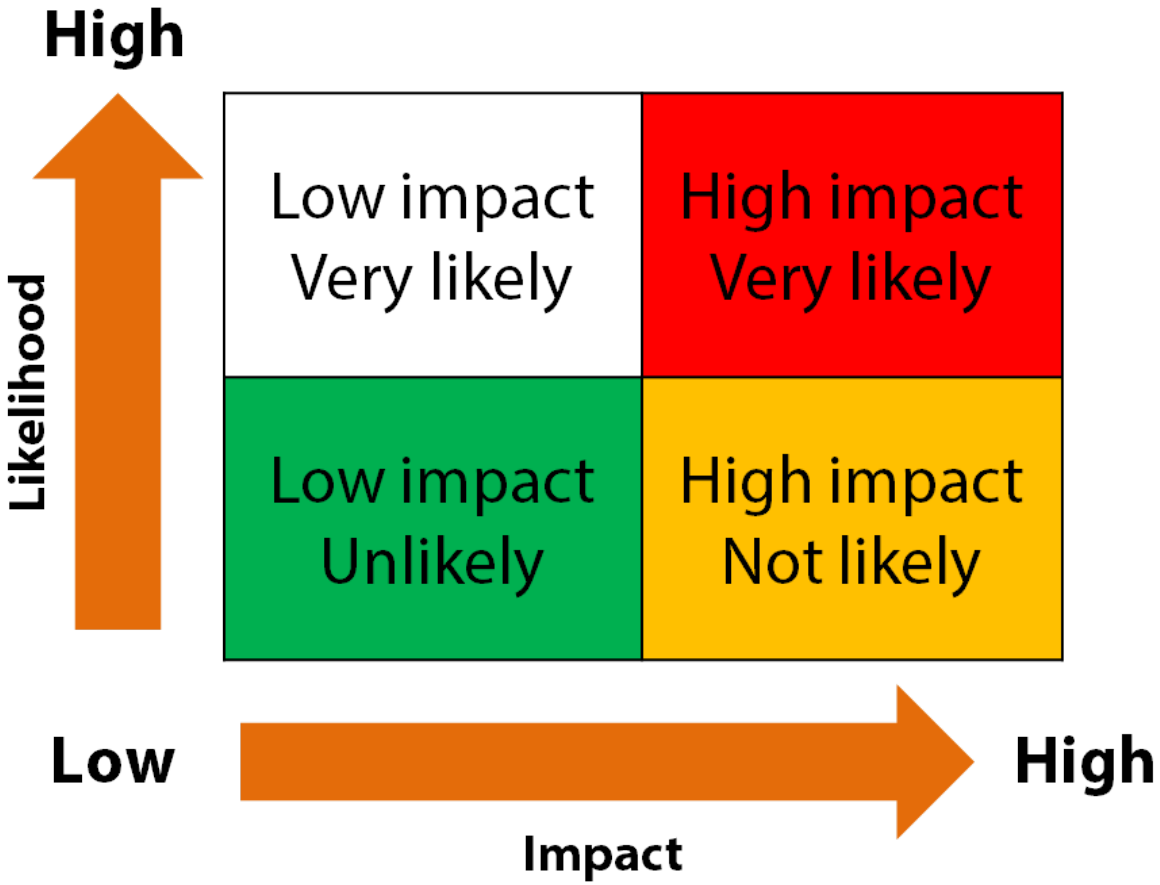
A risk analysis typically seeks answers to 4 questions:

- What can go wrong? (*Risk*)
- How likely is it to go wrong? (*Likelihood*)
- What would be the consequences of it going wrong? (*Impact*)
- What can be done to reduce either the likelihood or the consequences of it going wrong? (*Action*)

RISK = LIKELIHOOD x IMPACT

- High priority issues are those with a high likelihood of occurrence and high impact
- High priority issues are the ones that require direct management

Prioritization based on risk



Impact

- How much change would occur

Likelihood

- Probability of it occurring

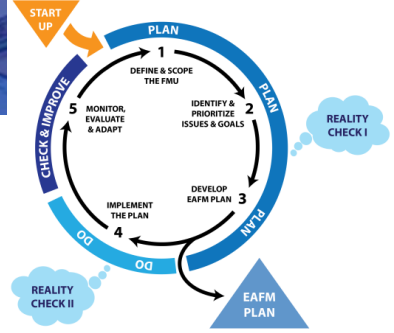
Prioritization based on risk

		Consequence Level			
		Minor	Moderate	Major	Extreme
Likelihood		1	2	3	4
Remote	1	1	2	3	4
Unlikely	2	2	4	6	8
Possible	3	3	6	9	12
Likely	4	4	8	12	16

EAFM Guidelines for WCPFC

Consequent level
(Impact)

Likelihood
- Probability of it occurring



Step 2
Identify & prioritize issues & goals

2.2 Goals

A risk analysis typically seeks answers to 4 questions:

- Goals are nested under the vision and should still be broad level and limited to three to five for any EAFM plan.
- A goal is the long term outcome that management is striving to achieve.
- It often refers to a group of inter-related issues and components

Step 2
Identify & prioritize issues & goals

2.2 Goals

For example:

Theme: Fishery and ecological issues

"Restored and Sustainably managed neritic tuna and associated marine living resources"

Theme: Habitat issues

"Restored and conserved vulnerable critical and spawning habitats of neritic tuna"

Theme: Livelihood issues

"All communities that depend on the neritc tuna resources are restored to and maintained above the poverty level"

Theme: Governance issues

"Compliance and enforcement of illegal neritic tuna fishing activities is effective and efficient

Step 3
Developing the EAFM plan

3.1 Develop operational objectives

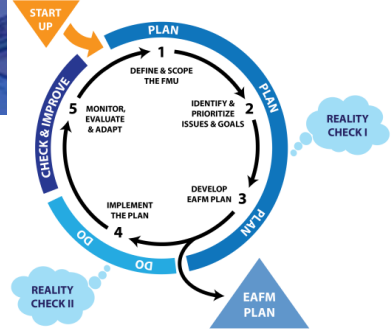
3.2 Develop indicators & benchmarks

3.3 Management actions & compliance

3.4 Identify sustainable financing

3.5 Finalize the EAFM plan

Develops the management framework



Step 3 Develop objectives, indicators and benchmarks

3.1 Develop Objective

Objective is a formal statement detailing the desired outcome of management

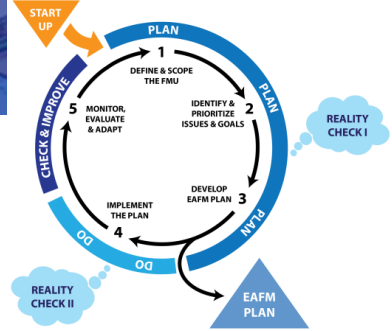
Fishery and ecological objective "Maintain or restore stocks at capable of producing maximum sustainable yield as qualified by relevant environmental and economic factors (Objective of WCPFC)

Habitat objective "Maintain the nursery habitat of neritic tuna from the fishing activity

Livelihood objective"Maintaining access to sufficient resources to enable of survival of the communities and industries"

Governance objective "Reducing the illegal fishing in neritic tuna fisheries"

Through the process of Participatory Approach and agreed by stakeholder



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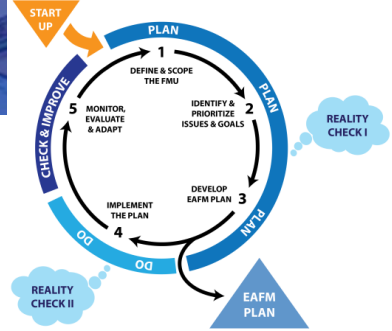
"Maintaining access to sufficient resources to enable of survival of the communities and industries"

"Reducing the illegal fishing"



Step 3 Developing the EAFM plan

3.2 Develop Indicator and Benchmark

A measure of the current status at one point in time (e.g. number of fish, area of mangroves, number of illegal vessel)

An indicator must be linked to the objective

Benchmark is a target, limit, or baseline that provides a reference for comparing the indicator

Target = where you want to be

Limit = where you do not want to be

Baseline = where you have come from

Data & information for the indicators and benchmarks

- Data and information are needed for the indicators and benchmarks
- Use existing data, where available
- Collect new data, if necessary
- Use participatory approaches, if possible

Note:

✓ When the indicator is compared to benchmark ,it tells you how well you are meeting the objective

✓ Data & information is a cross-cutting theme. It was needed for scoping to set the background and now for indicators and benchmarks

✓ Indicators and benchmarks must be "***SMART***"

- **S**pecific (in terms of quantity, quality and time)
- **M**easurable (easy to measure with acceptable cost)
- **A**vailable (from existing sources or with reasonable extra effort)
- **R**elevant (to objectives and sensitive to change)
- **T**imely (measured regularly)

Step 3 Developing the EAFM plan

3.3 a Management actions

Sets of management action will help meeting of the objectives

Management actions could include:

(i) Technical measures
- Catch and effort controls (e.g. gear, limited entry, harvest control)
- Spatial and temporal controls (e.g. MPAs, seasonal closures)

(ii) Ecosystem manipulation i.e. habitat restorations (e.g. Restocking)

(iii) Community-based i.e. income diversification (e.g. alternative livelihoods skills)

(iv) Human capacity i.e. Fishery management skills

(v) Strengthen institutions i.e. increase coordination (e.g. interagency task forces)

(vi) Work with others to achieve objectives outside your mandate e.g. ICM, MSP, Environment Agency, etc.

Step 3 Developing the EAFM plan

3.4 Financing

Budget

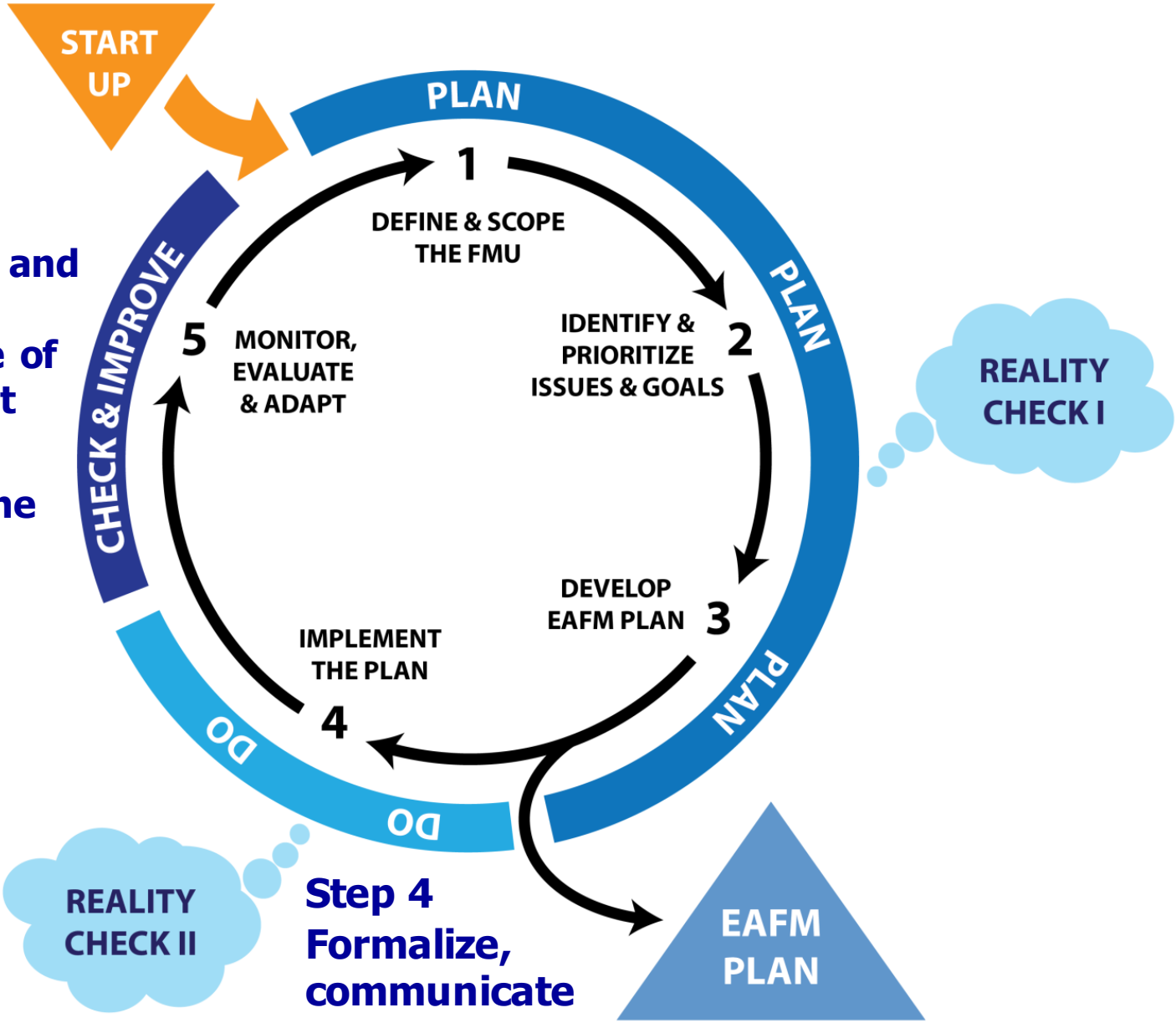
- How much?
- Where from? (Existing sources? / New sources?)
- Existing budget and budget cycles
- Need to consider who will/can pay, equity, impacts

Sources of financing

- Government (part of the normal budget cycle)
- Government (special grant)
- Donors (may cover startup costs but not ongoing)
- Grants from NGOs
- Fishing fee and fines (e.g. licenses, penalties)
- Stakeholders – **Industries (share the costs)**

EAFM Process

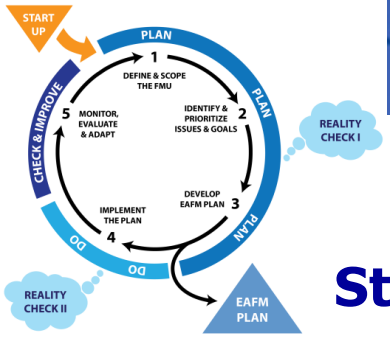
Step 4 and 5



5 .1 Monitor and Evaluate performance of management actions

5.2 Adapt the plan

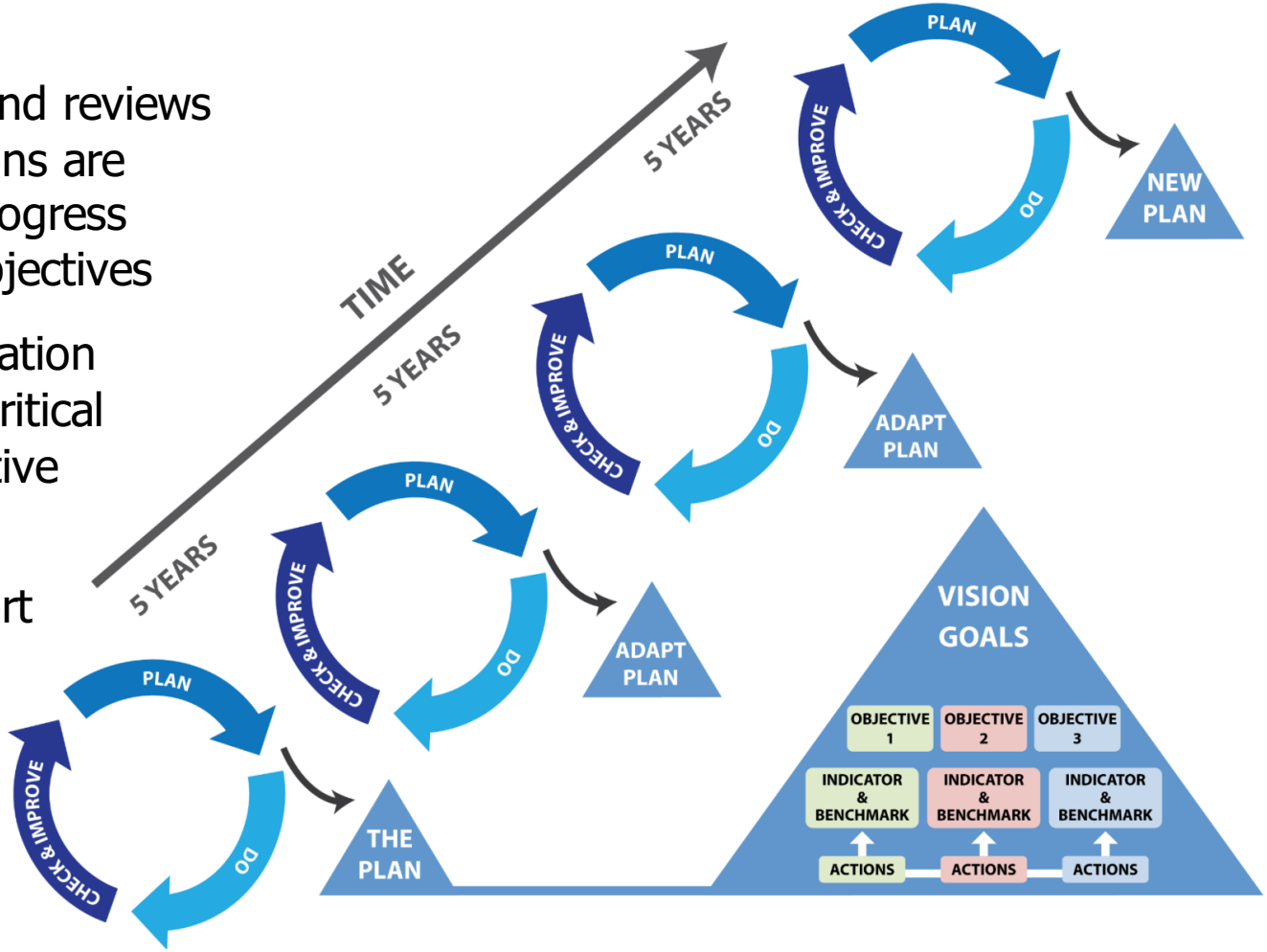
Step 4 Formalize, communicate & engage



Step 5 Monitor, evaluate, adapt

Step 5 is a critical step in the management cycle

- Regular monitoring and reviews of management actions are required to assess progress towards achieving objectives
- Monitoring and evaluation (M&E) provides the critical information for adaptive management
- Need scientific support including ecology socioeconomic and governance
- Prepare for the coming new threats

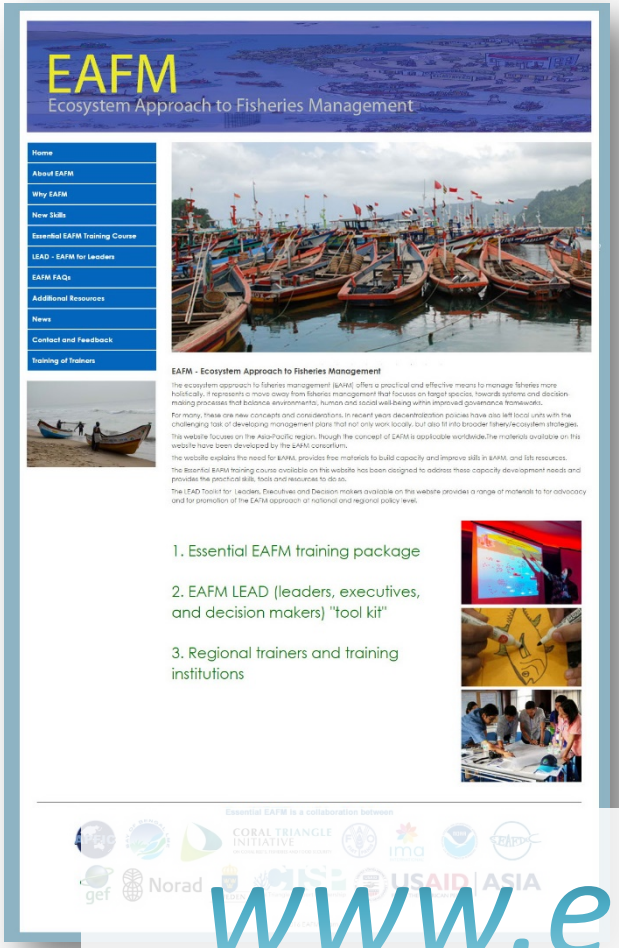


Notes

- Is neritic tuna is straddling / high migratory
- Institutional framework – Far beyond local/national level?
- EAFM need PA - Who are stakeholders in Neritic Fisheries? (National / Regional)
- Who are high influent and high important stakeholders
- What happen in neritic tuna fisheries? (Threat and Issues in fisheries)
- In EAFM, threats and issues needed considering in 3 components (Possible 4 pillars)
- Economic incentive to mobilize fishing industries is required
- Development of Management Plan is national / regional level
- EAFM is never ending stories even though you have already finish the plan
- Management is success or not indicate by project indicator

EEAFM and LEAD Website

www.eafmlearn.org



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