



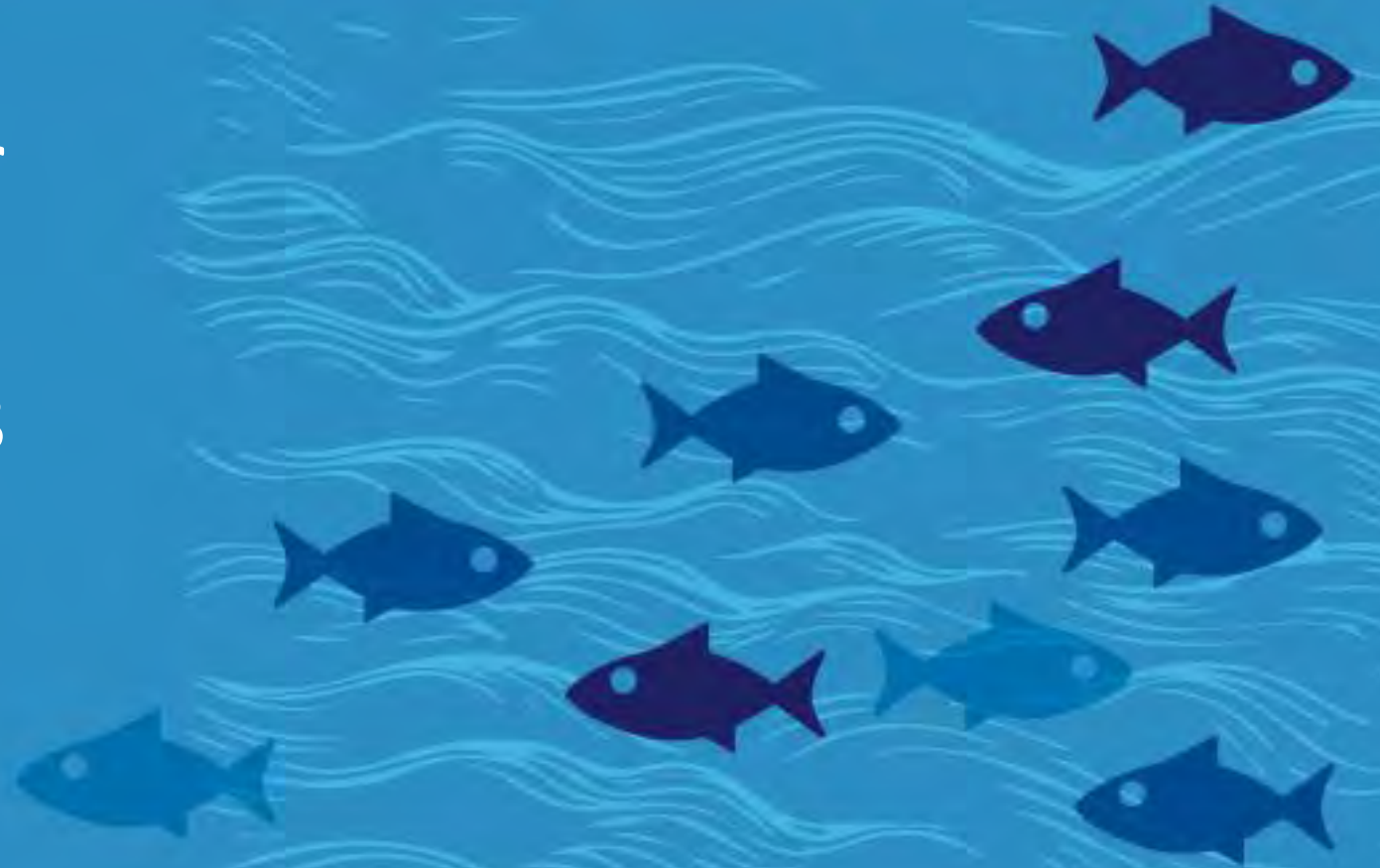
Food and Agriculture  
Organization of the  
United Nations

# Methods and tools for climate change adaptation in fisheries

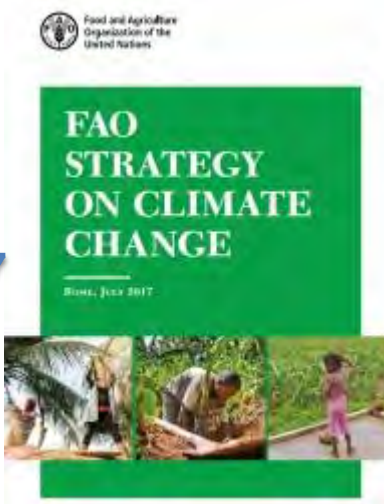
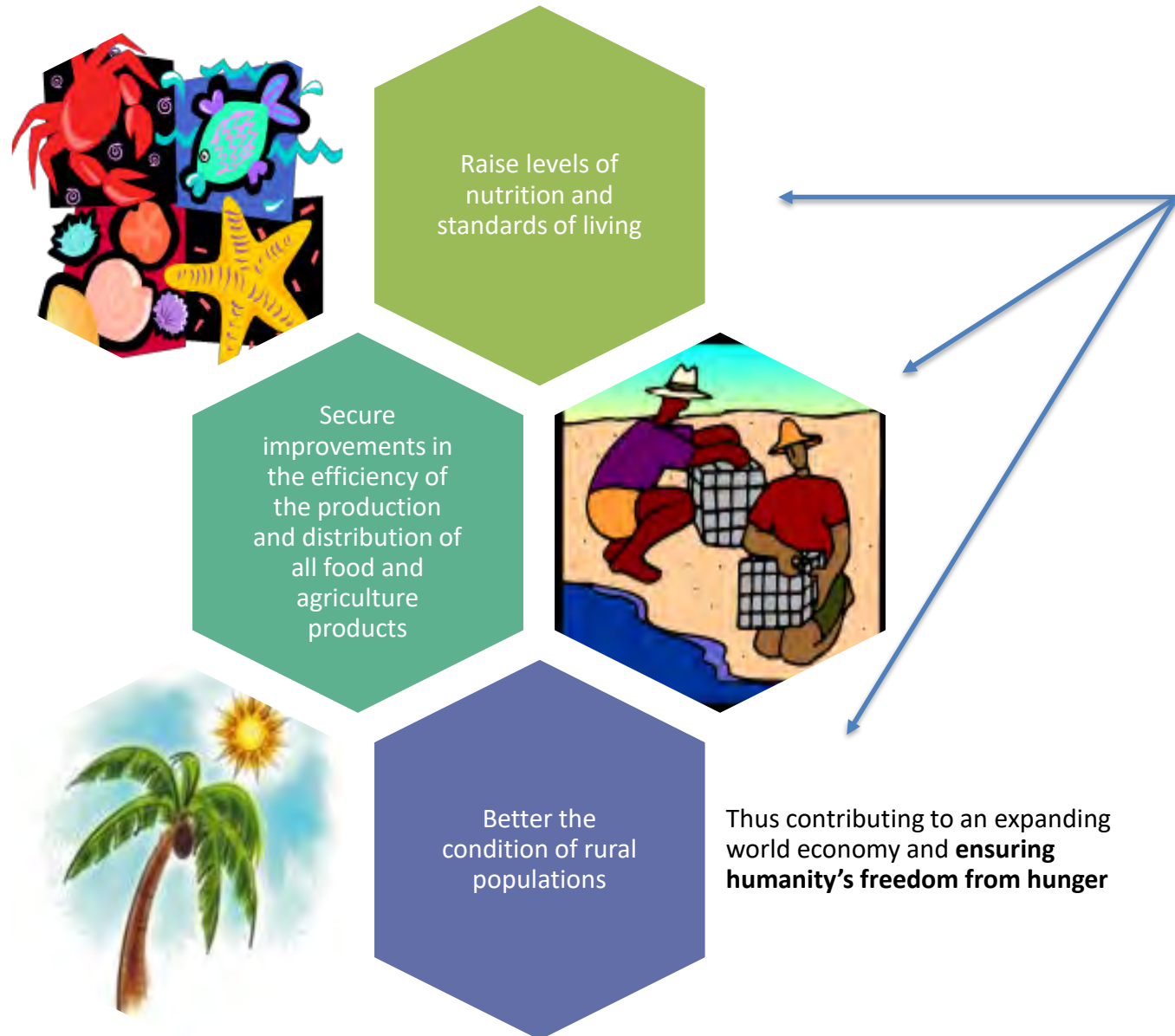
Presenter:

Florence POULAIN

FAO Fishery and Aquaculture Officer

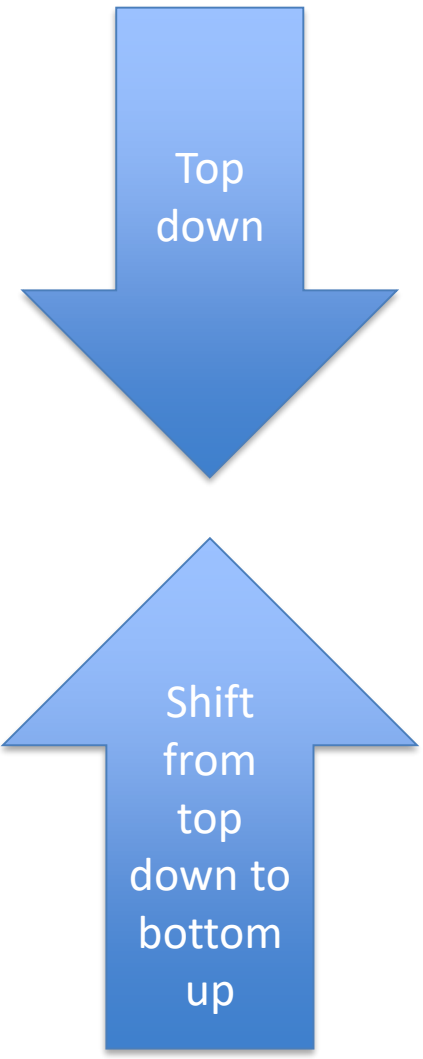
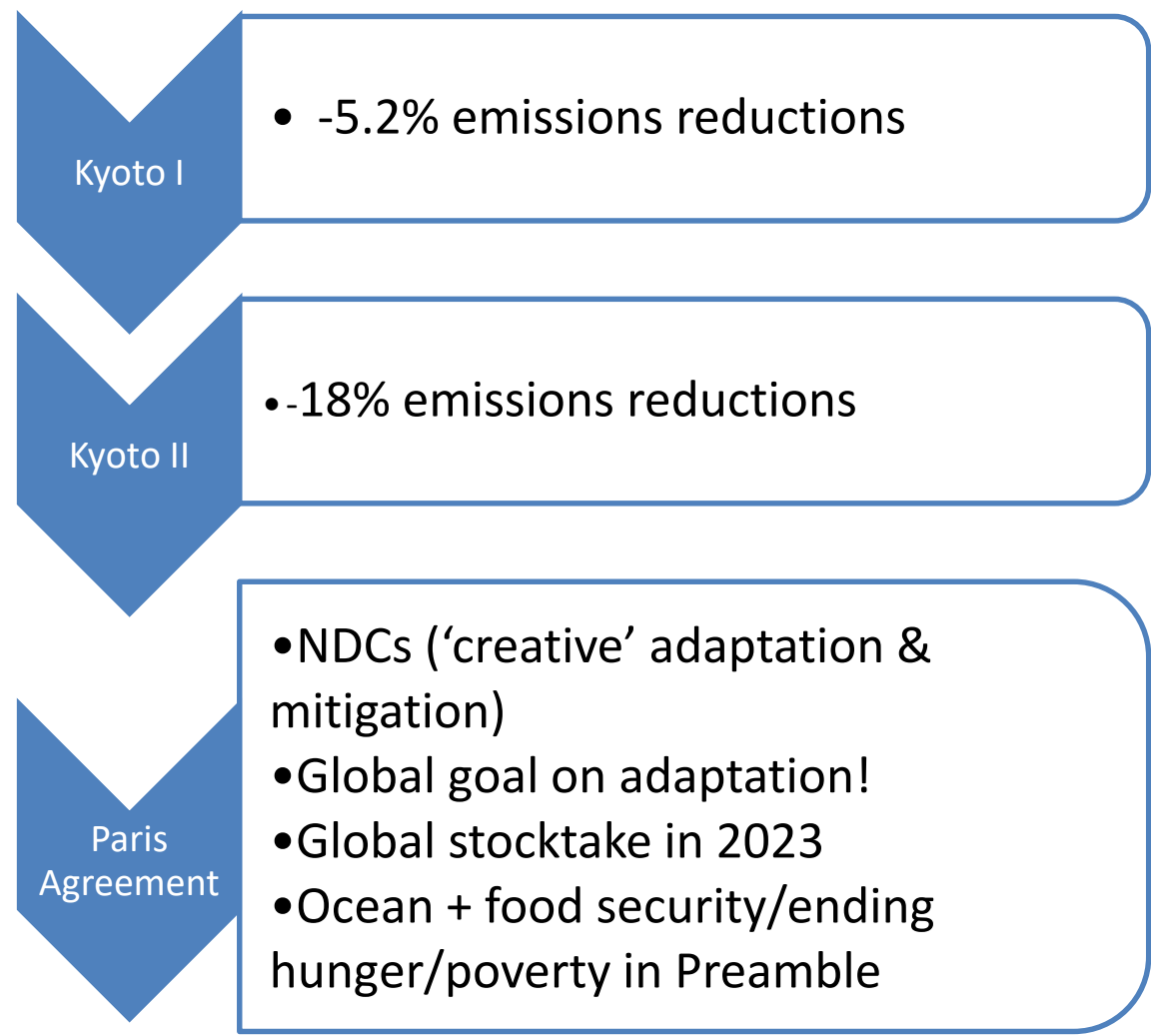


# FAO Constitution, preamble



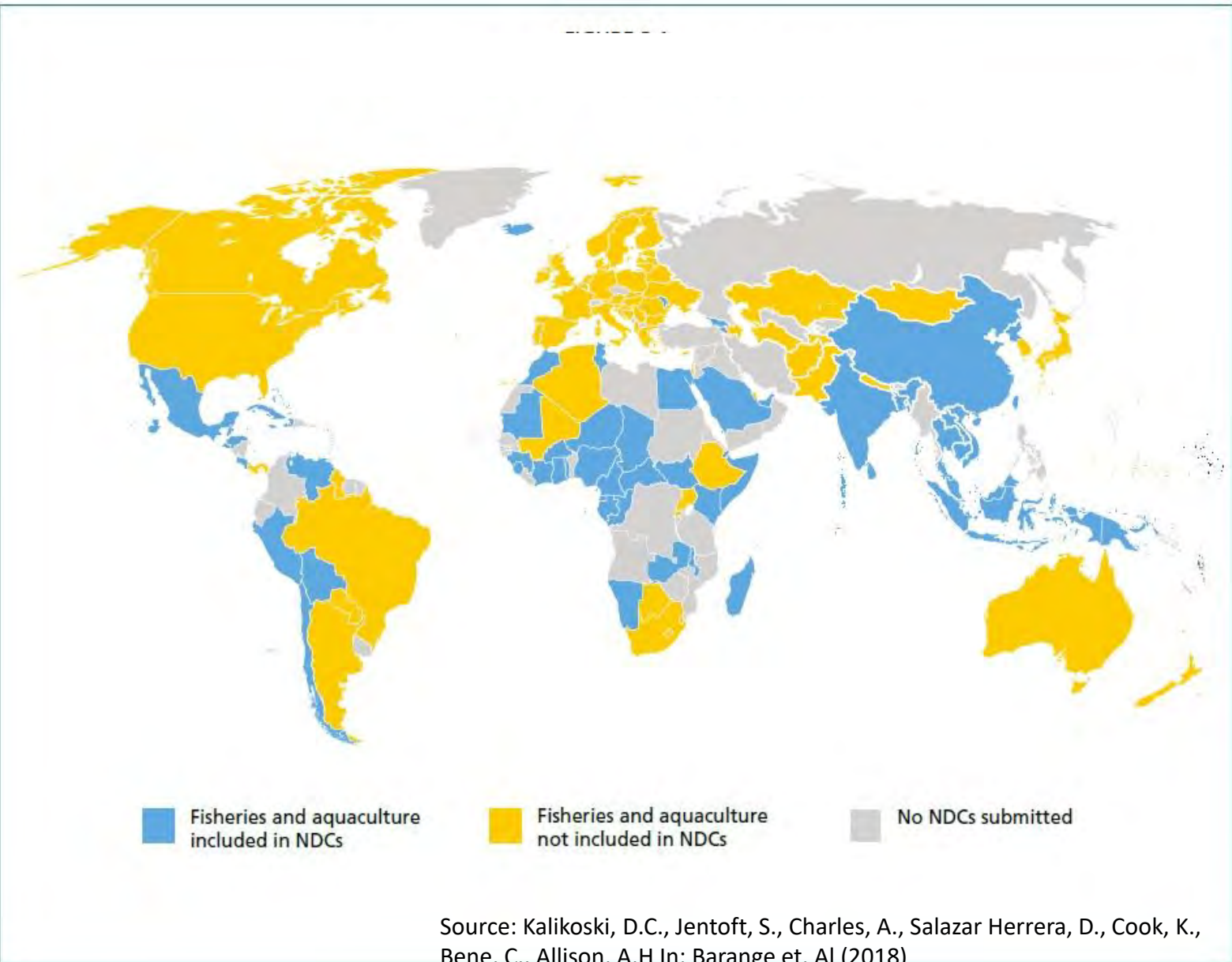
Thus contributing to an expanding world economy and **ensuring humanity's freedom from hunger**

# Policy goals and targets



# Is fisheries reported in the NDCs?

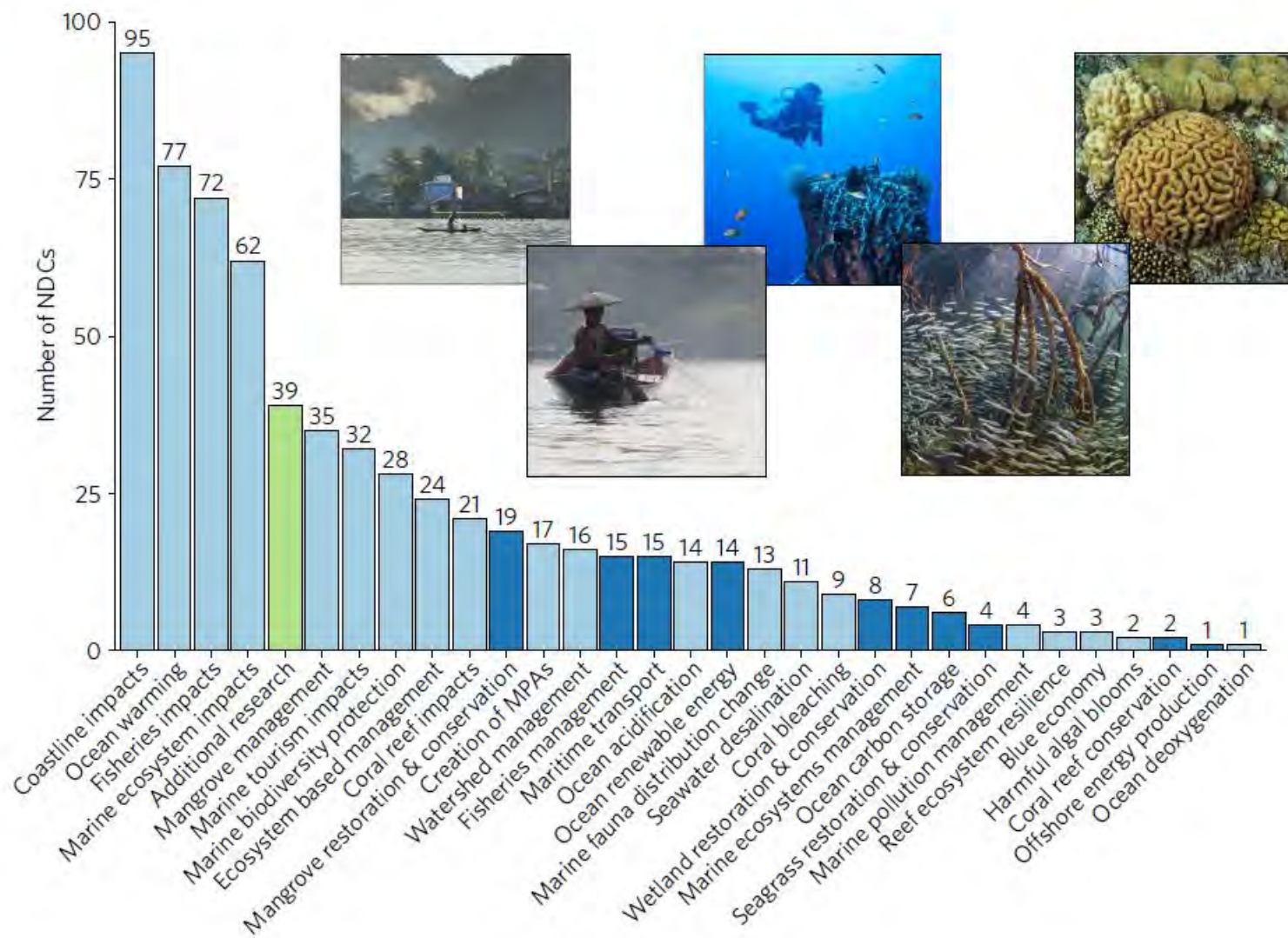
155 NDCs submitted.  
Of which 87 address  
fisheries and aquaculture





# Frequency of marine mitigation and adaptation categories in the NDCs

- Marine mitigation
- Marine impacts and adaptation
- Research



# Adaptation tool box

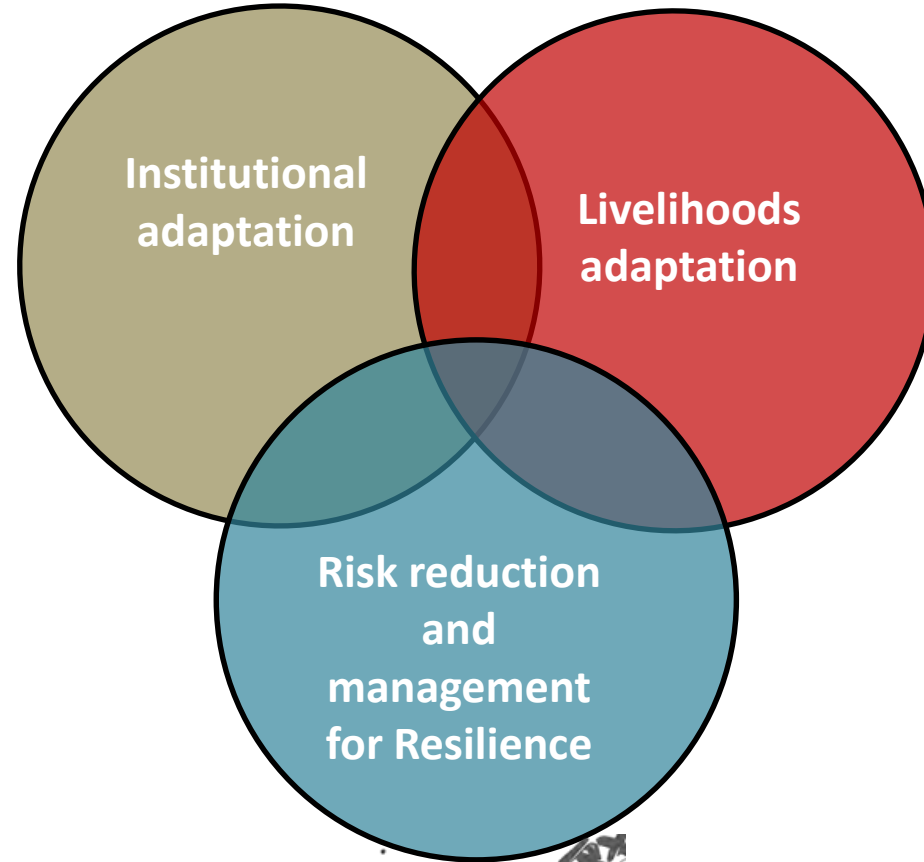
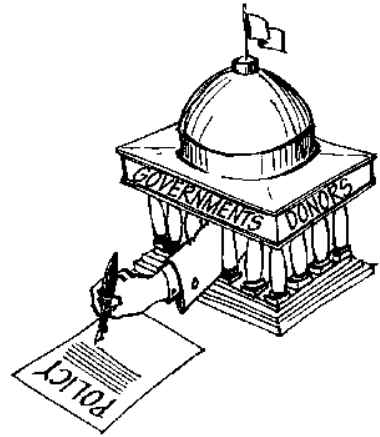
- Help countries & other stakeholders to inform their adaptation plans (e.g. NDCs – NAPs and NAPAs).
- Contains a portfolio of available tools and approaches for adaptation in capture marine, inland fisheries and in aquaculture
- Guidance for selecting, implementing and monitoring the effectiveness of adaptation actions
- Guidance on the phasing and timing of adaptation and
- Guidance for avoiding maladaptation

# Typologies of adaptation

- Drivers/impacts
- intent (autonomous or planned)
- timing (reactive, concurrent or anticipatory)
- the scale at which they occur (nation and/or region)
- the responsibility of various stakeholders (fishers, industry, and governments)
- their degree of necessary change (incremental, transformational)
- Characteristics (tools and approaches)

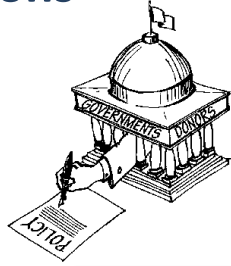


# Adaptation categories





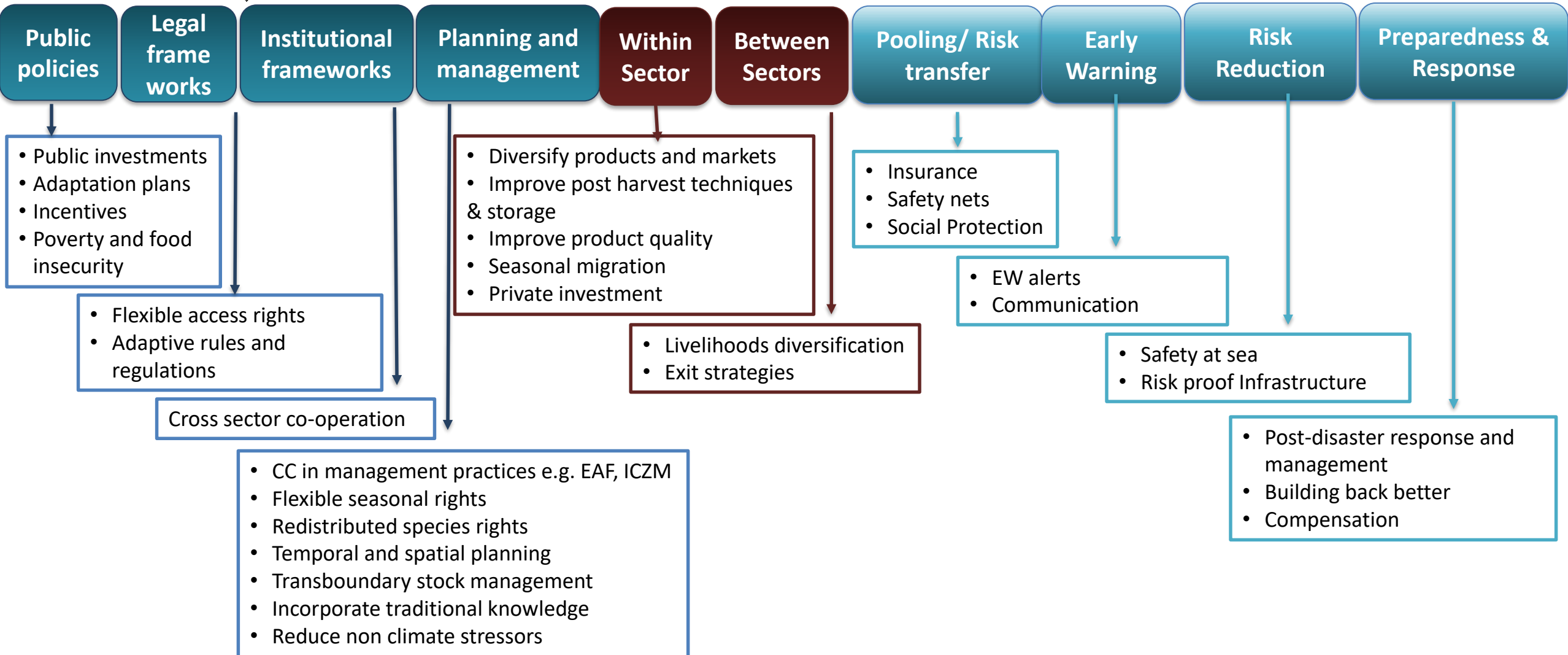
# Institutions



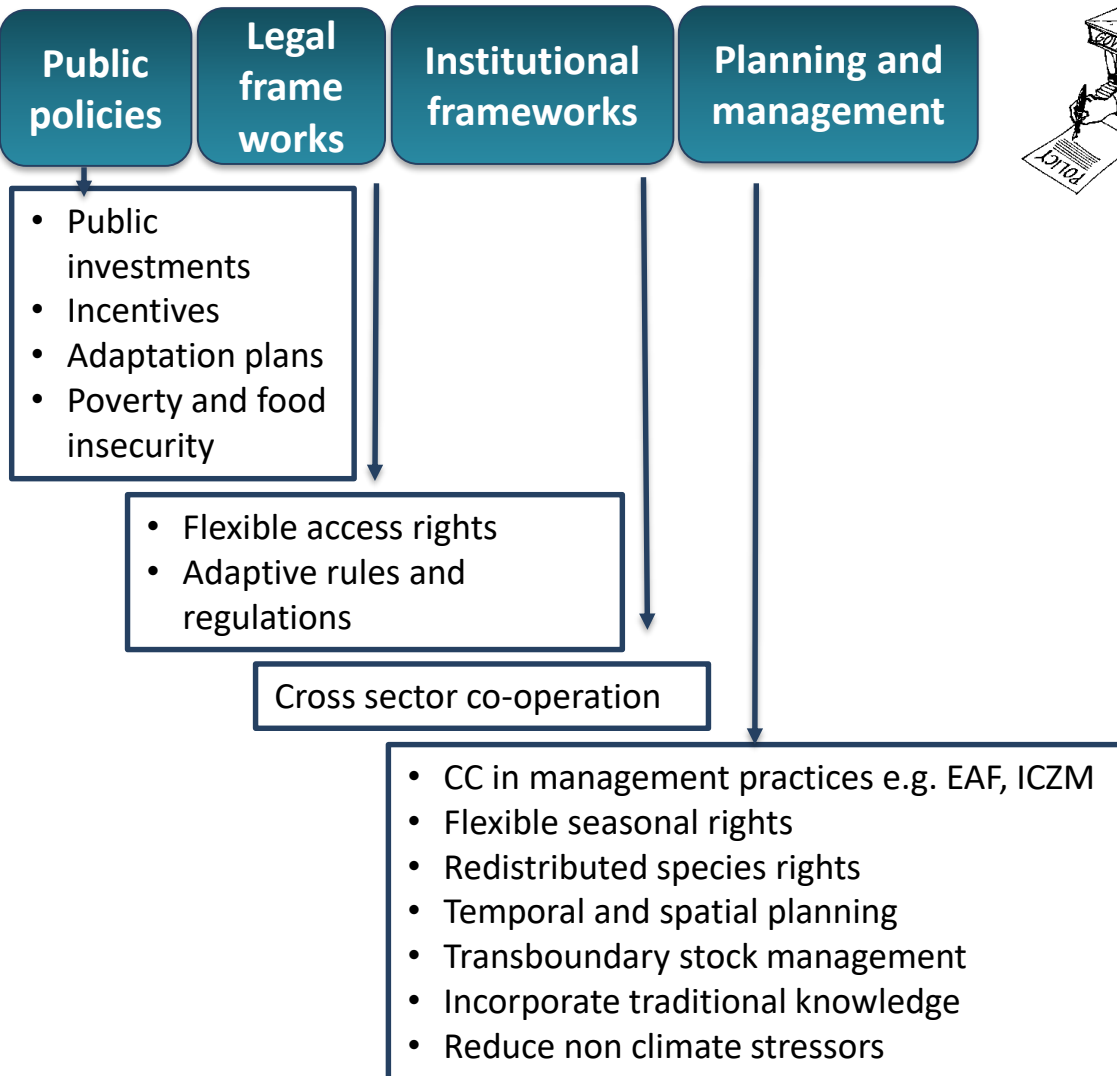
# Livelihoods



# Risk reduction and management for Resilience

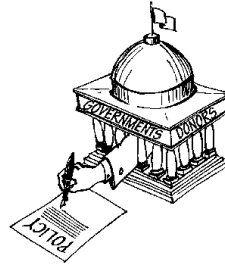
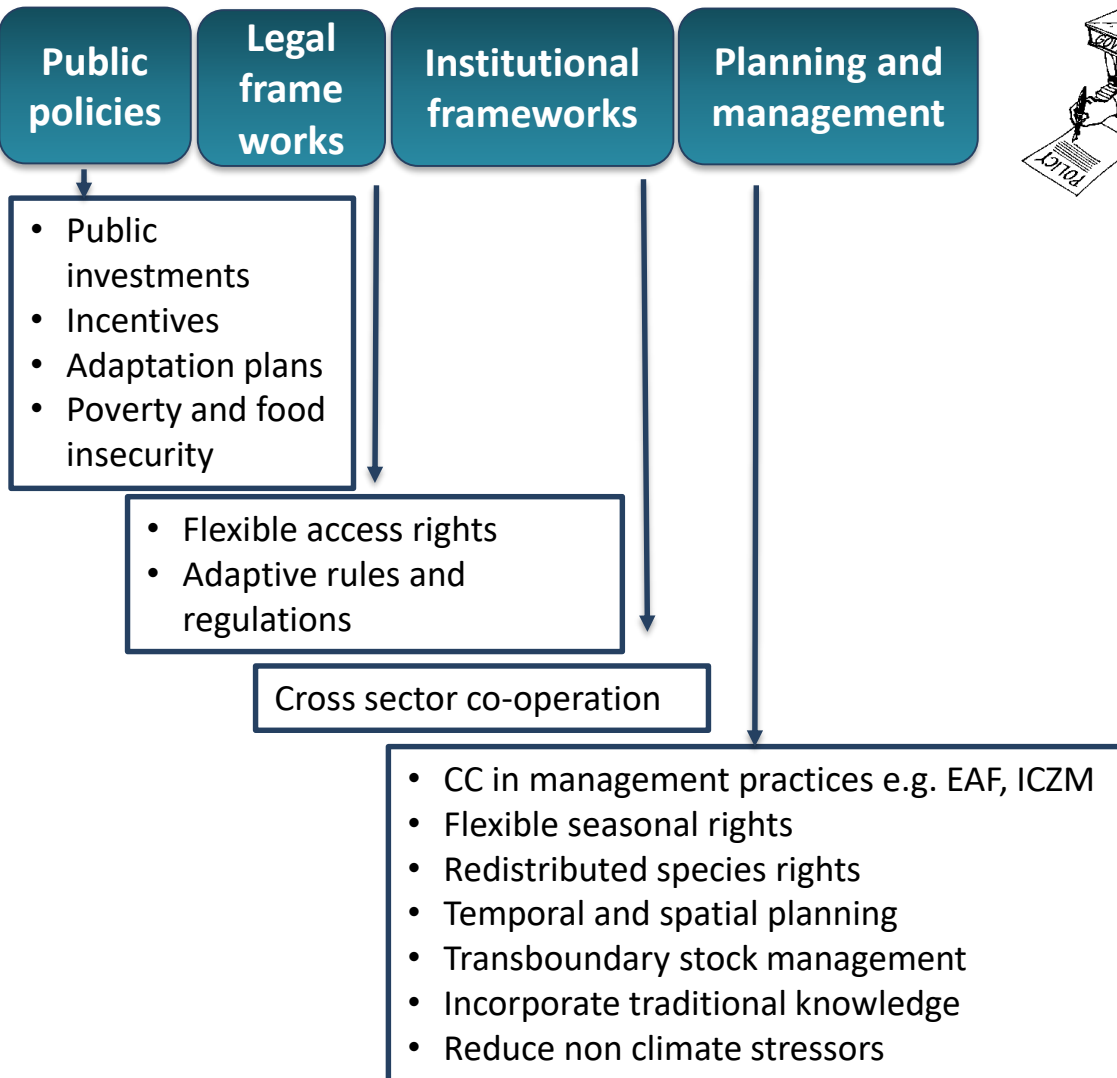


## Institutions



- Issue: Avoiding surprise/unanticipated outcome while providing flexibility & adapting to changing conditions
- Improving the information base: Public investments in research or in learning from CCA best practice and trials
- Incentives e.g. to promote flexible management (market dev) or reduce the level of fishing pressure
- Expanding policy frameworks (e.g. NAPs, NAPAs, poverty)
- Improving rules & regulations, that are flexible to changing volumes and locations of catch (effective MCS/IUU fishing + conflict resolution)

## Institutions



- Increase coordination/strengthen linkages (e.g. legislative action or consultation)
  - Build capacity to integrate CC in management plans + flexible/adaptative management (e.g. EAF)
  - Consider transboundary issues to deal with changing stock distribution
  - Incorporate traditional knowledge
  - Reduce non climate stressors/more resilient
  - Fishery to be integrated with other resource use management
- => Immediate (e.g. fishing safety policies) vs longer term benefits

## Livelihoods



**Within  
Sector**

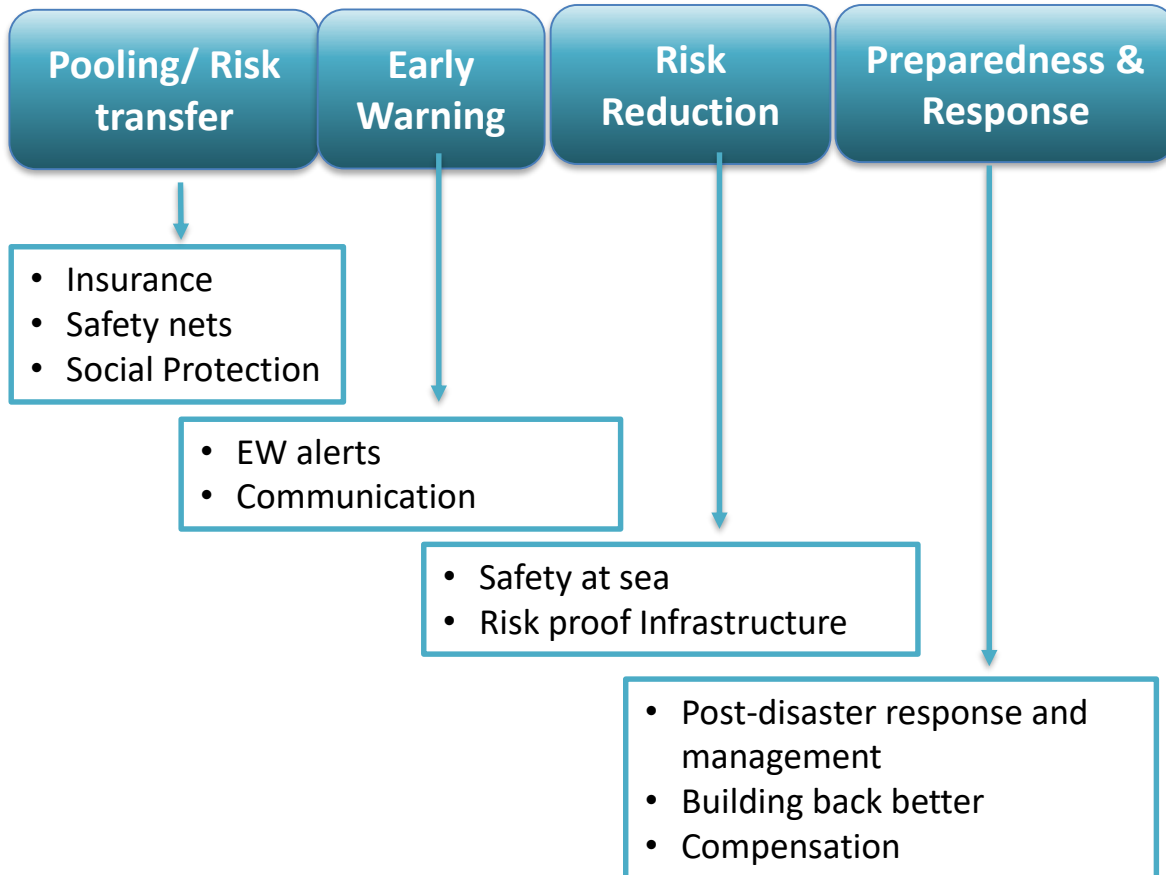
**Between  
Sectors**

- Diversify products and markets
- Improve post harvest techniques & storage
- Improve product quality
- Seasonal migration
- Private investment (e.g. in new technology)

- Livelihoods diversification
- Exit strategies

- Issue: changes in the availability and quality of fish for food & for markets as well as livelihoods/economic instability.
  - The whole value chain (gender)
  - Private activities w. public support (includes...)
  - Most needed in the tropics because of greater dependence on fishery resources and low adaptive capacity
  - Poor and small scale fishers and value chain actors to be supported
- => Adaptation/food security and poverty reduction in an integrated way

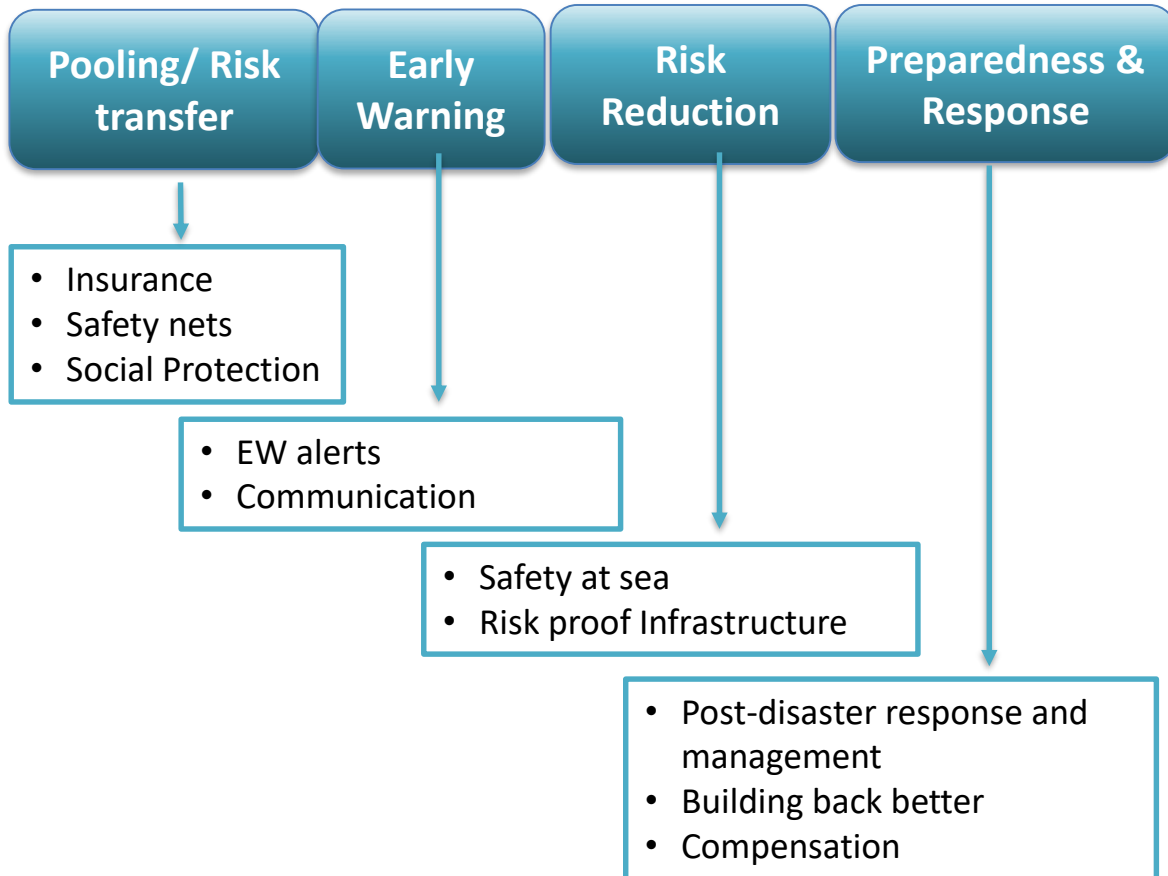
## Risk reduction and management for Resilience



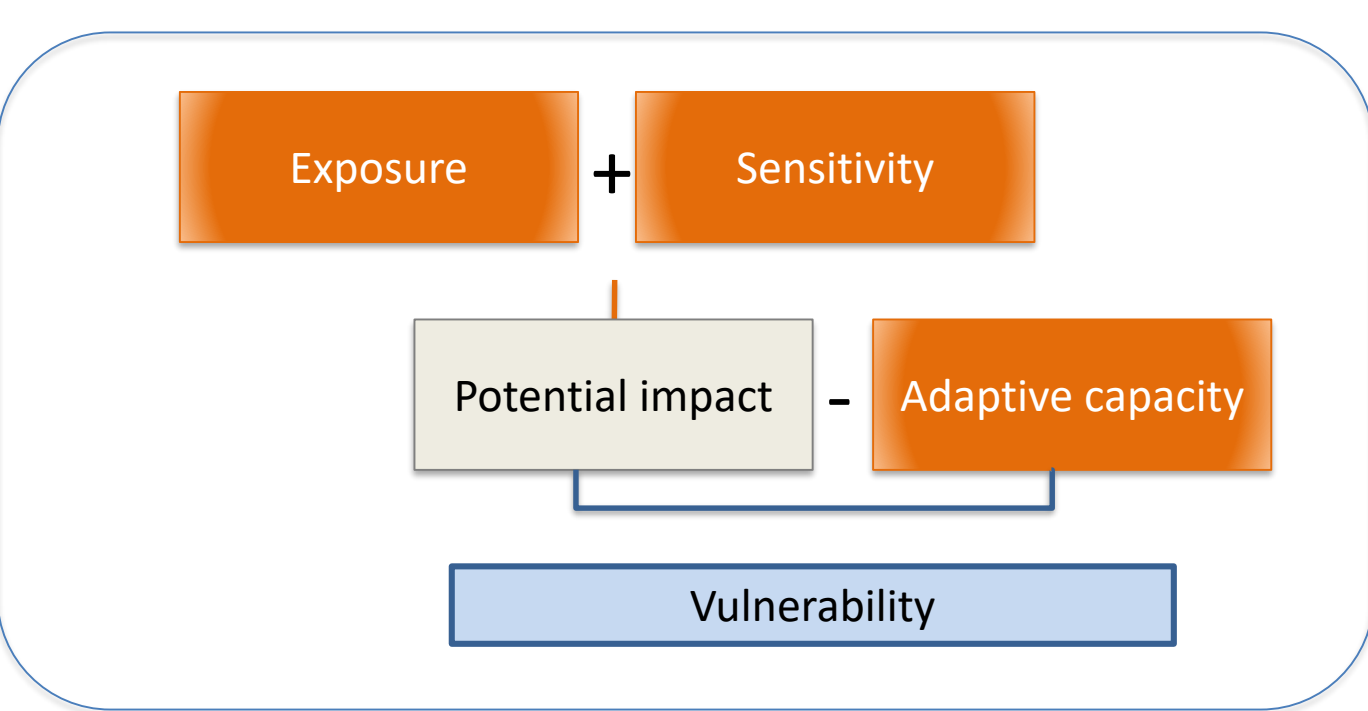
- Issue: reducing/managing current and future risks
- Insurance provision, co-financed by the government, to compensate fishers/farmers after natural disasters and fish disease outbreak in VN (FAO, 2016).
- In BDG, fishers pool resources by sharing gear and fishing together following storm events to spread the cost of recovery (Chowdhury *et al.*, 2012).
- in response to an extreme cold event leading to high mortality in cage aquaculture in Taiwan, an early warning system was recommended, connecting marine researchers, fisheries organizations and policy decision-makers, which has also improved communication between stakeholders (Chang *et al.*, 2013).



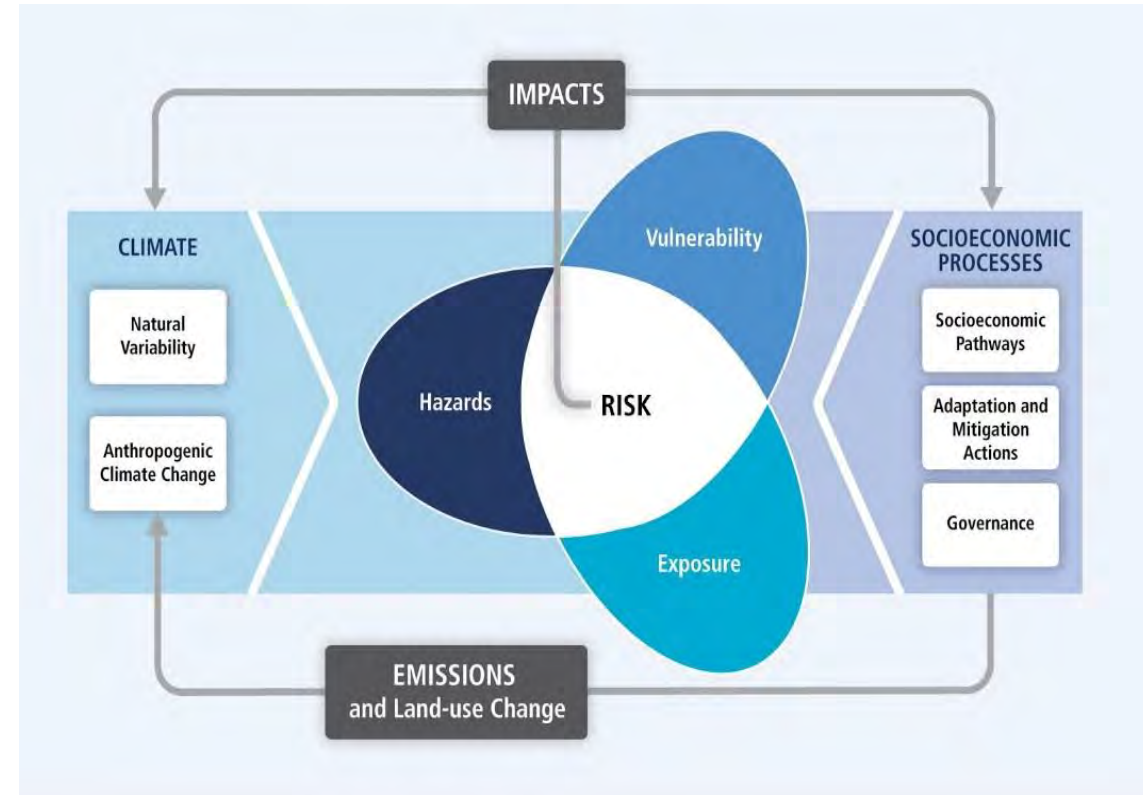
## Risk reduction and management for Resilience



- Reducing exposure to risks at sea, such as storms and winds, can include training and provision of safety gear or GPS devices/ICTs, and is used in projects in marine fisheries such as in the Caribbean (GEF, 2014b)
- After a stormier than usual season in the U.K, the government provided compensation to individual fishers and the fishing industry in the form of grants to replace damaged or lost static gear and allowed temporary flexibility on allocation rules to make up lost income when conditions returned to normal (Defra, 2014).



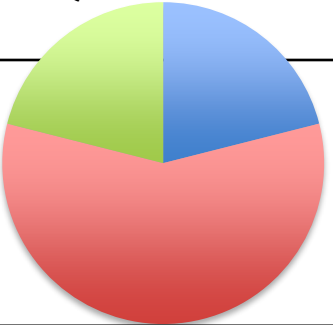

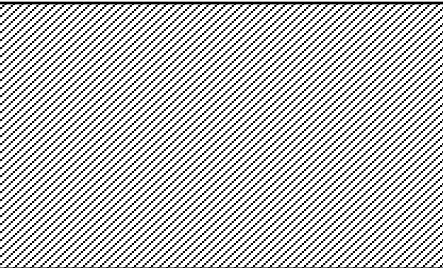
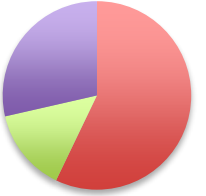

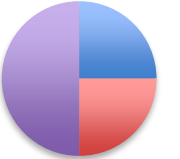
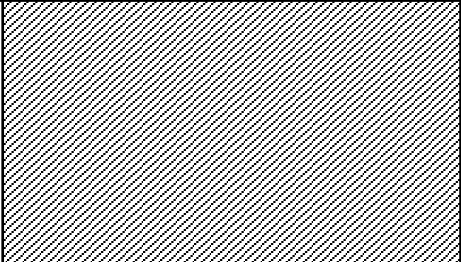

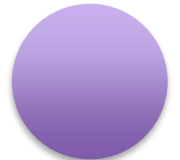
IPCC, 2001

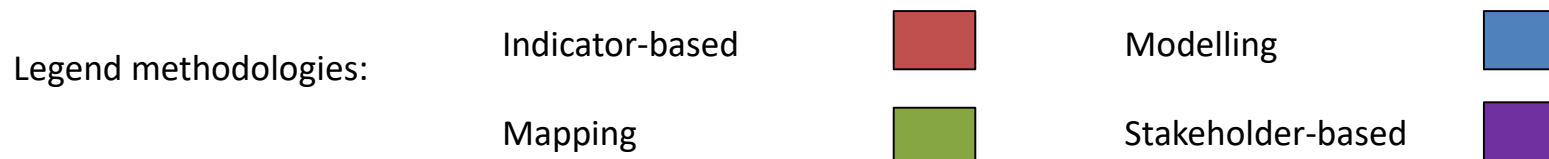


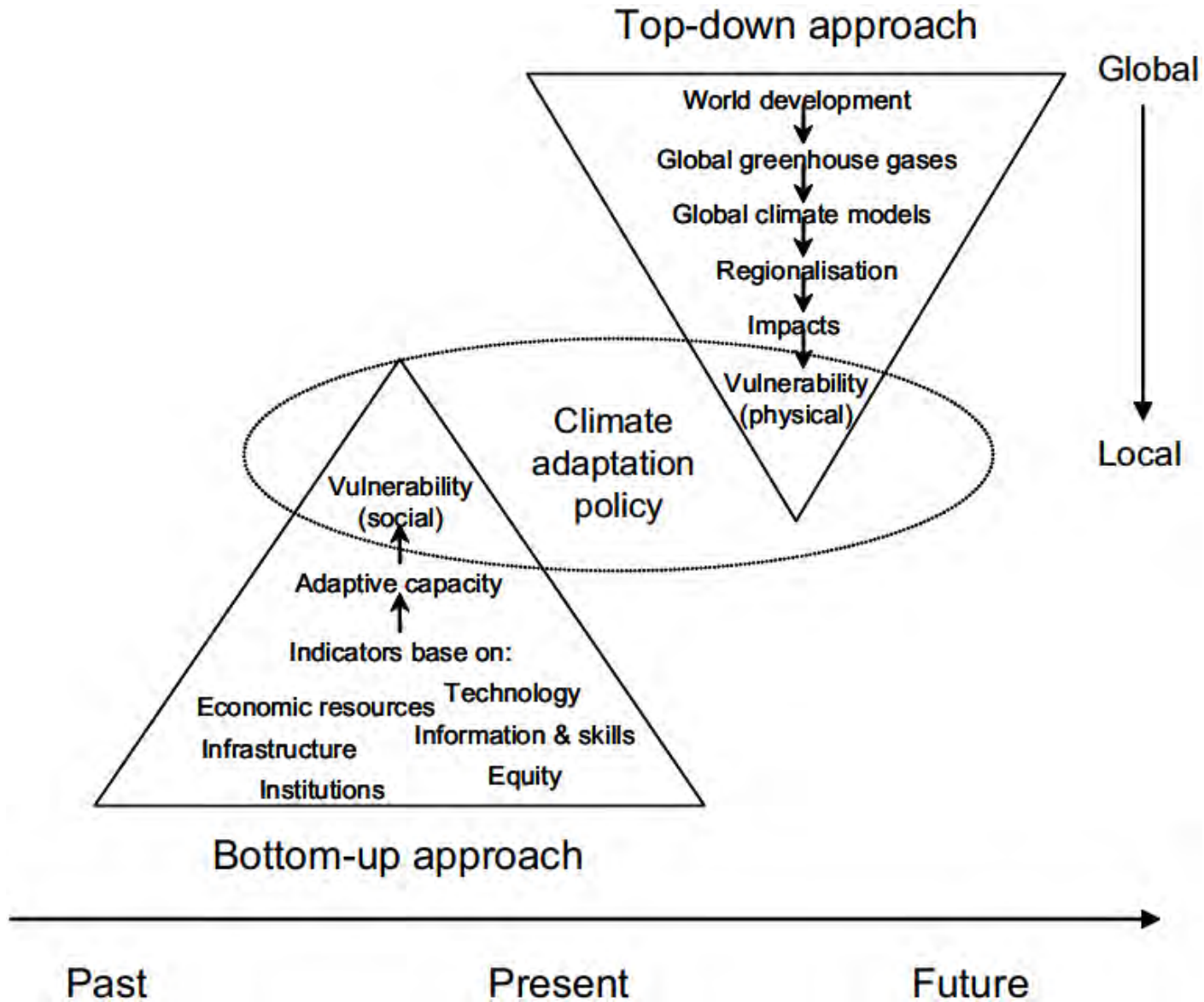
IPCC, 2014

# Assessment methodologies applied to FIA (1995-2012)

Brugère and De Young (2015)

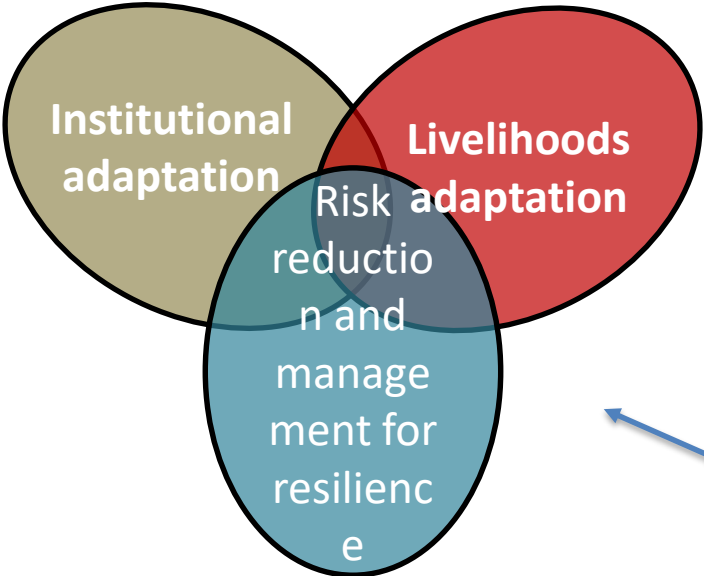
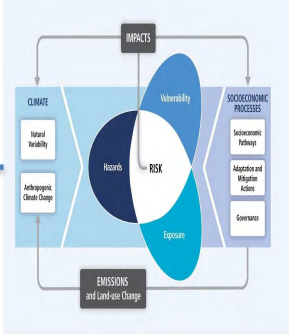
	Quantitative	Integrative	Qualitative
Top-down			
Integrative/mixed			
Bottom-up			





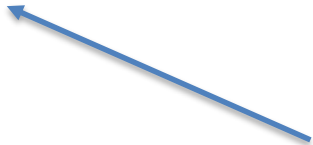
Ongoing and reiterative process/dynamic and evolving risk

Scoping (identify objectives and scope, gather relevant information, assess vulnerability and risks) (Glick et al 2011)



Implement, review and adjust

Identify, prioritize and select adaptation options









# Phasing and timing of adaptation

- Avoid cost of inaction
- Start with current climate – to future uncertain impacts
- Focus on decisions now for current risks (e.g. low or no regret adaptation, building adaptive capacity)
- Focus on decisions now that exposed to climate in future (e.g. mainstreaming, climate resilient infrastructures)
- Take early action for long term change i.e. early monitoring, research, learning to start planning for the future impacts of climate change

.....other  
drivers

# Adaptation decision framework

Addresses Climate Change

		Long-term Loss	Long-term Gain
Addresses other drivers	Near-term Loss	<b>Lose-Lose</b> 	<b>Lose-Win</b> 
	Near-term Gain	<b>Win-Lose</b> 	<b>Win-Win</b> 

Adapted from Grafton (2010) and adapted by Bell (2011)

# Avoid maladaptation

<b>Ecosystem/biodiversity impact</b>	<b>E.g. Diversification of fishing activities that places pressures on new, vulnerable stocks</b>
Socio/economic impact	E.g. Heat wave of warm water temperatures leads to greater abundance of catch, shift in fishing season and price collapse due to lower demand (Mills et al., 2013)

## Useful principles to develop adaptation with a low risk of maladaptation

Magnan, 2014

### **Avoiding environmental maladaptation**

Avoid degradation that causes negative effects *in situ*.

Avoid displacing pressures onto other environments.

Support the protective role of ecosystems against current and future climate-related hazards.

Integrate uncertainties concerning climate change impacts and the reaction of ecosystems.

### **Avoiding sociocultural maladaptation**

Start from local social characteristics and cultural values that could have an influence on risks and environmental dynamics.

Consider and develop local skills and knowledge related to climate-related hazards and the environment.

Call on new skills that the community is capable of acquiring.

### **Avoiding economic maladaptation**

Promote the reduction of socio-economic inequalities.

Support the relative diversification of economic and/or subsistence activities.

Integrate any potential changes in economic and subsistence activities resulting from climate change.



What are your suggestions for the next phase?

**Chapter 25 Methods and tools for climate change adaptation in fisheries and aquaculture.**

Florence Poulain, Amber Himes-Cornell and Clare Shelton





Food and Agriculture  
Organization of the  
United Nations

Thank you

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