

Poverty alleviation and fisheries development

Some bioeconomic considerations

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IDPPE, Maputo, August 17, 2006

Small-scale fisheries - Background

- Large number of fishers
- High diversity of fishing activities
- Low degree of capitalisation in catch production
- Poorly developed fish markets
- Some gears are considered being destructive
- Limited biological knowledge on exploited resources and ecosystems
- Conflicting interests in the coastal zone

Some basic characteristics of most small-scale fisheries in developing countries, including Mozambique

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Immediate objectives

- Build infrastructure
- Make capital available
- Reduce use of destructive gears
- Reduce post harvest losses
- Establish and utilise co-management bodies
- Encourage technological development in fisheries, new gears and new boats

Common expressions of objectives related to the development of small-scale fisheries

Possible consequences

- Community development and reduced number of fishers
- Capitalisation of fishing effort and reduced activity in subsistence fisheries
- Increased total fishing effort and increased pressure on fish stock resources, overfishing
- OR: No change?

Possible consequences of trying to meet the immediate objectives by relevant projects and governmental interaction

Utilising a natural resource - Basic perspectives

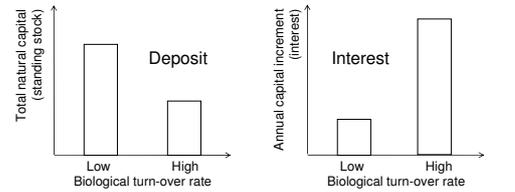
- Biological growth
- Resource rent
- Value of time (discounting)
- Market performance
- Governmental responsibilities:
 - Public goods/infrastructure
 - Poverty alleviation and food security
 - Economic growth
 - Proper management

Basic elements of the utilisation of a natural resource, biology, economics and social factors

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Natural growth and resource rent

- Natural resources are capital deposits
- Renewable natural resources (as fish stock) are growing capital



Regarding the natural resource as capital deposit with internal growth depending of capital size and biological properties (turn-over rates). This also includes a time perspective, as the long term consequences of reducing the deposit of slow growing capital is more severe than if the capital is fast growing.

Resource rent

- Free access to scarce resources gives access to a valuable product for free and creates excess demand
- The net value after paying the cost of collecting the value, is the resource rent
- The resource rent is in an open access fishery spent on subsidising a higher fishing effort than a perfect market could cover
- The resource rent does never disappear, it is only distributed in different ways

The resource rent derives from the market failure when a scarce resource is free. In subsistence fishery the resource rent is used to feed people. Closing the commons could only be recommended if certain alternatives exists whereby the resource rent collected by others is distributed back to the subsistence fishermen left out.

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The concept of discounting

- Discount rates are reflecting the degree of impatience regarding utilising capital now rather than later
- Maximising present value of the capital involves using parts of the capital early rather than save it for later use
 - if the discount rate is high
- A high discount rate reflects therefore that you can not afford to save the capital for later use, it has it highest value when utilised now
- This perspective does not contradict the conservation perspective, it gives an input in the process of deciding how much should be saved

The time it takes to wait for the capital to be harvested, has a value. If this value is high, it is reflected in a high discount rate. The more you need the value now, the more impatient you become and the higher discount rate you will have. Open access fishery is maximising the present value of the resource rent if the discount rate becomes infinitely high and future income has no value.

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The market perspective

- It is an inherent market failure in open access harvest of living resources
- Fishing gears and boats needs to be financed and purchased. Capital is needed
- Fish is not durable and needs transport to fish markets to be sold in time

Essential markets in fisheries: The harvest production, the technical supply and capital, the fish markets

Market dynamics or governmental interaction?

- Given the *necessary conditions* a market will be a place of *negotiation* between suppliers and buyer with the ability of reflecting relevant information regarding *production cost* and *consumer benefits* in a *market price*
- If the market fails a number of possible reasons exist:
 - Lack of information
 - Lack of infrastructure (e.g. transport of goods)
 - Externalities
 - Some operators in the market have market power (e.g. monopolies)

In order to function properly, the markets need to have the right conditions. If the market fails to work, it may be an governmental issue to correct the market failures.

Lack of infrastructure (roads, water, electricity, etc.)

- Can not access important markets by road
- Ice production are not resolved by the market
- Fishing gears are not available locally
- Credit is expensive or not available

Lack of necessary infrastructure creates some of the basic market failures in fisheries.

Effects of giving priority to one single economic activity

- Lack of infrastructure is a major bottleneck in the development of fishing communities
- Public goods like roads, schools and electricity mains represent infrastructure serving all economic activities in the community
- Credit lines targeting only one economic activity may benefit some and harm others. In the long run it may have negative effects on all economic activities in community

Building infrastructure benefits equally all economic activities. This is important.

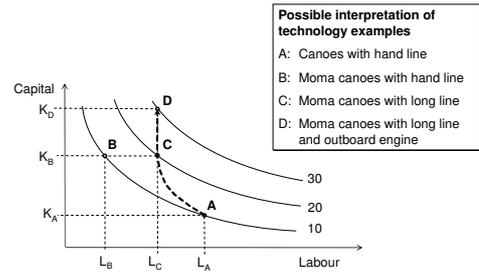
Effects of giving priority to one single economic activity

- In a perfect labour market all economic activities in a community are balanced by equal opportunity cost on equal labour resources
- Subsidising one activity leads to increased opportunity cost of labour in all other activities
- This may cause previous profitable activities to become unprofitable and previous unprofitable fishing activities to become profitable, harming both the fish stock resources and the community

Changing the balance in the labour market by subsidising the fishing community, may lead to other previous profitable activities become unprofitable.

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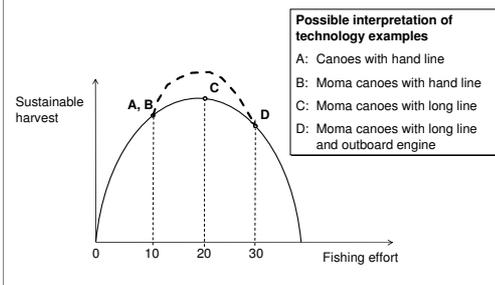
Development of fishing effort



Identification of four stages in fisheries development in the context of labour and capital use.

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Impact on sustainability



Possible effects on stock biomass and sustainable catch.

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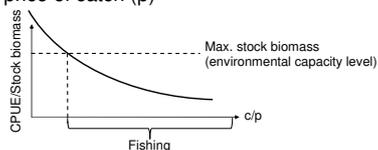
Stages in fisheries development

- Low amounts of capital and labour, and low fishing effort production capacity
- Increased use of capital and reduced use of labour in fishing effort production
- Further capitalisation, increased total fishing effort and negative stock effects
- Capitalised fishing effort production and possible overfishing problems

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Development impact on stock

- In open access the stock biomass development is a function of cost/price ratio
 - unit cost of effort (c)
 - unit price of catch (p)



Economic development and the effect it has on stock situation (e.g. in terms of CPUE)

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Fisheries characteristics - developing stages

Type of fishery	% Labour in input	% Capital in input	Infrastructure	Credits	Stock risk
A	High	Low	Poor/No road, water electricity	Hardly available, very high interest rates	Low
B	Decreasing	Increasing	Access to new markets	Accessible, but high interest rates	Low
C	Medium	Medium	Access to ice	Available at relatively high interest rates	Medium
D	Low	High	Present	Available at normal interest rates	High

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Management and development dynamics

Type of fishery	Technology	Fish Market	Unit cost of effort	Unit price of catch	Management
A	Poor	Poor	Low	Poor	Community development, Data collection and fisheries monitoring
B	Simple	Limited	Increasing	Low	Community development, Data collection and fisheries monitoring
C	Simple	Developing	Increasing	Increasing	Community development, Data collection and fisheries monitoring
D	Developing	Developing	Decreasing	Increasing	Data collection, fisheries monitoring and resource management

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What needs to be done?

- Fishing activities need to be monitored and data collect programmes involving all sectors (social, economic and biological) should continue
- Data analysis and regularly statistical information should be prioritised
- Data analysis and expressed political objectives should be used for management considerations

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