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# Cape Verde

## Fisheries Sector Strategy Assessment

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## CURRENCY EQUIVALENTS

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## ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
<i>Barlavento</i>	Windward
CECAF	Fisheries Commission for the Eastern-Central Atlantic
CPUE	Catch Per Unit Effort
CSRP	Sub-Regional Commission for Fisheries
CTS	Technical and Social Center
DGP	Directorate General of Fisheries
<i>Demersal</i>	Swimming close to the bottom
EEZ	Exclusive Economic Zone (200 miles)
EU	European Union
FAB	Fisheries Asset Board
FEDS	Fisheries Extension and Development Service
FMP	Fisheries Management Plan
GDP	Gross Domestic Product
GPRSP	Growth and Poverty Reduction Strategy Paper
HDI	Human Development Indicators
ICCAT	International Commission for the Conservation of the Atlantic Tuna
INDP	Institute of Fisheries Development
ISECAR	Technical College of Engineering and Marine Science
IUCN	World Conservation Union
MAAP	Ministry of Environment, Agriculture and Fisheries
MEY	Maximum Economic Yield
MITA	Ministry of Infrastructure, Transport, and Sea
MSY	Maximum Sustainable Yield
NDP	National Development Plan
ODA	Official Development Assistance
<i>Pelagic</i>	Swimming in the entire water column
<i>Sotavento</i>	Leeward
TAC	Total Allowable Catch
UNESCO	United Nations Educational, Scientific and Cultural Organization
WWF	World Wildlife Fund

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The findings and recommendations of this report were discussed and commented upon during a workshop in Mindelo, Cape Verde on September 19 and 20, 2007 attended by representatives of the public and private sector.

## **Executive Summary**

This report is the result of a technical and economic assessment of the fisheries sector in Cape Verde. While originally focusing particularly on the long-term development and governance strategy of the sector, the authors, faced with the increasingly apparent need for fundamental restructuring of the sector, redirected their attention to what has become an assessment of how to create a viable fishing sector that can effectively reach realistic stakeholder objectives. The draft report was discussed with representatives of the public and private sectors in Cape Verde September 19 and 20, 2007. The findings and recommendations of the workshop have been summarized in separate textboxes in the report; the complete findings have been attached as Annex C.

### ***Main Message***

The government and foreign donors, in past and ongoing attempts to achieve full exploitation of the assumed potential of domestic fish resources, have pursued sector strategies based on high (public and private) costs and risky assumptions, which did not fully achieve their objectives in terms of fish production and export growth, poverty alleviation and local fish consumption.

This report suggests that a strategy supporting a combination of short-term actions is needed to create a sector – using gradually decreasing public and donor funding - that would provide: a) fishermen and other stakeholders a long-term sustainable source of raw material, b) equitable income growth and employment prospects, and c) provide the country with a dependable source of protein for human consumption.

The strategy objectives and measures suggested in this report should be the subject of an extensive stakeholder discussion leading to a broadly shared consensus before they would be translated into local policies and sector restructuring programs. The key proposals are:

- Management of fish resources should be based on more consistently applying the precautionary principle, reducing or at least postponing fishing effort expansion until the existence of sufficient and/or additional fish resources are proven. Under current policies the risks appear too high of over-exploiting specific resources, and creating insufficient value added to alleviate poverty and maintain acceptable levels of household income.
- To achieve sustainable resource exploitation and more equitable income levels, the short-term strategy would aim at an overall reduction of fishing effort of small-scale fisheries and of the number of small-scale fishermen. Income levels would be supported by a temporary income support scheme, while providing education, training and job-seeking incentives for fishermen to leave the industry.
- Sector governance would increasingly be based on a decentralized model.
- The future infrastructure and fish processing needs of the sector will be evaluated and a separate authority would be created to guide the process of further privatization and of decentralized management of public facilities needed in the future.
- The future level of local and foreign commercial industrial fishing would be dependent upon the productivity of proven fish resources, the allocation of allowable

catches (for regional tuna resources) to Cape Verde flag vessels and on the proven commercial viability of the domestic fleet, in cooperation with foreign interests.

### ***The Economy***

With few other natural resources, Cape Verde has historically had a close relation with the sea. Many villages along its coasts have subsisted on fish for many generations. Still, with a narrow economic base and frequent natural disasters, Cape Verde has a long history of emigration; almost two-thirds of all Cape Verdeans live abroad.

Following independence, the country initially pursued a socialist agenda, with central planning and public control of productive assets. In 1991 the country adopted a multiparty political system, and embarked on a program of liberalization of the economy and of privatization. The change in economic governance has resulted in relatively rapid economic development, but household income growth has been uneven, with rural and coastal areas increasingly lagging in growth and poverty alleviation compared to urban areas.

### ***Institutional Framework***

The new policies have been slowly applied to the fishing sector, where high production growth, infrastructure construction and a costly top-down sector governance model continued to dominate the strategy agenda. The Directorate General of Fisheries, which recently was transferred to the Ministry of Transport from the Ministry of Environment, Agriculture and Fisheries, and the Fisheries Research Institute still reflect the past centralized sector governance model.

Current public and private involvement in the sector reflects the past focus on sector growth and the emphasis on public sector investment of the 1970s and 80s. While management of most of the sizeable public productive infrastructure such as cold stores and ice-plants has been transferred to the private sector, ownership still rests with the government. Similarly, while some fishing port infrastructures are currently being managed by stakeholder commissions, ownership and responsibility for maintenance and replacement remains public. Other facilities at over 30 fish landing places remain in the public domain.

Past sector strategies were supported by public and external donor investment and technical assistance. Activities needed for sustainable management of the sector, such as research supporting actual resources management, and monitoring surveillance and control efforts to police the extensive EEZ have received relatively less attention. Decentralized management of local fish resources, of local infrastructure, and of fisheries within Marine Protected Areas is still in its infancy.

### ***Socio-economic Performance of the Sector***

While the economic contribution of the fishing sector to Gross Domestic Product (GDP) is officially reported to be of the order of 2 % and declining, this report estimates that the actual contribution may not exceed 1%, of which small-scale fisheries probably contributes some 60%.

The sector reportedly employs some 5-7% of the active population, of which small-scale fishermen (2500 in 1975 and around 4300 in 2001, less than 4000 in 2007) and people working in shore-based activities (2000 in 2001, of which some 75% female fishmongers) constitute the majority. Less than 800 seasonally work as industrial fishermen and in fish

processing. By implication the average annual value added per fisherman and fishmonger may be US\$ 780 and US\$ 1250 respectively, which compares with average annual GDP per capita of US\$ 1420 (2002).

A 1982 long-term assessment of the future production (over 30,000 tons) and development potential of the sector copied earlier estimates that would triple fish production from prevailing levels of less than 10,000 tons, and suggested a substantial improvement of the fishing fleet, expansion of sector linked coastal infrastructure and of productive assets. While most of the capacity of productive assets and infrastructure needed to support the projected production expansion have been acquired and built over the past 20 years, and the fishing fleet and the number of fishermen have expanded considerably, domestic catches actually declined compared to the early 1980s, while only some foreign catches may have occasionally increased. Equally important, income growth of most fishermen did not keep-up with recent urban income growth levels.

The fishing sector has relied for a significant portion of its development efforts on foreign transfers and development aid. The sector received over US \$200 million (in current US dollars) in donor supported investment and technical assistance since 1978, or an average US\$ 7.5 million annually, for a fishery with an annual gross domestic landed value of only US\$ 5-7 million annually.

The costs of public administration of the sector have fluctuated, but appear high; total public operational budget outlays for 2005 amounted to at least CVE 100-120 million (US\$ 1.25-1.5 million). The entire public funding picture of the sector is complicated because responsibility for funding of routine maintenance and upkeep of most public port, fish landing and local ice plant infrastructure in the sector is not clear and part of necessary scheduled maintenance appears to remain under-funded. While foreign funded support in the past mainly targeted construction of public infrastructure, private vessels and public technical assistance, local public budgets – operational and development – have and still are focused mainly on supporting centralized public services and institutions. Direct subsidies to the sector appear modest, but most benefit industrial fishing.

Cape Verde has maintained a number of international fisheries agreements with international bodies and with the EU, Japan and a number of African countries. It derives modest direct financial benefits from these agreements, while there is some uncertainty about the actual level of legal and illicit foreign catches. The agreements with African countries are mostly reciprocal bilateral agreements, enabling fishing vessels from both countries to fish in each other's waters without compensation. Recent experience suggests Cape Verdean fishermen do face practical constraints when operating in waters of certain foreign countries.

### ***Resources Base***

Together with its narrow continental shelf area, the seasonally fluctuating influence of the colder Canary Current and the warmer equatorial currents result in occasionally adverse conditions (for either tropical or subtropical/temperate species), thus hampering the development of rich tropical biota. Nonetheless, the country's 750 thousand square kilometer Exclusive Economic Zone prompted 1980 estimates of potential annual fish catches of over 30 thousand tons – particularly based on the seasonal migration of tuna. Using these estimates Cape Verde has over the past 25 years looked at the sea as a major source of future wealth.

This report suggests that the original estimates of potential yield of the fish resources were flawed in two ways: a) they were not based on any solid scientific evidence – more recent research raises fundamental questions about earlier assumptions - and b) the estimates ignored

the commercial aspects of fishing, assuming, wrongly, that all available fish can be caught profitably. It now appears increasingly likely that most resources (particularly lobster stocks in most locations, some demersal stocks, some regional tuna stocks) may already be exploited well beyond ‘cautionary’ levels, while for others the status is at best uncertain (other tuna, small-pelagics).

### ***Sector Purpose and Strategy***

Several documents have over the past seven years defined measures to improve sector performance. While they express some direct or indirect concern about the status of the marine resource base, they avoid suggesting direct support for a reduction of fishing efforts, and do not directly link such reduction – or any other direct or indirect income support program – to the issue of poverty alleviation. This report suggests such reduction, and aims to provide such a link.

The most recent, the Growth and Poverty Reduction Strategy (GPRSP, 2004) includes a growth oriented strategy for the sector that include recommendations to *expand* the productive base, modernize infrastructure, introduce new fishing technology, diversify production, and reinforce regional and international cooperation aimed at rational exploration of the fish resources and expansion of fishing activities beyond the country’s EEZ.

The Government Program of the VI legislature (2001-2005) was more careful in terms of production growth; it had as its objectives the maximization of economic and social benefits from the sector *on a sustainable basis*, to improve the sector trade balance and improvement of the quality and levels of food supplies. Still, it suggested among others: a) an integrated policy for the management and exploration of water, agricultural land and related resources, and b) sustainable management of resources, and *increased* and diversified production.

The recently prepared Fisheries Management Plan – the first for Cape Verde – best reflects the fundamental paradox that affected sector governance during the past two decades: while the plan aims to sustainably manage fish resources it also has economic objectives - value added expansion, income growth and implied poverty alleviation targets - that can far easier be achieved through production growth than by a combination of fishing effort reduction, adjustment of public support programs and more careful sector governance as suggested in this report. The more sustainable solution would require an acknowledgement of the apparently modest size of commercially exploitable fish resources in the Cape Verde EEZ.

This would imply the need to define the future sector strategy mainly in terms of generating domestic value added under a resource management umbrella based on the cautionary principle, priority allocation of such value added towards poverty alleviation, and improvement of the efficiency of sector governance.

In fact, the short-term sector strategy suggested in this report aims to address the following three key and interlinked questions:

- Given our current knowledge of the state of resident and migrating stocks and the marine ecosystem, what can Cape Verde do to continue to exploit its fish resources while ensuring a healthy ecosystem and more productive fish stocks?
- What is an acceptable level of income for fishermen and fishmongers?
- How much public funding is Cape Verde willing to spend on sector restructuring, immediate poverty reduction, and how should it be allocated?

While these questions need answers at the national level, they reflect different realities across the country. The poverty issues appear quite important for Fogo and Brava, which have relatively large fishermen populations and quite modest fish resources and alternative income opportunities, and appear most pressing for Santiago -with almost half of the total fishermen population and modest, highly overexploited resources.

### ***Future Levels of Fishing***

Fishing efforts on lobster and some demersal species in most locations may be effectively reduced. Modest production expansion from small-scale and semi-industrial fisheries appears only feasible for small-pelagics and surface tunas if research confirms stocks can sustain such increase. New technology should be tested to establish the technical and commercial viability of catching deep swimming tuna.

Cape Verde should make every effort to support an overall reduction of international fishing efforts on regional tuna stocks -from which it would eventually benefit through higher catch rates. Larger industrial tuna vessels need to operate mainly outside the Cape Verde EEZ -fishing regional, migrating tuna stocks- to have a chance of being commercially viable. Cape Verde may consider participating in such a fishery through direct commercial arrangements with the most successful foreign companies, possibly linked to and supported by international fisheries agreements. If private industrial tuna fleet management fails to achieve commercially sustainable results, Cape Verde may evaluate alternatives while avoiding subsidized fleet operations. If domestic vessels cannot operate commercially without public support, Cape Verde should decline to subsidize non-commercial industrial fisheries in the long-term, and instead use public money to retrain surplus fishermen and create alternative jobs.

### ***Income Growth and Poverty Alleviation***

The GPRSP generally focuses on public programs that improve well-being --but not necessarily income- such as public health, education, and water supply services. However, immediate, substantial poverty reduction/household income growth in fisheries is impossible given the poor status of the resource. The value added that may be sustainably generated -even by a well managed sector- will not allow all existing fishermen to truly escape current poverty levels. The sector's only chance at increasing household incomes in the short-term would be through a combination of direct and indirect income support programs.

This report suggests that the main strategy to quickly increase incomes of particularly the poorest fishermen would be to create a system of temporary and declining direct income support in parallel to special training and employment placement programs. This combination would provide strong incentives for particularly younger, more energetic fishermen to retrain and find employment outside the sector. Meanwhile, other – longer-term – steps would need to be taken to replace the short-term income support with structural, indirect measures to increase the income of those remaining in the industry, notably by a) reducing overall fishing efforts, b) improving the efficiency of individual vessels and gear, c) reducing fishing operating costs, d) increasing the price of the landed catch, and e) paying fishermen for services they could provide part-time at the local level (statistics and research data collection, MCS, infrastructure maintenance).

Direct income support has political and equity issues. For such pilot “temporary direct supplemental income” approach to be politically viable, one may probably need to create a

scheme that may eventually also apply to other sectors. Direct income support to all existing fishermen may ignore sizeable income differences between small-scale boat-owners and crew, and industrial fishermen. Selecting “poor” fishermen may equally raise major political issues. Hence, some political consensus will be required whether the scheme would apply only to fisheries, and whether it would apply to all fishermen.

This report recognizes the substantial political constraints that may need to be addressed to successfully introduce such a scheme, of which one will be costs. The latter would depend on the political judgment of what is ‘acceptable’ and ‘equitable’ in terms of selection of beneficiaries and acceptable levels of poverty, and would be modest in comparison to past public outlays for infrastructure, technical assistance and sector administration. Still, the authors believe direct, temporary income support to be a key component of a sector strategy that wants to come to grips with the issue of excess fishing capacity and poverty alleviation.

During the September 2007 workshop participants virtually unanimously agreed that direct income support would meet strong political opposition and financial constraints. Instead, the participants strongly endorsed the use of indirect, positive measures to support fishermen incomes and a reduction of the number of fishermen, such as re-training and education, improvement of fishing technology and more effective credit. Temporary income support to fishermen receiving training was considered acceptable, while fishermen should be able to obtain social security and pension rights.

### ***A Risk Reduction Strategy for the Sector***

The proposed risk reduction strategy would have a single goal: create and maintain a commercially viable and environmentally sustainable fishing sector that is able to quickly and substantially eliminate poverty, while minimizing environmental and commercial risks.

The four key objectives of the sector strategy would be to:

- Ecological management: Maintain a marine environment that can provide optimal resource benefits to the country and minimize environmental risks;
- Poverty reduction: Substantially increase average fishermen incomes similar to that of the general population;
- Institutional effectiveness: Adjust the institutional framework to ensure long-term sector governance effectiveness, and
- Financial sustainability: Reduce public spending on the sector to what is essential to restructure the sector, maintain public infrastructure, and ensure effective public governance.

Some short-term components of this long-term risk reduction strategy could be coordinated under two main short-term programs, a) a controlled reduction of small-scale fisheries and improved governance of semi-industrial fisheries and industrial fisheries, and b) preparation for development of industrial fisheries based on market forces. These would be followed by two long-term programs to maintain effective governance of the sector that would aim at: a) institutional strengthening and improvement, and b) long-term marine environmental management.

### ***Institutional Changes***

The strategy is based on a process of governance decentralization, building-up effective institutional capacity at the local level through fishermen associations. These associations would constitute the main local mechanism to execute a number of functions, and play a long-term role in maintaining financially and environmentally healthy local fisheries.

The second institutional component of the strategy would be the creation of a mechanism to effectively use and maintain the existing public infrastructure – for processing of fish and to facilitate fish landings and fish quality. The strategy proposes the creation of a professional Fisheries Asset Board -representing a number of public and private stakeholder groups- that would take responsibility for a) the process of disposing of public assets, b) negotiating and monitoring the use and management of public assets by private contractors and other parties, and c) of maintaining existing infrastructure. The Board would have a part-time character, but have a small permanent secretariat, and would use private contractor(s) to execute most activities.

Participants of the September 2007 workshop objected to the creation of an infrastructure Board, citing the lack of political will as the main constraint to more effective use of existing infrastructure. Instead, participants suggested that public-private partnerships could create the necessary conditions to enable more effective management of industrial facilities, while the government should create the regulatory and fiscal conditions that would enable independent agencies to manage other facilities.

Given the modest size of the fishery, and the high costs of maintaining separate institutions, the long-term strategy would aim at consolidating existing and newly created institutions as much as is practically feasible. The design of the future framework of sector institutions should be based on the following principles: a) reducing lines of control; b) limiting bureaucratic regulations; c) decentralization; and d) financial transparency. Although this report will not suggest a ‘final’ structure for fisheries institutions, it recommends that the government consider consolidation of several sector support activities under a single institutional umbrella. These would all be involved in supporting fisheries activities at the local level.

The September 2007 workshop highlighted the current Government’s intention to focus public action on management and restructuring rather than development. It aims at a gradual decentralization of selected public services, depending on local institutional capacity, enhance synergies from institutional cooperation, and redefine the respective roles of public institutions. It gives high priority to expansion of local credit facilities, notably to support the introduction of new technologies.

### ***Main Strategy Programs***

The strategy that should be discussed by stakeholders may include the following main programs:

- Improvement of research on and management of local fish resources and the marine environment - to provide a stronger scientific basis for future resources management action, to define new management regulations, future research programs to evaluate and adjust regulations, and to define and implement monitoring, surveillance and control measures to effectively implement these regulations;

- Positive, indirect support to enhance fishermen incomes - To provide a range of indirect support measures to members of fishermen associations during the sector-restructuring period;
- Vocational training, education and job placement - To assist fishermen and family members in preparing for and finding better paying employment outside the fishing sector;
- Fisheries extension and technology development and testing – To provide effective management and organization support to all fishermen associations in the country, and to organize the design and testing of new fisheries technologies and boat designs;
- Development of sound financial intermediation – To enable fishermen to borrow at reasonable costs for seasonal operational expenditures and capital investment;
- Infrastructure management, maintenance and funding – To (cost) effectively maintain and manage existing infrastructure supporting small-scale and (semi-) industrial fisheries;
- Commercial development support - Ensure optimal future benefits from existing productive infrastructure and vessels, and their effective commercial operation; and
- Strengthen MCS to provide credible deterrence against illicit fishing – To provide technical and financial support to the existing MCS program to ensure its future effectiveness and credibility.

***Public Financial Support to the Sector***

The proposed strategy could be funded from at least six potential sources: a) external donor support for specific strategy components, b) the public budget allocated to poverty reduction in the sector under the GPRSP, c) the regular public operational and development budget of the fisheries department, MAAP and INDP, d) contributions from the Ministries of Education, Social Affairs and Transport, e) compensation payments from foreign fisheries agreements, and f) users of public sector facilities – port facilities, ice, privately managed but publicly owned fish processing plants etc. The likely annual costs of the implementation of the entire strategy will substantially depend on policy decisions that would be made concerning direct income support levels and public support for retraining fishermen.

**Summary of estimated potential costs of implementation of risk reduction strategy for the fishing sector (first six years).**

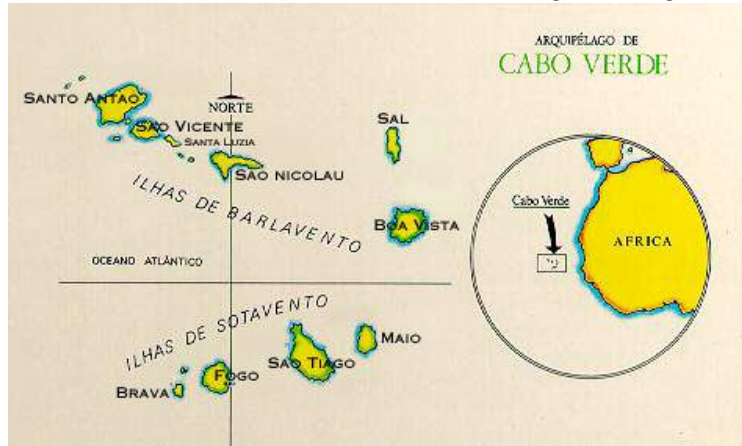
Sub-component	Annual Costs US\$('000)					
Year	(1)	(2)	(3)	(4)	(5)	(6)
Research and resources management component	375	375	375	375	375	300
Supplemental income program	<b>110</b>	<b>170</b>	<b>290</b>	<b>530</b>	<b>770</b>	0
Training, education and job-placement program	2130	2130	2130	2130	2130	300
Fishery extension and technology development	430	430	430	430	430	180
Fisheries infrastructure management and maintenance	1790	1660	1660	1660	1660	1650
Commercial development support	275	175	0	0	0	0
MCS support	220	220	220	220	220	220
<b>Total</b>	<b>5330</b>	<b>5160</b>	<b>5105</b>	<b>5345</b>	<b>5585</b>	<b>2650</b>

Past levels of public funding of the sector and its administration – including external donor funding – are unlikely to be continued indefinitely in the future, given the likely future size and economic importance of the fishing sector. In the short (6-year) term public ‘restructuring’ funds, supported by external donors, should finance implementation of the proposed risk reduction strategy. The possible estimated costs of implementing the strategy following the reconstruction period may decline to some \$ 2.6 million, of which over half would be needed for maintenance of existing infrastructure.

## 1. Introduction

### 1.1 THE COUNTRY

Cape Verde is made up of 10 islands and 13 islets, located some 600 km west of Senegal. It has a 4,033 km<sup>2</sup> land area, most of which is bare and organically poor due to very low and variable values of precipitation. Only an estimated 10% of the land area is suitable for agriculture. The islands, which are generally divided into a northern (Barlavento: windward) and a southern group of islands (Sotavento: leeward), are of volcanic origin, rising from depths of at least 3,000 meters. According to the 2000 Census, Cape Verde had a 434,625 resident population, of which 55 % lived in urban areas. Some 54 % of the population lives on the island of Santiago and 23 % in Praia, the country's capital. The reduced dimensions of Cape Verde, its geographical isolation and the lack of natural resources means that traditional development possibilities are limited. The country's economy has however experienced significant growth since independence.



Formerly a Portuguese colony, Cape Verde became independent in 1975. Cape Verde was ruled during the subsequent 15 years by a one-party state, which brought about a significant development in economical and social terms. Following the changes introduced to the constitution in 1990, a pluralist political system was introduced. The opposition party won the following elections in 1991 and governed during a period of ten years. During this period, emphasis was placed on reinforcing civil liberties within a state of law and the gradual transformation from a socialist-type plan economy to a liberalized market economy. Today, Cape Verde has a track record of more than ten years of multi-party democratic rule, several elections carried out, peaceful political transitions, respect of human rights, and effective participation of civil society in the governance process, which is seen as exemplary in Africa and the World.

Real per capita GDP is estimated at US\$ 1,420 (2002), which shows a significant improvement since independence (1975), at which time it was US\$ 190. Strong real GDP per capita growth was accompanied by a significant and continuous improvement of the human development index (HDI), which went from 0.587 in 1990 to 0.670 in 2002. Official Development Aid (ODA) has been steadily decreasing, having dropped from 24.1% of GDP in 1998 to 13.5% in 2001.

## 1.2 THE MARINE ENVIRONMENT

The continental shelves (down to depths of 200m) are generally narrow and irregular, with a total estimated area of only 5,394 km<sup>2</sup>. The eastern islands Sal, Boavista, and Maio, form a more extensive continental shelf system<sup>1</sup>. No true coral reefs exist in the Cape Verde Archipelago, but there are a number of sites with rich coral communities. On the other hand, the Exclusive Economic Zone (EEZ) of Cape Verde covers an extensive area of 789,400 km<sup>2</sup>, much of which is exploited by foreign fishing fleets only.

The Archipelago is situated in the tropics and isolated from the African mainland by great depths. Moreover, marine habitats around the Cape Verde Islands are generally characterized by a much lower primary productivity compared to the upwelling areas close to the West African coast. The influence of upwelling off Mauritania is seen to reach the Cape Verde Islands<sup>2</sup>, possibly leading to an import of nutrients and chlorophyll production, but this effect appears to be sporadic and of limited consequences in terms of productivity. The alternating seasonal influence of the colder Canary Current and the warmer equatorial currents (North Equatorial Counter Current – NECC / North Equatorial Current – NEC) result in occasionally adverse conditions (for either tropical or subtropical/temperate species), thus hampering the development of rich tropical biota.

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<sup>1</sup> Shelf conditions are characterized by predominantly sandy bottoms with rocky outcrops of volcanic rock. The extensive shelf regions around Boavista and between Boavista and Maio would present ideal trawling grounds were it not for these outcrops of sharp rocks and nodules that making trawling difficult.

<sup>2</sup> Observed through satellite images of sea surface temperature and chlorophyll concentration.

## 2. Fish Resources, Fishermen and Infrastructure

The fishing grounds are generally small, scattered and sensitive to exploitation, particularly in the case of demersal and coastal species. The combined effects of strong currents, rough bottom conditions, the small size of the fishing grounds, limited productivity, and variations in water temperature make fishing in Cape Verde waters difficult and expensive. In simplified terms, there are three main fisheries, for tuna, small pelagic species and demersal species, that are being exploited by an industrial, a semi-industrial and an artisanal fleet. Total annual catches totaled around 9-10,000 tons in recent years.

### 2.1 FISH RESOURCES

An evaluation of the potential for exploration of fisheries resources was recently carried out in connection with the formulation of the Fisheries Management Plan (FMP). The total estimated potential of between 36,000 and 44,000 tons was estimated (Table 2.1), where more than half is assumed to be tuna resources in the Cape Verde EEZ. This appears to imply that there is considerable room for expanding and developing fisheries in Cape Verde. In fact, this has generally been the aim of successive fisheries strategies since independence, but with limited success. What has not been clearly stated previously, or in the latest FMP, is that the estimates of potential fisheries resources in Cape Verde are generally associated with a high level of uncertainty *and* that they ignore the commercial viability of fishing the entire potential resources. In the following paragraphs, emphasis will be placed on a critical assessment of these potential estimates and the commercial viability of catching the assumed potential.

**Table 2.1: Estimated potential and availability of fisheries resources.**

Resource	Estimated Potential (tons)	Mean Catch 1997-2001 (tons)	Further Potential/ Availability (tons)
Tuna	25,000	6,000 <sup>3</sup>	19,000
Small pelagics	7,500 – 9,300	2,860	Approx. 4,500-6,000
• Mackerel scad ( <i>Decapterus macarellus</i> )	5,000 – 6,000	2,000	3,000-4,000
• Big-eye scad ( <i>Selar crumenophthalmus</i> )	1,000 – 1,500	800	200-700
• Sardinella ( <i>Sardinella maderensis</i> )	1,500 – 1,800	60	1,440-1,940
Demersals on sandy bottoms down to 50m, Maio - Boavista shelf	700 – 2,800	1 222 <sup>4</sup>	Unknown; to be defined
Demersals on rock bottoms, Boavista, João Valente, Tarrafal and Bancona	3,000 – 6,500		Unknown; to be defined
Deep-sea lobster	50 – 75	17 <sup>5</sup>	Unknown
Coastal lobsters	40	13 <sup>6</sup>	Unknown
Deep-sea	Unknown	Unknown	Unknown; Experimental fishing is a priority
Approx. Totals	36,000-44,000	Approx. 10,000 <sup>7</sup>	26,000 – 34,000

<sup>3</sup> Includes catches of both the national and foreign fleets

<sup>4</sup> Catches of both sandy and rock-bottom demersal species

<sup>5</sup> 1996-1997

<sup>6</sup> 1996-97 and 1997/2002

<sup>7</sup> Including other non-specified

### 2.1.1 Tuna

Tuna potential, referring primarily to yellowfin and skipjack tuna, has been assessed on a number of occasions and there has been a consistent decrease in estimates of potential in successive studies over time. Earlier estimates of potential coastal tuna catches (12,000 t) have been largely based on guesswork; only recently have data and analytical methods become available to make a more rigorous assessment<sup>8</sup>. The latest estimate of 25,000 tons<sup>9</sup> potential tuna catches is divided up in a 13,000 tons offshore component and a 12,000 tons coastal component. The offshore component was based on production estimates of the international tuna fleet in the area, which have been adjusted downwards to take into account the lower productivity of Cape Verde waters. Foreign catches are estimated at around 3,000 tons<sup>10</sup>, which together with current national catches of 3,000 tons gives a total current production of 6,000 tons in the EEZ (Table 2.1). This estimate of foreign catches refers to the period 1992 to 1995, but the activity of foreign fleets, particularly using surface gears, catching younger fish, has increased steadily over the last 10 years (Annex A). The level of foreign catches in these seasonal fisheries has been as high as approximately 10,000 tons in recent years, although these tend to be quite variable. Presumably, this variability has to do with changing abundance of tuna in the EEZ, as a result of oceanographic and environmental factors that affect the distribution and abundance of tuna and the location of the main fishing fleets. Thus, foreign vessels appear to be exploiting a substantial part of the offshore tuna resource in the Cape Verde EEZ, depending on the availability of the resource in the area. The highly seasonal nature of surface tuna fishing forces foreign industrial fishing vessels to fish elsewhere along the African west coast during the rest of the year.

Year round industrial fishing for tuna by the local fleet limited to the Cape Verde EEZ has proven commercially impossible; tuna stocks are only present during a 3-4 month period. The domestic fleet has recently demonstrated that it lacks the management skills and international contacts to regionally operate as cost-effective as its foreign counterparts, when operating on its own. Considering the available information, the potential for further expansion of surface tuna fisheries in Cape Verde appears highly uncertain unless it is done at the expense of the foreign fleets. However, since the local fleet has been unable to emulate the commercial performance of foreign vessels, expansion appears questionable. Achieving profitable commercial operations of the local fleet may only be possible through close, long-term commercial linkages with foreign companies that have a proven track-record in these regional tuna fisheries.

Concerning coastal tuna resources, exploited seasonally by a semi-industrial local fleet (which catches other species the rest of the year), domestic catches have actually decreased from

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<sup>8</sup> Recent trophic-dynamic modeling studies of the Cape Verde coastal ecosystem can further elucidate on this issue. These models are generally associated with great uncertainty, but they are excellent “book-keeping” exercises. Given the available information on biomass, catches, and CPUE as well as trophic relationships between species groups, the objective is to simulate the observations from the ecosystem. A total tuna (yellowfin and skipjack) biomass of 12,000 tons was assumed, which is the same value as the assumed total potential catch in coastal areas. Even when assuming this relatively low tuna biomass, the simulations indicated that there was not enough prey, small pelagics mainly, in the coastal ecosystem to sustain such a level of biomass. In order to balance out the observed catches and CPUE, it was necessary to assume that tuna obtained more than half of their diet offshore. These results suggest that a tuna potential of 12,000 tons for coastal areas only is highly over-estimated. (Stobberup *et al.* 2004, 2005)

<sup>9</sup> Hallier 1999

<sup>10</sup> Fisheries Management Plan (FMP) 2005

about 5,000 in 1986 to about 3,000 tons in 2001<sup>11</sup>. Catch rates per boat per day have also decreased considerably over the last 15 years (Annex A), reflecting the declining size of the resource, raising further doubts about a large unexplored potential. Part of this decline may be attributable to a general lack of baitfish, which has constrained coastal tuna fishing for years. It is also important to note that a downward trend in the catch rates of tunas is a general pattern observed in the Eastern Central Atlantic and Macaronesian Islands, reflecting an overall decline of the tuna resources. The currently available data do not support the estimate of 12,000 potential tuna catches in the coastal areas.

Several exploratory surveys have been undertaken using industrial long-line gear to study the prospects of fishing for large pelagics (tuna and billfish), sharks and other deep-sea resources<sup>12</sup>. Generally, the results indicate that industrial long-line fisheries do not appear to be feasible in Cape Verde and small-scale exploitation is recommended. Exploratory fishing experiments should be continued, as recommended by the FMP, in order to study the possibility of establishing alternative, potentially profitable, small-scale fisheries.

The parameters of the resource of deep swimming, older) tuna, which are currently not exploited by Cape Verde are highly uncertain; expansion of catches will require careful scientific monitoring.

### **2.1.2 Small Pelagics**

Being important resources in Cape Verde, small pelagic species, such as mackerel scad, have been assessed on numerous occasions. Two acoustic surveys undertaken to assess small pelagics in Cape Verde have given inconsistent results; biomass estimates of 50,000-65,000 tons in 1981<sup>13</sup> and 14,000 tons in 1997. In theory, stocks of small pelagics are expected to fluctuate substantially, depending on environmental conditions. However, local catches have been steadily increasing from about 1,000 tons in 1986 to 4,000 tons in 2001 and a peak of 5,000 tons in 1998<sup>14</sup> (Box 1).

The estimate of a further potential of mackerel scad of 3-4,000 tons (Table 2.1) is based on an assessment carried out in 1997<sup>15</sup>. The estimate of the MSY remains highly uncertain. A more recent assessment of small pelagics, which was not available at the time for the FMP, indicates that these resources appear fully exploited<sup>16</sup>.

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<sup>11</sup> Not including catches of about 500 t of wahoo (*Acanthocybium solandri*) in recent years.

<sup>12</sup> Torres 1982; Giani *et al.* 1999; Menezes *et al.* 2001

<sup>13</sup> The survey by the *Fridtjof Nansen* should be critically reviewed on account of the consistent upward bias displayed in most of surveys the vessel performed around the world, possibly reflecting technical calibration issues.

<sup>14</sup> The high variability of catches in the early 1980s is most probably due to deficiencies in the statistical collection system, as this was the beginning of the implementation of such a system.

<sup>15</sup> Almada 1997

<sup>16</sup> Production modeling was used to assess small pelagics as “bulk” biomass, using CPUE as an index of abundance. Species catches and effort data were aggregated in an attempt to minimize the effect of data limitations such as the observed changes in fishing strategy (e.g. targeting) and the unreliable effort data when considering specific gears and targets. By using this approach, the model estimated biomass to have decreased from about 20,000 to 10,000 tons in the period 1987 to 2001. (Stobberup and Erzini *in prep.*)

Trophic-dynamic modeling suggests that predation mortality has decreased together with the decrease in tuna abundance, but still accounts for 80 % of total mortality at present<sup>17</sup>. Fishing mortality has increased strongly over time (by a factor 5), over-compensating the decrease in predation<sup>18</sup>. These results confirm the expected role of small pelagics as important forage fish in the system for large predators. This implies that the fisheries for small pelagics should be carefully managed if one wishes to maintain the fisheries for large pelagics, notably tuna. The fact that catch rates for small pelagics have decreased strongly over time supports the notion of declining abundance. Moreover, the recently increasing catches of the other two species, big-eye scad and picarel, may be linked to an over-exploitation of mackerel scad, providing some room for expansion of competing species (e.g. habitat, prey) (Box 1&2). In summary, the potential for further expansion of small pelagic fisheries in Cape Verde may need to be further reduced and it may be necessary to even reduce current fishing efforts as a precautionary measure.

### **2.1.3 Other Fish Resources**

Regarding demersal species, catches are around 1,200 tons for both sandy and rock-bottom species. There may be some potential for increasing catches of sandy-bottom species, but this should be monitored closely. Fish stocks are generally sensitive to exploitation in Cape Verde, as pointed out by the FMP. The potential of 3,000-6,500 tons for rock-bottom species implies room for further expansion, but the origin of this estimate is not clear. The referred source<sup>19</sup> gives an indication of the relative level of fishing pressure but not an estimate of absolute yield. In contrast, an assessment of a grouper species (*Cephalopholis taeniops*)<sup>20</sup>, a rock-bottom species that dominates demersal catches ( $\approx 30\%$ ), indicates that this species is fully exploited or even over-exploited in some islands (Santiago). Thus, the given potential for rock-bottom species appears too high.

Lobster resources have been assessed on several occasions, the deep-sea lobster in particular. Overly optimistic assessments of deep-sea lobster apparently led to excessive fishing pressure from which this resource is slowly recovering. This is the reason for the low catches relative to the estimated potential. However, this indicates also that an updated assessment is necessary. In the case of coastal lobsters, assessments are uncertain as the activity of the fishery is not being monitored properly and catches are considered underestimates. The consensus is that these coastal species are over-exploited by divers (with flasks), particularly in certain areas close to tourist centers or facilities for export.

There are important fisheries for conch shell and limpet, being very popular delicatessen, which are not monitored at all. A guess-estimate of 50 tons of conch meat annually has been proposed<sup>21</sup>, caught by diving and dragging. As these resources can easily be depleted, it is urgent to determine their state of exploration, particularly in specific localities.

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<sup>17</sup> Estimates of total mortality in 2000 was  $Z=1.4$  and fishing mortality was  $F=0.305$

<sup>18</sup> Estimated increase from 0.06 to 0.305 (F) in the period 1986-2000.

<sup>19</sup> Oddson *et al.* 1998

<sup>20</sup> FMP 2005

<sup>21</sup> Bouwsma 2003

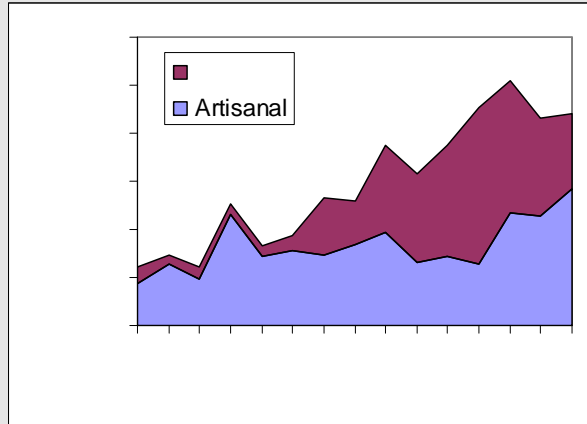
#### ***2.1.4 Concluding Remarks***

The policies of successive Governments in Cape Verde have specified the objective of increasing fisheries production, thus increasing the contribution to the national economy and food security. However, as the previous sections evaluating the status of the main fish stocks and realism of production potential have attempted to demonstrate, current estimates of potential are based on highly uncertain and, in some cases, questionable estimates of the status of fish resources and on the commercial viability of exploiting available resources. Under current policies there appears to be high risks of over-exploiting specific resources, as discussed in more detail in Section 3.2 dealing with the current Fisheries Management Plan.

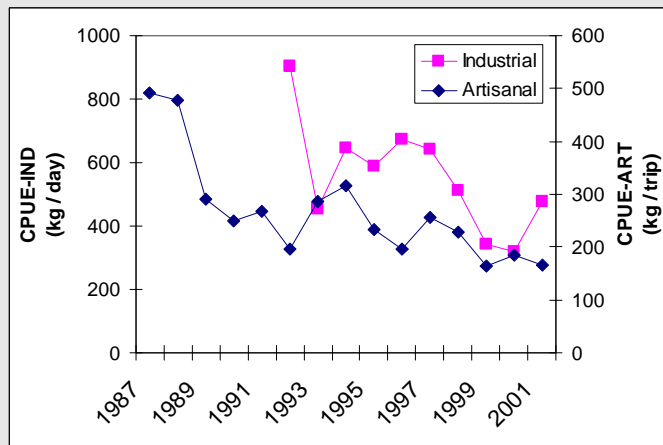
This report concludes that the general emphasis of future fisheries management efforts should focus on applying the precautionary principle, at least postponing further expansion of fishing efforts on most stocks until the existence of sufficient and/or additional fish resources are clearly proven. This may require a reduction of small-scale fisheries in specific areas/islands and freeze on the expansion of the industrial and semi-industrial fleet in order to improve the profitability and thus income of those involved in fisheries. Considering tuna fisheries, successful operations of the national fleet will require a reduction of activities of foreign fleets, as well as access to resources outside the Cape Verde EEZ through close involvement of foreign parties in management of the fleet.

### BOX 1. THE FISHERIES FOR SMALL PELAGICS

Small pelagic resources are particularly important in Cape Verde, constituting around half of total catches in recent years (4-5,000 tons). In terms of species, mackerel scad (*Decapterus macarellus*) has always been a major part of these catches, but there has been a considerable decrease from around 80% in 1997 down to almost 40% in 2000. Two other species, picarel (*Spicara melanurus*) and big-eye scad (*Selar crumenophthalmus*), have recently gained importance in artisanal and industrial catches, respectively. Most of the catches are taken with seine gears, both in the semi-industrial and artisanal fisheries; gillnets are used to catch *Spicara melanurus* around Santiago Island.



The increasing importance of small pelagics in the semi-industrial fishery was related to two events. Two large Japanese freezer vessels started buying mackerel scad in the early 1990s to be used elsewhere as bait for the Japanese fleet, creating an attractive market for this species. Also, the introduction of 20 small, fiberglass purse seiners (11 m) in the period 1994-1995 led to a strong increase in industrial production, reaching almost 3,000 tons of mackerel scad in 1997<sup>22</sup>. However, the Japanese market for mackerel disappeared in the late 1990s, which has resulted in a shift away from mackerel scad as the main target (850 tons in 2001). Catch rates have generally been decreasing over time in both the semi-industrial and artisanal fisheries (see figure).



Small pelagics have traditionally been fished for local consumption and have become a staple food in Cape Verde. These species are also used as live bait in the tuna pole and line fishery. A small part of the catches go to the local canning industry and some of the catches are transported frozen from the northern islands, where catches are higher, to supply the market in Santiago.

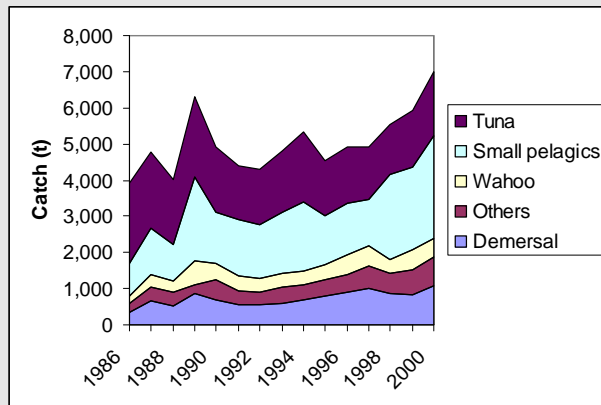
Source: INDP & FMP

<sup>22</sup> In 2001, 66 vessels were actively operating in the semi-industrial fishery, which is dominated by vessels in the range 10-14 m.

## BOX 2. ARTISANAL FISHERIES

The latest Fisheries Census, undertaken in 1999, showed that there were a total of 1,257 boats operating in the artisanal fisheries. These boats are typically of traditional wooden design, ranging from 3 to 9 m in length and using outboard engines and/or sails/oars (motorization 73%). The majority of these boats use various forms of line gear (e.g. handline, canes, trolling). However, the census showed that a further 28 purse seines (12 in S. Vicente), 50 beach seines (29 in Santiago), and 84 gillnets (56 in Santiago) were operating in the fisheries. Catches have been steadily increasing, overtaking the industrial fisheries in terms of total catches in recent years, which are mostly sold fresh in the local markets (see figure). Pelagic and/or migratory species dominate, constituting almost 90% of the catches.

Important large pelagic species are yellowfin tuna and wahoo (*Acanthocybium solandri*), which are caught primarily by handline and trolling, respectively. In recent years, the purse seine catches of small tuna (*Auxis thazard* and *Euthynnus alletteratus*) have increased, comprising about 300 tons in 2001. Catches of small pelagics have been increasing and these are now comprised of three species in roughly even proportions; mackerel scad (*Decapterus macarellus*), picarel (*Spicara melanurus*) and big-eye scad (*Selar crumenophthalmus*). Mackerel scad is caught by purse seine mainly, picarel by gillnet, and big-eye scad by a combination of different gears. Most demersal species are caught



with handline. Although the species composition of demersal catches is diverse, it is important to note that only three species/groups constitute about 60% of the total catches. In 2000, these were grouper (*Cephalopholis taeniops*: 33%), mullet (*Pseudupeneus prayensis*: 12%) and moray eels (*Muraenidae*: 15%).

Catch per unit of effort (CPUE) for has been relatively stable around 37 kg per fishing trip (typically less than one day) and 5 tons per boat per year. When considering the artisanal purse seine or gillnet fishery separately, CPUE increases to 274 and 130 kg per fishing trip, respectively. CPUE has shown a slight tendency for increase over the last 15 years, indicating stable catch rates. However, a recent modeling study<sup>23</sup> has shown that this type of fishing effort measure is unreliable, probably masking a strong decrease in catch rates, because it does not consider an increase in catching efficiency (e.g. the introduction of outboard engines). If efficiency is considered, the model estimated that artisanal fishing pressure has tripled over the 15-year time period in order to account for the observed catches. Thus, there is reason for concern for important target species such as grouper, mullet, moray eels and small pelagics, as the available abundance estimates (CPUE) may be unreliable and over-estimated.

Source: INDP & FMP

Attendees of the September 2007 workshop generally agreed with the above assessment, and stressed the need for additional research to support future fisheries management actions.

## 2.2 FISHERMEN

The Fisheries Census in 1999 estimated that there were a total of 4,283 artisanal fishermen, 384 of which were part-time. More recent estimates suggest that the number has declined to below 4,000. However, the number of temporary fishermen is known to fluctuate, depending on weather conditions. Low rainfall and drought usually result in agricultural workers seeking a livelihood in fisheries, but the importance of this is not well known. The recent rapid development of the tourism industry has increased demand for local labor, including former fishermen. Income in fisheries is generally well below national averages and large families (5-7 members) have to be supported, making savings difficult. Fishermen education levels are generally low. Within families men undertake fishing and women take care of fish marketing.

In Santiago, the number of artisanal fishermen (1,729) account for almost half of the total number in Cape Verde (see also Table 5.1). This high fishing effort, coupled with a low level of motorization and low catch rates, makes poverty among fishermen a particularly serious problem on the main island. In general poverty is more profound in rural areas, where about half of the population is poor in contrast with ¼ of the urban population. About 72% of the total poor population in Cape Verde is located on the two main agricultural islands, Santiago and S. Antão, which have large rural populations. The measures suggested in this report to address local poverty of fisher folk will need to particularly focus on these two islands.

Specifically, if the Government wishes to seriously address the poverty issue in the sector, economic and social aspects will require more attention in determining the feasibility of expansion or the need for contraction of the fishery. Given the uncertain resource base, and the high relative level of poverty in coastal and fishermen communities, the key recommendations of this report suggest a decline of coastal fishing effort – resulting in higher catches of the remaining boats – and improvement in the efficiency of boats, gear and the cost-effectiveness of fishing, while in parallel major efforts may be made to provide – notably younger - fishermen with alternative training and employment, to take advantage of the current building boom in the country, and rapidly growing demand for sport-fishing, whale watching and other tourist related activities.

Workshop participants stressed the large variation in fishermen income between islands and fisheries, even within local communities. Many fishermen have alternative sources of income. Further analysis of the incidence of poverty among fishermen was recommended.

## 2.3 FISH PRODUCTION AND EXPORT

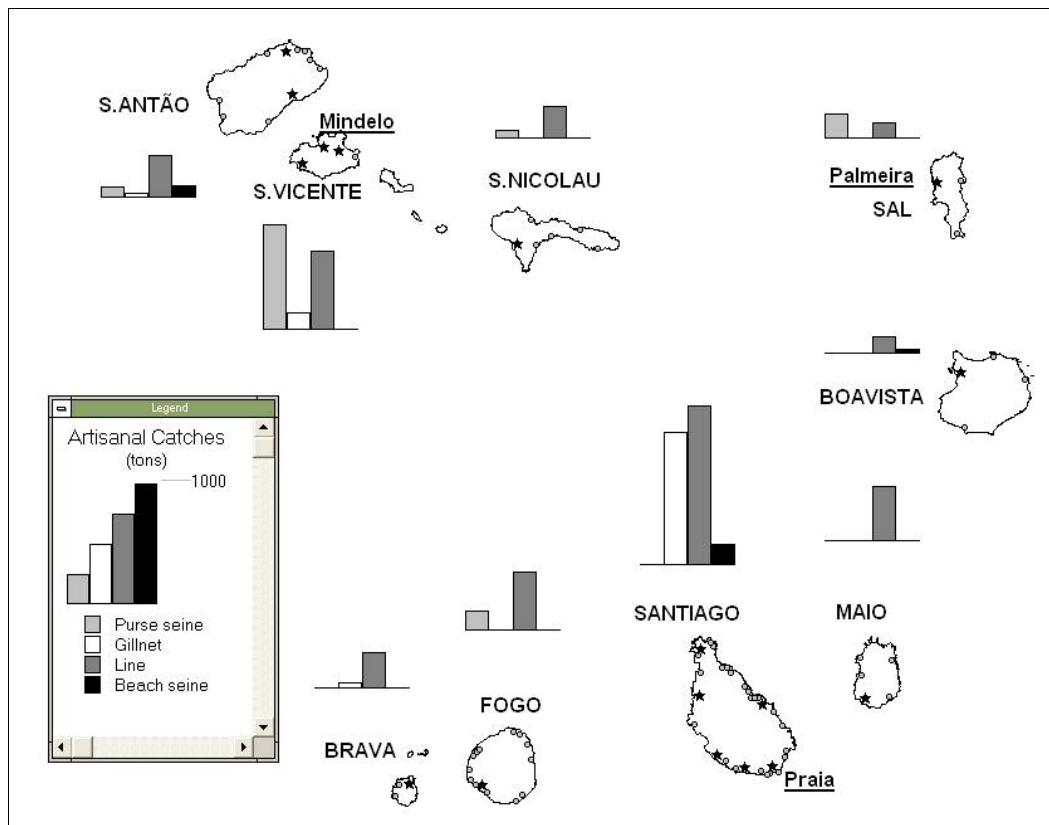
Fish production has important geographical variation in the country (Figure 2.1) The importance of artisanal fishing in islands such as S. Antão and Santiago (and Fogo to a lesser extent) is linked to the larger rural/ fisher populations. S. Vicente and Santiago have the highest fish production, but they also represent the highest and lower catch rates, respectively (67 and 27 kg/trip in 2001). The lowest catch rate is observed in Fogo (22 kg/trip in 2001). The differences mainly reflect important differences in the effectiveness of fishing gear and the health of target species resources. For example, the purse seine is particularly important in

S. Vicente, catching larger volumes of small pelagics; gillnets operated by artisanal craft and beach seines dominate in Santiago (Figure 2.1), handlines in Fogo.

The main bases of the industrial and semi-industrial fleets are Mindelo and Praia (Palmeira is more of a temporary base), corresponding to the Barlavento and Sotavento fleet (see figure in Section 1.1). The fleet is divided up more or less equally in terms of number of vessels, but there are important geographical differences. The Barlavento, northern, islands account for almost 70 % of total industrial catches and catch rates (1.12 t/day) are more than double those of the Sotavento fleet.

Figure 2.1 shows also the 17 landing sites that sampled for statistical purposes. In the case of industrial or semi-industrial fisheries, the method of obtaining statistics has been by full enumeration, where information on catch and effort has been compiled for every fishing trip.

**Figure 2.1: Landings of the artisanal fisheries by gear and by island in 2000. Also shown are the 3 major ports (underlined), 78 landing sites (dot), and the sampled sites for statistical purposes (stars).**



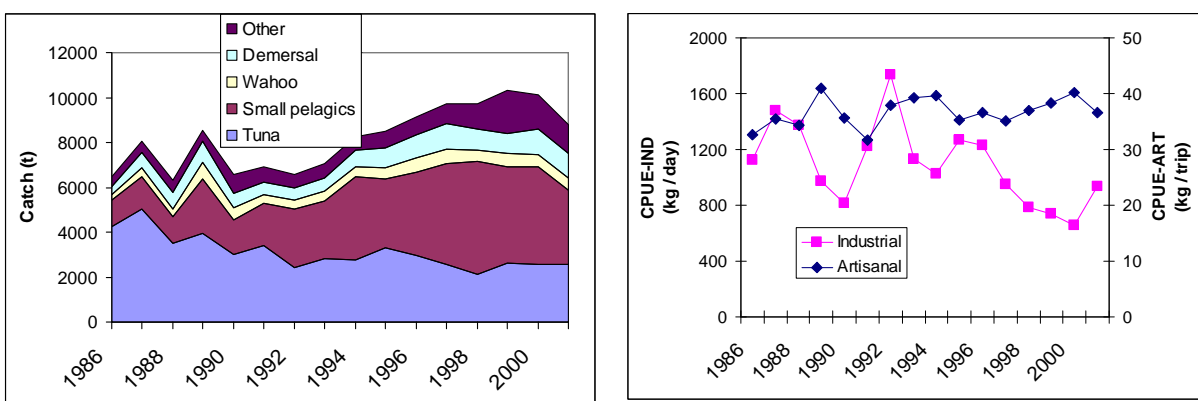
Source: INDP

Total fish production has increased gradually to about 10,000 tons in 2000, but has since declined slightly to about 8,700 t in 2003<sup>24</sup> (Figure 2.2). This modest increase and then decline should be seen in the context of substantial investments in the fleet (vessels, engines, etc.) and infrastructure (see also Section 4.3). Catch rates have generally declined in the semi-

<sup>24</sup> Carlos Monteiro, Head of Statistics Dept., INDP

industrial fisheries since the early 1990s, when 20 fiberglass vessels (11m) were introduced to the fleet. Artisanal catch rates appear to be stable or slightly increasing, but the effort data used (fishing trips) mask a decreasing trend (Box 2).

**Figure 2.2: Total catches in Cape Verde (left) and catch rates for the artisanal and industrial fisheries (right). Catch rates (CPUE) are given as kg per fishing day and kg per fishing trip in the industrial and artisanal fisheries, respectively.**



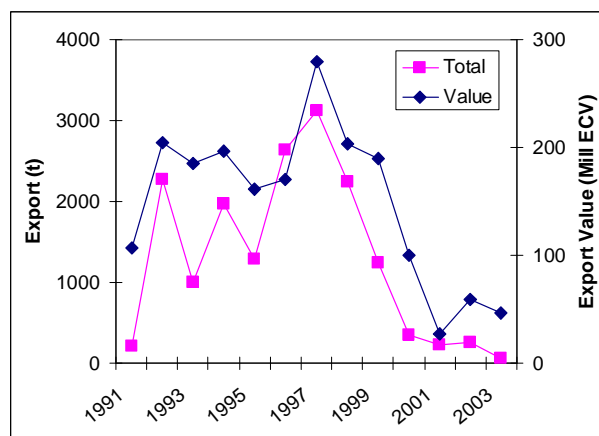
Source: INDP

Fisheries export quantities and value have been variable over the last decade, but the ban on imports to the EU in 2000 was a hard blow to the sector from which it has not recovered (ban lifted in 2003). Note however that export was declining before 2000, which appears to be a sign of economic difficulties even before the ban (local demand, external market factors, lack of scale in production, higher national production costs, low competitiveness).

**Table 2.2: Export of fisheries products (tons) and corresponding value (Million ECV).**

Year	Export (tons)			Total (tons)	Value (M ECV)
	Fish	Lobster	Cans		
1991	122	70	26	218	107
1992	2143	100	32	2274	205
1993	921	73		994	185
1994	1881	68	25	1974	197
1995	1222	58	9	1289	161
1996	2607	29		2636	171
1997	2939	18	158	3115	279
1998	2169	29	50	2248	203
1999				1236	190
2000				344	100
2001				224	27
2002	201	23	35	259	59
2003	12	17	33	62	47

Source: INDP



## 2.4 INFRASTRUCTURE

There are 97 landing sites in the archipelago, but the major ports of Mindelo (S. Vicente) and Praia (Santiago) are also the two sites with the best fisheries infrastructure, including fishing quays, cold storages and ice plants. The islands of Santiago and Santo Antão, with the largest rural populations, account for 45 of these landing sites distributed more or less evenly around the islands (Figure 2.1). In islands such as Brava, Fogo, Maio, Boavista, Sal, S. Nicolau, and Santo Antão, the major landing sites (typically 1 or 2) are equipped with a quay and/or slipway, which is used for both commercial purposes and fisheries. Only a minority of the small beach landing sites have some kind of slipway to cater for the artisanal fishermen.

For artisanal fisheries, 30 community support centers (Centros Técnico e Social – CTS) have been established, with fisheries support infrastructure at 26 sites (e.g. ice plant, chill room, receiving station, warehouses). Many of these small facilities are not functioning at present due to lack of demand - most catches are sold fresh directly in local markets - and maintenance and technical support problems.

Fish-processing is presently limited to four modest plants; the cannery FRESCOMAR in Mindelo with a capacity of 928 tons/year, the cannery SUCLA in Tarrafal (S. Nicolau) (750 tons/year), the cannery LA TRADICIONAL in Mindelo currently overhauling its installations, and SALSESIMBRA in Sal for processing and export of lobster and fresh fish. These canneries operate well below capacity due to difficulties in obtaining raw material. Other types of processing such as drying and salting account for less than 3% of the catches, most of which takes place in isolated sites to preserve larger catches.

The lack of effective quality control of fisheries products and deficient facilities for the landing and handling of fish eventually led to a ban on fish exports to the EU in 2000. Since then, considerable efforts have been made to improve the situation; a quality control laboratory has been established in Praia; FRESCOMAR, SALSESIMBRA, and the state-owned landing/processing facility in Mindelo (Covo Ingles) have introduced HACCP standards and LA TRADICIONAL and SUCLA are in the process of doing so. A similar quality control laboratory should be established in Mindelo, considering that most of the processing infrastructure is in that area. The ban on exports has seriously affected the sector, which has not been able to increase exports to similar levels even after the lifting of the EU ban in 2003.

It is crucial to define a future strategy to effectively maintain and manage existing sector infrastructure, which represents substantial past investment. Infrastructure facilities in coastal areas typically require between 2% and 5% per year of initial investment costs for proper maintenance; equipment may annually require 10% of investment costs for routine maintenance and replacement of parts. Considering the large number of currently non-functioning and under-utilized facilities, and the future need for a more cost effective sector, able to create more value added from a smaller fishing fleet, the country needs to define which existing infrastructure is essential and worth to maintain and operate, and how such facilities could be most effectively managed.

### 3. Sector Governance

#### 3.1 LEGAL FRAMEWORK

Considerable efforts have gone into the creation of a legal framework for fisheries-related activities, as this was and is seen as a strategic sector for development. Starting shortly after independence, various Law Decrees established the limits of territorial waters and the EEZ. Also, Cape Verde was among the first countries to ratify the UN Convention on Law of the Sea in 1987. In connection with the ratification of the Law of the Sea, a specific fisheries-related legal framework was adopted, establishing sovereignty over national fisheries resources and exclusivity of access (Law Decree n°17/87). This Law distinguishes between different types of fisheries and vessel ownership, prohibits the use of poison or explosives, establishes fisheries zones, and specifies management plans and the creation of “Local Fisheries Councils” as instrumental for the management of fisheries resources. The law introduces modern non-transferable fishing licenses including technical limitations and opens the possibility for the government to establish fisheries agreements. It establishes responsibilities for fisheries control and enforcement, defines types of infractions and sanctions as well as the relevant legal procedures<sup>25</sup>. The Law on the establishment of a Fund for Control and Enforcement of EEZ (Law n° 09/99) was adopted in order to finance naval and aerial activities necessary for the monitoring, control and surveillance of the Cape Verde EEZ and air space; the associated regulation has recently been prepared, enabling a rapid expansion of surveillance activities in the EEZ, with foreign support<sup>26</sup>.

The existing legal framework can thus be considered adequate, containing the guiding principles for the exploration of fisheries resources. However, some associated regulations have not been developed at the expected pace (with the notable exception of quality control of fisheries products and surveillance of the EEZ), but the lack of effective implementation of existing law, notably in terms of creating and implementing sound local management plans and decentralization of selected service functions remains an issue.

#### 3.2 FISHERIES MANAGEMENT

The preparation of a FMP for the period 2004 to 2014 is the first such attempt in Cape Verde and an essential step towards improving the management of fisheries resources. Fisheries in Cape Verde are classified as industrial or artisanal, but it is important to note that small wooden or fiberglass vessels, ranging from 3 to 11m, dominate the whole fleet. The primary distinction is that artisanal vessels are typically open-decked and usually use outboard engines

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<sup>25</sup> Additional legislation was adopted later to provide new incentives for the development of the sector, such as the creation of: (i) the Fisheries Development Fund (FDP), (Law n° 25/94); (ii) the Integrated Investment Support System (SIAI; Law n° 26/94);(iii) the Bank of Rural Credit (Law n° 27/94), and (iv) the Institute of Fisheries Development (Law n° 123/92). Also, the conditions imposed by the European Union in terms of quality control of fisheries products led to legislation to address these issues in the late 1990s and early 2000s.

<sup>26</sup> There are a number of issues that have to be addressed, which have particular reference to the management of fisheries resources. In relation to licensing, there is a need for adjustments to fisheries law in order to be able to consider specific resources, effort levels and total allowable catches (TAC) in each fishery. The possibility of adopting management measures that concern gear and vessel characteristics should be incorporated in law, which will invariably lead to an improvement on the definition of industrial and artisanal vessels. (FMP 2005)

(3-9m), while industrial vessels (7-26m) use inboard engines and usually have some sort of shelter on board<sup>27</sup>. The FMP distinguishes between 8 main industrial and artisanal fisheries (not including foreign and sports fisheries)<sup>28</sup>:

- Industrial – (i) pole and line fishery for tuna, (ii) purse seine fishery for small pelagics, and (iii) trap fishery for deep-sea lobster.
- Artisanal – (i) handline fisheries for demersals, tunas and related species, (ii) purse seine fishery for small pelagics, (iii) gillnet fishery for small pelagics, (iv) beach seine fishery for small pelagics, and (v) diving for demersals, coastal lobsters and conch shells.

A number of problems are discussed in the FMP, which are relevant to the management of fisheries resources in Cape Verde in general. Most importantly, there is a lack of information on the state of exploration of resources and there is a need to strengthen the coordination amongst key functions dealing with fisheries research, administration and control. Notwithstanding, the management measures proposed by the FMP are based on the best available information and have been approved by the Government, covering the period 2005-2006. These are:

<b>Industrial Fisheries</b>	<b>Management Measure</b>
Pole and Line Fishery for Tuna	Minimum size of 3.2 kg for yellowfin and bigeye tuna.
Purse Seine Fishery for Small Pelagics	Fishery reserved for national vessels.
Trap Fishery for Deep-Sea Lobster	Season closure from July to November; Minimum size of 24cm total length; Fishery reserved for national vessels; Maximum of 4 licenses attributed in the season 2005/2006.
<b>Artisanal Fisheries</b>	
Handline fisheries for demersals, tunas and related	Minimum size of 3.2 kg for yellowfin and bigeye tuna; Coastal waters out to 3 nautical miles are reserved for this fishery.
Purse Seine Fishery for Small Pelagics	Cautious expansion of the fishery through the issuing of licenses.
Gillnet Fishery for Small Pelagics	Cautious expansion of the fishery through the issuing of licenses.
Beach Seine Fishery for Small Pelagics	Maintain the number of beach seines at 50, until their impact can be studied; Minimum size of 6cm for bait.
Diving for Coastal Lobsters, Demersals, and Conch Shells	Season closure between July and September and minimum size of 20cm (total length) for coastal lobsters; Catch of berried females is prohibited; Freeze fishing effort using SCUBA equipment; Freeze fishing effort on conch shell and limit to S. Pedro and Tarrafal (Santiago); Fishery reserved for national fishermen
<b>Other Fisheries</b>	
Sports Fishing	Definition of regulations and the implementation of a licensing system; The use of SCUBA equipment is prohibited; The marketing of the catches, direct or indirect, is prohibited.
Foreign Fisheries	Minimum size of 3.2 kg for yellowfin and bigeye tuna and 125 cm for swordfish; Fishing within 12 nautical miles of the coast is prohibited; Fishing demersals is prohibited; Shark-fining is prohibited; Maintain the current number of licenses in future fisheries agreements;

<sup>27</sup> In other countries, one would generally distinguish between semi-industrial boats – up to 14-16 meter – and industrial vessels - over 14-16 meter length.

<sup>28</sup> Trawling is prohibited in Cape Verde except for experimental or research purposes.

### 3.2.1 Analysis

The management measure adopted for yellowfin and bigeye tuna (minimum size of 3.2 kg) is based on International Commission for the Conservation of Atlantic Tunas (ICCAT) recommendations<sup>29</sup>, and is being applied to artisanal, industrial, and foreign fisheries in Cape Verde. The FMP considers tuna resources in general to be over-exploited in the whole Atlantic, based on assessments by ICCAT, due to the high pressure exerted by local and international fleets. Still, the FMP repeats its earlier assessment that there is room for further expansion of the industrial fisheries for tuna within the Cape Verde EEZ by both national and foreign vessels; it also considers that the country can take advantage of these unexploited resources through foreign fisheries agreements.

Illegal fishing by foreign vessels is assumed to be taking place in the Cape Verde EEZ, although the level of this activity is not known, and may be limited and highly seasonal given the modest resources within the Cape Verde EEZ. The FMP refers also to the existence of illegal fishing for deep-sea lobster by foreign vessels using gillnets. However, the still limited control and enforcement capacities and very large EEZ make it difficult and costly to effectively address illegal activity as well as the enforcement of management measures, particularly for the foreign fleet<sup>30</sup>.

The fundamental issue of the FMP is that while it aims to manage fish resources of which some appear over-exploited, it also has several economic objectives that can be most easily achieved through production growth, but may be more difficult to achieve through structural changes in the sector. The overall objective of the FMP is to “increase the contribution of fisheries to national production, decrease the trade balance deficit, increase food security, increase the quality and value added of fish products, and increase employment”, which should be seen as an integrative part of National Development Policy. Steps which are required to address the over-exploitation issue – a reduction of fishing efforts and the number of fishermen, and more effective use of public funding, may not satisfy either of these objectives. The FMP assumes that production can be expanded, although the scientific evidence suggests otherwise. As stated before, the potential for further expansion of the various fisheries are based on uncertain and outdated estimates, which appear to be overly optimistic, notably in the case of tuna resources. The FMP makes one exception: management emphasis has been placed on specific measures to control the lobster fisheries, both deep-sea and coastal lobsters, as these are clearly considered over-exploited. Still, the basic underlying assumption of the FMP is that there is room for expansion in several fisheries (ex. small pelagics, demersals, tuna). While the precautionary principle for the management of fish resources is embodied in law – only exploit what you are certain can be sustained - and has been incorporated in the management of specific resources, there is a fundamental flaw to the underlying assumption of fisheries potential.

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<sup>29</sup> ICCAT has specified a 15% tolerance level concerning this minimum size, but this has not been incorporated in Cape Verde.

<sup>30</sup> The competent authority in this aspect is the DGP in articulation with the Port Authorities (Capitania) and the Coastal Guard. However, the coordination between these authorities is not functioning well and a clear definition of roles and procedures is necessary. An entity within DGP to carry out fisheries control is proposed by the FMP as a possible solution.

The FMP rightly emphasizes reinforcing of control and enforcement capacity as a major priority, which is currently being addressed with foreign support. Likewise, the proposal of co-management and decentralization as a possible solution to managing fisheries at the local level should be more strongly pursued, possibly through the establishment of “Local Fisheries Councils” as envisaged by law. Contrary to FMP proposals, its core emphasis may need to focus on the management of the current level of fisheries, or even a reduction of certain fisheries. This may achieve poverty alleviation objectives of the fishermen that remain, while alternative employment opportunities should be aggressively sought for those that leave the sector.

### **3.2.2. Environmental Protection**

In relation to the marine environment, considerable efforts have gone into the study of biodiversity in Cape Verde and the identification of sites for the purpose of protection and conservation. Cape Verde is participating in the implementation of a Regional Strategy for Marine Protected Areas in Northwest Africa within the context of the Sub-Regional Commission for Fisheries (CSRP)<sup>31</sup>. This strategy has been subscribed by the Ministers responsible for fisheries in countries such as Cape Verde, Gambia, Guinea, Guinea-Bissau, Mauritania, and Senegal. In Cape Verde, a total of 47 terrestrial and marine protected areas have recently been established, including important fishing grounds such as the uninhabited Santa Luzia and associated islets. Two islets off Boavista have also been declared protected areas. Moreover, a current initiative is preparing a proposal for declaring the islands of Sal, Boavista and Maio as Biosphere Reserves.

These initiatives of conservation and the sustainable use of coastal areas are laudable, considering also the possible benefits in terms of eco-tourism and the associated potential for development. However, a stronger coordination amongst key institutions, appears necessary. Fishing in Santa Luzia was prohibited without taking due consideration to the livelihood of artisanal fishermen from S. Antão, S. Vicente and S. Nicolau, who fish in this area. This is currently under revision, but it shows a lack of coordination with fisheries management. Considering the limited control and enforcement capacity in Cape Verde, it is important to establish a local structure in order to implement monitoring and management functions in the context of conservation as well as in fisheries.

### **3.3 MINISTRY OF INFRASTRUCTURE, TRANSPORT, AND SEA**

The fisheries administration, which until a year ago resided under the Ministry of Environment, Agriculture and Fisheries (MAAP), has been transferred to the Ministry of Infrastructure, Transport, and Sea (MITS). The Directorate General of Fisheries (DGP)<sup>32</sup> includes two divisions; the Department of Fisheries Development and the Department of Juridical Affairs, Quality and Control. There are four Consultative Councils, established in 2002 together with the present institutional structure, including one for fisheries that meets at

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<sup>31</sup> With the support of international collaborators such as the IUCN, WWF, and UNESCO.

<sup>32</sup> Direcção Geral das Pescas – DGP (Directorate of Fisheries); Gabinete de Estudos e Planeamento – GEP (Studies and Planning); Conselho Nacional das Pescas – Consultative Council for Fisheries; INTERBASE – landing and storage facility in Mindelo (see Section 4.5); FDP (see Section 3.5)

least once a year. Moreover, there are five public institutes that are supervised and controlled by the Department, including the Institute of Fisheries Development (INDP<sup>33</sup>). Together with fisheries policy and management, DGP has an important control and enforcement function in relation to fishing and fish processing activities. DGP is also responsible for licensing of fisheries and related activities, the compilation and processing of statistics from fishing, the processing industry and exports, management of sector infrastructure, and product quality inspection.

The effective presence of DGP at the local level is currently limited. The FMP proposes a form of co-management as a solution to the problems of its limited presence at the local level and to improve the effectiveness of infrastructure management at the local level.

Workshop participants stressed that decentralization of public functions, and involvement of local fishermen-associations in sector management functions needs to be approached in a careful manner, as local institutional capacity varies widely, and no consensus exists about the future division of labor between the Department and local fishermen associations. Decentralization of public functions in all sectors (not only fisheries) has become a sensitive issue, and is the subject of considerable political debate. Given the currently quite limited – and variable - local institutional capacity, serious decentralization efforts will require strong capacity building and stakeholder consultation.

### **3.4 INSTITUTE OF FISHERIES DEVELOPMENT (INDP)**

INDP is a self-governing institution with administrative and financial autonomy and has its base in Mindelo and a regional representation in Praia as well as a network of samplers/extensionists that cover all inhabited islands. The institute has recently become part of the University of Cape Verde. INDP has a dual purpose:

- Provide recommendations for the sustainable use of fisheries resources in order to increase gradually the contribution of various fisheries to the development of the sector, including the collection of statistics and other data; and
- Promote technical, economic and social development in fisheries in accordance with Government sector policies.

#### ***3.4.1. Scientific Research***

Scientific research has in the past suffered from a lack of scientific planning, as well as a setting of priorities, poor coordination and supervision, and insufficient funding. Fundamentally, a larger part of INDPs activities need to be transferred to the local level if it is to successfully support the management objectives of the FMP.

Lack of experienced research staff is a perennial problem, as stock assessment scientists have generally been promoted to non-research positions, leaving young and inexperienced scientists with the task of complex stock assessments. Hence, specialized training is needed according to pre-defined priorities, but the necessary incentives to retain these scientists in

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<sup>33</sup> Instituto de Desenvolvimento das Pescas – INDP (see Section 3.4)

stock assessment positions should also be addressed (e.g. career structure, salary), as pointed out by the FMP.

The need for periodic stock assessments is a recurring issue and an update of stock assessment studies is recommended at 3-year intervals by the FMP. The current FMP is largely based on assessments that were made almost ten years ago. It is urgent to update these, using current techniques and with guidance from an institution abroad with the necessary experience and know-how. Lobster and small pelagic resources are clearly a priority. The current approach of controlling effort in the industrial deep-sea lobster fishery appears to be the best solution<sup>34</sup>, which should also be adopted in the purse seine fisheries for small pelagics. In addition, priority may be given to acoustic surveys for small pelagics, trawl surveys in limited trawlable areas, handline surveys to complement local data collections, and experimental fishing with various gears. In order to carry out such a task, it is essential that scientific data collection and interpretation activities be reinforced, including data collection from artisanal catches, and the repair of the research vessel *Islandia*, while a formal link to a foreign research institution be established to provide technical support.

In relation to catch and effort data, there is a need to identify the origin of catches by area (as opposed to landing site) and the allocated effort, and to improve estimates of directed effort and specific target species according to the 7 main fisheries, which is most problematic in the artisanal fisheries. This is of particular importance when considering the implementation of local management in the form of, for example, co-management. The use of fishermen associations as a platform appears to be the most effective solution for this combined data collection and MCS activities. Research at the local level should be cost-effective and have clear management objectives. Local data collection should be established considering a set of specified biological indicators, which have proven to be robust indicators on the state of exploration of resources. While these indicators may give only a relative sign of exploration, but this is sufficient in adaptive management. It is implicit that this should be carried out not only at the national level, but also on an island-by-island basis

Regarding large pelagics, including tuna and tuna-like species as well as sharks, the current strategy of research, assessment, and providing management advice in the context of ICCAT should be continued and strengthened. For example, a local network of data collection and MCS activities will provide information that is useful for the assessment of these large migratory species at the regional level. Also, this will provide insight on whether there are particularities in the Cape Verde coastal ecosystem which can bring benefits to the fisheries.

#### ***3.4.2. Statistics, and Economic Analysis***

Ideally, from a fisheries management point of view, the objective of fisheries research is to be able to carry out bio-economic assessments of the distinct fisheries, preferably using dynamic models for simulation. In the case of Cape Verde, economic analysis is equally required to monitor the impact of sector management measures on poverty levels, and measure the financial impact of specific management measures. This requires substantial strengthening of

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<sup>34</sup> However, the number of traps has to be controlled also.

the ability to collect and analyze financial and economic data. These data are not regularly collected and analyzed, particularly in artisanal fisheries. Assessments of income of fishermen and women marketing the fish and are particularly needed for those islands with the highest density of poor fishermen and small-scale fisheries. Hence, island-based and/or port-based aggregation and extrapolation of data is needed. The current efforts of establishing fishermen's associations and reinforcing the network of samplers/extensionists are clearly important in order to establish a framework for local management as well as MCS activities.

### ***3.4.3. Technical Development and Fisheries Extension***

Technological development of the fisheries is clearly also a priority issue and should aim to design and test new small-scale and semi-industrial boats and related gear, that would be more effective in catching fish and creating local value added. This function has received limited attention in INDP in the past, and may be best strengthened through international cooperation.

It is important to point out that the INDP has been forced to find alternative sources of funds for its catch monitoring activities (including biological, oceanographic, and socio-economic data)<sup>35</sup>. It is essential for the Government to ensure core funding of these monitoring activities, as recommended by the FMP, since sustainable external funding is difficult to obtain for these types of activities.

There are currently two initiatives underway which may have a particular bearing on the future role of INDP. Firstly, establishment of an oceanographic institute is being contemplated in collaboration with international partners, which is expected to support basic oceanographic and meteorological research. Secondly, the possible restructuring of the INDP is being discussed, including the desirability of maintaining its dual purpose. In developing a new operational strategy for INDP, emphasis may be placed on applied, decentralized research, and development of international linkages, including ICCAT activities. If INDP is to play a key role in supporting future sector management and development at the local level, it will need to strengthen its ability to monitor and analyze economic data, and expand its access to qualified research and development staff, further strengthening its links with the University of Cape Verde and ISECMAR.

### **3.5 FISHERIES DEVELOPMENT FUND (FDP)<sup>36</sup>**

The Fisheries Development Fund was created in 1994 to support development in the fisheries sector. FDP covers part of the total investment covering:

- Construction or purchase of production infrastructure,
- Equipment, machinery, materials, software, etc. for production,
- Cargo and transport equipment,
- Studies for project formulation and the development of products/processes.

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<sup>35</sup> An example of this is that the RV *Islandia* undertook limited survey activities, while it was operating from 1994 to 1998, as it was used mostly for commercial fishing in order to finance the other activities of the INDP.

<sup>36</sup> Fundo de Desenvolvimento das Pescas - FDP

FDP provides subsidies for fuel<sup>37</sup> and ice; for creating jobs in the fishing and processing sectors, and for the de-commissioning of vessels. It provides small loans at an annual interest rate of 2%. Another important role of the FDP is providing guarantees and covering part of the interest rates (up to 50%) for loans taken in the private banking sector. However, the sector has gained a reputation for bad investments and very low repayment, so that there is in fact a very limited willingness of the banking sector to provide loans for investment in fisheries. Although some efforts have been made lately to improve repayment of commercial and FDP loans, the overall record and loan recovery rates on all outstanding loans is still very poor. Even in the case of small loans given out by the FDP, repayment has been poor.

The role of credit in Cape Verde's fisheries sector is complex, and the lack of credit has had an effect on its development. On the one hand, lack of easily accessible credit has been one of the reasons the fishing sector has been slow to replace traditional boats and gear with more modern, safer and more effective equipment. In addition, lack of credit has negatively affected the ability of the private sector to experiment with new technologies, like small-scale long-lining for deep-swimming tuna. In addition, the current high interest rates prevailing for fisheries loans (14%) have been a major impediment to fishermen willing to replace old boats to borrow money.

On the other hand, the fishing sector has maintained the current fleet – traditional boats are still being built and sold, and small boatyards building fiberglass boats have been established in Mindelo – despite the lack of credit. Given the limits of the fishing resources, a more substantial expansion of the fleet in the past may have compounded the current economic problems of the fishing sector.

The FDP is currently the subject of an evaluation; the study is to provide recommendations and solutions to the current state of affairs, including the limited financial and human resources of the FDP as well as legal instruments to enforce the repayment of loans.

Workshop participants were unanimous that the fishing sector will require a functioning and effective credit system that particularly targets the sector taking into account the special requirements and risks of fisheries credit in terms of seasonality, social and cultural backgrounds of fishermen, existing subsidy systems, and realistic development potential.

### **3.6 TECHNICAL COLLEGE OF ENGINEERING AND MARINE SCIENCE (ISECMAR<sup>38</sup>)**

This technical college offers medium level academic education in various fields of engineering and marine sciences. It was created in 1984 as the Center for Nautical Training, providing training in fisheries and naval activities, but has since developed into a medium-level academic institution, which has been linked to the recently created University of Cape Verde. In relation to fisheries, ISECMAR provides training courses for fishermen, master fishermen, motorists, samplers, extensionists, observers, fish handling, legislation and

<sup>37</sup> Diesel, which benefits the industrial fleet only.

<sup>38</sup> Instituto Superior de Engenharia e Ciências do Mar - ISECMAR

navigation. These training courses have not been provided regularly over the last 10 years due to financial limitations, but this situation has improved since 2000. ISECMAR has played an important role in providing the necessary training for officers and crew for the industrial fleet, including the fleet of 10 pole and line vessels acquired in 2005/6.

Moreover, ISECMAR offers a bachelor's degree in marine biology with the possibility of continuing higher studies in Portugal, based on a formal protocol with the University of the Algarve. Most of the teachers for this course are researchers from the INDP, which automatically establishes close links with the work of the INDP. It may also be desirable to consider establishing a bachelor's degree in more applied fisheries research and management, including other aspects of fisheries development, to support a de-centralized management system in Cape Verde.

The establishment of a local network for co-management will require considerable efforts in terms of training of personnel in management, bookkeeping, data collection, MCS, maintenance of equipment and infrastructure. ISECMAR could play a decisive role in providing the necessary training as well as providing vocational training for those that are interested in leaving the fisheries sector.

Workshop participants stressed the major needs of the sector in terms of short-term training and longer-term education. Retraining of fishermen for alternative occupations, education of family members, permanent training of members of fishermen associations and of staff and managers of the public sector were all accorded very high priority.

### **3.7 PROFESSIONAL ASSOCIATIONS**

Since Independence in 1975 and up until 1990, there was a strong movement supporting the creation of cooperatives in specific sectors and activities. This was also the predominant form of organization among artisanal fishermen with the creation of 31 cooperatives in the country (Santiago – 21, S. Antão – 3, S. Vicente – 3, S. Nicolau – 1, Fogo – 2, Maio – 1). However, their role in development has been limited and only 8 of these cooperatives are currently functioning. The INDP is currently making efforts at reactivating or reinforcing these cooperatives in islands such as Maio, Fogo and Brava. In Santiago, of 7 community support centers (Centros Técnico e Social – CTS) supported in part by the African Development Bank, only 2 or 3 are functioning reasonably well. INDP is attempting to transfer the set-up from the more successful sites to re-activate others, involving the creation of an association with wider areas of responsibility including social and training functions as well as the assistance of NGOs in providing back-up and management services and micro-credit experience. Other successful examples are the associations in S. Vicente (3 associations), which have taken a more pro-active role including the establishment of protocols with the FDP for the benefit of their members.

There are two boat-owner associations<sup>39</sup> in Cape Verde, covering primarily the industrial fleet dominated by 11m vessels, which cover the interests of the fleet based in Mindelo and Praia, respectively. The major concerns of these associations are the poor conditions of land-based support infrastructure, deficient supply of ice, the lack of a credit system for the maintenance and development of the fleet, and high risks associated with external factors beyond national control. Moreover, the prevailing view is that previous investments in the sector have not used a participatory approach and should have been based on more extensive and careful analysis.

A strategy has to be defined to provide effective management and organization support to all viable fishermen associations in the country. But better local management is only a small part of the solution. A more fundamental restructuring of local organizations may be required to prepare them to take-up a multitude of local service functions that should be decentralized in the future. Local fishery associations may be involved in designing and implementing local fisheries management plans as well as be involved in some local aspects of surveillance, control and enforcement of fisheries regulations and activities. Ideally, associations could also be involved in such activities as local data collection for fisheries research, existing infrastructure maintenance and management, micro-credit activities, local training and education, and improvement of fish quality, fish marketing and landed fish prices. Hence, ultimately local associations may become general service organizations that are able to earn money from providing a multitude of local services necessary for effective management of local fishing activities.

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<sup>39</sup> Associação de Armadores da Pesca Industrial (Barlavento, Sotavento)

## **4. Economic and Financial Aspects**

### **4.1 ECONOMIC AND SOCIAL OVERVIEW**

The economic contribution of the fishing sector to Gross Domestic Product (GDP) has been officially estimated of the order of 1-2 % and appears to be declining; small-scale fisheries reportedly contributes some 60% to sector GDP (see section 4.2. for a more detailed analysis). The sector reportedly employs some 5-7% of the active population. The number of small-scale fishermen has increased over the years from around 2500 in 1975 to around 4300 (2001), after which the number declined to less than 4,000 in 2006. Employment growth in the primary sectors (agriculture and fisheries production) increased less than the overall population growth - reflecting a net migration from rural to urban areas. Around 90% of fishermen are considered full time fishermen. The industrial and semi-industrial fleet employs 400–500 people, while fish processing industries employ another 300 people in the season. Employment in service industries and fish marketing is important; some 2000 people work in shore based activities, of which some 75% female fishmongers.

The importance of the traditional fisheries sector in the overall economy of Cape Verde has declined over the last 25 years and there are no indications that the sector will be of more economic importance in the immediate future. Over the years it has been felt that development of fisheries may give an important contribution to the reduction of poverty. Yet, while over the past 25 years the number of fishing craft and the capacity of fish processing plants and fishing landing infrastructure has substantially expanded – the result of mostly donor supported investment - to potentially catch and process well over four times the actual current local fish production, the average income growth of fishermen has lagged that of people employed in the country's tertiary (services) sector, notably in southern islands. Income growth of other people involved in the sector – notably in fish marketing – is less well documented, but as the analysis of Section 4.3 suggests, may have been more substantial, in part because of the efficiency of the local marketing system, and in part because demand for fish appears to increasingly exceed local supply, notably in the large Praia and Mindelo markets, and on account of the rapid growth of tourism.

### **4.2 ECONOMIC PERFORMANCE**

The following estimate (using average catch data and prices prevailing in 2002-3) suggests that the total domestic value added created by the fishing sector may be of the order of US\$ 6.5 million only, or about 1 % of GDP (US\$ 600 million - 2002).

The implication of the following estimates is that the average annual value added per fishermen and fish monger may be US\$ 780 and US\$ 1250 respectively, suggesting a – not unusual – bias towards fish marketing, and compares with average annual GDP per capita in Cape Verde of US\$ 1420 (2002).

**Table 4.1: Summary of 2005 estimated domestic value added from the fishing sector (\$'000).**

Source	Estimated Catch in EEZ	Estimated Gross Value of Fish Production <sup>40</sup> (US\$ '000)	Domestic Value Added <sup>41</sup>	Value Added from Local Marketing, Processing <sup>42</sup> , (US\$ '000)	Financial Compensation, License Fees (US\$ '000)
<b>Domestic Small-scale Fisheries</b>	sp- 2900	725	580	290	
	tuna-2200	1760	1400	700	
	dem-1200	1200	960	480	
	other-600	250	200	100	
<b>Domestic (Semi) Industrial Boats</b>	sp-1900	425	170	85	
	tuna-1700	1020	400	200	
	dem-90	90	36	18	
<b>Foreign Licensed Vessels</b>	sw- 100*	150*			100
	tuna-750*	750*			
<b>Foreign Fleets (Fisheries Agreements)</b>	sw-750*	1125*			EU-850
	tuna-2500*	2500*			Japan- ?
<b>Other</b>					
<b>Total (US\$'000)</b>		<b>9995</b>	<b>3746</b>	<b>1873</b>	<b>1000</b>

*(The above estimates are preliminary, \* are subject to further verification)*

### 4.3 EXTERNAL AID

As in other sectors of the economy, the fishing sector has relied for a significant portion of development efforts on foreign transfers and development aid. The sector received over US \$200 million (current US dollars) in investment and technical assistance donor support since 1978, or an average US\$ 7.5 million annually, for a fishery with a gross domestic landed value of US\$ 5-7 million (Table 4.2). These donor supported investments focused on boats (25%) and port and small fish landing facilities (52%). Industrial fisheries development received substantially more investment (71%) compared to artisanal fisheries (29%). Actual investments are higher, as these estimates do not include those supporting the establishment of a Fisheries Training School (ISECMAR) or the construction of processing plants.

It is interesting to note that the strategy targets in terms of total investments, identified in the Food Strategy Study in 1981<sup>43</sup>, have been largely met. The purpose of this study was to

<sup>40</sup> Average landed fish prices used for small-scale fisheries: sm. pelagics – \$ 250/ton; tuna - \$ 1000/ton; demersals - \$ 1000/ton; other fish - \$ 1000/ton . Landed fish prices from semi-industrial catches: small-pelagics - \$250/ton; tuna - \$600/ton; demersal fish \$1000/ton;

<sup>41</sup> Value added small-scale fisheries: 80% of gross earnings; from semi-industrial fisheries: 40% of gross earnings (FAO data from Senegal).

<sup>42</sup> Value added from marketing: 50% of domestic value added from fishing (FAO data West Africa)

<sup>43</sup> Bouwsma 2003

formulate an economic development plan making the country more self-supporting, especially in the area of food production, including fisheries production. However, a significant larger proportion was actually invested in infrastructure (US\$ 56 M compared to the estimated requirement of US\$12 M) then was considered necessary. The objective of these investments was to increase fisheries production to an estimated 34,000 tons in 2005. Actual local catches declined from 11,000 tons in 1981 to 8,700 tons in 2003.

**Table 4.2: Total approximate investments in the fisheries sector since Independence (1975). Investment value (US\$ Million) has not been adjusted over time and this should be doubled to obtain an approximate investment value at current US dollars. (TA: technical assistance)**

Sector	Type	Investment	Percent
<b>Artisanal Fisheries</b>	Boats	5	5
	Infrastructure	16	15
	TA multilateral	1.8	2
	TA bilateral	9	8
	Sub-total	31.8	29
<b>Industrial Fisheries</b>	Boats	21.5	20
	Infrastructure	40	37
	TA multilateral	5	5
	TA bilateral	9.5	9
	Sub-total	76	71
<b>Total Investment</b>		107.8	

Source: Bouwsma 2003

#### 4.4 PUBLIC BUDGETS, INVESTMENTS AND SUBSIDIES

The costs of public administration of the sector have fluctuated, but appear high. Public operational budgets for 2005 targeting the fishing sector were of the order of CVE 20-40 million US\$<sup>44</sup>; INDP has a CVE 40 million operational budget (which includes funding of the development wing), and FDP's budget is some CVE 40 million<sup>45</sup>; total public operational budget outlays amount to at least CVE 100-120 million (US\$ 1.25-1.5 million) annually. The 2005 development budget for activities benefiting fisheries combines many joint activities between agriculture, the environment and food security. Reorganization and restructuring of the fishing sector is reportedly budgeted for an estimated CVE 650 million (US\$ 8.4 million).

The entire public funding picture of the sector is complicated because responsibility for funding of routine maintenance and upkeep of most public port, fish landing and local ice

<sup>44</sup> Data from Ministry of the Environment, Agriculture and Fisheries; data include estimated share of budget of joint administrative services and funds and autonomous services.

<sup>45</sup> The FDP annual budget includes some CVE 7 million to finance subsidies for ice production and fuel. The budget is partly funded from foreign fleet vessel license payments; FDP receives 30% of license fees actually received.

plant infrastructure in the sector is not clear, while a substantial part of scheduled maintenance appears to remain under-funded<sup>46</sup>.

Similarly, since most local loans for boats and vessels introduced with external support in the past have not been repaid, past public subsidy levels to the private sector in practice substantially exceed annual current subsidy levels for ice production and diesel fuel (CVE 7 million – US\$ 87 thousand).

While some of the above public budget data are extrapolations, it is clear that public funding of the sector remains substantial, and that only a modest fraction of the budget directly benefits small-scale fishermen income. While foreign funded support in the past mainly targeted construction of public infrastructure, private vessels and public technical assistance, local public budgets – operational and development – have and still are focused mainly on public services and institutions.

#### **4.5 PRIVATIZATION**

Over the past 15 years, the Government has implemented an economic growth strategy anchored on the private sector, with private investment replacing public investments, which dominated until then. In the fishing sector this process has generally been slow, and until recently, most efforts have aimed at introducing private management in handling public fisheries infrastructure and processing facilities, while retaining public ownership. Privatization of public assets faces two problems in Cape Verde, as in most other countries, (i) most port infrastructure serving the fishing sector does not create enough revenue to operate and maintain the facilities; and (ii) the country's ice supply and fish processing capacity far exceeds local requirements and landed raw material. It appears too early to determine whether the solution being sought in Cape Verde – creating private management while mostly retaining public ownership – is financially sustainable.

The two main fishing ports, at Praia and Mindelo, are still publicly owned but are managed by a local Port Management Committee, representing various public and private stakeholders. The Committee has a small staff to manage day-to-day activities. Financial arrangements to manage the fishing ports, the daily costs of operations and long-term maintenance are currently opaque; operational costs in 2005 were shared by the Ministry of Agriculture, Fisheries and Environment and local users, at present the Ministry of Transport may have taken responsibility for management. For port infrastructure additional arrangements may be needed to ensure funding and implementation of the necessary maintenance of port facilities.

Privately managed but still publicly owned cold storages are currently mostly being used for general food storage; their long-term financial viability is as yet uncertain<sup>47</sup>.

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<sup>46</sup> Given the size of the past public infrastructure investments - an estimated US\$ 80 million for fishing ports, landing places, village facilities and ice plants – one could assume, based on experience in other parts of the world, and the age of some of the facilities, a theoretical annual budget for regular maintenance and repair of some US\$ 2-4 million. Actual budgets appear lower.

<sup>47</sup> The Interbase Complex in Mindelo was build in the beginning of the eighties with the eye on serving the international Atlantic tuna fishing fleet, but demand for this service did not arise as expected, leaving the facilities completely under-utilized. The complex is still the center of the local industrial fishing fleet - the three local canneries, also from other islands,

A small-scale fisheries port and fish-processing complex has been constructed in the more southern part of the Mindelo bay under a financial cooperation agreement between Japan and Cape Verde<sup>48</sup>. State owned and intended to enable small-scale fisheries to export fish, the facility has been severely underutilized, and is receiving public financial support to break even; private management is one of the options that may be considered to enable the plant to test its commercial viability. In Sal, the facilities of the cold storage complex of SALMAR are obsolete but somehow a part is still in operation<sup>49</sup>. The former government company, part of the Interbase organization, is now in private hands.

For the 97 fish landing sites in the archipelago, which include 30 CTS, the most intractable problem appears determining future demand for their services, and their future role. While many landing places are still in use, many ice plants are no longer operational – due to lack of funding for maintenance and/or lack of demand - and other facilities reportedly frequently stand idle.

The local infrastructure problem has three sub-issues: (i) does it make sense to maintain these facilities in these locations, to serve a possibly much reduced local fishing fleet in the future, (ii) for those facilities where the answer is yes, what institution should be responsible for operation of these facilities – a local fishermen association, a public institution or a private party – and (iii) given the costs of properly operating and maintaining the facilities, what form of public support would be needed to effectively operate and maintain the facilities.

Three approaches have been tried. For example, on Brava a fish receiving center was privatized a couple of years ago and is now managed by RabiPesca, a kind of family enterprise. The center is one of the few operational centers, and is used by the majority of the fishmongers, who are exporting to Praia. In Santiago, a fishermen association successfully manages the center at Pedra Badejo, be it with some human and financial public support. In both cases the experiment worked out well, but did require – and in the case of Pedra Badejo, still requires – quite substantial technical and financial public support. In a number of other locations the public sector remains fully responsible for most of these facilities.

Workshop participants agreed many infrastructure facilities are currently not functioning, and suggested that a program to address this issue should not only define current and future requirements, but specifically include funding for new development. They support the creation of a broad strategy for future development and management of sector infrastructure, encompassing different approaches dependent on local circumstances. Most prefer public/private partnerships based on public ownership within a well defined regulatory framework. Past delays in addressing infrastructure issues are blamed on lack of political will, which may also affect future strategy implementation.

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are storing tuna at the complex, caught in the high season to process at a later time. Interbase, until now a state enterprise, is in the process of getting private management of the Mendelo Complex; its assets will remain public.

<sup>48</sup> It has a 10 tons ice plant, 24 ton/24 hours blast freezer and 300 tons cold storage capacity.

<sup>49</sup> It has an ice plant of 7.5 tons, some 2000 tons cold storage and theoretical freezing capacity of 24 tons; it has also a huge life lobster storage facility, but this has not operated for many years.

#### 4.6 INTERNATIONAL AGREEMENTS

Cape Verde has maintained or renewed a number of international fisheries agreements with international bodies and with the EU, Japan and a number of African countries<sup>50</sup>.

The current protocol with the EU, which was renegotiated following a joint, wide-ranging study on a number of aspects in the fisheries sector, expires in 2011, and is limited to tuna catching. It allows 48 surface long-liners (2000-2004: 62 surface long-liners), 25 purse-seiners (was 34) and 11 pole-and-line vessels (was 18) to fish for tuna. Contrary to the previous agreement, bottom long-liners catching demersal species are no longer included in the agreement. Reportedly, only a modest number of EU flagged boats is actually being employed in Cape Verde waters under the agreement, mostly surface long liners. The current financial contribution of the EU amounts to □385,000 a year, of which 16% is targeted at measures to promote conservation, such as fisheries research, surveillance and quality control.

The agreements with African countries are mostly reciprocal agreements, in that they enable fishing vessels from both countries to fish in each other's waters without payment.

#### 4.7 RECENT SECTOR STRATEGY INITIATIVES

Considered a strategic sector for the country's development<sup>51</sup>, several strategic documents have recently defined measures to improve sector governance and performance. While they express some direct or indirect concern about the status of the resource base, they avoid directly support for a reduction of fishing efforts, and do not link such reduction – or any other direct or indirect income support program – to the issue of poverty alleviation. The 2004 Growth and Poverty Reduction Strategy (GPRSP) is exactly that, a growth oriented strategy for the sector that includes recommendations to *expand* the productive base, modernize infrastructure, introduce new fishing technology, diversify production, enhance surveillance and control of the EEZ, strengthen research and the evaluation of the main fish resources, enable the fishing sector access to credit, develop aquaculture, and reinforce regional and international cooperation aimed at rational exploration of the fish resources and expansion of fishing activities beyond the country's EEZ.

In 2000 the Government Program of the VI legislature (2001-2005) included as objective the maximization of economic and social benefits from the sector on a sustainable basis, to improve the sector trade balance and improvement of the quality and levels of food supplies, to be achieved through:

- an integrated policy for the management and exploration of water, agricultural land and related resources,
- sustainable management of resources, and increased and diversified production,
- improvement of product quality, the distribution network and promotion of processing industries, and

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<sup>50</sup> With international bodies: (i) Law of the Sea Convention, (ii) UN Straddling Stocks, (iii) UN Compliance Agreement, (iv) ICCAT, (v) CECAF, and (vi) SRFC. Bilateral agreements with: (i) Portugal, (ii) Mauritania, (iii) Guinea Bissau, (iv) Senegal, (v) Angola, and (vi) Japan.

<sup>51</sup> *Ibid.* GPRSP

- promotion of investment in the sector, notably in processing industries – those providing added value products – and in export of fish, as well as alternative technologies related to the marine environment.

Of the many specific aspects that the program aims to address, the following appear particularly relevant:

- The Government intends to reconsider the role of the State in sector investments, while continuing a role as promoter and regulator,
- It aims to support private external investments and wants to create incentives to improve local savings, and enable better local access to credit,
- It wants to promote the creation of interests groups to develop the sector, and seeks a participatory approach in such areas as protection of marine biodiversity and reinforcement of human and institutional capacity,
- Monitor foreign fisheries and identify strategies to maximize economic and social benefits,
- Promote a large program of development support to small-scale fisheries in collaboration with NGOs,
- Develop exploratory fishing for new resources and testing of new technologies,
- Contribute to training, developing the capacity of ISECMAR,
- Maintain existing and develop new infrastructure,
- Create Marine Protected Areas,
- Reinforce regional, and international cooperation in the context of exploration and conservation of marine resources.

The FMP prepared in 2004 – the first for Cape Verde – best reflects the fundamental paradox that affected sector governance during the past two decades; while the plan aims to sustainably manage fish resources it also has economic objectives - value added expansion, income growth and implied poverty alleviation targets - that can far easier be achieved through production growth than by a combination of fishing effort reduction, adjustment of public support programs and more careful sector governance, the only feasible and realistic strategy solution, as discussed in the next Chapter 5.

## 5. Why Adjust the Fisheries Strategy; Why Change?

### 5.1 A SECTOR THAT LAGGED BEHIND

Over the past 15 years, the Government has implemented an overall economic strategy based on strong and sustained growth, in which private investment played a key role in replacing public investment. As a result the services sector became dominant, while the primary sector – agriculture and fisheries – progressed far more slowly.

The objectives and goals of the Government for the fishing sector have also perceptively changed. While the *Program of the Government for the 2001-2005 Legislature*, as summarized in Chapter 4, still aims at production and export led growth, its focus is moving towards sustainable exploitation and addressing the poverty issue in fisheries. It aims to address growth and poverty reduction mainly through improvement of technical issues, such as quality improvement, organizing fishermen into associations, addressing the lack of credit, and a review of the performance of some public sector institutions. The *GPRSP* goes further along this path, still focusing on ‘growing the productive base’ and expansion of infrastructure, but also focusing on sustained exploration of resources to ensure a durable equilibrium of the ecosystem, diversification of production, as well as value added creation. It also mentions quality improvement, the need for credit and the need for regional cooperation, education and training. It strongly advocates the need to increase employment of the poor, the development of an integrated agricultural policy extending to fisheries, and most important, redistribution of income and social protection.

All this demonstrates the Government’s continued intention of improving the sector’s economic and social performance, but without accepting the biological limitations, and without realistically evaluating the sector’s past performance.

*What caused fish production and the sector contribution to GNP to decline to a little over 1%? Equally important, why has the sector been unable – despite very substantial public support over twenty years, including major investments in boats, infrastructure and processing plants - to reduce the relative poverty level of most fishermen, when compared with the rest of the population?*

The past and following sections will suggest most of the answers.

- **Neither the ultimate goal of sector development nor the sectoral objectives were in line with each other or realistic**
- **Fish resources that can be exploited with current technology are quite limited and some are already heavily or over-exploited**
- **Past investments have focused too much on infrastructure and processing capacity**
- **The financial resources aimed at directly improving the income of small-scale fisheries were relatively modest, and had only a limited impact**
- **Sector governance has been costly and weak.**

These findings actually come from the evaluation report prepared by Bouwsma<sup>52</sup> in which he compared 1981 projections for the performance and investment needs in the fishing sector between 1981 and 2001 with actuals. He is the first author to formally state that resources exploitable with currently available technology are modest and mostly overexploited, and that investment in shore-based infrastructure has far exceeded actual requirements. More specifically, it appears that:

- **Fish stocks are modest.** As discussed in Chapter 2, resident fish resources are small, and demersal and lobster stocks have been over-exploited locally. Migrating seasonal tuna stocks are already very heavily exploited in the eastern Atlantic. Past estimates of potential yields in the Cape Verde EEZ appear too optimistic. Commercial realities have not been taken into account in these potential catch estimates; viable tuna fisheries require major investments, highly effective fleet management and regional operations, that do not yet exist in Cape Verde.
- **Catch rates have declined, due to stock declines and lack of technology improvement.** Current catch rates – catches per fishing day in the semi-industrial fisheries have declined to about half of those realized 10 years ago (Figure 2.2). In relation to tuna, the decrease in catch rates has been even stronger (Annex A – Figure A.7), following the pattern observed in other parts of Macaronesia. Catch rates of small-scale fisheries<sup>53</sup> are a fraction of past projections for 2001. While the fishing fleet has expanded as projected in 1981, the projected technological improvements of the small-scale and semi-industrial fleet – which was supposed to substantially increase their effectiveness - did not occur.
- **Excessive investment in shore-based infrastructure.** Actual investment in shore facilities (ports, fish landing places, ice plants, freezing plants, cold storages) has exceeded past projections for 2001, while actual fish production is currently less than 25% of projected production. The fish canning industry faces uncertain and insufficient local supplies of raw material – boats get higher prices in local markets for their tuna - and relatively high operating costs; plants survive on account of Cape Verdean preferences for locally canned product, imported raw material and niche export markets. Cold storages equally suffer from low throughput, and – under private management – diversify into other foodstuffs to survive.
- **Local fish marketing is functioning well and creates substantial value added.** The traditional fish marketing through female fishmongers appears to function well; local supplies of fish are less (per capita) than in 1981, and as a result prices have substantially increased. There is some indication that the higher earnings caused by higher consumer prices have particularly benefited those involved in fish marketing. The ongoing substitution between fish and imported chicken ensures total protein availability appears not to have much changed.

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<sup>52</sup> Bouwsma 2003

<sup>53</sup> Small-scale fisheries can only survive by targeting many species; four of these fisheries – tuna, small pelagics, lobster and demersals – have problems. The small-scale and semi-industrial tuna fishery is seasonal and the small-scale tuna fishery is short of bait. Demersal stocks appear locally over-exploited – particularly near Santiago, where many small-scale fishermen are concentrated - with average catch rates that have become very low by any standard. Small-scale boats and the semi-industrial vessels increasingly targeted small pelagics. Three out of four lobster resources appear heavily over-exploited.

## 5.2 SECTOR GOVERNANCE

It is unfair to say that poor sector governance has been the only cause for the sector to perform poorly. Many factors played a role, as will be clear from the rest of this Chapter. But the reasons that ultimately caused poor sector governance should be noted, as they need to be addressed and avoided in any future long-term sector strategy.

First of all, sector governance has suffered as a result of the fundamental shift in economic policy from state socialism to a guided market based system. The change has been particularly difficult in fisheries because whatever economic system is favored, it still requires public inputs – in infrastructure, research, resources management, quality control. Determining the proper role of the public sector in fisheries has baffled many administrators all over the world, and Cape Verde is no exception. It has taken successive administrations also some time to get to grips with the unique triple requirements of local sector governance a) limited and partly over-exploited fish resources, b) excessive shore based processing capacity and infrastructure, and c) the emerging poverty issue.

Previous administrations had to deal with a legacy of optimism about future potential catches that was very difficult to dispel or even question. The increasing focus on poverty alleviation in fisheries – which resulted from the relative success of the new economic policies at the national level, and the lagging performance of primary production sectors – came about at a time when the impact of over-fishing and the lack of new technology had already made its negative mark on the sector, and made quick action through production increases virtually impossible.

While privatization was a critical part of the market based economic policy program, administrations had to deal with large investments made in processing and infrastructure prior to the policy shift, with questionable viability in an environment of declining or stagnant fish catches. The solutions pursued so far for productive infrastructure – aiming for private management, while maintaining public ownership – may buy time and test long-term commercial viability of the processing plants, but may need further action in the future. Similarly, new management arrangements for port facilities introduce local stakeholder management, but do not yet address funding issues of regular maintenance and future replacement or adjustment of many costly coastal structures.

The poverty issue has always been part of the fishing sector, but has increasingly moved to the front burner of sector strategy. As is discussed in the next sections, addressing this issue is possible, but it will require different solutions from those pursued before.

Last but not least, the sector has created a credit vacuum that started during the socialist years and continues until now. While the lack of credit may have been a blessing in disguise – a larger fishing fleet may have faced even more serious resource problems – it also constrained technological development. Changing borrower (and bank) attitudes about fisheries credit after such a long time of state condoned non-repayment may take major efforts.

The poor performance of past sector governance has been indirectly influenced by donor preferences and attitudes. For example, while major donor-supported investments were made in research – 2 research vessels, a new research institute – funds have been short for regular stock assessment work, the latest stock assessment for a major species (mackerel scad) dates from 1997. Very little scientific and economic analysis has supported sector policy design, and the donor supported and executed work that was done in the early 1980s on future food security used resource estimates that were based on educated guesses of a single individual.

The time between investment decisions and completion of construction has also affected sector governance. The most recently completed fish processing complex in Mindelo still appears to reflect a policy of addressing poverty by increasing production oriented and state controlled fish processing of the 1980s, one that no longer makes sense.

### **5.3 THREE KEY QUESTIONS: HOW MUCH FISH? HOW MUCH INCOME? HOW MUCH PUBLIC MONEY?**

When comparing these evaluation findings, and the analysis of Chapter 4 on public funding patterns with the evolving government objectives for the sector -higher fish production, addressing poverty- the following key questions need strategic answers, and provide some of the arguments for further change in the sector strategy:

- Given our current knowledge of the state of resident and migrating stocks and the marine ecosystem, what can Cape Verde do to continue to exploit its fish resources while ensuring a healthy ecosystem and more productive fish stocks?
- What is an acceptable level of income for fishermen and fish-mongers?
- How much public funding is Cape Verde willing to spend on poverty reduction, and how should it be allocated?

These questions have several critical parameters: (i) a realistic assessment of available fish resources that are accessible at local level with currently available technology, (ii) the desired future income levels of fishermen; (iii) future public financial resources available to support restructuring and maintenance and operations of public infrastructure and sector governance, and (iv) the nature and availability of alternative income opportunities for surplus fishermen. There are also two unknown parameters: (i) the future availability of new – commercially viable - small-scale and semi-industrial fisheries technologies that enable exploitation of under-exploited fish resources; and (ii) the future commercial viability of semi-industrial and particularly industrial fisheries.

### **5.4 FUTURE LEVELS OF EXPLOITATION OF FISH RESOURCES**

The detailed solutions for determining viable future fishing activities may well differ from island to island, as excess fishing and infrastructure capacity, the sustainable level of exploitation of accessible fish resources, and potential opportunities for alternative employment vary much among islands. Details are provided in Annex B.

- Fogo and Brava have relatively large fishermen populations and appear to have quite modest fish resources and alternative income opportunities; with Santiago they face the largest and most pressing restructuring requirements. Particularly the expansion of the **demersal** fishery appears ill-advised, and a substantial reduction of fishing effort in most locations is likely to be the only way to rebuild healthy stocks.
- Small-scale fisheries and semi-industrial fisheries on **small-pelagics** may continue to target these species, but no immediate expansion should be planned unless the parameters of the stocks are better understood. Both fisheries appear commercially viable under current conditions. However, total fishing efforts (the number of days fished - and fishing capacity – the number of boats operating - and possibly the distribution of boats among the islands may need to be adjusted to ensure that the long-term average sustainable exploitation level of available small-pelagics resources not be exceeded.
- While Cape Verde should make every effort to support an overall reduction of international fishing efforts on regional **tuna** stocks – from which it would eventually benefit through higher catch rates – it can expand its own catches as long as such fishing is commercially viable and generates sufficient income to fishermen and processors. Future exploitation of the regional surface tuna resource transferring through Cape Verde waters may well be most effective through a combination of small-scale line fisheries and semi-industrial and industrial purse-seine technology, given the local shortage of bait. For large industrial purse seining, Cape Verde may consider participating in such a fishery through direct commercial arrangements with foreign companies – shareholding in foreign companies - possibly linked to and supported by international fisheries agreements.
- Deep swimming tuna and billfish may be the only resources in the Cape Verde EEZ that theoretically could be exploited by small-scale and semi-industrial boats. However, no suitable small-scale technology – in terms of boat design and suitable gear arrangements – appears currently available to effectively exploit these stocks, and knowledge about stock size and potential yield is virtually non-existent. Hence, without the technology and the knowledge, it appears ill-advised to base production expansion on this resource alone.

## 5.5 INCREASING FISHERMEN INCOME; THE ROLE OF PUBLIC FUNDING

The available data in Chapter 4 only suggest the scope of the problem of fishermen poverty: the level of poor and very poor people in Brava, Fogo, Maio, Santiago, S. Antao and S. Nicolau is well above average, with the absolute numbers of very poor particularly high in Fogo, Santiago and S. Antao.

The poverty issue has two sides: how much should existing incomes increase to be ‘acceptable’ – and should future incomes be allowed to differ by island – and what measures can be realistically taken to improve incomes. The first question, including the issue of local variation in income, cannot be answered in this report; such judgment should be made in Cape Verde. As detailed in the next table, the GPRSP has made some assessment, without indicating actual minimum levels of income. The poverty alleviation targets that are currently being pursued in the GPRSP require public programs to ensure health, education, water

supply etc (Table 5.2). These targets improve the well-being and future income of recipients. However, poverty reduction targets that actually aim at directly increasing family incomes may be achieved through a combination of direct and indirect support programs and policies, as discussed below. The main strategy suggested in this report, adjusted to reflect recent strategy discussions in Cape Verde, would be to increase incomes through indirect means – better equipment, effective credit, training, better managed fish resources - and use other positive incentives for younger, more energetic fishermen to retrain and find employment outside the sector, including direct income support during training. A proposal for temporary direct income support to alleviate the most serious incidences of poverty in the fishing sector was universally rejected by public and private sector representatives during the September 2007 workshop.

**Table 5.1: Indicators for monitoring Growth and Poverty Reduction Strategy in Cape Verde.**

<b>PILLAR 1</b>					
<b>PROMOTE GOOD GOVERNANCE, REINFORCING EFFECTIVENESS AND GUARANTEEING EQUITY</b>					
<b>MACROECONOMIC INDICATORS</b>		<b>FORECAST</b>			
		<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
1	Per capita GDP growth rate	3.6%	4.1%	4.5%	5.0%
2	Real GDP growth rate	5.5%	6%	6.5%	7%
3	Inflation rate	1.0%	2%	2%	2%
4	Budget deficit (% of GDP)	-4.3	-7.6	-7.3	-6.1
5	International reserves (in months of imports)	2	2.3	2.5	2.8
<b>Other indicators of good governance</b>		<b>Base</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
6	Poor (%of population)	36.7			
7	Very poor (% of population)	19.7			
8	MTEF drafted and approved by Ministries	3	4	5	
9	Environmental expenditures (% of National Budget)		3%	4%	4%
10	Education expenditures (% of National Budget)	20%	22%	22.5%	23%
11	Health expenditures (% of National Budget)	6.3%	6.5%	7%	7%
<b>PILLAR 2</b>		<b>BENCHMARKS</b>			
<b>PROMOTE COMPETITIVENESS TO FOSTER ECONOMIC GROWTH AND JOB CREATION</b>		<b>Base</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
12	Direct investment (net, US\$ million)	1,484	3,648	5,465	6,066
13	Unemployment rate	17.3			
14	Homes connected to power grid (%)		70%	75%	78%
15	Number of overnight stays / tourist	832,000			
<b>PILLAR 3</b>		<b>BENCHMARKS</b>			
<b>DEVELOP AND UPGRADE HUMAN CAPITAL</b>		<b>Base</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
<b>Education</b>					
16	Nr. of people with professional training	7,453			
17	Adult literacy rate (15 to 49 year old)	86.4%	88.5%	89.2%	90%
		F 83.4%	85.5%	86.2%	87%
18	Early childhood coverage rate (0 – 5 years old)	MF 54%	58%	62.5%	67%
		F 52%	59%	63.5%	68%
19	Proportion of children completing basic education within 6 years	44.6%	46.6%	47.3%	48%
20	Secondary education gross admission rate	81.5%	82%	82.5%	83%
21	Proportion of secondary education students attending the technical branch	7.4%	8.5%	10.1%	9.2%
<b>Health</b>					
22	% of population with easy access to health facilities	35%	47%	76%	80%
23	Infant mortality rate (per 1,000)	28.2			

24	Maternal mortality rate (per 100,000)	7.6			
25	Immunization rate (% of children under 1 year old)		80%	85%	90%
26	Change in occurrence of infectious and parasitical disease (reduction)		3%	6%	10%
27	Occurrence of HIV/AIDS on attended pregnant women		1.1%	1.1%	1%
28	Children underweight (under 5, per 10,000)	55.4%			
<b>PILLAR 4</b>		<b>BENCHMARKS</b>			
<b>IMPROVE AND DEVELOP BASIC INFRASTRUCTURE, PROMOTE LAND USE PLANNING, AND PROTECT THE ENVIRONMENT</b>		<b>Base</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
29	Proportion of families connected to water grid	25%	50%	65%	80%
30	Percentage of families connected to power grid	58.5%			
31	Proportion of families with access to sewerage grid	11.5%	30%	50%	65%
32	Population with access to solid waste collection system		40%	50%	55%
33	Area covered by micro-irrigation infrastructure (% of total irrigated area)		15%	20%	25%
34	Number of watersheds with operational plans		5%	10%	15%
<b>PILLAR 5</b>		<b>BENCHMARKS</b>			
<b>IMPROVE THE EFFECTIVENESS AND SUSTAINABILITY OF THE SOCIAL PROTECTION SYSTEM</b>		<b>Base</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
35	Population covered by a social protection system (% of total population)		10%	20%	30%
36	Number of Minimum Social Security pensioners	6,514	7,600	8,600	9,500
37	Number of Social Solidarity pensioners	9,373	12,500	14,200	16,000

### 5.5.1 Direct Income Transfers.

In some developed economies direct income transfers are provided in the form of publicly supported social security. In some countries financial support may increase fishermen incomes to a defined minimum level, like in Norway, possibly combined with a pension scheme to take care of old fishermen. Newfoundland has an unemployment scheme that pays fishermen for the season they cannot fish. The drawback of these schemes is that they support the *status quo* and reduce the incentives for fishermen to move to a different form of employment.

In Cape Verde fisheries, no long-term poverty alleviation policy is financially feasible without an improvement of fishing efficiency, a reduction of fishing efforts and of the total number of fishermen. In many instances, fishermen incomes may need to be supplemented by other sources of income, including income from supporting local public services, such as research data collection, local surveillance and implementation of quality control schemes. The value added that can be sustainably generated by the sector alone will not allow all existing fishermen to escape current poverty levels. This structural adjustment will however take time. In the short-term a reduction of poverty is technically and financially feasible through direct income support. Such direct income transfers appear only strategically justified if they would effectively encourage a reduction of fishing effort and fishermen – notably the younger ones, or would represent payment for supporting local public services.

Poverty reduction can be achieved by giving fishermen seeking alternative employment temporary support when they get training and seek alternative jobs and by paying fishermen for supporting public activities.

As has been discussed in Chapter 4, in the future it would be essential to use existing or newly formed fishermen's associations to participate in local public services that would support fisheries management, research, MCS and infrastructure management. Hence, it would make sense to create - in parallel to training and outplacement program - a long-term program supported by public funds to support development of fishermen associations, train members for managerial and technical functions and create a nationwide program to pay small-scale fishermen that remain in the industry for actively supporting and providing labor to all activities in which fishermen associations will be involved.

### ***5.5.2 Indirect Measures to Improve Fishermen Incomes***

Small-scale fishermen incomes can be indirectly increased by a combination of a) reducing overall fishing efforts, notably on demersal and small-pelagic species, b) improving the efficiency of individual vessels and gear, c) by reducing the operating costs – for example of traveling to and from the fishing grounds - and d) by increasing the price of the landed catch. This report suggests that all these measures – combined – be used to improve fishing efficiency and increase fishermen incomes.

#### **5.5.2.1 Reducing Fishing Efforts**

This can have – with a time lag - a positive impact on local demersal and small-pelagic fish catches and fishermen incomes. However, since the demersal resources are modest, as a result of limited habitat (small shelves), and only contribute about a third to current small-scale fishermen income, no long-term impact of a temporary reduction can be counted upon to substantially increase small-scale fishermen income. In the long-term demersal fish should be seen as a modest additional source of income for most fishermen; the same applies to surface lobster stocks. Reducing fishing on demersal fish and lobster may be achieved through local management measures – for example limiting the daily number of handlines that are allowed to operate per km of coastline – that should be enforced locally. This implies that for the long-term future, small-scale fishing would largely have to rely on small-pelagics, surface tuna and possibly deep swimming tuna as main sources of income. It also implies the need for local institutional capacity to implement local fisheries management measures – such as protecting demersal and lobster stocks.

Reduction of fishing efforts – for small-scale and industrial fisheries - will reduce the demand for crews. This report favors a process of fishermen volunteering to seek other employment, and looking for vocational training and other education. This will equally create pressure for their children to obtain better education. Future demand for training and education from the fishing sector will substantially increase, and focus on re-training fishermen and educating their children. Ultimately, Cape Verde should create a system of social security for fishermen that includes pension provisions, taking into account cultural practices of the fishermen communities.

While it is uncertain what will happen in industrial fisheries, demand for officers and crews for industrial and small-scale fishing and processing is most likely to decline in the future, unless Cape Verde fishermen target foreign fishing operations as a major future employment market.

#### **5.5.2.2 Improving the efficiency of fishing boats and gear – while reducing the total number of boats**

This may well be the potentially most effective way to indirectly improve fishermen income – provided boats are able to fish healthy fish stocks. While fishing gear has seen major improvements over the years on account of external technical assistance, fishing boats -with the exception of semi-industrial boats- have generally not been improved although many have been motorized. Recent design improvements in other parts of the world (Yemen, East Asia) suggest that it may be possible to introduce new boat designs in Cape Verde that may be faster, more seaworthy, safer, better suited to handle deep long-lines and other gear, and more effective in preserving the catch.

The bulk of the current small-scale fishing fleet consists of locally constructed wooden boats of a traditional design that can be easily beached. Replacing these boats with locally built fiberglass boats is only useful if the new boats are sufficiently profitable to repay the substantially higher building costs. The commercial viability of the current designs produced in Mindelo, and their ability to substantially increase fishermen incomes, still needs to be determined. For this reason any future sector strategy should include an assessment of the financial and technical feasibility of existing and potential alternative future boat designs. As discussed in Chapter 6, this report strongly recommends the creation of a fishery extension unit that would test new boats and gear, and collect costs and earnings data from a sample of existing and newly introduced boats in various islands.

The issue of technology and future replacement of the aging fleet is directly related to fishery credit. Many fishermen argue that their fishing operations have declined on account of lack of credit to replace aging wooden boats. Any new sector strategy will need to address the replacement issue of the small-scale fleet, and the need for viable sources of sound fishery credit<sup>54</sup>. Operation and maintenance of the current fishing fleet – and possible improvements of the fleet and fishing technology – require a functioning and reasonably efficient fishery credit system. Part of the future demand for credit may be satisfied by creating micro-credit savings activities managed by local fishermen associations. However, for larger boats either FDP or commercial banks appear the only potential source, provided the regulatory framework is upgraded to enable FDP or the banks to effectively maintain loan recovery.<sup>55</sup>

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<sup>54</sup> This report will argue that, while for a declining minority of mainly small-scale fishermen it may be commercially more interesting not to up-grade boat technology and continue to operate cheap traditional wooden vessels, full-time fishermen targeting small-pelagics and tuna may be better-off buying more modern boats – provided they are available and prove commercially viable.

<sup>55</sup> Both semi-industrial and small-scale fisheries have suffered during the past decade from the increasing reluctance of commercial and public banks to provide credit caused by the very poor repayment record on their existing fishery portfolio. As a result, the small-scale fleet has been maintained by building boats cheaply locally. The number of semi-industrial boats has in fact decreased in recent years, despite their apparent commercial success. While lack of appropriate boat-building capacity may also have played a role, lack of credit appears a major factor.

This report encourages the Government to consider the recommendations of the team that evaluated FDP, and implement those recommendations soonest.

### **5.5.2.3 Reducing vessel operating costs, the role of subsidies.**

Reducing operating costs in fisheries can be achieved in many ways. For example, fishermen may seasonally move to other islands – from Santiago to Boavista or Maio – to fish rather than moving over every trip. But the key to cost reduction is improving technology, ensuring effective fish preservation, improving vessel seaworthiness and safety, and catching fish closer to port by reducing concentrations of boats in limited areas.

At present the only public contribution to reducing fishing boat operating costs is a subsidy reducing the costs of ice production and of diesel fuel. Reportedly both these subsidies actually benefit semi-industrial and industrial fishermen most. In addition Cape Verde provides virtually free fish landing facilities, interest subsidies for new loans through FDP, and in the past *de facto* grants for donor supported vessels for which loans were not repaid. Virtually all these programs supported industrial fisheries most.

Subsidizing fisheries is a time-honored past time in fisheries; many countries subsidize or have subsidized fuel, port fees, and frequently investment in and operations of fishing vessels and port facilities. Subsidies can play a useful role in fisheries when fisheries are just developing – testing new technology, exploiting unknown fish resources, overcoming a lack of infrastructure -but usually are highly detrimental to fully mature fisheries, encouraging excessive investment and postponing necessary reductions of fishing efforts.

Current subsidies for ice, fuel and vessel credits – through FDP – are currently relatively modest, but do generally not reach those fishermen most in need. Diesel fuel subsidies support industrial fisheries and may favor energy intensive fishing methods, interest subsidies – except in situations with very high interest rates – encourage more capital intensive fisheries than may be required.

While the historical reasons to subsidize ice are still valid – ensuring all fish caught is properly iced; keeping the right to export fish to the EU – this report suggests that as a long-term strategy, all existing subsidies should be gradually reduced, and replaced by public support that directly benefits small-scale fishermen. Such support may target the creation and support of fishermen associations that would operate ice plants, O&M of other local infrastructure and micro-credit schemes that support small-scale fisheries, or support for local surveillance and control of fisheries and marine parks. Such public support may well be more cost effective and would directly support payments to small-scale fishermen that are involved in such activities.

Future subsidies for semi-industrial and industrial vessels should particularly be avoided. Since some of the foreign tuna vessels currently operating in the region have benefited in the past from substantial public subsidies, Cape Verde may be tempted to use - very substantial - public funds to let its industrial fleet effectively compete with those vessels. This appears an economically poor use of scarce public funds, with very few potential national benefits. Both

semi-industrial and industrial vessels operate in a high-risk environment. If domestic vessels cannot operate commercially without public support, Cape Verde should decline to subsidize non-commercial industrial fisheries in the long-term.

#### **5.5.2.4 Increasing the price of landed fish**

Fish prices fluctuate, from day to day, from hour to hour, and from location to location. Sustained relative price increases can be achieved by improving fish quality, by reducing fish supplies and/or by improving the current formulas that exist between fish traders, fish processors and fishermen. Quality improvement is most effective for fish destined for the tourism sector and export; local markets may be slower in appreciating high quality fish through higher prices.

This report favors a strategy of gradually reducing the number of fishermen, small-scale and possibly industrial. This may lead – assuming no future technology improvements and increases in the number of semi-industrial vessels - to a stagnant supply of fish in an expanding market. Over time traders may seek imports of fish to supply local markets, but this may take time and may be limited to more expensive species. Hence, measures to reduce the fishermen population may indirectly support the income of those that remain. The creation of fishermen associations, which is also supported by this report, may lead to future negotiations that may increase the share of consumer prices transferred back to fishermen.

Conclusion: Poverty of small-scale fishermen can be reduced by the combination of direct and indirect support measures and policies. It can be reduced immediately and effectively by providing income supplements in the form of direct compensation for public services related labor and income support to people being retrained. The costs of such income supplements would be modest compared to past public investment levels in the sector. Other, indirect, ways to improve fishermen income include a) the reduction of the number of boats in specific areas – increasing the catch/boat of the remaining fleet – b) improving the efficiency of boats, by introducing new designs and reducing operating costs and c) by improving producer fish prices.

### **5.6 OTHER STRATEGIC CONCLUSIONS**

From the findings of previous chapters and the detailed descriptions of the current fisheries available from various reports, other conclusions can be drawn concerning the need for other changes in sector strategy:

#### **5.6.1 The Allocation of Public Expenditure**

Cape Verde's history with public investment has been a major factor affecting sector performance; the general predisposition of allocating public and donor funds to public investment and operating budgets to public institutions – while understandable from an historic perspective - requires review. The past levels of public funding of the sector and its administration – including external donor funding – are unlikely to be continued indefinitely in the future. Given the needs of society as a whole and the likely future size of the fishing

sector, including its role in poverty alleviation, public support may increasingly be directed to more promising activities. Such support may particularly focus on supporting a lean sector administration and restructuring (decentralization) and downsizing the sector. This may include such items as:

- a) Budget support for essential administration of the sector, and for critical research,
- b) Essential maintenance of necessary existing public infrastructure (ports, selected landing places, community centers, local ice plants),
- c) Public support for all aspects of the future role of fishermen associations<sup>56</sup>, including local management of some local fish resources, data collection, local surveillance and control, management of micro-credit schemes, support for management of marine protected areas etc.
- d) A managed restructuring of small-scale fisheries, including voluntary retraining of older fishermen and educating younger fishermen for new jobs,
- e) Operating a modest fisheries extension service, including support for the design and testing of new (small-scale) boat and gear technology; and
- f) All aspects of educating, training and re-training fishermen, their families and people working in the public and private sector.

#### ***5.6.2. Monitoring, Control and Surveillance (MCS)***

Cape Verde, with substantial foreign support, has a modest surveillance capacity for its large EEZ; surveillance operations have taken place – be it less frequent as one would wish – but the results have generally not indicated any substantial presence of non-licensed, illegal fishing vessels. Some uncertainty exists about the formal catch data produced by the EU fleet<sup>57</sup>. Given the high costs of MCS activities – in terms of flight hours and surface vessel follow-up, Cape Verde should aim to improve the effectiveness of MCS through the most cost-effective means. This may be achieved by further improving its ability to monitor foreign fishing fleets by linking-up to existing VMS systems. Similarly it could consider an increase of the number of observers and a further increase in support for MCS as part of new fishing agreements.

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<sup>56</sup> Past efforts to organize fishermen have suffered from conflicting and changing objectives; that does not mean that fishermen organizations are not necessary: they are – as recent examples have clearly proven - but most will require sustained management and financial support to remain viable and effective.

<sup>57</sup> While it is clear the EU fleet particularly targets swordfish and sharks, it is less clear how much tuna is being caught – just inside or outside the Cape Verde EEZ during the surface tuna season.

## 6. What Changes in Strategy

### 6.1 AN ALTERNATIVE STRATEGY: REDUCING SECTOR RISKS

A well-known chronicler of fisheries in Cape Verde (J. Bouwsma) suggested that looking at a single vision of the long-term future is virtually impossible, since so many things have a habit of changing in the short-term, and the sector has so many uncertainties and changing constraints. In his view a long-term vision is more of an impediment to proper sector management than a support. Bouwsma was right when he said that it is dangerous to plan for a single outcome; he was wrong when he implied long-term planning is a waste of time.

The proposed sector strategy suggested below may be considered the starting point for a national discussion of the sector strategy. This report strongly suggests that its suggestions and recommendations for the purpose, objectives and detailed programs of such strategy be subject to further extensive stakeholder discussion.

This paper will argue that exactly because the sector does face a number of critical issues and risks, a long-term sector strategy is needed to effectively reduce those risks. Particularly, a strategy is needed **to reduce the risks of a) over-exploitation of stocks and degradation of the marine environment, b) low incomes being generated by the sector, c) ineffective fisheries technology being applied; and d) excessive public funds being used for sector investment and governance.**

The proposed risk reduction strategy would have a single goal: create and maintain a commercially viable and environmentally sustainable fishing sector that is able to quickly and substantially reduce poverty, while minimizing environmental and commercial risks.

The four key objectives of the sector strategy would be to:

- *Ecological management:* Maintain a marine environment that can provide optimal resource benefits to the country;
- *Poverty reduction:* Substantially increase average fishermen incomes and increase sector income growth similar to that of the general population;
- *Institutional effectiveness:* Adjust the institutional framework to ensure long-term sector governance effectiveness, and
- *Financial sustainability:* Reduce public spending on the sector to what is essential to restructure the sector, maintain public infrastructure, and ensure effective public governance.

Some short-term components of this long-term risk reduction strategy could be coordinated under two main short-term programs to **restructure and adjust** the fishing sector: a) **a controlled reduction of small-scale fisheries and improved management of semi-industrial fisheries and industrial fisheries, and b) preparation for development of industrial fisheries based on market forces.**

During and following the short-term reconstruction of the sector, the strategy would be implemented through two long-term programs to maintain effective governance of the sector: **a) institutional strengthening and improvement, and b) long-term marine environmental management.**

The proposed strategy could be funded from at least six potential sources: a) external donor support for specific strategy components, b) the public budget allocated to poverty reduction in the sector under the GPRSP, c) the regular public operational and development budget of the fisheries department, MITS and INDP, d) contributions from the Ministries of Education, Social Affairs and Transport, e) compensation payments from foreign fisheries agreements, and f) users of public sector facilities – port facilities, ice, privately managed but publicly owned fish processing plants etc. While this report has estimated some order of magnitude of the funds required, a more detailed follow-up study would be needed to assess these costs in more detail, and assess the political choices that would need to be made to determine the relative contribution of each of these funding sources. The likely annual costs of the implementation of the entire strategy will substantially depend on policy decisions that would be made concerning income support levels and public support for retraining fishermen; still, it may be of the order of \$ 3-6 million annually during the first 5 years, and \$ 1-2 million thereafter.

The strategy is based on a process of decentralization and empowerment. It requires the creation of effective institutional capacity at the local level through building-up of **fishermen associations in cooperation with municipal councils**. These associations would constitute the main local mechanism to execute a number of functions, and play a long-term role in maintaining financially and environmentally healthy local fisheries. While these associations may initially be dependent upon outside support – as detailed in Section 6.4 on institutional improvement – the core aspects of the strategy would be dependent upon a viable group of existing and newly created fishermen associations, and implementation of a program to effectively decentralize key public service and administrative functions supporting the sector. Development of and support for these associations and the parallel restructuring of the Fisheries Department and other public institutions involved would be one of the key aspects of the institutional improvement program. The new institutional framework would be responsible for the restructuring of the fishing sector, development of realistic management plans and research programs, major training and education activities and creation of a viable system of financial intermediation.

The second component of the restructuring process would be the creation of a mechanism to effectively use, maintain and develop the existing public infrastructure – for processing of fish and to facilitate fish landings and fish quality. The strategy proposes the creation of broad strategy, in which local private stakeholders can effectively participate – that would take responsibility for a) the process of disposing of public assets, b) negotiating and monitoring the use and management of public assets by private contractors and other parties, and c) of maintaining existing infrastructure. To minimize the political nature of the adjustment process, the Government may consider creation of a stakeholder commission – specifically appointed by the Prime Minister and comprising representatives from the public and private

sector - to address the infrastructure issues and to create a more effective political process to address these long-standing problems.

## **6.2 SHORT-TERM PROGRAM 1: A CONTROLLED REDUCTION OF SMALL-SCALE FISHERIES AND IMPROVED MANAGEMENT OF SEMI-INDUSTRIAL FISHERIES**

This program would aim to reduce the risks in the small-scale and semi-industrial fisheries by a combination of a reduction of the total number of fishermen and boats, improve the potential earning power of those that stay, and by an enhanced resources management regime. It would include steps to tighten registration of all fishermen combined with strong limits on new entrants, and a temporary program to provide fishermen with incremental income and incentives to leave the sector. This would include actions to enable fishermen to effectively prepare for and actually engage in other jobs. The program would also include activities to improve fisheries extension - develop and test new fishing technologies -, create an effective financial intermediation system for future improvement and replacement of the fleet, strengthen vocational training and education of fishermen and their families, and effectively operate existing shore based infrastructure in fishing villages.

### ***6.2.1 Improve research on and management of local fish resources and the marine environment***

**Objectives and description:** The objective of this strategy component would be to provide a stronger scientific basis for future resources management action, to define new management regulations, future research programs to evaluate and adjust regulations, and to define and implement monitoring, surveillance and control measures to effectively implement these regulations.

**Implementation:** This component would re-assess the current status of demersal, lobster, small-pelagic and large pelagic resources in Cape Verde, but particularly in local areas with the highest fishermen densities. The purpose of the analysis would be to define those areas and stocks that require management, and to define – in close cooperation with the fishermen associations in those areas – local management and MCS programs to regulate and protect these resources. This program would expand and define in more detail the broad management measures defined in the existing fish resources management plan for 2005/2006, and take into account the programs currently being prepared to establish marine parks and protected areas in selected locations in the archipelago. For each of the next 5 years it would guide the preparation of updated annual fisheries management plans consisting of an evaluation of the impact of previous plans and the additional measures recommended to further improve management effectiveness. Each plan would particularly define or review the likely scale of future small-scale and semi-industrial catches of small-pelagics, including the longer-term average number of semi-industrial purse-seine licenses, future measures to control and monitor small-scale surface and industrial deep-sea lobster fishing, and local measures to control demersal fish catches. In addition, the program would assess the status of deep swimming tuna stocks and billfish/shark stocks, and evaluate regional tuna management measures into local plans. The program would establish procedures and lines of responsibility

for local fishermen associations to participate in MCS activities coordinated and in cooperation with the MITS unit responsible for MCS.

**Institutional responsibility:** The program would be managed by a short-term, part-time *resources management team* – to be created by MITS, in close cooperation with INDP, with local and foreign team members - responsible directly to the Director General of Fisheries and the Minister of Transport. The team would for a period of up-to 5 years define research requirements and programs necessary for marine resources management, including requirements and actual activities to establish and maintain effective local monitoring and control. Actual research would be executed under contract to MITS by INDP, possibly with some external technical and financial assistance from a research establishment with extensive experience in small-scale fisheries management design. Actual monitoring and control would over time be executed by fishermen associations in cooperation with the MCS unit<sup>58</sup> in MITS. Following the 5-year period, the functioning of the resources management team may be evaluated, and the team may either be disbanded, maintained, or transformed into a research board for INDP.

**Table 6.1: Estimated annual funding requirements, research and resources management component (five years).**

<b>Sub-component</b>	<b>Average Annual Costs US\$(‘000)</b>
Resources management team	25
Targeted local scientific research	150
Support for the design and implementation of annual management plans (max: 20)	100
Incremental MCS (local only)	100
Total	375

### **6.2.2 Incremental support program**

**Objective(s):** This program would aim to provide immediate temporary income to members of fishermen associations that: (i) actively engage in (re-) training activities aimed at leaving the sector and (ii) receive training to strengthen fisheries associations or perform ‘service ‘ functions to be executed by fishermen associations during the sector-restructuring period.

**Implementation:** The program would serve several purposes. It would: a) provide a strong incentive to join fishermen associations, b) provide increasing incentives to volunteer for redeployment from fisheries, and c) provide strong incentives for those who stay as fishermen to participate in many of the potential future activities of the association.

<sup>58</sup> Such a unit does not exist at present, but its creation is proposed by the FMP.

FEDS, INDP and FDP would review where new associations would be required and initiate the process to establish or strengthen fisheries associations in those areas. Fishermen will be provided with the option to become a member of a local fishermen association.

Fishermen expressing the wish to leave the sector would be allowed to select from a series of retraining programs, offered by ISECMAR, INDP and NGOs, to prepare for a new career, would be offered support in their job-search and receive a nominal income during retraining and a specified, limited period of job-search (see section 6.2.3).

A parallel scheme would financially support fishermen associations. These funds – originating from several sources - would be used to support the association’s activities, and could pay its members for performing specific tasks: managers, bookkeepers, members performing MCS functions, members supporting collection of statistics and research data, members assisting with the maintenance and operation of the ice plant, engine repair shop and fishing gear store management, members supporting local education, members performing maintenance of existing local infrastructure – fish landing place, buildings etc. The program would provide annual budget support to functioning fishermen associations, which would pay members directly for services performed. Over time, associations would be asked to assume more direct responsibility for a part of their budget by charging members for specific services from ice to kindergarten services. This program would operate as a permanent, critical, component of the institutional decentralization program.

**Institutional responsibility:** The program would be supervised jointly by MITS, the Ministry of Finance and Planning and the Ministry of Social Affairs. It would be managed by the FEDS, in cooperation with ISECMAR and INDP. All financial aspects would be handled by FDP, which would be responsible for payment of member fees, and budget support payments to fishermen associations. FEDS would also be the channel to move funds from other institutions – for example from the Fisheries Asset Board for infrastructure maintenance – to associations.

**Table 6.2: Estimated annual funding requirements supplemental income program (five years).**

Sub-component	Annual Costs US\$('000)				
	Year	1	2	3	4
Fishermen registration	50	50	50	50	50
Payments to fishermen <sup>59</sup>	60	120	240	480	720
<b>Total</b>	<b>110</b>	<b>170</b>	<b>290</b>	<b>530</b>	<b>770</b>

### *6.2.3 Vocational training, education and job placement*

**Objective:** To assist fishermen and family members in preparing for and finding better paying employment outside the fishing sector.

**Implementation:** This program would be voluntary, and provide fishermen boat owners willing to leave the industry and their crew with a training package, income support and assistance in finding jobs in exchange for withdrawing of their boat from the fishery. In total the program would aim at providing publicly supported training to a maximum of 2000 fishermen and their families over 5 years. It would particularly focus on younger fishermen (< 30 years old) boat owners, their crew, their wives and their children. The program would provide these volunteer fishermen with a free vocational training for themselves and their wives, and provide primary and secondary education for their children.

The program would be designed by ISECMAR in cooperation with the Ministry of Education and FEDS, and would be linked to existing NGO training programs and one (or more) private job placement bureau(x). Volunteers and their families would be interviewed and tested, and each would receive recommendations for training and education. Volunteers would keep their fishermen association fee payments for the entire 5 year period when withdrawing from the fishery.

ISECMAR, FEDS, NGOs and the private placement bureau would be financially supported to execute the program, conduct interviews and tests, design new courses, expand training capacity and expand its administrative staff to handle some 400 - 600 trainees annually. ISECMAR would aim to create as many local courses as possible, and explore on-line training opportunities, to minimize the need to temporarily move and house fishermen and their families.

In cooperation with the Ministry of Education, ISECMAR would support or organize the education and possible vocational training of fishermen children's including primary and

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<sup>59</sup> This budget example assumes a registered fishermen population of 4000, of which 30% would receive payments for non-fishing activities performed for the fisheries associations, and an average first year payment of \$600 – with \$60 000 administrative expenses.

secondary education. The program would use existing schools and would provide financial assistance to particularly needy families to enable their children to finish their education.

The employment support program would hire one or more private job placement agencies to handle job placement and to define particularly promising areas for future training.

A similar training program would also be offered to female fishmongers desiring to leave the business, or willing to improve their trade.

**Institutional responsibility.** The program would be supervised by the Ministry of Education, and implemented by FEDS and ISECMAR.

**Table 6.3: Estimated annual funding requirements, training, education and job placement program (five years).**

Sub-component	Annual Costs US\$('000)					
	Year	1	2	3	4	5
Income support to trainees <sup>60</sup>		480	480	480	480	480
Program design + implementation		50	50	50	50	50
Vocational training <sup>61</sup>		800	800	800	800	800
Primary and secondary education, incremental costs <sup>62</sup>		600	600	600	600	600
Job placement, administrative costs		200	200	200	200	200
<b>Total</b>		<b>2130</b>	<b>2130</b>	<b>2130</b>	<b>2130</b>	<b>2130</b>

#### **6.2.4 Fisheries extension and technology development and testing**

**Objective:** provide effective management and organization support to all fishermen associations in the country, and to organize the design and testing of new fisheries technologies and boat designs.

**Implementation:** A modest program currently exists to support the operation of fishermen associations, organized by INDP and private NGOs. The new program would extend current efforts to all islands, and create new associations in those areas where they do not yet exist. In those areas that probably will be unable to support any substantial small-scale fisheries in the future, the association may cover more than one village or coastal area, and may even include several islands (S. Lucia?).

<sup>60</sup> Assuming training courses for 400 fishermen per year would last 6 months, and income support would be \$200 per month.

<sup>61</sup> This budget example assumes 400 fishermen and their dependents taking a vocational course of 6 months at an average cost of \$2000 per course.

<sup>62</sup> Assuming 400 children attending secondary school at an incremental cost of \$1500 per child.

The program would be based on proven training practices developed in Cape Verde and other countries. It would particularly focus on providing management assistance and training to the association management teams. It would also include a regular training program for association staff, the creation and operation of an electronic network between all associations, FEDS and NGOs involved, and the creation of a national association ‘board’.

As discussed above, the role of the associations would far exceed that of an ‘extension’ vehicle. Associations membership would provide the platform to organize local fisheries management and fleet reduction, local MCS activities, local data collection for fisheries research, existing infrastructure maintenance and management, micro-credit activities, local training and education, and improvement of fish quality, fish marketing and landed fish prices.

FEDS and/or NGOs would involve local and foreign boat builders and gear specialists to design and test new small-scale and semi-industrial boats and related gear. The program would specifically aim at testing multi-purpose boats that are fuel efficient, highly seaworthy, with relatively low building costs that have a proven track record catching tuna and small-pelagics in other parts of the world. In view of the potentially large number of future activities, each association should have a minimum number of members, not only at present, but particularly after the number of fishermen has been reduced following training for other vocations.

**Institutional Responsibility:** The program would be supervised by MITS and would be jointly designed and executed by FEDS, FDP and private NGOs experienced in the creation, management and operations of fishermen associations, the protection of marine parks, and the management of micro-credit operations.

**Table 6.4: Estimated annual funding requirements fisheries extension and technology development program (five years).**

Sub-component	Annual Costs US\$('000)					
	Year	1	2	3	4	5
Management support to fishermen associations (incremental staff costs of FEDS)		80	80	80	80	80
Fishing boat and gear technology development and testing		150	150	150		
Financial support to Associations <sup>63</sup>		200	200	200	200	200
<b>Total</b>		<b>430</b>	<b>430</b>	<b>430</b>	<b>430</b>	<b>430</b>

<sup>63</sup> This budget example assumes a maximum of 20 associations would receive \$10 000 in financial support to effectively operate.

### **6.2.5 Development of sound financial intermediation**

**Objective:** enable fishermen to borrow at reasonable costs for seasonal operational expenditures and capital investment.

**Implementation:** *To follow recommendations of the completed FDP evaluation report.*

**Institutional Responsibility:**

### **6.2.6 Infrastructure management, maintenance and funding**

**Objective:** (cost) effectively maintain and manage existing infrastructure supporting small-scale and (semi-) industrial fisheries.

**Implementation:** Following an evaluation of the future, long-term, role of all existing coastal infrastructure facilities supporting fisheries, including ‘productive ‘ facilities like ice plants and cold storages, a temporary commission hosted by MITS – and possibly appointed by the office of the Prime Minister - comprising engineers, fisheries specialists, commercial plant managers, fishermen representatives, port managers and representatives of the Ministries of Planning and Finance would develop a strategy framework to address the current issues affecting fisheries infrastructure, The commission would recommend which facilities are likely to provide tangible future benefits to the sector, and assess their current and future maintenance requirements. Similarly, existing port and fish landing facilities servicing the (semi-) industrial fleet would be assessed for future use, maintenance requirements and benefits. Finally, the commission would estimate future infrastructure requirements, and assess priorities for construction and their economic viability.

The commission would evaluate which institutions should preferably manage existing and future infrastructure facilities, review the benefits and costs of continued public ownership or alternative ownership arrangements, such as public/private partnerships. The commission would also define long-term maintenance requirements and suggest how these could be most effectively satisfied, including current arrangements of the recently established fishing port commissions and/or the “*Capitania*” of the commercial ports concerned for maintenance of the quays, jetties, breakwaters and possibly for shore based publicly owned and run ice plants and buildings concerned.

Funding of future maintenance may originate from five sources:

- Income from lease contracts of publicly owned fish processing facilities
- Financial compensation of foreign fisheries agreements,
- Funding from a temporary fisheries infrastructure budget, possibly supported by foreign donors,
- Public budget support, and
- Maintenance charges collected by fishing port commissions and fisheries associations from users.

The initial costs and allocation between funding sources will depend on the number of facilities concerned and the total costs of routine and major maintenance and replacement requirements<sup>64</sup>, to be defined by the commission.

**Institutional responsibility:** The program would be managed by MITS, in coordination with the Ministries of Finance and Planning.

**Table 6.5: Estimated annual funding requirements fisheries infrastructure restructuring, management and maintenance (five years).**

<b>Sub-component</b>	<b>Annual Costs US\$('000)</b>				
<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Temporary commission	50				
Maintenance fish landing facilities serving small-scale fisheries <sup>65</sup>	400	400	400	400	400
Maintenance fishing port facilities serving small-scale and (semi-) industrial fisheries <sup>66</sup>	1200	1200	1200	1200	1200
Ice plant subsidies	10	10	10	10	10
Implementation restructuring program	50	50	50	50	50
<b>Total</b>	<b>1790</b>	<b>1660</b>	<b>1660</b>	<b>1660</b>	<b>1660</b>

### **6.3 SHORT-TERM PROGRAM 2: PREPARATION FOR DEVELOPMENT OF INDUSTRIAL FISHERIES BASED ON MARKET FORCES**

The principle underlying this strategy component is that all (semi-) industrial fisheries – boats over 8 meter involved mainly in small-pelagics and tuna fishing – and particularly the recently created tuna pole-and –line industrial fishing fleet should be able to operate without direct public support in the future. If such commercial operation proves technically or commercially not feasible, the fishery should be closed and other avenues to obtain the product should be explored.

However, this does not mean that industrial fisheries could or should not benefit from some short-term assistance and cooperation with the public sector. The currently existing industrial fishing fleet may benefit from fisheries agreements negotiated with neighboring countries, or from commercial cooperation arrangements that may be supported through international fisheries agreements. The newly constructed industrial pole and line fleet financed by the AfDB will require experienced commercial fleet management and access to foreign EEZs to test their commercial viability realistically.

<sup>64</sup> Most infrastructure facilities in coastal areas annually require between 3% and 5% of initial investment costs for proper maintenance; equipment (ice plants etc) may annually require 10% of investment costs for routine maintenance and replacement of parts.

<sup>65</sup> This assumes total infrastructure investment costs of \$20 million, and maintenance costs of 2% annually.

<sup>66</sup> This assumes total infrastructure investment costs of \$40 million, and maintenance costs of 3% annually.

### **6.3.1 Commercial development support; existing productive infrastructure and fleet**

**Background:** At present private parties manage part of the publicly owned fish-processing infrastructure, another part has been truly privatized. At least one cold storage (Covo Ingles) and ice plant in Mindelo is still owned and operated by the public sector. Some ice production facilities are managed by fishing port commissions. A number of ice plants located in 26 coastal locations – including ice storage and chilled fish storage facilities – are currently managed by local associations, others are no longer functioning. The country has a newly constructed fleet of industrial pole and line vessels that currently operate in cooperation with an Angolan company.

**Objective:** Ensure optimal future benefits from existing productive infrastructure and vessels, and their effective commercial operation.

**Implementation:** The commercial development support program would be a temporary program (2-3 years maximum) that would aim at providing the Government and entrepreneurs in Cape Verde access to technical advice, commercial intelligence and assistance in structuring and negotiating commercial cooperation and/or management contracts. The program would support the testing of the commercial viability of the newly constructed industrial pole-and-line fleet and arrangements that would allow Cape Verde to effectively participate in existing foreign tuna fisheries in the region. It would support the Government in integrating local sector objectives and commercial activities as integral parts of foreign fisheries agreements. This may cover three areas of activity: a) commercial cooperation between Cape Verde and foreign companies to manage vessels of the existing tuna pole and line fleet, b) Cape Verde participation in ongoing and future tuna fishing activities by foreign companies, and c) on-the-job and management training of Cape Verde commercial managers.

Funded by external donors, the program would provide access to senior or retired managers from commercial foreign fishing and processing companies as well as sector technicians to assist the Government in making arrangements to properly manage or dispose of public industrial fishing assets.

The program would provide the government access to inside information from senior decision makers in the industry how to test commercial arrangements that would optimally utilize existing public assets, notably the tuna fleet. It would particularly aim at locating foreign interests that could act as foreign partners in joint activities, and providing advice and support to Cape Verde interests in commercial negotiations. They could also support the preparation for negotiations of foreign fisheries agreements that would include and support commercial cooperation between local and foreign entrepreneurs (see section 6.3.2). Finally, the program would provide financial support to managers of Cape Verde companies to improve their skills in managing a large industrial tuna fleet.

**Institutional responsibility** for this component would rest with MITS and the Ministry of Finance and Planning; the program would be executed by MITS.

**Table 6.6: Estimated annual funding requirements commercial development support (two years).**

Sub-component	Annual Costs US\$('000)	
	Year 1	Year 2
Technical assistance	200	100
Administration and training	75	75
<b>Total</b>	<b>275</b>	<b>175</b>

### 6.3.2 Strengthening of MCS (EEZ)

In the long term, sustainable local and foreign exploitation of fish stocks in the large EEZ of Cape Verde is not possible without effective MCS. MCS is expensive; it requires airtime of spotter planes, follow-up at sea, monitoring foreign fleets through a satellite vessel monitoring system, and an expensive organization. The benefits of such efforts vary; successful MCS usually leads to a drop-off of infringements, as the word gets around that country X is improving its MCS system. Ideally the MCS system budget should be entirely funded from fines<sup>67</sup>. In practice most countries aim for a balance between minimizing public contributions to MCS costs while maintaining a credible threat against illicit fishing. The program may be developed in cooperation with the CSR, notably the IDA and GEF supported regional fisheries project currently being prepared.

**Objective:** strengthen MCS to provide credible deterrence against illicit fishing.

**Implementation:** This component would provide technical and financial support to the existing MCS program to ensure its future credibility.

**Institutional responsibility:** MITS, in cooperation with the Coast Guard.

**Table 6.7: Estimated annual funding requirements to improve MCS program (five years).**

Sub-component	Annual Costs US\$('000)				
	Year 1	Year 2	Year 3	Year 4	Year 5
Technical assistance	50	50	25	25	25
Surveillance operating costs, EEZ	150	150	150	150	150
Incremental costs of persecuting offenders	20	20	20	20	20
<b>Total</b>	<b>220</b>	<b>220</b>	<b>220</b>	<b>220</b>	<b>220</b>

## 6.4 LONG-TERM PROGRAM 1: INSTITUTIONAL STRENGTHENING AND IMPROVEMENT

Once the short-term restructuring of the fishing sector has been completed, the main aim of the long-term strategy is to assure that the key objectives of the strategy – ecological management, poverty reduction, institutional effectiveness, and financial sustainability - will

<sup>67</sup> Fines in many countries appear low compared to the value of the catch of the offending vessel, and could well be substantially increased.

be further pursued. This requires a sector governance system that is able to effectively collect and analyze research data, create and implement resources management plans, enable technological development, control the EEZ, provide regulatory support for commercial development, and maintain and operate the country's stock of sector infrastructure, all at a minimum cost to the treasury.

Given the modest size of the fishery, and the high costs of maintaining separate institutions, the long-term strategy would aim at consolidating existing and newly created institutions, and decentralize services needed at the local level as much as is practically feasible. In designing the ultimate organogram of institutions, the following aspects may be taken into consideration:

- *Lines of control:* MITS and the Ministry of Finance and Planning should be able to effectively monitor and evaluate activities in the sector and provide broad directions to the resulting institutional set-up;
- *Limit bureaucratic regulations:* Fisheries sector management, research, supporting fishermen associations and infrastructure management involve activities that usually are not within the normal work patterns of ministries. Hence, the institutional set-up should be able to operate with a minimum of bureaucratic regulation;
- *Decentralization:* Most activities concerning fisheries management, MCS, research and infrastructure management should ideally over time be transferred to the local level; and
- *Financial transparency:* Financial sustainability is going to be a critical long-term factor for the sector. A number of independent sources of funding may well support sector governance in the future; the institutional structure should be responsive to cost effectiveness considerations and include funding of activities carried out at the local level.

Although this report will not suggest a 'final' structure for fisheries institutions – the process of decentralization should reflect the speed with which local capacity of the fishermen associations can be increased - it is recommended that the government consider consolidation of several sector support activities under a single institutional umbrella supporting fisheries 'service' activities at the local level. These activities may include: a) all activities supporting the management and operations of fisheries associations, b) all fisheries extension and technical development activities – currently under INDP -, c) all local aspects of the design and implementation of fisheries management plans, including supporting research and data collection, and d) local micro-credit and other activities of FDP.

The role of INDP may evolve over time; steps have been taken to involve INDP in regional oceanographic research efforts, and expand its capacity to provide higher education and training. While INDP should continue to provide scientific advice concerning key fish stocks and resources management measures, its future may evolve towards several core functions: a) local scientific research, including economic analysis, b) international research supporting regional assessments for tuna and oceanographic research – funded externally – and c) local academic education. INDP has already been linked to ISECMAR as part of its transformation into a larger academic institution.

The role of MITS may also evolve over time. During the first five years of the strategy it may particularly focus on restructuring the sector, reducing fishing efforts, enabling existing infrastructure and industrial vessels to operate more effectively, and creating and supporting a new institutional framework. Following restructuring its role may change, with more emphasis on evaluation of the performance of sector institutions for which it is responsible, MCS, financial planning and management, and negotiating and evaluating international fisheries agreements.

## **6.5 LONG-TERM PROGRAM 2: LONG-TERM MARINE ENVIRONMENTAL MANAGEMENT.**

The marine ecosystems in Cape Verde play a major role in the health and functioning of the coastal and marine environment, which in turn affects the livelihood of the people who depend on the environment, such as fishermen, local fish consumers and tourism workers. Over-exploitation of fish resources and loss of bio-diversity are the major risks affecting the marine environment. The Government, with assistance from WWF, has prepared a bold program for national parks and protected areas, including marine protected areas (MPAs). Some of these MPAs would include areas currently being exploited by various fisheries.

Marine management areas of various types have traditionally been used in many countries to maintain fish stocks and their associated habitats. Habitat reserves limit fishing to those activities that do not affect the surrounding habitat; other types of fishery management limit fisheries to certain areas, gear, species or season. The future system may therefore include: a) fully protected MPAs or zones, where no fishing will be allowed, b) multiple use MPAs that do allow limited fishing and tourist activities, and c) all other areas along the coast, the managed fishing areas.

At the national scale, the system would integrate all of these elements and link them to a broader coastal zone management plan and the management of the EEZ.

The long-term strategy suggests that the entire EEZ would be under some form of rational management, enforced through a national MCS program. At the local level, fishery associations may be involved in designing and implementing local fisheries management plans, and in areas with MPAs, be involved in surveillance, control and enforcement of fisheries regulations and activities.

To arrive at a rational management of the fish stocks in the EEZ will require research and adaptation to commercial realities. At present we know too little about the EEZ and coastal waters, but it would be hubris to presume all the information is currently available, which is needed to design a management system that captures all the ecological and local imperatives. The parameters for effective commercial exploitation of tuna, small-pelagic and demersal fish resources are uncertain, and so is the future size of and technology employed by small-scale fisheries. Hence, future resources management will require a continuing process of evaluation, review of new research data, and knowledge management of the commercial and financial aspects of the fisheries to generate the necessary information for sound decision-making. That decision-making should be largely at the local level, although decisions should be vetted nationally for internal consistency.

This implies that future environmental management and fish resources management be integrated at the local level, and that the entire process of designing and implementing management plans will take place through an integrated process of consultation at the local level linked to design and evaluation activities at the national level.

The institutional implications of such process are simple: local fishermen associations should be an integral part of the national environmental management activities. Fisheries management plans – local and national - should be evaluated at the national level for their compatibility with environmental plans.

## 6.6 FINANCIAL IMPLICATIONS

Each of the short-term programs suggested as part of the sector strategy included incremental budget cost estimates that are summarized in Table 6.8 below. These estimates are based on assumptions that would optimally implement to component objectives, disregarding funding constraints. If during implementation different assumptions would be adopted – for example, reducing the direct income support program by 50%, first year expenditure for that component alone would be reduced by \$1.75 million. Similarly, a reduction in the average costs of vocational training and education programs by 50% would reduce the overall costs of this component by \$ 0.7 million.

Hence the following table is not meant to define the absolute costs of the strategy – versus another strategy. Instead, it is meant to provide an order of magnitude of the total costs involved, and to indicate the relative costs of the main components of the strategy.

**Table 6.8: Summary of estimated costs of implementation of risk reduction sector strategy (first six years).**

Sub-component	Annual Costs US\$('000)						
	Year	(1)	(2)	(3)	(4)	(5)	(6)
Research and resources management component		375	375	375	375	375	300
Supplemental income program		<b>110</b>	<b>170</b>	<b>290</b>	<b>530</b>	<b>770</b>	0
Training, education and job-placement program		<b>2130</b>	<b>2130</b>	<b>2130</b>	<b>2130</b>	<b>2130</b>	300
Fishery extension and technology development		430	430	430	430	430	180
Fisheries infrastructure management and maintenance		1790	1660	1660	1660	1660	1650
Commercial development support		275	175	0	0	0	0
MCS support		220	220	220	220	220	220
<b>Total</b>		<b>5330</b>	<b>5160</b>	<b>5105</b>	<b>5345</b>	<b>5585</b>	<b>2650</b>

The most important figures actually concern the possible estimated costs of implementing the strategy following the first reconstruction period. These costs would decline to some \$ 2.6 million, of which over half would be needed for maintenance of existing infrastructure.

## **7. Conclusion**

The government and foreign donors, in past and ongoing attempts to achieve full exploitation of the assumed potential of domestic fish resources, have pursued and implemented solutions based on high (public and private) costs and risky assumptions; many of these solutions did not fully achieve their objectives.

This report suggests that a combination of short-term actions is needed to create a sector – using gradually decreasing public and donor funding - that would provide: a) fishermen and other stakeholders a long-term sustainable source of raw material, b) equitable income growth and employment prospects, and c) provide the country with a dependable source of protein for human consumption.

Management of fish resources should be based on more consistently applying the precautionary principle, reducing, or at least postponing fishing effort expansion until the existence of sufficient and/or additional fish resources are proven. Under current policies the risks appear too high of over-exploiting specific resources, and creating insufficient value added to alleviate poverty and maintain acceptable levels of household income.

To achieve sustainable resource exploitation and equitable income levels, the short-term strategy would aim at an overall reduction of fishing effort of small-scale fisheries and of the number of small-scale fishermen. Income levels would be supported by a temporary support scheme, providing incentives for fishermen to leave the industry. The future level of local and foreign commercial industrial fishing would be dependent upon the productivity of proven fish resources, the allocation of allowable catches (for regional tuna resources) to Cape Verde flag vessels and on the proven commercial viability of the domestic fleet.

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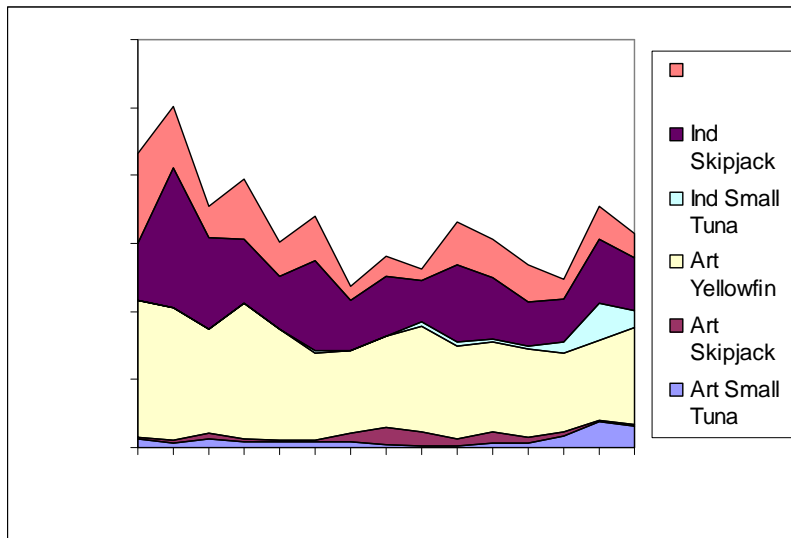
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## Annex A. Tuna Fisheries in Cape Verde and Surrounding Waters

### NATIONAL FISHERIES

Tuna fisheries in Cape Verde are dominated by the fisheries for yellowfin tuna using line gears in both the artisanal and industrial fleet (Figure A.1). The predominant gear is handline, but there are small catches using trolling and longline gears. Catches of bigeye tuna and various billfish are almost negligible and have not been included in the figure below. Interestingly, the catches of small tuna (*Auxis* and *Euthynnus* spp.) have increased in recent years, which are caught by both the artisanal and industrial fleet using purse seine. Except for these higher catches of small tuna, total tuna catches show a clear downward trend over the last 15 years.

Figure A.1: Catches of tuna by the artisanal and industrial fleet in Cape Verde.



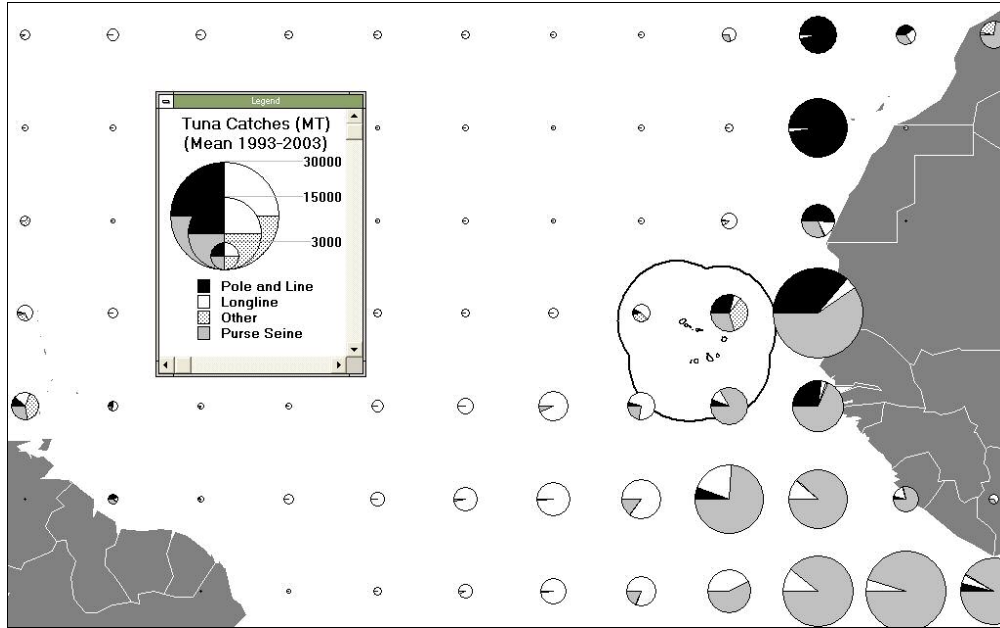
m vessels has now changed the characteristics of this rather heterogeneous industrial fleet. These new vessels are essentially pole and line vessels, but they have not yet started to operate fully.

## **FOREIGN FISHERIES**

In the Atlantic, a substantial proportion of the total tuna catches are taken in the Eastern Central Atlantic. This is even more evident when considering surface gears such as purse seine and bait boat (pole and line is another term for bait boat). In the case of skipjack tuna, these two surface gears account for most of the catch, while they account for about 80 percent of yellowfin tuna catches. Pole and line is an important gear in near-shores areas only, including the Macaronesian Islands (Azores, Canary Islands, Cape Verde, Madeira). In Cape Verde, there is a peculiarity in that a large proportion of the yellowfin catches are taken by handline gears (classified as other gear in Figure A.2).

It is important to point out that the Cape Verde Archipelago appears to be outside, or on the outer limits of, the richer fishing grounds off the northwest African continent and the equator (Figure A.2). In the case of the industrial longline fishery, substantial catches are taken closer to the equator, south and southwest of Cape Verde. In the case of the industrial purse seine fishery, a major proportion of the catches are taken in the areas closer to the African mainland and south of Cape Verde (Figure A.2 & A.3).

**Figure A.2: Tuna catches by gear in the area around the Cape Verde Islands. Catch data is presented as average catch by 5 x 5 degree square for the period 1993 to 2003. Pie chart sizes have been scaled using square root.**



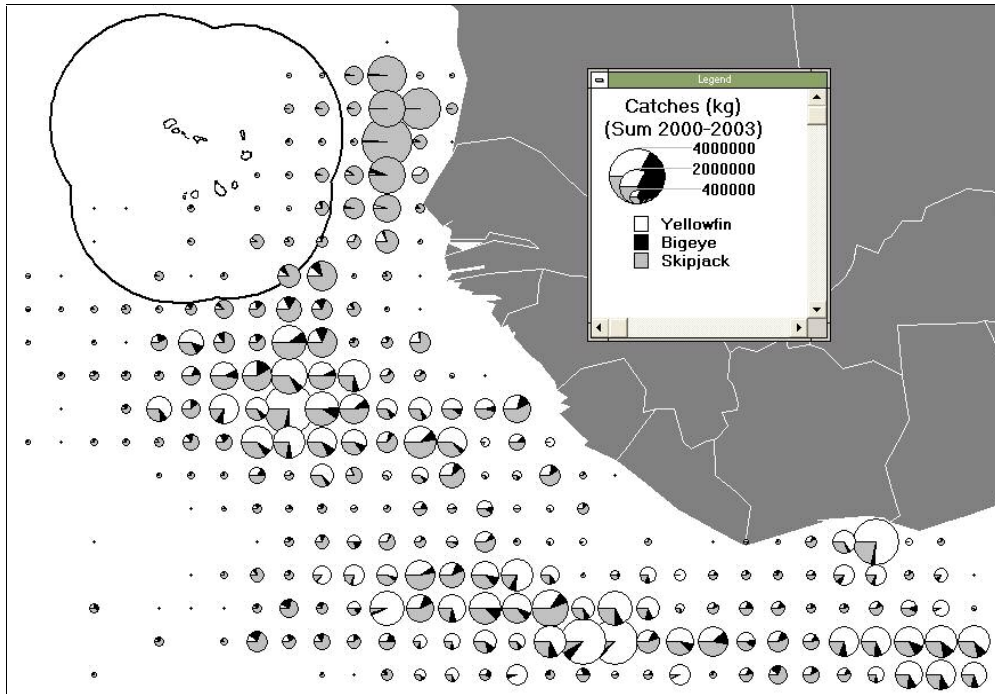
Source: ICCAT ([www.iccat.es](http://www.iccat.es))

Tuna fishing potential in the Cape Verde EEZ has been assessed several times over the years, ranging from around 25 to 35 thousand tons per year for all species combined and including both coastal and offshore waters. In contrast, national tuna catches (and catch rates) have been decreasing steadily from 5 to 3 thousand tons over the last decade, which does not conform to the notion of a vast unexploited tuna potential. Of course, the potential for expanding the national fishery will depend on how much is being caught by the foreign fleet in the Cape Verde EEZ. The only independent estimate on the activity of foreign vessels in the Cape Verde refers to the period from 1992 to 1995, indicating a total catch of about 3,000 tons<sup>68</sup>. Also, the latest assessment of tuna potential considered the foreign catches taken in the area up until 1993, but without indicating the proportion taken within the EEZ<sup>69</sup>.

<sup>68</sup> Hoogesteger 1997 in FMP 2005

<sup>69</sup> Hallier 1999

Figure A.3: Catches of the Spanish purse seine fleet in the Cape Verde area and surrounding waters. Data is presented as the sum of catches by 1 x 1 degree square for the period 2000 to 2003. Pie chart sizes have been scaled using square root.



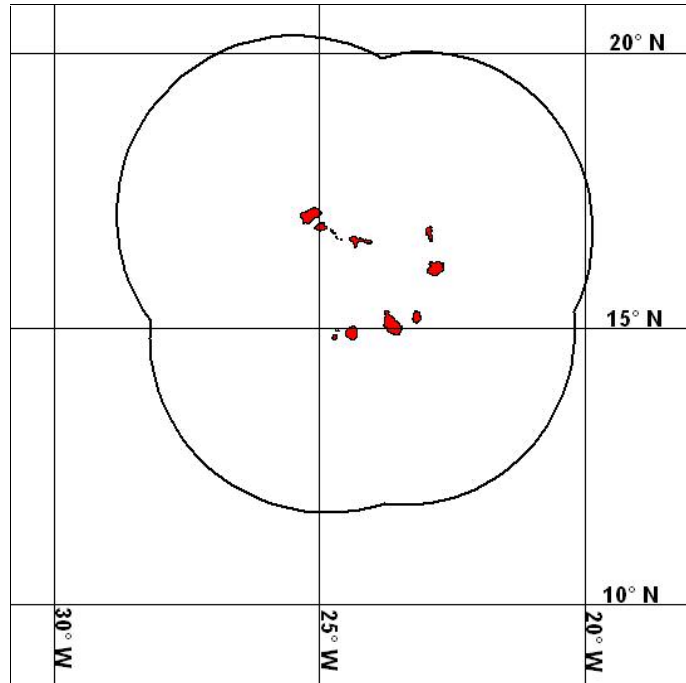
Source: ICCAT ([www.iccat.es](http://www.iccat.es))

This issue on tuna fishery potential in Cape Verde is of utmost importance for a future strategy on fisheries and an update on foreign activity is essential. Is there a relatively vast unexploited tuna potential of around 20,000 tons that may be of strategic importance for Cape Verde? Considering the highly dynamic nature of these industrial fisheries for tuna, what is the current level of catches of the foreign fleets in Cape Verde waters? Using publicly available data from ICCAT, it is possible to get an idea of the magnitude of these foreign fisheries, but we do not presume to give a precise estimate, as this is in itself a fairly comprehensive study.

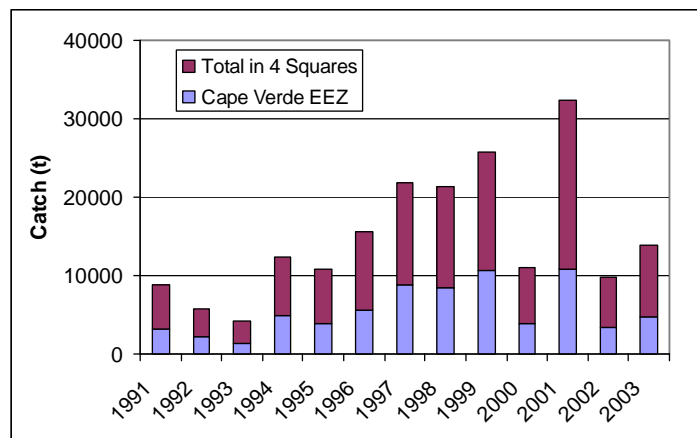
ICCAT provides total catch data by 5 x 5 degree square and the Cape Verde EEZ concerns four of these squares primarily; 10°-20°N and 20°-30°W (Figure A.4). The procedure used was to estimate the area proportion of each of these four squares that is part of the EEZ and assume that catches in each of these squares are homogenously distributed. Catches are not homogenously distributed as the previous maps have shown, where catches (and catch rates) tend to be higher towards the south. However, we attempt to give an idea of the magnitude of the fishery and not accurate estimates.

Using this approach, estimates of tuna catches by foreign vessels in the Cape Verde EEZ have been increasing to about 10,000 tons, although these tend to be very variable in recent years (Figure A.5). This increase has been due to surface gears such as purse seine, by Spanish and French vessels mainly, and pole and line, by Senegalese and French vessels mainly (Figure A.6).

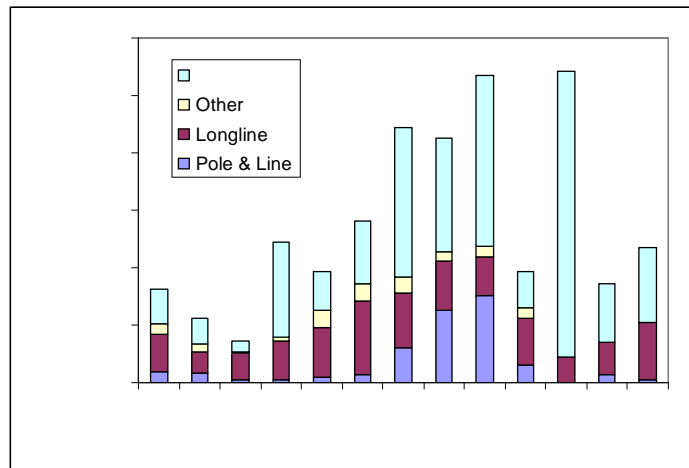
**Figure A.4: Study area considered, showing an approximation of the EEZ limits and the coordinates of the four 5 x 5 degree squares that encompass most of the EEZ.**



**Figure A.5: Total foreign tuna catches, including tuna and tuna-like species, in the four squares specified in Figure A.4 and the estimated proportion taken within the Cape Verde EEZ.**



**Figure A.6: Estimated catches by gear taken by foreign vessels in the Cape Verde EEZ.**



Skipjack tuna dominates the catches of surface gear with smaller quantities of yellowfin and bigeye tuna. Most of the purse seine catches are taken in the 2<sup>nd</sup> quarter of the year, while the pole and line fishing season extends over the 3<sup>rd</sup> and 4<sup>th</sup> quarter. Longline catches are dominated by bigeye tuna taken by Japanese and Chinese (Taipei) vessels primarily and a large proportion of the catches are taken in the 1<sup>st</sup> quarter of the year. However, some Spanish and Chinese vessels deploy surface longlines targeting swordfish primarily as well as blue marlin and sailfish to a lesser extent<sup>70</sup>.

The number of licenses issued to foreign vessels has also been increasing. For example, 50 licenses were issued in 1997 and 106 in 2002 (but only 24 licenses in 2000)<sup>71</sup>. Reported catches have typically been around 1,000 tons or below during the past decade. Only about 10% of the licensed vessels report their catches, which has led to the general belief that the available catch estimates are unreliable. There appears to be no doubt that this is true, as shown above. Furthermore, illegal fishing is presumed to take place. Thus, it appears that foreign vessels are in fact exploiting a much more substantial part of the tuna potential in the Cape Verde EEZ.

Concerning the state of exploration of the main species, skipjack, yellowfin and bigeye tuna, these have been the subject of regular assessments by ICCAT<sup>72</sup>. This has involved various stock assessment models or indicators when the data quality is not adequate for modelling purposes. Regarding yellowfin and bigeye, the results vary depending on the model used, but these are more or less consistent in showing a fully exploited or moderately over-exploited stock in the Atlantic Ocean. CPUE shows clear decreasing trends for all species, but a critical level has not been defined for skipjack as yet. A similar trend of decreasing catches and CPUE has been observed in all of the Macaronesian Islands including Cape Verde<sup>73</sup>.

<sup>70</sup> Catches of about 500 tons in recent years in the area around Cape Verde (four 5x5 degree squares).

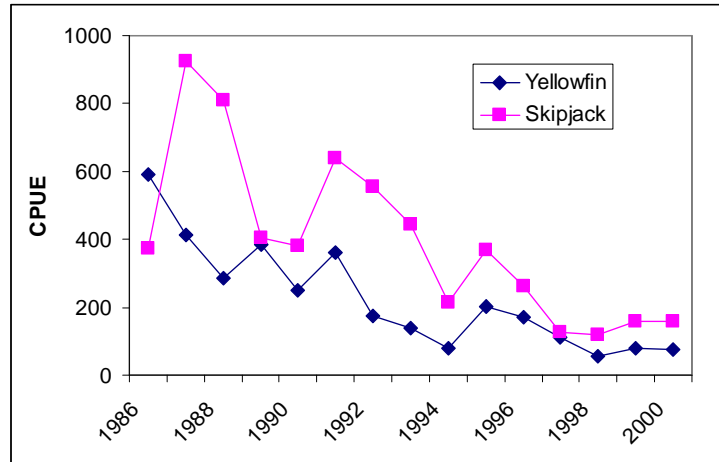
<sup>71</sup> FMP 2005

<sup>72</sup> ICCAT 2004

<sup>73</sup> Bouwsma 2003;

Concluding, the major tuna species such as skipjack, yellowfin, and bigeye tuna are under heavy fishing pressure in the Atlantic including Cape Verde. The available data on tuna catch rates in Cape Verde can not be considered good estimates of relative abundance (highly aggregated and non-specific effort), but these show an undeniable trend of strong decrease (Figure A.7). Thus, estimates of large unexploited tuna potential tuna ( $\approx 20,000 - 30,000$  tons) are highly unlikely. Another important issue is the influence of oceanographic and environmental factors (front systems, current displacements, temperatures, upwelling, etc.) that probably have a strong effect on the level of available resource each year. If ICCAT general recommendations were to be followed for these major tuna species, there is not much room for expanding national tuna fisheries in Cape Verde unless foreign fisheries are restricted. On the other hand, Cape Verde has an allocation of 25,000 tons within ICCAT<sup>74</sup> based on these previous assessments of tuna potential, which gives the country a good negotiating position.

**Figure A.7: Catch per unit of effort (CPUE: kg per fishing day) in the Cape Verde industrial tuna fishery.**



<sup>74</sup> Bouwsma 2003

## ANNEX B. analysis of Fisheries Potential

Most fisheries – and fishermen – are concentrated on four islands: Santo Antão, S. Vicente, Fogo and particularly Santiago (Table 5.1). Of these four the first two appear to have access to the more substantial fish resources; in addition half of the fishermen in S. Vicente are involved in industrial fisheries, which requires a different strategic approach compared to small-scale fisheries. Santiago, with almost half of all fishermen, has a very narrow continental shelf, and many of its fishermen already fish regularly around Maio and Boavista. It has the largest and most severe structural problem – too many fishermen and too little fish, but has a relatively large group of part-time fishermen, like Santo Antão, who also work in agriculture. Of the islands with more modest fishermen populations, Maio, Sal and Boa Vista appear to have the largest fish resources and relative opportunities for alternative employment in tourism and management and surveillance of marine parks. Fogo and Brava have relatively large fishermen populations and appear to have quite modest fish resources and alternative income opportunities; with Santiago they face the largest and most pressing restructuring requirements.

**Table B.1: Continental shelf area and the number of boats and fishermen by island.**

Island	Continental Shelf area (Km <sup>2</sup> )	Number of Fishermen and (Female Fishmongers)	Number of Boats
Santo Antão	268	534 (58)	132
São Vicente	487 <sup>75</sup>	573 (136)	117 + (35 <sup>76</sup> )
São Nicolau	561	170 (25)	52
Sal	290	235	90
Boa Vista	2541	119 (3)	43
Maio	732	148 (48)	68
Santiago	289	1728 (1000)	478 + (31 <sup>77</sup> )
Fogo	121	580 (35)	197
Brava	50	196 (50)	80
Other (small islands, sea mounts etc.)	90	-	-

Source: Bravo de Laguna 1985 & INDP 2003 (1999 Census) & Bouwsma 2000

Small-scale fisheries almost all survive on fishing multiple stocks. Although stock knowledge of demersal and lobster species is not up-to-date, the experience of other island countries in the region and in Cape Verde suggests that catches of these species in heavily fished areas are clearly excessive. Expansion of the demersal fishery appears ill-advised, and a substantial

<sup>75</sup> Including Santa Luzia and islets

<sup>76</sup> Industrial and semi-industrial boats; a substantial part of the industrial and semi-industrial fleet operates from S. Vicente, supplying the local fish processing and canning industries.

<sup>77</sup> Mostly semi-industrial boats fishing for the Praia market.

reduction of fishing effort in most locations is likely to be the only way to rebuild healthy stocks.

Small pelagics are increasingly targeted such as in the case of the gillnet fishery for picarel in Santiago, which shows a strong increase in catches in recent years. Mortality rates from predation from other fish (tuna) are uncertain, but appear important compared to human fishing. Substantial expansion of fishing efforts on these stocks appears ill-advised without a better understanding of the role of these species in the ecosystem, and their long-term average stock size. Small-scale fisheries and semi-industrial fisheries may continue to target these species, but no immediate expansion should be planned unless the parameters of the stocks are better understood. Both fisheries appear commercially viable under current conditions. However, total fishing efforts (the number of days fished - and fishing capacity – the number of boats operating - and possibly the distribution of boats among the islands may need to be adjusted to ensure that the long-term average sustainable exploitation level of available small-pelagics resources not be exceeded.

Surface tuna stocks appear heavily exploited in the region, witness the 50% decline in international regional industrial catch rates. While expansion of small-scale and semi-industrial fishing for surface tuna may be commercially and technically feasible, the seasonal character of this fishery limits the impact on annual incomes and poverty. While Cape Verde should make every effort to support an overall reduction of international fishing efforts on regional tuna stocks – from which it would eventually benefit through higher catch rates – it can expand its own catches as long as such fishing is commercially viable and generates sufficient income to fishermen and processors, and as long as it can convince foreign fleets to reduce fishing in the Cape Verde EEZ.

Industrial tuna fisheries should explore the most effective ways to use the existing fleet – seeking the best commercial management and ownership arrangements – inside Cape Verde or outside - to ensure optimal future operations.<sup>78</sup> The recent experience with the industrial pole-and-line fleet financed by the African Development Bank strongly suggests that larger industrial vessels – operating either pole-and-line, long-line or large purse-seines<sup>79</sup> - will need to operate mainly outside the Cape Verde EEZ under a management or charter contract with the most effective foreign operators in the area to have a chance of being commercially viable. If private fleet management can ensure commercially viable operations, Cape Verde may need to expand its actual share of regional allowable catches of tuna.

Future exploitation of the regional surface tuna resource transferring through Cape Verde waters may well be most effective through a combination of small-scale line fisheries and semi-industrial and industrial purse-seine technology, given the local shortage of bait. For large industrial purse seining, Cape Verde may consider participating in such a fishery through direct commercial arrangements with foreign companies – shareholding in foreign companies - possibly linked to and supported by international fisheries agreements.

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<sup>78</sup> This also implies that the licensing policies reflect international tuna management regulations and strategies, and that Cape Verde should particularly aim to ensure the application of the precautionary approach to future tuna fisheries in the region.

<sup>79</sup> These vessels are currently not owned or registered in Cape Verde, but constitutes the bulk of the EU fleet operating in the eastern Atlantic.

Deep swimming tuna and billfish may be the only resources in the Cape Verde EEZ that theoretically could be exploited by small-scale and semi-industrial boats<sup>80</sup>. However, no suitable small-scale technology – in terms of boat design and suitable gear arrangements – appears currently available to effectively exploit these stocks, and knowledge about stock size and potential yield is virtually non-existent. Hence, without the technology and the knowledge, it appears ill-advised to base production expansion on this resource alone.

The long-term future of small-scale fisheries and semi-industrial fisheries will largely depend on their relative commercial viability and the willingness of Cape Verde to directly or indirectly support small-scale fisheries as a source of employment. Over time, and without direct public income support to small-scale fisheries, a substantial reduction of small-scale fisheries and modest increase of semi-industrial fisheries may well occur.

Conclusion: Fishing efforts on lobster and some demersal species in most locations should be effectively reduced. Modest production expansion from small-scale fisheries appears only feasible for small-pelagic and surface tunas if research confirms stocks can sustain such increase, technology should be tested to establish the commercial viability of small-boat long-lining for tuna and billfish. Semi-industrial fisheries on tuna and small-pelagics may be expanded modestly if research confirms stocks can sustain such increase, and operations remain profitable. Commercial industrial fishing should explore how effective management and ownership arrangements could ensure commercially viable operations, before further expansion should be considered. This report suggests that these principles be incorporated in the FMP.

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<sup>80</sup> Although past efforts to develop such a fishery have been non-conclusive.

## **ANNEX C: Principais recomendações e conclusões sobre os resultados do estudo do Banco Mundial sobre a Estratégia para a Pesca em Cabo Verde**

### **4 Tópicos principais:**

- A reestruturação da Pesca Artesanal,
- As Infra-Estruturas, o seu desenvolvimento e gestão,
- O papel do sector publico no sector,
- A pesca industrial.

### **Topico 1 – Reestruturação da Pesca Artesnal**

1. Na comunidade de pescadores a pobreza é relativa. Existem disparidades ao nível do país, com diferenças significativas, quanto aos rendimentos, entre pescadores industriais e pescadores artesanais, entre os principais centros urbanos e as comunidades mais afastadas desses centros. Por conseguinte, diferentes estratégias de intervenção devem ser traçadas, em função dessas disparidades.
2. Grupo de trabalho discorda com proposta de atribuição de subsídios aos pescadores mais carenciados ou que queiram abandonar voluntariamente o sector das pescas, embora entenda que há pescadores carenciados em determinadas comunidades piscatórias.
3. Considera-se que a diminuição do numero de pescadores far-se-á naturalmente (o nº de pescadores artesanais tem diminuído nalgumas comunidades, seja por migração para a pesca industrial como consequência de introdução de embarcações melhoradas, seja por escolha de outras actividades geradoras de melhores rendimentos).
4. Deverá haver programas de incentivos positivos, seja para projectos de pesca, seja para actividades alternativas a pesca para os que queiram abandonar a pesca para se dedicarem a outras actividades geradoras de rendimentos.
5. Deve-se privilegiar a organização das comunidades piscatórias em associações profissionais, a capacitação (formação) dos operadores, a implementação de linhas ou sistemas de crédito para actividades de pesca ou para o inicio de actividades alternativas, a melhoria das tecnologias de pesca e conservação do pescado, a melhoria das embarcações, a melhoria das condições em que o pescado é comercializado (os mercados).
6. A melhoria das infra-estruturas existentes, a implementação de estratégias de gestão dessas infra-estruturas, bem assim a criação de infra-estruturas de pesca cuja justificação seja provada, deve ser também uma das prioridades de intervenção.
7. Relativamente a pescaria do Atum, o grupo propõe que, antes de qualquer decisão de congelar ou diminuir o esforço de pesca do atum, sejam actualizadas as avaliações desse e de outros recursos.
8. O grupo entende que o insucesso na pescaria industrial do atum prende-se essencialmente com as limitações das técnicas de pesca que se pratica no país, face aos condicionalismos próprios dessa pescaria.
9. Propõe que a frota seja adaptada às técnicas modernas de pesca do atum.
10. Para o feito, os pescadores devem ser devidamente capacitados.
11. Relativamente a descentralização da gestão do sector.
12. As comunidades devem ser envolvidas desde o inicio na definição das medidas de gestão do sector.

- Estando organizadas, as comunidades devem “apropriar-se” das políticas de gestão das pescas por forma que sejam envolvidas e co-responsabilizadas na implementação das medidas de gestão;
  - Estando as comunidades conscientes da pertinência das medidas de gestão, a implementação dessas medidas torna-se mais fácil e exequível ao nível comunitário;
  - As comunidades devem participar na fiscalização da actividade de pesca na respectiva área de actividade;
  - Os membros das comunidades devem ser co-responsáveis na criação e na gestão de infra-estruturas de pesca na respectiva área.
13. As instituições publicas devem estabelecer estratégias adequadas para uma melhor ligação permanente com as comunidades.
  14. Membros das comunidades podem ser representantes das instituições do sector das pescas nas respectivas comunidades.
  15. O envolvimento das Câmaras Municipais na gestão do sector ao nível dos respectivos concelhos deve ser explorado.
  16. Sistemas de micro credito devem ser promovidos de forma célere ao nível das comunidades.
  17. O sistema mutualista deve ser desenvolvido, testado e alargado ao nível do país.

## **Topico 2 -“Infra-estruturas” Desenvolvimento e Gestão**

1. Existe de facto um nr. elevado de pequenas infra-estruturas pouco funcionais e inviáveis espalhados por varias localidades.
2. Aceita-se uma redução dessas infra-estruturas desde que haja um investimento sério e bem dimensionado para criação de grandes infra-estruturas de frio (redes de frios), por exemplo para cada ilha. Exemplo: existindo um complexo de frio (conservação, manuseamento, gelo), bem dimensionado, existindo capacidade de transporte de gelo e produto acondicionado, existindo boas redes de estradas, dispensa-se completamente a existência de pequenas infra-estruturas espalhadas. Vantagens: viabilidade na gestão e produção; Manutenção; baixo custo de produção, estrutura centralizada, etc.
3. O grupo de trabalho acredita em parcerias publico-privadas para a gestão de grandes infra-estruturas. Estado mantinha um papel promotor, regulador e fiscalizador, podendo estes últimos serem desempenhados também por agencias independentes.
4. É necessário uma estratégia clara, estudos bem dimensionados, para a criação de um “rede-de-frio” inter-ilhas, com complexos de frio estrategicamente posicionados nas principais ilhas onde se aguarda um desenvolvimento rápido. (turismo).
5. O Grupo não é a favor da existência de nenhum conselho de gestão – somos pelas parcerias publico-privados. As condições: VONTADE POLITICA. Governo deve apostar nos privados. Deve ajudar a identificar e criar oportunidades. Deve providenciar um bom ambiente económico e financeiro que possibilite a prospecção de negócios. Assume, junto com agencias independentes, o papel de regulador/fiscalizador.
6. Os grupos precisam estar organizados (associados):
  - Precisam com isso conseguir representatividade;
  - Precisam conhecer os direitos que adquirem, definir e exigir responsabilidades a quem eles escolherem para gerir as IE;

- Depois de associados os grupos necessitam capacitar-se financeiramente. (Associações Mutualistas). (resolve-se também assim o problema do pequeno crédito no sector);
- Formação continua aos membros das comunidades.

### **Topico 3 -Papel Do Sector Publico Nas Pescas**

1. Sector publico está enfocado no desenvolvimento, não na gestão e reestruturação
  - Descentralização limitada;
  - Acesso limitado ao crédito e as novas tecnologias;
  - Fraqueza das organizações de interessados directos, limitações da capacidade.
2. O GT concorda com as considerações gerais do consultor, mas entende que tem havido esforços no sentido de descentralizar algumas actividades no sector, nomeadamente a nível da gestão de infra-estruturas.
3. Ainda defenda uma descentralização selectiva de funções e actividades do sector
4. Reforçar o papel do Estado na mobilização de recursos para a infra estruturação do sector.
5. Reforçar as sinergias entre as instituições, nomeadamente na formação profissional.
6. Redefinição do papel dos diferentes actores (Estado, organizações profissionais, pescadores, armadores, etc.).
7. Antes de descentralizar há necessidade de:
  - Organização a nível das comunidades (Associações – Participação);
  - Infra-estruturas adequadas;
  - Formação profissional: Coordenação entre o ISECMAR e o sector.
8. Actividades sujeitas a descentralização condicionada/limitada ( óptica de complementaridade):
  - Fiscalização, p.e. vigilância das praias e zonas costeiras;
  - Investigação;
  - Gestão de Infra estruturas;
  - Elaborar, divulgar e implementar um plano de formação para o sector;
  - Sinergias entre o sector das pescas e o ISECMAR;
  - Promover cursos a distância e/ou semi-presenciais;
  - Participação das associações profissionais na preparação e implementação dos planos de gestão das pescarias;
  - Descentralização de uma forma selectiva e gradual.
9. Mecanismo de financiamento das entidades do sector (DGP, INDP):
  - através do Tesouro e cooperação com entidades estrangeiras.
10. O GT considera ter havido vários sistemas de financiamento pouco adequados.
11. Uma solução passa pela reestruturação do FDP.
  - Um sistema de crédito adequado a estratégia do sector deverá conter:
    - Um sistema de pagamento ajustado a sazonalidade da pesca;
    - Parâmetros de ordem social e cultural;
    - Revisão do sistema de Subsídios;
    - Reversão das receitas públicas geradas para apoiar o desenvolvimento do próprio sector.
12. O GT considera como pre-condições:
  - Incentivar uma cultura de poupança;
  - O seguimento da actividade por parte das entidades financiadoras e gestoras de incentivos;

- A criação de um sistema especial de Segurança Social para os profissionais de baixo rendimento;
- Adesão dos demais profissionais ao sistema normal de S.S.

#### **Topico 4 – A Pesca Industrial**

1. Reflexão feita em torno de duas questões básicas e apresentadas pelo consultor, nomeadamente:
  - Viabilidade do modelo actual da Pesca Industrial;
  - Papel do sistema de crédito local.
2. Acredita-se que efectivamente as capturas provenientes da pesca industrial diminuíram, mas no entanto o estudo/consultor não identificou ou não realçou as causas da diminuição dessa captura.
3. Assim achou-se necessário fazer uma análise de diferentes tópicos para abordar a problemática, nomeadamente a problemática do recurso utilizada pela pesca industrial , a comercialização e ainda o sistema de crédito para o sector.
4. Em relação ao Recurso ATUM:
  - Acredita-se na ainda disponibilidade do recurso, há vários índices que apontam para isso, recomenda-se então uma actualização dos estudos que possam definir o potencial real desse recurso;
  - Existe o problema do isco que necessita solução/alternativas;
  - Há necessidade de actualização das técnicas e tecnologias de detenção e captura;
  - Necessidade de qualificação de pessoal em diversos domínios, nomeadamente em tecnologias de pesca.
5. Em relação ao recurso CAVALA:
  - Respeitando as medidas de gestão, acredita-se que este recurso possa continuar a significar uma importante captura para a pesca industrial;
  - necessita igualmente de actualização de estudos e dados sobre o potencial existente.
6. Em relação ao recurso LAGOSTA ROSA:
  - suscita alguma preocupação, sendo necessário fazer um acompanhamento das medidas de gestão em vigor.
7. Em relação aos Aspecto da Comercialização:
  - Enfrenta vários constrangimentos:
    - escoamento ( mercado),
    - necessidade de valorização do produto, desde o momento da sua captura,
    - estabelecer um sistema organizado de comercialização (lota?),
      - embargo da União Europeia terá deixado sequelas profundas no sistema de pesca industrial,
    - controle da qualidade, necessário implementar e fiscalizar.
8. Em relação a FROTA:
  - Frota envelhecida; embora muitas embarcações estejam operacionais, enfrentam altos custos de manutenção devido a idade;
  - Recomenda-se portanto a continuação da modernização da frota, por substituição;
  - Cabo Verde não deve aceitar a entrada de embarcações envelhecidas, principalmente as abatidas em outros países
9. Em relação ao CREDITO:
  - Este é quase inexistente devido a:
    - alto risco do sector das pescas,

- existência de elevado numero de créditos mal parados.
  - existe a necessidade de créditos específicos, por exemplo para as campanhas de pesca, para a exportação e para a modernização da frota.
  - existe também a necessidade de transformar o FDP numa instituição para-bancária, vocacionada e adaptada, conforme a realidade do sector.