



Assessing Investment & Financial flows for Adaptation in the **FISHERIES** Sector

UNDP I&FF Methodology Guidebook: Adaptation

Relevance of the fisheries sector

- Capture fisheries & aquaculture supplied the world with about 110 million tonnes of food fish in 2006
- Aquaculture is the fastest growing food production industry in the world, highly diverse in cultured species in different systems, & has been growing at a rate that is almost 3 times that of terrestrial farmed meat production systems
- Climate change constitutes a threat to the sustainability of capture fisheries

1. Establish key parameters of the assessment

- Define scope for the sector
- Specify the time horizon for the analysis: 2015-2030 recommended, base year 2015 recommended
- Identify preliminary adaptation measures
- Select analytical approach

1. Establish key parameters of assessment

Approaches in the fisheries sector

System	Condition	Consequence
Marine ecosystems	Less geographically constrained than terrestrial systems.	Transboundary management, control & utilization, & reinforced regulatory frameworks.
Fish populations	Migrate over long distances, passing through multiple territorial waters.	Transboundary management, control & utilization, driven by natural environmental factors
Fish populations	Common property resources	Adaptation options centre on altering catch size & effort
Fisheries	Stocks fluctuate due to interannual & decadal climate variability & consequently	Industry has developed considerable coping capacity.
Fisheries	Marine fish stocks are being exploited close to or above productive capacity in three-quarters of world	Reductions in the level of fishing are required in many cases to sustain yields.

1. Establish key parameters of assessment

Possible adaptation measures for fisheries

Impact of climate change on fisheries	Adaptation measures
a. Governance & institutional elements	Institutional mechanisms, resource allocation
b. Legal elements	Regulatory tools, ...
c. Policy & planning elements	Support initiatives to reduce fishing effort in overexploited fisheries, Fiscal incentives, ...
d. Fisheries system elements	Explore the availability of alternative fishery resources Diversify livelihoods, Exit the fishery
Increased variability of yield	Insurance schemes, Migration of fishing strategies
Reduced profitability	Managed retreat/accommodation Early warning systems & education
Increased dangers of fishing	Weather warning system
Influx of new fishers	Support for existing local management institutions Diversify livelihoods through microcredit
e. Financial elements	Cluster insurance, Emergency funds, Pooling of risks
f. Research	Assess risks of future fish stock variation

2. Compile historical I&FF data and other input data for scenarios

- Compile annual historical IF, FF and O&M data, disaggregated by investment entity & source
- Compile other input data for scenarios
- Data sources
 - The **System of National Accounts** (SNA): primary source of information about the economy
 - **Systems of integrated environmental & economic accounts** (SEEA): to address statistical gaps
 - Other sources: **National fishery plans, National Communications** etc.

2. Compile historical I&FF data and other input data for scenarios

Data collection, rely on national accounts data

Examples for I&FF

Year 2013		
List of Investment types	IF (2013 US\$)	FF (2013 US\$)
Government		X
Policies & measures		
Regulations		X
Government / private	X	
Infrastructure		
Fleets	X	
Technology	X	
Gear, Equipment	X	
Management	X	
Training		X
Insurance		X

2. Compile historical I&FF data and other input data for scenarios

Data collection, rely on national accounts data

Examples for O&M costs

Cost items	%	%
Running costs	31 – 33	29 – 30
Vessel costs	19 - 28	18 – 24
Labour	25 – 44	22 – 42
Other costs	6 – 14	5 – 13
Total O&M costs	100	88 – 96
Capital costs		4 -12

2. Compile historical I&FF data and other input data for scenarios

Data collection, rely on national accounts data

Examples of I&FF data disaggregation in each sub-sector

Category of Investment Entity	Source of I&FF Funds	Investment Flows (2005 \$)		Financial Flows (2005 \$)	
		Facility / Technology Type 1	Facility / Technology Type 2	Practice / Measure Type 1	Practice / Measure Type 2
Households	Domestic				
	Total Household Funds (all domestic)				
Corporations	Domestic (e.g. Business investments in hotels, restaurants)				
	Foreign (e.g. Int'l service industry- travel agencies, tourism info centers)				
	Total Corporation Funds				
Government	Domestic (e.g. Physical infrastructure- roads, communication)				
	Foreign				
	Total Government Funds				

3. Define Baseline Scenario

- Define the physical basis for the Baseline Scenario
- **A baseline scenario:** description of what is likely to occur in the absence of ADDITIONAL policies to address climate change; expected socioeconomic trends (e.g. growing demand for fish), technological change (if relevant), & expected business-as-usual investments in the sector

Baseline scenario reflects

- Current sectoral & national plans
- Expected socioeconomic trends
- Expected investments in the subsectors

Information should be disaggregated by

- Year (starting 10 years before the Base Year)
- Source (by corporations & government)
- Type (national funds, foreign direct investment, official development assistance)

4. Derive I&FF for baseline scenario

- Compile annual estimates, disaggregated by investment entity, source, investment flow type, & financial flow type
- Calculate the **total investment cost** in real, unannualized terms over the planning period.
- Estimate **annual investment costs** associated with the new plan
- Develop a **breakdown of total investments** into major categories (e.g., ODA, FDI, domestic funds)

4. Derive I&FF for baseline scenario

Estimate annual I&FF

Adding costs to baseline scenario

Funding entity category	Source of funds	Cumulative investment* (2015-2030)	
		(billion 2015 \$)	(%)
Households	Domestic funds		
Governments	Domestic funds (budgetary)		
	Foreign borrowing (loans)		
	Foreign aid (ODA)		
Corporations	Domestic equity		
	Foreign investment		
	Domestic debt		
	Foreign borrowing		
	Government support		
	Foreign aid (ODA)		
	Total		

*Fleet (2015 \$/Boat), equipment (2015 \$/Net) ...

5. Define Adaptation scenario

- Adaptation scenario: a description of what is likely to occur in the sector, over the assessment period, in the presence of **additional** policies to address climate change
- The adaptation scenario should include previously identified adaptation options, such as those used in a national communication or in a national NAPA

5. Define adaptation scenario

Examples of I&FF in fisheries adaptation scenario

Category of adaptation measure	Measure
Policies & measures	Relocation allowances, Fiscal incentives, Contingency plans, Financial policies, Diversify income & activities, Emergency funds, Microcredit
Regulatory framework	Limits in the access to resources, Standard setting, Codes of conduct, Using sustainable fishing methods: no dynamite fishing, promoting intelligent nets...
Investment	Infrastructure, Fleet, Technology, Gear, Equipment, Training
Management	Diversification, Stay in/exit the fisheries
Research	Forecasting, Resource monitoring

6. Derive I&FF for Adaptation Scenario

- Compile annual estimates, disaggregated by investment entity, source, investment flow type, & financial flow type
- Estimate annual investment costs associated with the alternative management plan
- Calculate the total investment cost in real, unannualized terms over the planning period
- Develop a breakdown of total investments into major categories (e.g., ODA, FDI, domestic funds)

6. Derive I&FF for adaptation scenario

Project I&FF associated with the Adaptation Scenario

Adding costs to adaptation scenario

	Cumulative infrastructure (2015-2030)	Unit cost
Facility/Technology		
Using intelligent nets	(# nets)	(2015 \$/net)
Monitoring of fish resources	(# activities)	(2015 \$/activity)
Training on sustainable fishing	(# trainings)	(2015 \$/training)
<i>Total</i>		

Adding costs to adaptation scenario

Funding entity category	Source of funds	Cumulative investment (2015-2030)	
		(billion 2015 \$)	(%)
Households	Equity & debt		
Governments	Domestic funds (budgetary)		
	Foreign borrowing (loans)		
	Foreign aid (ODA)		
Corporations	Domestic equity		
	Foreign investment		
	Domestic debt		
	Foreign borrowing		
	Government support		
	Foreign aid (ODA)		
	Total		

7. Estimate changes in annual I&FF needed to implement adaptation

- Subtract the baseline annual I&FF, by entity & source, from the annual adaptation I&FF, by entity & source
- Subtraction of the Baseline Scenario from the Adaptation Scenario
- Sum incremental amounts over all years, by entity & source

7. Estimate changes in annual I&FF needed to implement adaptation

Subtract the baseline annual I&FF from the adaptation annual I&FF

- For each chosen fisheries adaptation option, the analysis should identify the incremental investment (total dollars) by source (domestic funds, ODA, FDI etc.) up through 2030 to support the respective fisheries management option

7. Estimate changes in annual I&FF needed to implement adaptation

Summarizing incremental investments

		Investment (billion 2015 \$)		
		Cumulative (2015-2030)		Incremental
Funding entity category	Source of funds	Baseline scenario	Adaptation Scenario	
Households	Equity & debt	Baseline value	Adaptation value	Baseline minus Adaptation value
Governments	Domestic funds (budgetary)			
	Foreign borrowing (loans)	...	...	...
	Foreign aid (ODA)	...	...	...
Corporations	Domestic equity	...	..	...
	Foreign investment	...	...	...
	Domestic debt	...	...	...
	Foreign borrowing	...	...	...
	Government support	...	...	...
	Foreign aid (ODA)	...	...	...
	<i>Total</i>	Sum (Baseline)	Sum (Adaptation)	Sum (Baseline minus Adaptation)

8. Evaluate policy implications

- Determine policy instruments & measures to encourage changes in I&FF
- Identify the entities that are responsible for the significant incremental changes in I&FF
- Determine the predominant sources of their funds, particularly important to distinguish between public & private sources of finance

8. Evaluate policy implications

Assess policy options and summarize the projected I&FF for the key sector

- Public fisheries sector policies are likely to be needed to induce the relevant entities to implement the proposed measures
- Adaptation can occur quickly in some sectors, but is slower in sectors with long-lived infrastructure
- These characteristics suggest a mix of adaptation policies

8. Evaluate policy implications

Assess policy options and summarize the projected I&FF for the key sector

- Public policies to minimize impacts of climate change
 - Building institutional & legal frameworks
 - Analyzing long-range perspectives of tensions
 - Identify & quantify linkages between demands by population growth & income level
 - Analyzing specific impacts on livelihoods related to the fisheries sector
 - Eliminating harmful subsidies & perverse incentives, such as subsidizing fishing fleets under stress
 - ...

9. Synthesize results and complete report

- For more information on synthesizing results, documentation & the completion of the report, please refer to the Reporting Guidelines

Q&A CLARIFICATIONS

