



CRFM Secretariat



**The Consideration of Socio – Economic  
and Demographic Concerns  
in Fisheries and Coastal  
Area Management and Planning**

**St. Lucia Case Study**

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## **1. General Country Information**

Saint Lucia is a Small Island Developing State (SIDS) with an area of approximately 616 km<sup>2</sup> and 158 km of coastline. The island is located within the Eastern Caribbean between Martinique and Saint Vincent and the Grenadines. Being volcanic, Saint Lucia is mainly mountainous in nature, surrounded by a relatively restricted submarine island shelf.

### *1.1 Population*

The last census (2001) estimated the population as 156, 635, with a growth rate of 0.78%. Due to topography, most persons reside within coastal settlements located immediate to the shoreline. Overall, 35.1% live in urban centres associated with various coastal towns and villages. The population is relatively young in age (the median age is 25) and 30.4% of persons are under the age of 15 years<sup>1</sup>.

Despite the level of development, the 2001 population and housing census also indicates that 19.2% of the population lives in poverty (categorised as ‘far below average’) and unemployment levels stood at 18.9%. The quality of health care is considered to be improving and life expectancy has increased to 76 years; however, infant mortality rates remain at approximately 14.2 per 1000<sup>2</sup>.

### *1.2 Economy*

Gross Domestic Product (GDP) stands at EC\$1109.09M (US\$415.39M). After a period of constant growth between 1990 and 2000, GDP has more recently declined, primarily due to difficulties experienced within the banana industry consequent to a movement towards trade liberalisation<sup>3</sup>.

Saint Lucia is transitioning from a country which has been heavily dependent on primary agricultural production and export, to one now largely supported by a growing tourism sector and a modest range of manufacturing and service industries. Fish exports remain minimal, with only 0.9 tons exported in 2003, mainly comprising frozen lobster (according to Statistics

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<sup>1</sup> 2001 Population and Housing Census- preliminary report, Government of Saint Lucia Statistics Department

<sup>2</sup> Statistics Department (provisional figures for 2003)

<sup>3</sup> Economic and Social Review. 2002.

Department records). Fish exports mainly comprise small quantities of fresh and frozen fish carried by travellers and small commercial exports to other Caribbean territories and the U.S.A. Imports of fish for 2003 were valued at EC\$8,871,559 and comprised 766 tons<sup>4</sup>. Thus, it is felt that there is considerable room for expansion of local fish supply to satisfy demand, particularly for filleted and frozen fish<sup>5</sup>. A significant proportion of imports comprise salted, smoked and dried fish, which have traditionally been imported for the local market.

The contribution of the fisheries sector to total GDP (at factor cost) is estimated at 1.03%<sup>6</sup> (compared to 0.82% in 1997<sup>7</sup>). The ex-vessel value of the 2003 fish landings was US\$5.91M<sup>8</sup>. However, such estimations underestimate overall contributions to the economy which result from value-added processing and ancillary services. Therefore, the overall contribution to the economy is likely far greater. Fishing also provides a primary source of employment in coastal villages. The highest fish landings occur at the southern town of Vieux Fort and the east coast village of Dennery (Table 1; Figure 1). With the traditional wooden canoe now comprising only 25.1% of the industry fleet, the majority of the operators utilise the more stable and versatile fibreglass open pirogue, with a small number of larger vessels also operating in the fishery (Table 2). As the two most productive landing sites, Vieux Fort and Dennery also have the largest number of registered pirogues and, along with Castries, support the highest number of full time fishers (Table 2).

In terms of employment, there are just under 2100 fishers registered (Table 2) as participating in commercial fishing activities, 66% of whom are fulltime fishers (i.e., depend on fishing for the greatest proportion of their income). A recent survey by the National Insurance Corporation<sup>9</sup> indicated the following regarding respective roles of persons involved in the sector: 8% boat owner; 23% boat owner / captain / crew; 15% captain only; 47% crew. Most fishers are male (only 3 women are registered as fishers). Although women are not heavily involved in the

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<sup>4</sup> Statistics Department. Government of Saint Lucia. Figures for 2003

<sup>5</sup> Fisheries Sector Review. 1999. S. George. Background paper for the Symposium on OECS Fisheries Management and Development

<sup>6</sup> Economic and Social Review. 2002. *Note: there is no data available on real value of fish landed locally, taking into account value added through vending, retail sale and processing. Thus, the GDP contribution is likely an underestimate of the overall contribution to the economy.*

<sup>7</sup> Fisheries Management Plan (draft). 1999. Department of Fisheries

<sup>8</sup> Department of Fisheries, landings data

<sup>9</sup> National Insurance Corporation//Government Central Statistics Officer. Fisher Survey. 2004

capture component of the fishing industry, they often play a key role in assisting their spouse/common law partner in sale of fish at the landing site, and are also active within the fish vending and fish processing sectors<sup>10</sup>. In addition, 9 registered fishing vessel owners are women<sup>11</sup>

In terms of age, the current average age of persons involved in fishing is 45 years<sup>12</sup>. Younger persons are moving into the fishing sector, however this movement is most predominant within the two most productive fishing communities of Vieux Fort and Dennery. Concern remains that for many coastal communities, the continued failure of young persons entering into the fisheries sector within these communities will likely bring about a decline in overall production levels and sustainability of the sector. The recent National Insurance Fisher Survey indicated that although 43% of fishers are between 15 and 40 years old, 39% are between 41 and 60 and 18% are over 60 years. Thus, the survey indicates that, on average, the fisher population is 10 years older than the national male labour force, and that some 57% of fishers are due to retire over the next 20 years. Government continues to support a young fishers training programme targeting secondary school leavers and other young persons within rural coastal communities to generate interest in modernised and responsible approaches to fishing as a viable career path and lucrative livelihood.

**Table 1** Estimated fish landings for 2003 (*in tons*)

SITE	Tunas	Dolphin	Wahoo	Flying Fish	Lobster	Conch	Snapper	Shark	Other	TOTAL
<b>Gros Islet</b>	9.25	8.11	2.42	32.6	8.82	36.55	2.89	1.17	54.11	<b>165.71</b>
<b>Castries</b>	40.95	3.76	0.87	7.27	0.24	0	12.91	2.64	62.80	<b>131.44</b>
<b>Soufriere</b>	29.42	4.11	1.01	0.04	0.10	0.00	3.09	0.00	56.13	<b>93.90</b>
<b>Choiseul</b>	39.64	2.97	1.58	4.66	0.00	0.00	1.19	0.00	10.95	<b>60.99</b>
<b>Laborie</b>	25.60	3.14	1.67	0.26	3.26	0.60	1.72	0.09	22.08	<b>58.98</b>
<b>Vieux Fort</b>	147.98	110.78	53.49	1.91	3.91	0.01	26.19	0.78	23.13	<b>368.16</b>
<b>Micoud</b>	12.64	16.55	9.41	0.78	0.00	0.00	0.60	0.07	5.55	<b>45.59</b>
<b>Dennery</b>	105.42	103.59	82.07	5.21	1.16	0.00	3.69	0.30	9.47	<b>310.90</b>
<b>Other Sites</b>	42.28	33.60	16.79	22.74	5.89	0.00	4.90	0.88	81.24	<b>211.32</b>
<b>TOTAL</b>	<b>147.98</b>	<b>110.78</b>	<b>53.49</b>	<b>1.91</b>	<b>3.91</b>	<b>0.01</b>	<b>26.19</b>	<b>0.78</b>	<b>23.13</b>	<b>1436.65</b>

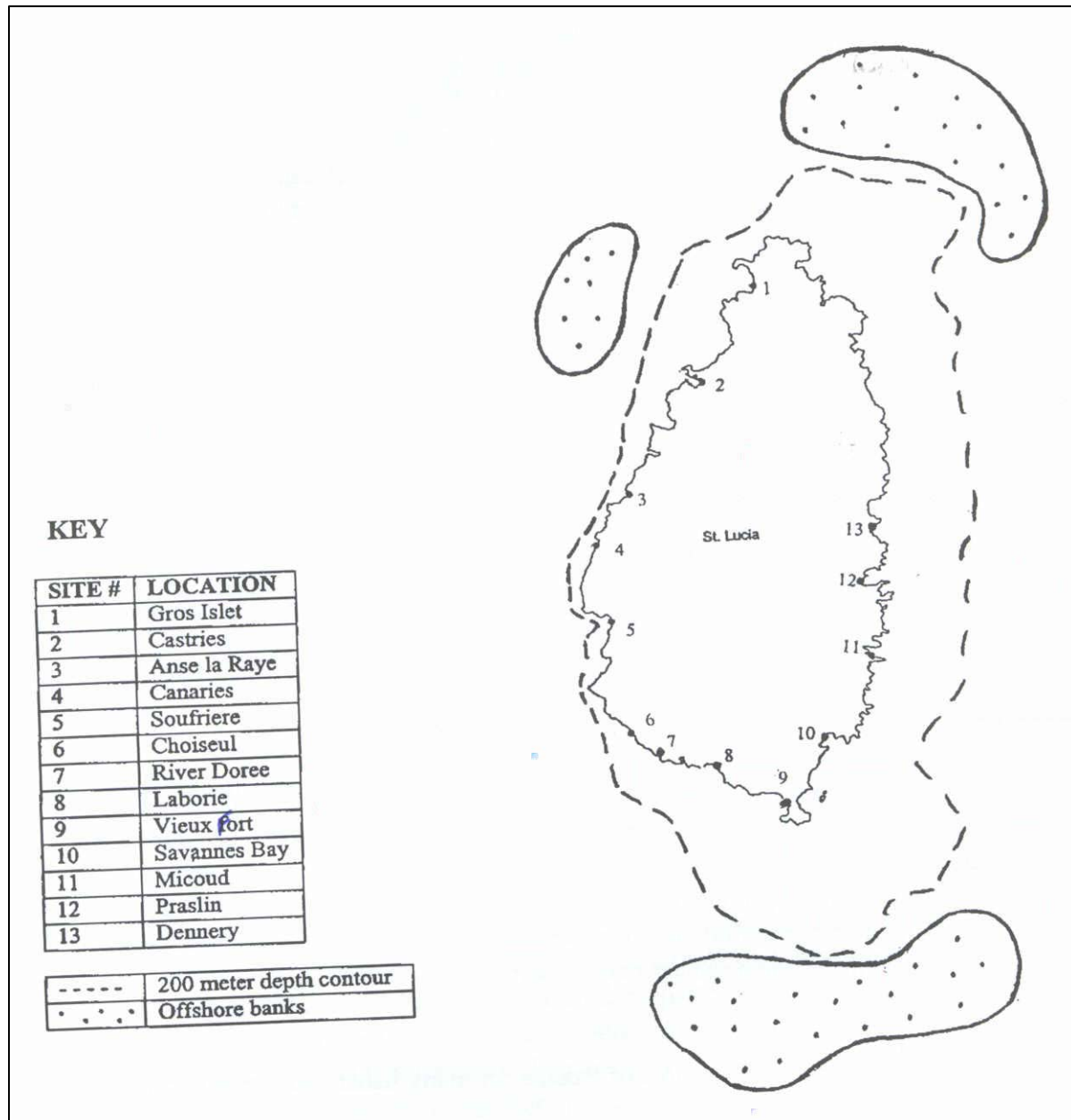
Source: Department of Fisheries,

<sup>10</sup> Fisheries Sector Review. 1999. S. George. Background paper for the Symposium on OECS Fisheries Management and Development

<sup>11</sup> Department of Fisheries Licensing and Registration Database

<sup>12</sup> National Insurance Corporation//Government Central Statistics Officer. Fisher Survey. 2004

**Figure 1: Fish Landing Sites in Relation to the Submarine Shelf and Offshore Banks**





**Table 2:** Registered Fishers and Vessels (as of 31<sup>st</sup> December 2003)

SITE	Registered Fishers			Registered Vessels					
	Fulltime	Part time	TOTAL	Canoe	Pirogue	Transom/Shalooop	Whaler	Longliner/Other	TOTAL VESSELS
<b>Gros Islet</b>	121	79	<b>200</b>	3	35	7	1	2	<b>48</b>
<b>Marisule</b>	8	13	<b>23</b>	4	2	8	0	0	<b>14</b>
<b>Castries</b>	140	108	<b>248</b>	0	43	8	3	2	<b>56</b>
<b>Bannanes</b>	41	40	<b>81</b>	10	20	4	1	1	<b>36</b>
<b>Marigot</b>	<i>registered with Anse la Raye</i>			1	3	4	0	0	<b>8</b>
<b>Roseau</b>	1	1	<b>2</b>	1	0	1	0	0	<b>2</b>
<b>Anse la Raye</b>	53	47	<b>100</b>	13	10	2	0	0	<b>25</b>
<b>Canaries</b>	52	37	<b>89</b>	18	7	5	0	0	<b>30</b>
<b>Soufriere</b>	93	62	<b>155</b>	47	36	24	0	0	<b>107</b>
<b>Choiseul</b>	102	37	<b>139</b>	24	20	1	0	0	<b>45</b>
<b>River Doree</b>	16	10	<b>26</b>	0	7	0	0	0	<b>7</b>
<b>Laborie</b>	74	44	<b>118</b>	3	27	1	0	0	<b>31</b>
<b>Vieux Fort</b>	237	121	<b>358</b>	39	106	2	1	2	<b>150</b>
<b>Savannes</b>	34	7	<b>41</b>	1	14	0	0	0	<b>15</b>
<b>Micoud</b>	106	107	<b>213</b>	0	20	0	1	2	<b>23</b>
<b>Praslin</b>	32	19	<b>51</b>	1	12	0	0	0	<b>13</b>
<b>Dennerly</b>	140	93	<b>233</b>	3	56	0	0	0	<b>59</b>
<b>TOTAL</b>	<b>1256</b>	<b>834</b>	<b>2090*</b>	<b>168</b>	<b>418</b>	<b>67</b>	<b>7</b>	<b>9</b>	<b>669</b>

Source: Department of Fisheries, as of December 31<sup>st</sup> 2003

\*"Total" column does not include registered boat owners who are not fishers

The fisheries sector remains characterised by a considerable degree of seasonality. The ‘peak season’ where most fishing activity and fish landings occur, extends from December through to June annually. During this time, migratory pelagics such as albacore, bigeye, blackfin and yellowfin tunas, Spanish mackerel, dolphinfish and wahoo are present in the Eastern Caribbean region and dominate the catch. These species comprise 65-75% of annual landings and are primarily caught using hand operated trolling lines. Other fisheries include:

- the pot or trap fishery (targeting near shore and bank reef species including lobsters);
- the flying fish fishery (using nets);
- a growing gillnet fishery (targeting reef demersals);
- a small conch fishery (with a select number of fishers authorised to use scuba gear);
- a restricted speargun fishery (also targeting nearshore reef fishes);
- a fishery for small cetaceans, including the pilot whale and bottlenose dolphin (partly a target fishery using harpoons and partly an opportunistic fishery);
- a seine/fillet net fishery (targeting a variety of jacks and other coastal pelagics such as ballyhoo and operating primarily out of west coast communities);
- a traditional sea urchin fishery in certain locations and is operated as a community based fishery;

Traditionally, primarily green and hawksbill turtles have been fished as a source of food and turtleshell. Since Saint Lucia became signatory to the Convention on International Trade in Endangered Species (CITES) in 1986, trade in turtleshell and other turtle products was halted (as required due to the current listing of the respective species on Appendix I of CITES), and the fishery was continued until 1996 as a source of turtle meat for local consumption. From 1996 to 2004 a moratorium was in effect as Saint Lucia took the decision to temporarily suspend the fishery as part of the global effort to stimulate recovery in sea turtle populations. The fishery has just been reinstated, and revised draft regulations have been developed to create a more rigorously regulated fishery with a range of precautionary controls aimed at sustainability and optimised fishery monitoring.

Aquaculture operates on a small scale, with approximately 20 acres of ponds in existence generating either cultured fish (hybrid *Tilapia spp.*) or farmed freshwater shrimp (*Macrobracium rosenbergii*)<sup>13</sup>. Nearly three quarters of aquaculture farmers are involved in other aspects of agriculture. The produce of the farmers is primarily sold to hotels and restaurants or the Saint Lucia Fish Marketing Corporation<sup>14</sup>. In terms of mariculture, several species of marine algae (*Gracilaria spp* and *Eucheuma*) are cultivated in a few coastal locations and used to generate a gelling substance for preparation of a popular local drink or ice cream.

### **1.3 Political, legal and administrative structure**

As signatory to the United Nations Convention on the Law of the Sea (UNCLOS), Saint Lucia claims sovereign rights over its Exclusive Economic Zone (EEZ) and seeks to ensure optimal utilisation of living and non-living resources contained therein. Consequently, the Government of Saint Lucia recognizes the need to have an integrated policy relating to the marine space over which it exercises sovereignty. In this regard, there is the binding obligatory policy to develop the marine resources present within the EEZ. This policy enunciates that there is no free access to the living marine resources and that they are to be managed for the long-term benefit of

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<sup>13</sup> Department of Fisheries records

<sup>14</sup> Fisheries Sector Review. 1999. S. George. Background paper for the Symposium on OECS Fisheries Management and Development

present and future generations.<sup>15</sup> The policy is pursued with consideration for the development of shipping or marine transportation, tourism and recreational aspects within the coastal waters, along with a sound program for coastal zone management and development. However, due consideration is also to be given to the traditional users (fishers) and their right to compensation for loss of traditional fishing areas.

Saint Lucia adopted the *St. George's Declaration of Principles for Environmental Sustainability in the OECS* in 2001. The objectives of this instrument were seen as complementary to the above stated national policy in that, as signatory to the Declaration, Saint Lucia carries a national obligation to:

- Manage marine resources, organisms and ecosystems for optimum sustainable productivity, while maintaining the integrity of natural and ecological processes and inter-relationships between such systems and processes;
- Cooperate in the conservation, management and restoration of natural resources that are shared among States or extend beyond any national jurisdiction;
- Work with civil society to promote and facilitate national and regional natural resource management capability;
- Collaborate to implement precautionary approaches to avoid environmental degradation and overexploitation within the Eastern Caribbean sub-region; and
- Take measures within an appropriate legal and policy framework to ensure that conservation and management of natural resources are treated as an integral part of development planning at all stages and levels.

In terms of the national approach to planning, the 2001 Physical Planning and Development Act, the draft Physical Planning Regulations and the draft Environmental Impact Assessment (EIA) Regulations provide a comprehensive framework for rational planning and development control. These, however, are new legal measures that demand significant institutional and operational changes for full implementation, and therefore, will be implemented incrementally<sup>16</sup>. Notably,

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<sup>15</sup> Fisheries Management Plan (draft). 1999. Department of Fisheries

<sup>16</sup> Coastal Zone Management in Saint Lucia: Issues Paper. 2002. CZMP, Ministry of Agriculture, Forestry and Fisheries

the Physical Planning Act deals with issues such as environmental protection, the requirements for EIAs and the designation of environmental protection areas.

## **2. Institutional and Legal Administrative Structure**

### ***2.1 Administrative arrangements for the management, development and regulation of fisheries and aquaculture***

Ultimate responsibility for the fisheries sector rests with the Minister of Agriculture, Forestry and Fisheries (MAFF); however, the mandate for fisheries management and development resides with the Department of Fisheries in MAFF. The responsibilities of this Department<sup>17</sup> include the:

- modernisation of fisheries infrastructure and fishing vessels;
- use of improved gear and methods;
- regulation of fishing gear;
- protection of marine and, to an extent, freshwater and coastal biodiversity;
- regulation of certain marine tourism activities such as scuba diving, snorkelling, and commercial sportfishing;
- provision of advice to the Government of Saint Lucia on how to mitigate negative impacts of development on the marine and coastal environments.

As signatory to key international instruments such as UNCLOS, the FAO Code of Conduct for Responsible Fishing, and the Agreement for the Implementation of the Provisions of the UNCLOS Relating to the Conservation and Management of Straddling Stocks and Highly Migratory Fish Stocks, the national policies, programmes and activities for fisheries management and development are steeped in the dual principles of sustainable resource use and responsible fisheries. The core legal framework (see Table 3) is provided by the:

- Fisheries Act, No. 10 of 1984, and
- Fisheries Regulations No. 9 of 1994.

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<sup>17</sup> Fisheries Sector Review. Sarah George. 1999. Organisation of Eastern Caribbean States

These are reinforced by the:

- Fishing Industry (Assistance) Act No. 33 of 1972;
- Maritime Areas Act No. 6 of 1984;
- Fisheries (Snorkelling Licence) Regulations No. 223 of 2000.

Other national legislation that bear some relevance to fisheries management and development include the:

- Saint Lucia National Trust Act of 1975 (preservation of areas of natural beauty/historic interest, including submarine areas);
- Wildlife Protection Act of 1980 (designation of endangered species);
- National Conservation Authority Act of 1999 (management of beach areas and designation of protected areas).

**Table 3:** Scope of the Fisheries Act and Fisheries Regulations

<b>Sections Within the Fisheries Legislation</b>
<ul style="list-style-type: none"><li>• promotion of fisheries</li><li>• fisheries management and development plan</li><li>• fisheries advisory committee</li><li>• regional cooperation in fisheries management</li><li>• fisheries access agreements</li><li>• fish import/export</li><li>• fishing licenses (foreign/local commercial, sport fishing)</li><li>• fish processing establishments</li><li>• local fisheries management areas</li><li>• fishing priority areas</li><li>• leasing of land for aquaculture</li><li>• marine reserves</li><li>• fisheries research</li><li>• prohibited fishing methods/gears</li><li>• species/specific conservation measures (lobsters, turtles, corals/sponges/marine algae, conch, sea urchins, freshwater shrimp/crayfish)</li><li>• use of scuba/hooka and spearguns</li></ul>

Fisheries officers are designated enforcement officers under the Fisheries Act and Regulations but do not have powers of arrest. It is important to note, however, that only two officers within the Department (the fisheries wardens) have surveillance and enforcement as their primary focus. The Department, therefore, depends heavily on the Marine Unit of the Royal Saint Lucia Police Force, which undertakes fisheries enforcement within the overall scope of maritime enforcement.

The Department also relies on support from community-based police officers for effective enforcement of the fisheries legislation at the national level. Additionally, regions designated as marine management areas, including the Soufriere Marine Management Area (SMMA) and the Canaries - Anse la Raye Marine Management Area (CAMMA), employ Marine Rangers for performing a range of enforcement duties (including arrest), along with other operational duties.

Governmental agencies which also play some role in sustainable fisheries development and regulation include the:

- Attorney General's Chambers (legal support and advice in fisheries matters);
- Customs and Excise Department (control of imports/exports seafood, fishing gear and vessels);
- Ministry of Communications, Works, Transport and Public Utilities (coastal infrastructure and mining);
- Development Control Authority (regulation of coastal development and coordination of physical planning and sustainable development);
- Ministry of Health (environmental health and pollution monitoring);
- Saint Lucia Solid Waste Management Authority (solid waste management).

Coordination and collaboration with various non-governmental organisations also occurs, including the:

- Saint Lucia National Trust (management of certain designated protected areas adjacent to marine reserves);
- Soufriere Marine Management Area Association (responsible for Soufriere Marine Management Area and the Canaries/ Anse la Raye Marine Management Area);
- Aupicon Charcoal Producers Group (assistance in the management of the Mankote mangrove);
- Desbarras Sea Turtle Watch Group (coordinates data collection and turtle watches on a nesting beach at Grand Anse).

There are also eight functioning fisher cooperatives (Gros Islet, Castries, Anse la Raye, Soufriere, Choiseul, Laborie, Vieux Fort, and Dennery). These organisations provide services to

members including the bulk purchasing and retailing of fishing gear and safety equipment, the provision of fuel and the education of members. The National Association of Fishermen's Cooperatives (NAFCOOP), although a legally established entity, has not functioned for a number of years due to past problems of mismanagement. Several fisher cooperatives are presently very active and expanding, seeking to expand their range of services to members. These currently engage in bulk purchasing of fishing and safety gear and equipment and perform primary roles in the management of fish landing facilities within their respective communities. Women actively participate in fisher cooperatives as members (mostly as owners of fishing vessels, rather than as fishers), staff and at the level of Board Members. Nonetheless, the National Insurance Corporation Survey<sup>18</sup> indicates that a higher proportion of older age groups of fishers (i.e., in excess of 60% of fishers older than 50 years) are cooperative members, whereas less than 39% of fishers 50 years old or younger are cooperative members. This suggests that the cooperative are either failing to attract younger members or are not granting them entry.

The Department of Fisheries has a number of professionally trained persons specialised in disciplines such as fisheries and marine biology, fisheries management and coastal zone management. Additionally, the organisation has fisheries extension officers, aquaculture officers, fisheries technicians, data collectors and administrative staff. Despite this level of manpower, personnel and other resources are considered scarce, given the broad mandate and emerging issues faced by the Department. In order to effect its mandate, the Department has long embraced both inter-sectoral and community based approaches to resource and fisheries management. Although the Fisheries Advisory Committee allowed by the Fisheries Act has never been constituted, the Department has entered into a number of collaborative management arrangements with certain community based organisations and resource user groups (established as either local fisheries management authorities or marine management areas, or as partners in resource monitoring arrangements). Comanagement arrangements have also been established with fisher cooperative and other civil agencies for the management of upgraded fisheries facilities located in certain communities and fisher cooperatives also play a central role in the administration of duty free concessions on fuel to members.

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<sup>18</sup> National Insurance Corporation//Government Central Statistics Officer. Fisher Survey. 2004

## ***2.2 Administrative arrangements for the conservation and rehabilitation of the coastal environment and aquatic resources***

The approach taken for the conservation and rehabilitation of specific coastal marine and aquatic living resources is articulated within the Fisheries Management Plan for Saint Lucia (Table 4). Programmes are implemented which focus on specific resources, habitats or fisheries (e.g., lobsters, turtles, conch, freshwater shrimps/crayfish, reef fishes; coral reefs, mangroves, beaches; conch fishery, lobster fishery). Programme activities are mostly undertaken by the Resource Management Unit, but strong operational linkages exist to allow such work to be integrated with the work of the Extension Unit (which focuses on fisher education and training, conflict resolution, fishery regulation) and the Aquaculture Unit (which focuses on the promotion and regulation of freshwater fish/shrimp culture and seaweed cultivation). Registration of fishers and registration / licensing of vessels for access to various fisheries and, in some cases, the use of specific gears, is jointly administered by the Extension Unit and the licensing/data management arm of the Resource Management Unit.

Wherever necessary, programmes in fisheries and marine resource management are set up and administered in such a way so as to ensure collaboration with relevant external agencies and stakeholders. For example, coral reef monitoring is conducted along with entities such as the SMMA and in collaboration with the Caribbean Natural Resources Institute (CANARI). Sea turtle monitoring is done in conjunction with community groups such as the Desbarra Sea Turtle Watch Group and the staff of many hotels and restaurants located along the coast. Data is collected on standardised forms and training provided by the Department of Fisheries. Coastal water quality monitoring is carried out with the Ministry of Health, and with assistance from community organisations such as the Laborie Development Foundation and the SMMA.

In certain cases, community groups have been designated as Local Fisheries Management Authorities under the Fisheries Act, and therefore granted certain management responsibilities along with opportunities to benefit from sustainable resource use. An example is the SMMA, which has been granted authority for day-to-day management of the Soufriere Marine Management Area for integrating coastal fisheries with a range of tourism and recreational



**Table 4:** Scope of the Fisheries Management Plan

<b>Fisheries Management Objectives</b>	
<ul style="list-style-type: none"> <li>• developing and increasing the potential living marine resources to meet human nutritional needs, as well as social, cultural, economic and developmental goals in the manner which should ensure sustainable resource use;</li> <li>• promoting the development and use of selective fishing gear and practices that minimize by-catch of non-target species and minimize capture of juveniles for target species;</li> <li>• taking into account traditional knowledge and interests of coastal communities, small-scale artisanal fisheries and indigenous people in development and management programmes;</li> <li>• maintaining or restoring populations of marine species at levels that can produce the maximum sustainable yield as qualified by relevant environmental and economic factors, taking into consideration relationships between species;</li> </ul>	<ul style="list-style-type: none"> <li>• preserving rare or fragile ecosystems, as well as habitats and other ecologically sensitive areas, especially coral reef ecosystems, estuaries, mangroves, seagrass beds, and other spawning and nursery areas;</li> <li>• ensuring effective monitoring and enforcement with respect to fisheries resources;</li> <li>• promoting scientific research;</li> <li>• protecting and restoring endangered marine species;</li> <li>• ensuring that the fishing industry is integrated into the policy and decision making process concerning fisheries and coastal zone management;</li> <li>• cooperating with other nations in the management of shared or highly migratory species.</li> </ul>
<b>Species-Specific Management Plans</b>	
<ul style="list-style-type: none"> <li>• shallow-shelf and reef fishes;</li> <li>• deep-slope fishes;</li> <li>• large pelagics;</li> <li>• coastal pelagics;</li> <li>• lobster;</li> <li>• conch;</li> </ul>	<ul style="list-style-type: none"> <li>• sea urchins;</li> <li>• sea moss;</li> <li>• flyingfish;</li> <li>• turtles;</li> <li>• freshwater shrimp.</li> </ul>

activities<sup>19</sup>. Other management arrangements have been built with groups such as the Aupicon Charcoal Producers Group (granted access to the mangrove marine reserve for sustainable harvesting and for eco-tours within the habitat), the Debarras Turtle Watching Group (granted permission to conduct turtle watches and given the responsibility to collect nesting data), and the Saint Lucia National Trust (which assists in the management of marine protected areas which exist congruent to protected land areas under National Trust jurisdiction).

### *2.3 Administrative arrangements for regional planning and development in coastal regions*

#### *Coastal Zone Management*

As part of national efforts to facilitate the establishment of stronger national mechanisms for:

- maintaining the integrity and productivity of the coastal zone and resources;

<sup>19</sup> Towards Strengthening of the Association- the case of the Soufriere Marine Management Area. 2003. Dawn Pierre-Nathaniel. Department of Fisheries.

- optimising the contribution of the coastal zone to social and economic development through sustainable use of resources and equitable sharing of benefits;
- harmonising uses of the coastal zone
- providing a framework for the management and resolution of resource use conflicts the Department of Fisheries, enabled by a project funded by the European Union, spearheaded development of a policy and guidelines for use and management of the coastal zone<sup>20</sup>.

As a consequence, a new administrative arrangement has recently been agreed by Government of Saint Lucia and will place the administration of coastal zone management (CZM) within a CZM Unit housed in the Ministry of Planning, Development, Housing and the Environment. An integrated approach will be enabled via a CZM Advisory Committee comprising membership from ministries responsible for physical planning, environment, fisheries, forestry, agriculture, works, environmental health and tourism, as well as the National Emergency Management Office and the Saint Lucia Air and Sea Ports Authority. The Committee is to operate under the Physical Development and Planning Act No. 29 of 2001 and will help guide coordination among the respective government and non-government agencies and institutions involved in coastal management and development within the context of broader national development planning and development.

### ***System of Protected Areas***

The Plan for a System of Protected Areas for Saint Lucia<sup>21</sup> was developed out of an extensive broad-based consultative and collaborative approach among government and non-government organisations and civil groups. It identifies a number of areas of special natural, cultural and historical value, which warrant particular focus in terms of effective management, to ensure sustainable use. The objectives of the plan are to:

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<sup>20</sup> Coastal Zone Management in Saint Lucia: Policy, Guidelines and Selected Projects. 2004. Government of Saint Lucia.

<sup>21</sup> A System of Protected Areas for Saint Lucia. 1992. Hudson, L., Y. Renard and G. Romulus. Saint Lucia National Trust

- conserve, through a broad network of marine and terrestrial protected areas, areas of critical habitat necessary for the maintenance of biological and cultural diversity;
- protect representative elements of natural and cultural heritage;
- sustain the productivity and quality of critical ecosystems, particularly in relation to forestry, fisheries and tourism;
- stimulate the rational use of marginal resources and the restoration of degraded lands;
- encourage research on national cultural and natural resources and contribute to public knowledge and understanding of this heritage;
- build self esteem and love of country through appreciation of that heritage; and
- provide places for recreation, enjoyment and inspiration.

### ***Physical Planning Controls***

The regulation of national physical development, is to be carried out so as to achieve specific objectives as expressed by the Physical Planning and Development Act. These include:

- ensuring that appropriate and sustainable use is made of all publicly-owned and privately-owned land in Saint Lucia in the public interest;
- maintaining and improving the quality of the physical environment in Saint Lucia, including amenity;
- providing for the orderly subdivision of land and the provision of infrastructure and services thereto;
- maintaining and improving the standard of building construction so as to secure human health and safety, and
- protecting and conserving the natural and cultural heritage of Saint Lucia.

The Government of Saint Lucia is presently undertaking to develop a national land use policy and plan, building on existing policy, legal and administrative frameworks such as those mentioned above.

### ***2.2.1 Efforts undertaken in the field of co-management of fisheries and coastal aquatic resources***

Since the 1980s, the Department of Fisheries has embraced the concept of co-management of resources as a means to effect sustainable conservation, empowerment of resource users, effective regulatory systems and community-based resource management. This approach is supported by the Fisheries Act of 1984, which allows for the establishment of Local Fisheries Management Areas. This enables the Minister of Fisheries to designate an area and associated local authority (a suitable body associated with the welfare/development of fishers) to regulate the conduct of fishing operations within the area. The Department has, however, balanced this more “formal” approach with a number of less-formal, resource based co-management arrangements, which have also produced some positive results. Examples illustrating the range of co-management initiatives are given below.

#### ***The SMMA: a formal co-management arrangement***

The Soufriere Marine Management Area (SMMA) was established as a result of intensifying resource use conflicts, coupled with declining resource quality and a perceived loss of economic opportunity within an 11 kilometre stretch of resource-rich but space-limited coastal marine area, extending along the central west coastal of Saint Lucia.<sup>22</sup> The administering body for the SMMA, the Soufriere Marine Management Association, presently exists as a not-for-profit organization overseen by a multi-stakeholder Board of Directors comprising a blend of government and civil society organisations (each with some element of management responsibility within the area), along with the political representative for the district of Soufriere. The arrangement was initially established in 1995 as a less formal arrangement agreed upon after nearly three years of intensive consultation and negotiation among resource users, government and non-government agencies and ultimately endorsed by Government of Saint Lucia.

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<sup>22</sup> Conflict Resolution and Participatory Planning- the case of the Soufriere Marine Management Area. 2002. Soufriere Marine Management Association.

At its inception the area was set up with a variety of “user” zones, and was primarily managed by the community-based Soufriere Foundation, with an extensive degree of technical support from the Department of Fisheries, under the guidance of a Technical Advisory Committee (TAC) comprising representatives of key management authorities and user groups. The initiative to strengthen the SMMA involved the adoption of a more formalised structure as a registered not-for-profit company, and the designation of the SMMA as a Local Fisheries Management Authority under the Fisheries Act. This move was based on the recognition of inherent weaknesses in the earlier administrative/advisory structure and allowed the SMMA to establish a wider range of formal administrative and operational systems (to address the full range of fisheries and tourism related responsibilities).

The SMMA experience has not been one of smooth sailing but rather one of adaptive management exercised in a continual effort to strive for the SMMA’s stated mission : ... *to contribute to national and local development, particularly in the fisheries and tourism sectors, through management of the Soufriere coastal zone based on the principles of sustainable use, cooperation among resource users, institutional collaboration, active and enlightened participation, and equitable sharing of benefits and responsibilities among stakeholders*”. Challenges to date included<sup>23</sup>:

- the unintentional marginalization of certain sub-groups of fishers within early stages of the planning and negotiation process as a result of inadequate stakeholder identification;
- limitations in the degree of two-way communication with key user groups via their “representatives”;
- management of inherent conflicts within the limited and highly sought-after coastal marine space through consistent application of fair and informed action for the management of conflicts;
- impacts from broader community/national social and economic dynamics that can greatly affect the level of support and compliance within a system of regulated use, e.g., incidents of large scale unemployment in relatively small communities can quickly

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<sup>23</sup> Case of the Soufriere Marine Management Area (SMMA), Saint Lucia. 2001. CANARI Tech, Rept. No. 285.

result in infractions such as fishing within marine reserves, or unauthorized water-taxiing.

Despite the challenges faced, the collaborative approach of the SMMA has been able to bring considerable tangible benefits to resource users and agencies, including improved reef fish populations, higher fish catches, user fee generation, elimination of anchor induced damage to reefs, and less intense/frequent conflicts among users. Consequently, an adjacent marine management area has now been established to include coastal space from Marigot Bay southwards to the northern boundary of the SMMA, which is all administered out of the SMMA office based in Soufriere, working with the coastal communities of Soufriere, Canaries and Anse la Raye .

### ***Co-management of Sea Urchins: an informal approach***

White sea urchins (*Tripneustes ventricosus*) have traditionally been harvested in Saint Lucia, mostly taken close to shore by skin diving. The gonads of the urchin are considered a delicacy and most of the catch is cooked and prepared for local sale. In the past, harvesting was primarily undertaken by family groups operating during the summer vacation period. Although family units still target this resource, the fishery now attracts a large number of young persons from various coastal communities (e.g., Vieux Fort, Laborie, Anse Ger, and Dennerly).

The sea urchin is particularly prone to over-fishing as it occurs close to shore and is virtually immobile. Destruction of marine habitats (seagrass beds) caused by natural events and anthropogenic activities (including agricultural and industrial pollution, siltation and areas of dredging, illegal fishing with dynamite and other destructive gears) has negatively impacted this resource<sup>24</sup>.

At the same time, high demand led to over-exploitation and this resulted in a ban on harvesting in 1987. During following years stocks recovered to an extent and the fishery was re-opened in 1990 under a limited entry/co-management regime. However, the fishery closed again in 1993 and remained closed until 2001 due to poor juvenile recruitment and low adult abundance, with

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<sup>24</sup> Fisheries Management Plan (draft). 1999. Department of Fisheries

the exception of a brief open period in 1995. Recent recruitment has been high, thus restricted fisheries took place during 2002 and 2003.

When the resource was less abundant (1990-1994), the management system comprised annual monitoring of resources (size structure, abundance, gonad ripeness) in key areas, in collaboration with traditional and potential sea urchin harvesters. In order to obtain a licence a harvester must have attended meetings held to discuss the biology and licensing conditions (size limit, zone of operation, data collection) and participated in pre-harvest population surveys<sup>25</sup>. The number of fishing permits issued to any one community depended on the population density and size range in the respective harvest zones. Harvesters played a lead role in deciding who would get the limited number of permits. As a result of their close involvement, harvesters willingly agreed to the fishery closures in 1993, 1994 and 1996-2000.

With the high abundance of this resource in recent years, the system has been adapted to allow for short “open periods” where anyone may harvest, but in accordance with a range of harvest conditions including a size limit, the requirement to land urchins whole (to facilitate estimating numbers and sizes landed, and proper waste disposal) and the provision of catch data to the Department of Fisheries. This approach was thought practical, given human resource constraints within the Department of Fisheries and the short period when the organism remains ripe which restricts the degree to which area-specific limited-entry management systems can be effectively administered annually. Zones have no longer been required and this had led to some level of inter-group (inter-community) conflict due to competition and varying levels of compliance with conditions set. This new approach has meant that the Department must maintain a heavier presence at the full range of landing areas during the harvest to secure data and ensure that conditions are being adhered to by those involved in the harvest. Levels of compliance have, however, been generally good, except for one community where there appears to be more widespread disregard for laws and law enforcement in general. This reality illustrates the importance of strong community-based policing as a means to engender compliance and allow for effective fisheries restrictions.

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<sup>25</sup> Fisheries Management Plan (draft). 1999. Department of Fisheries

Each harvesting group usually comprises 3 or 4 persons who skin dive to collect the urchins (use of scuba is prohibited due to its potential for causing over-fishing), along with an additional 2-4 persons who operate on the shore to break and clean out the urchins and prepare the final product (baked roe placed within stuffed urchin shells) by roasting on an open fire. Women play a key role in urchin preparation on shore, however the harvesting and vending of the urchin (either on the roadside or within nearby communities) is primarily carried out by the men. Sea urchin harvesting is still seen as a lucrative seasonal activity which can generate considerable income for those involved in the fishery, with the timing of the fishery (based on seasonal ripeness of the eggs) usually coinciding with the opening of the school year, thus providing much sought after income for rural coastal communities.

### ***2.2.2 Efforts undertaken in the field of integrating fisheries and coastal aquaculture into coastal area management, planning and conservation***

#### ***The SMMA***

The case of the SMMA, mentioned in the preceding section, illustrates a successful approach to integrating fisheries within a coastal area where new and emerging uses are creating incidents of confrontation among users and also leading to declining resource availability. Having become regionally and internationally renowned as a ‘success story’, the SMMA is now able to play a key advisory and advocacy role within on-going coastal zone management and integrated resource management initiatives at the national level and beyond.

#### ***Coastal Zone Management Policy and Guidelines***

The recently adopted Coastal Zone Management Policy announces that, in spite of a number of policy, legal and institutional arrangements in place to facilitate sustainable development of the island's natural wealth and the heavy dependence on coastal and marine resources for social and economic wellbeing and progress, the arrangements to date are inadequate and therefore coastal resources remain vulnerable to over exploitation and to the impacts of natural disasters. The new CZM policy states that in order “to ensure an integrated approach to CZM in Saint Lucia, the



*roles of regulatory and other agencies need to be comprehensive and clear, all stakeholders must be informed of, and sensitised to, CZM issues, and CZM related information must be made readily available to inform decision-making. To effectively achieve this, a coordinated approach is needed, and formal linkages must therefore be created among planning and management authorities*". It is on this basis that the CZM framework has been adopted to comprise an interagency Coastal Zone Management Advisory Committee to operate as the decision-making body, and a Coastal Zone Management Unit (not yet established), which would act as Secretariat to the Committee and provide technical advise, information dissemination and public education. According to the policy, the objectives of this framework are to:

- serve as a mechanism for co-ordination among agencies and institutions involved in coastal zone management and development;
- allow for the integration of coastal issues into the national planning and development framework;
- assist in minimising duplication of functions of management agencies, and in addressing gaps;
- provide a forum for conflict resolution and management;
- conduct specific programmes and activities that do not currently fall within the mandate of existing organisations.

The policy goes even further to embrace an 'island systems approach' to management, recognizing that many of the problems being experienced in the coastal area are as a result of land-based activities which will have to be tackled at the broader level if they are to be addressed effectively. The Policy presents a "...*regional planning approach with strategies and actions that take into consideration the environment, as well as cultural, social and economic needs. This approach should be flexible, providing direction for development within regions and their components. It should incorporate, among others, the concept and practice of watershed management*". The policy therefore proposes the division of the island into four regions based on a combination of watershed boundaries, resource issues, and development and management trends: the northwest coastal region, the central west coastal region, the northeast coastal region

and the south to southeast coastal region. The policy sees all components of the regional approach as ‘pieces of the same puzzle’ and stresses that it is imperative that CZM be guided by a national vision for development, an economic development strategy and a comprehensive/national land use plan.

### ***The People and the Sea Project***

At a smaller scale, an example where fisheries and aquaculture have been integrated into coastal area planning is that of a three-year research project (2000-2003) undertaken as a joint venture among the Laborie Development Planning Committee, the Department of Fisheries and the Caribbean Natural Resources Institute. The People and the Sea Project focused on the community of Laborie, which continues to depend heavily on coastal marine resources for its livelihood, e.g., reef fishing, seaweed (seamoss) cultivation and sea urchin harvesting. The project aimed at investigating the role of active stakeholder participation in sustainable coastal resource management by assessing a range of coastal resources, their present and potential uses, user perceptions regarding these resources, local experiences in resource management, and how such resources could be better managed for sustainability, both by organisations and by resource users<sup>26</sup>.

The People and the Sea managed to produce a wide range of detailed information (biological and socio-economic) on a relatively small area of high relevance to a coastal community. The initiative was able to produce baseline surveys of the reef resources, as well as studies of the reef fishery, the sea urchin fishery and traditional harvesting of seamoss. Information was also produced regarding coastal pollution and potential opportunities within the tourism sector. Monitoring was undertaken with stakeholder (user/community) involvement, for sea urchin stocks, water quality, coral cover, reef fishery activity and institutional change, throughout the project lifespan.

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<sup>26</sup> The Sea is Our Garden: a report on a study of institutional and technical options for improving coastal livelihoods in Laborie, Saint Lucia. 2003. CANARI Tech. Rept. No. 322.

The outcome of the project has partially been that government and community-based management and development agencies now have a wide range of current information to factor into management and development decisions for the community of Laborie. The degree to which this happens will depend on the extent to which the Laborie Development Planning Committee and the people of Laborie require that such agencies now use project outputs in their future work with the community.

Such in-depth focus would no doubt be beneficial to other coastal communities; however, it is a costly exercise, both in terms of time and resources. The People and the Sea Project was made possible through funding assistance provided by DIFD. It placed considerable demands on agencies such as the Department of Fisheries and the Ministry of Social Transformation, in terms of allocating consistent expertise and manpower at the level of project planning and execution. Nonetheless, the experience and insight gained will have positive effects on approaches taken in future work, in both national and community initiatives.

### **3. Consideration of Socio-Economic and Demographic Concerns**

#### ***3.1 Availability of socio-economic and demographic information on coastal fishing communities***

##### ***The 2001 National Census***

The most recent national census conducted by the Government of Saint Lucia was carried out in 2001. All communities were assessed, including coastal communities where fishing is either a primary or at a least significant source of livelihood. Information generated includes:

- Sex, age, education level, religious affiliation, employment;
- Housing density, persons per household, access to solid waste disposal, electricity, water and other basic services, property tenure, union membership;
- Type of toilet facilities, lighting, fuel used; and
- Access to television, computers, telephone services, vehicles.

### ***Socio-economic Survey of Fishers***

Limitations in the availability of detailed socio-economic information specific to fishers and their families led the Department of Fisheries, in 2001, to conduct an island-wide survey to gather such information<sup>27</sup>. The survey was carried out in 12 selected fishing communities by sampling 20% of registered fishers selected randomly, with the numbers of persons sampled in any one site being proportional to that site's contribution to total registered fishers. Information gathered included demographic data such as age, marital status and number of dependents, but focused on pertinent socio-economic data, including access by households to electricity, water, sanitary facilities, and ownership of property (land, house), vehicles, fishing boats, etc. The survey was broad and also gathered input from fishers in terms of their length of involvement in fishing, the percentage of total income earned by fishing, other sources of livelihood, personal savings and financial liability, and details of average costs and revenues from fishing. Fishers were also asked about their perceptions regarding the level of service received from the Department of Fisheries, their Cooperative and the Saint Lucia Fish Marketing Corporation. Although assessment of the results has been completed and a report is being compiled, final interpretation and reporting is still pending due to human constraints. This is of concern, as the information becomes more and more dated with the increasing time lag between the survey and the resultant report.

### ***Fishers Survey by the National Insurance Corporation***

Another recent initiative is a survey undertaken by the National Insurance Corporation, with guidance of a multi-agency advisory committee established by the Government of Saint Lucia so as to consider the development of a pension scheme for farmers and fishers (the Department of Fisheries is part of this committee). The survey considered a range of factors relevant to such a scheme, i.e., the status and income of the fisher, the level of existing access to employment pension and insurance coverage, the number and type of dependents, existing health status and level of access to medical care, and various social indicators, such as access to basic sanitary

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<sup>27</sup> Preliminary report: socio-economic survey of fishers (in prep.). Department of Fisheries

services, property ownership, etc. Results of the survey are highlighted within the various components of this paper.

### ***Study of the Social and Economic Impacts of the SMMA***

In 1998, an assessment was carried out within the SMMA to determine the social and economic impacts of the marine management area.<sup>28</sup> Stakeholders interviewed included fishers, along with other users such as the dive community and hoteliers. The questionnaire sought perceptions regarding whether the SMMA had reduced user conflicts, displaced local users, allowed for equitable benefits, or assisted in an increasing understanding and appreciation of the marine environment and its resources. Reported results are not disaggregated by user, thus responses attributed to the fishing community cannot be specifically determined from the report; however, it does note some of the verbal responses given by fishers or by other groups regarding their perceptions regarding the impact of the SMMA on fishers, which in general allude to their earlier feelings of being marginalized by tourism interests, and more recent perceptions that real benefits are being generated for the fisher community.

### ***Use of socio-economic and demographic indicators in the preparation of coastal area profiles and management/development plans***

#### ***The Fisheries Management Plan***

The current Fisheries Management Plan (2000-2005) is focused on resource-specific management plans, and cannot be considered a management plan for the fisheries sector per se. The Plan does, however, give basic national demographic and economic parameters and outlines the fisheries management process as one which incorporates consultation with industry and other stakeholders at early and mid stages of the development of the fisheries-specific management plans. In their present form, the individual fishery plans do not systematically identify partners within the management framework.

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<sup>28</sup> Social and Economic Impacts of Marine Protected Areas: a study and analysis of selected cases in the Caribbean. 1998. CANARI Tech. Rept. No. 252

Neither socio-economic nor detailed demographic data were used in the process of compiling the current Fisheries Management Plan. The document was prepared based on a template provided by the CIDA-funded CARICOM Fisheries Resources Assessment and Management Project (CFRAMP), which assisted member countries in the development of such plans, as required in national legislation. The Department of Fisheries is presently conducting a review of the plan, given its impending expiry, and has suggested that it be made broader to reflect the status and potential management role of all stakeholders. Results of the recent socio-economic survey conducted by the Department could also be used to broaden the information base on which specific fisheries are interpreted and options selected for specific management approaches. Despite the present Plan stipulating one of its primary objectives as *‘developing and increasing the potential living marine resources to meet nutritional needs, as well as social, cultural, economic and developmental goals in a manner which should ensure sustainable resource use’*, it does not specify what these goals are and also does not indicate to what degree present fisheries and aquaculture production meets the nutritional needs of the country. A broader ‘sector’ plan would need to indicate the present status and give indicators, targets, and strategies to meet key ‘sector’ objectives expressed within national policy:

- to develop the fishing industry in terms of modernization of fisheries infrastructure and fishing vessels and use of improved fishing gear and methods;
- to promote self-sufficiency through increased production from capture fisheries and the aquaculture sector;
- to advance the social and economic welfare of fishermen and their families;
- to improve the nutrition of the nation through the provision of increased volumes of fish protein.

### ***Development of Fisheries Infrastructure***

As part of its initiative towards establishing improved fisheries infrastructure in fishing communities, the Government of Saint Lucia has benefited from a partnership with the Government of Japan, where fish landing facilities have been established in most landing sites around the island. In developing the project proposals for such facilities, data used includes the

trends in fish catches, the number of vessels and fishers (using both past and current figures) generated through the Department's data collection, licensing and registration programmes. In-house databases can generate such information at the national level and for individual communities. This information is then used to estimate present and potential catch rates, and anticipated demands for berthing space, locker rooms, ice making and cold storage capacity, etc. The level of employment in fishing (indicated by fisher registration figures for the landing site) and the range of ancillary employment (boat boys, vendors, processors) are estimated using current information (data) or best estimates (usually generated by extension officers and fisheries data collectors who work regularly in the particular landing area).

### ***Estimating the Value of the Fisheries Sector***

Similar to many countries within the region, little has been achieved in determining the real economic contribution of the fisheries sector to the country. Earlier reference was made to the limitations of present estimations for the contribution of fisheries to GDP. The Department of Fisheries has attempted to produce annual estimations of the value of the fish catch, by species groups (listed in Table 2), based on average market prices for individual species. However, this is only a rough estimation of ex-vessel values and does not include significant gains made in processing and wholesaling/retailing. For this to happen, inter-agency collaboration among fisheries and economic agencies will be required.

A range of government agencies (responsible for economic planning, national budgeting, social/community development), financial institutions (banks, credit unions), and local and regional/international funding agencies also use available information on fishing catch and effort trends and associated catch values for planning for and/or selectively initiating developments within the fisheries sector and fishing/coastal communities<sup>29</sup>. Obviously, more comprehensive and realistic social and economic information regarding the fisheries sector would greatly assist in effective planning at both the community and national level. The results of the recent survey

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<sup>29</sup> Fisheries Sector Review. 1999. Sarah George. Organisation of Eastern Caribbean States.

by the National Insurance Corporation, although somewhat limited in extent (16% of fishers interviewed from a population of 2,163), should be made available for use in guiding investment and development initiatives within the sector, whether by public or private interests.

***Preparation and implementation of special projects and activities in the context of fisheries and coastal area management and conservation programmes, which aim at improving the socio-economic well-being of coastal fishers and their families.***

The mandate of the Department of Fisheries necessitates a range of approaches that tie the dual responsibilities of conservation of natural coastal and marine resources and secure the socio-economic development of fishers and their families. Many resource management programmes and activities seek opportunities for sustainable resource use while aiming for conservation of a very limited resource base (species, habitats, ecosystems) on which such economic activities depend. Examples of such integrated approaches are given below.

***Seamoss farming developed as an alternative to wild harvest***

Seamoss (various indigenous *Gracilaria* species) used to be common in shallow coastal waters, however, increasing harvesting for local use and a burgeoning export market to nearby islands such as Martinique, led to over-harvesting in the 1970s and early 1980s and heavy reductions in local seamoss stocks in many areas<sup>30</sup>. In the early 1980s, the Government of Saint Lucia, with funding and technical assistance from the Government of Canada, developed methods suitable for culture of local seamoss species. This technology was introduced to several communities including Praslin (on the central east coast), Vieux Fort and Laborie (see Figure 1). More recently, with assistance from CANARI, work has been carried out to identify the most productive seamoss strains (including a species of *Eucheuma*), processing techniques and marketing potential, both locally and abroad. Women have remained key participants in this economic livelihood, both at the farming and processing levels. In addition, the activity remains

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<sup>30</sup> A description of the wild harvest of seamoss in Laborie, Saint Lucia. 2001. A H Smith and J Gustave. People and the Sea Project Doc. No. 2. CANARI/DFID



at a cottage industry level, with family groups still providing the primary modus operandi within the various participating communities.

Despite development initiatives within the industry, total production remains quite low as few locations were found to present ideal cultivation locations (in terms of adequate water clarity/quality, low herbivory by fishes and settlement of epiphytes, and low levels of space competition/conflict with other users such as recreational bathers, fishing activities, coastal marine traffic, etc).

Nevertheless, several farmers have remained in the activity which provides their main source of income. Farmers were encouraged to produce processed products (e.g., seamoss punch with milk for local retailing, or concentrated gel for sale to hotels/restaurants or the local distillery and ice cream manufacturers). Some have taken up this challenge, while others prefer to sell the sun-dried product to local retailers or overseas markets. Despite incidents of business training and other technical support, the industry remains rather small.

### ***Fisheries infrastructure development and community-based management***

As indicated earlier, in order to establish appropriate fisheries facilities in the main fish landing sites around the island the Government of Saint Lucia received significant assistance from the Government of Japan. The Japanese involvement in Saint Lucia's fishing industry began in 1988 when the main cold storage and fish processing facility was built in Castries, along with fish landing facilities in Castries and five of the fishing villages. Fibreglass vessels and modern fishing gear were also provided. Two of the facilities built in coastal villages were also equipped for some level of ice making/cold storage and fish processing<sup>31</sup>. More recently, Japan assisted the Government of Saint Lucia in the construction of sizable fisheries facilities at Dennery, Vieux Fort, Choiseul and Soufriere, and refurbished the Gros Islet facility. Each facility includes gear lockers, washrooms, a fuel station, a fish market, ice making facilities (in many), and a marine mechanics workshop. Some of the facilities included office space for the resident

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<sup>31</sup> Press Release, 23 August 1997. Embassy of Japan, Trinidad and Tobago

cooperative and fisheries staff, cold storage and coastal protection (breakwaters / revetments) for both the shoreline and vessels<sup>32</sup>.

Through this sort of investment many benefits have accrued to fishers, vessel owners and fisher cooperatives. The complexes provide hygienic and safe environments for the daily landing and sale of fish. This also benefits the consumers as fish quality is improved. Although ice is available at minimal cost, few vessels use ice at sea, apparently due to the added cost and space it requires. Community based multi-stakeholder committees have been established to manage these facilities, with fisher Cooperatives playing a lead role. Maintenance costs are largely defrayed by the collection of fees charged for fish vending, use of toilet/shower facilities, purchase of ice and landing of fish at the facility.

Such external forms of assistance, along with education and training undertaken by the Department of Fisheries with financial and technical assistance from governments of Canada, Japan and France, have largely been responsible for a steady increase in fish landings over the past 15 years (from 442 tons in 1989 to 1,528 tons in 2003)<sup>33</sup>, along with an increase in the number of fishing craft and steady conversion from wooden canoe to fibreglass pirogue. Thus, the overall value of landings has increased and fishers enjoy better facilities to operate from. It may be assumed, therefore, that such changes have resulted in better livelihoods for fishers and their families as reflected by the continuing movement of persons into the sector. However, specific studies to verify this have yet to be carried out.

### ***Measures undertaken to ameliorate negative economic impacts in the establishment of the SMMA***

As has been stated earlier, the fishers of Soufriere had found themselves in increasing conflict for space and living marine resources due to expanding tourism activities such as diving and yachting within the Soufriere area. The establishment of the SMMA brought a range of benefits for Soufriere fishers (representation on both the SMMA's administrative and advisory bodies,

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<sup>32</sup> Saint Lucia Nationwide. May 24<sup>th</sup> 2003. Department of Information Services, Government of Saint Lucia

<sup>33</sup> Department of Fisheries: landings and registration data

further establishment of fishing priority areas for use by seine fishers and marine reserves as nursery/breeding grounds for fish population recovery). However, fishers also lost direct access to some of the most productive reef areas and had to wait several years before seeing the benefits of fish stock recovery in the form of increasing fish catches<sup>34</sup>. It should be noted that, according to the 2001 national census results<sup>35</sup> 73% of households in the district of Soufriere contain persons without a secondary school leaving certificate or higher academic qualification, thus a large percentage of the population is likely to find it difficult to transfer to occupations which require some form of formal education beyond a primary school level. As a result, fisher households often heavily depend on the income and subsistence provided by fishers within the household. The high average age of fishers, particularly in communities such as Soufriere, suggests that individuals may not be easily transferable into other occupations at this stage in life.

Soon after the establishment of the SMMA, the closure of two key sources of employment in the community of Soufriere (a local factory and a major hotel) led to increased unemployment and an influx of persons into the fishery. Many of these persons did not have the commitment to stay out of the marine reserves and this situation led to an upsurge in illegal fishing activities, both by new entrants and traditional fishers who now faced higher levels of competition for a reduced range of legal fishing areas. In light of the above, the Government of Saint Lucia took several measures to cushion this difficult transition period, including the provision of a small stipend (EC\$400) to 20 of the most dependent pot fishers who had been substantially displaced by the establishment and active enforcement of the marine reserves. The stipend helped somewhat in alleviating this pressure, and persons who were caught fishing illegally faced the threat of losing their stipend.

The French government also assisted in funding a project which included, among other things, the establishment of Fish Aggregating Devices (FADs) in offshore locations to encourage Soufriere fishers to leave over-fished, declining reef areas and fish offshore for pelagic fish species which aggregate under such structures. The FAD was soon embraced by fishers as a site

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<sup>34</sup> Adjusting to a new way of life: marine management areas and fishers. 2000. D. Pierre. In: *The OECS Fisher*.

<sup>35</sup> Saint Lucia Government Statistical Department

where they could generate a guaranteed catch year-round and cut down on cost of an average offshore fishing trip. Notably, the project also provided a small revolving fund for fishers to obtain small loans (up to EC\$6,000) to engage in activities such as deep-sea fishing and tourism).<sup>36</sup> All such initiatives have combined over the years to assist in the rehabilitation of reefs and reef fish populations in Soufriere. In the space of five years a variety of scientific studies had shown that reef fish populations and reef fish catches in Soufriere have both increased significantly<sup>37</sup>

***The People and the Sea: recognizing the socio-economic importance and potential of coastal marine resources to the people of Laborie***

As was indicated previously, the People and the Sea (PAS) Project managed to generate a wide range of information and considerable community and agency involvement in determining the potential for improving coastal livelihoods in the village of Laborie. Like the coastal community of Soufriere, Laborie comprises a high percentage of households (72%) without persons having attained at least a secondary education<sup>38</sup>. Thus, traditional livelihoods (fishing and agriculture) continue to provide important sources of employment for a large proportion of the community. In assessing the past, present and potential impacts of coastal resources on livelihoods in Laborie, the PAS project aimed at better understanding the relationship between poverty and the environment, while viewing poverty in a broad context, i.e., as not only income, but also access to assets (land, property, equipment, education and skills), social services, and also to dignity, self-esteem, a capacity of choice, and opportunities to participate in decision making and development<sup>39</sup>.

From its household survey, individual studies and field observations, the project showed that unemployment in Laborie is high and has grown significantly over the past few years, affecting

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<sup>36</sup> Adjusting to a new way of life: marine management areas and fishers. 2000. D. Pierre. In: *The OECS Fisher*.

<sup>37</sup> The fishery effects of the Soufriere Marine Management Area: 1995/6 to 2000/1. 2002. F Gell, C. Roberts and R. Goodridge. University of York, UK

<sup>38</sup> Saint Lucia Government Statistics Department

<sup>39</sup> The Sea is Our Garden: a report on a study of institutional and technical options for improving coastal livelihoods in Laborie, Saint Lucia. 2003. CANARI Tech. Rept. No. 322.

young persons in particular. According to the 2001 census<sup>40</sup>, Laborie has the second highest unemployment rate for the male population (19.3%), second only to the village of Canaries (25.2%). Additionally, 21.9% of women in Laborie were unemployed in 2001. This situation has resulted in the contraction of the community's population over the past ten years and a dramatic decrease in the number of young persons within the community, especially men, as they had either emigrated or moved to other parts of the country (the 2001 census shows that, between 1991 and 2001, just over twice as many males left the community as females). The PAS project showed that, in particular, the community had lost persons who possessed a variety of marine-based skills, especially within the field of watersports. The skewing of the population towards older ages was seen to place additional burdens on the community in terms of healthcare needs and social support services.

The project did show that coastal resources still played an important role in supporting the livelihoods of older persons within the community, many of whom were or are fishers. In its conclusions, the project determined that non "area related" coastal zone management approaches (other than marine parks or similar zoned management systems) are valid in terms of achieving coastal resource conservation, particularly for coastal areas where there are neither the strong institutional organisations or the intense levels of resource use for generation of user revenues, both of which are important for administrative and financial sustainability of marine parks and the like. Additionally, the limited availability of pro-poor approaches to coastal area management and governance was recognized. It was felt that such approaches would better address the needs of *people*, and therefore:

- generate greater conservation support;
- use more appropriate science and technology that relates positively to popular knowledge and perceptions;
- enhance people's livelihoods along with resource sustainability;
- protect uses, activities and opportunities for the community and its members rather than succumb to powerful outside interests.

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<sup>40</sup> Saint Lucia Government Statistics Department

As was mentioned earlier, this project now provides a valuable case study for work in other areas and communities. It should also allow the range of organisations which work in Laborie to make more informed development and management decisions in the short to medium term.

***The FAD development programme: moving fishers away from the reef***

Earlier mention was made of the use of FADs to attract fishers away from vulnerable reef areas and towards offshore fishing. The Department of Fisheries continues to operate a FAD development programme, having benefited from assistance in the demonstration and establishment of this technology over the past ten years from the Governments of Japan and France, and more recently through a project funded by the European Union. After making it through the early years where there was still considerable vandalism of FADs by local fishers (reportedly as they felt the devices had been set in national waters by foreign fishers), the fishermen and fishers cooperatives are now fully supportive of the FAD programme, and cooperatives are now financial partners in such ventures. The benefits include reduced focus on the nearshore reef resources, particularly during the low season (June to November) when migratory fish stocks were otherwise thought to be in short supply. This can result in more consistent landings of large pelagics during the second half of the year. However, FADs can be expensive devices considering their relatively short expected life span, and the Department of Fisheries is now working with local fishers and their cooperatives to determine the suitability and durability of locally available and recycled materials.

***Use of socio-economic and demographic indicators in monitoring the impact of management regulations and measures on the socio-economic well-being of coastal fishers, their families and other segments of the coastal population.***

As can be seen from the information provided so far, there are extremely few cases where socio-economic assessments or demographic indicators for coastal communities or fishing industry stakeholders have been conducted with the objective of better understanding levels of dependency on coastal and marine resources, the costs and benefits thus derived, or opportunities available to further develop and improve livelihoods generated through the sustainable use and

management of such resources. Neither has there been substantial work in monitoring the impacts (both positive and negative) of management regulations on the socio-economic well-being of coastal fishers and their communities.

To glean a broader picture in this regard at the community level, specific factors such as resource use patterns, stakeholder characteristics, perceptions/behaviours, gender issues, organizational and institutional arrangements and the influence of market factors would first need to be assessed and better understood. For monitoring socio-economic change (in terms of some fisheries development/management or other intervention), suitable indicators would need to be selected to track such changes (positive and negative) over time. Lack of appropriate baseline socio-economic studies would likely lead to erroneous conclusions and inappropriate management decisions.

#### **4.0 Conclusion and Recommendations**

The limited integration of socio-economic considerations and demographics into management and conservation planning and action does not mean that the management and conservation work outlined in earlier sections have failed in bringing tangible benefits to fishers, their families and communities. Communities heavily dependent on fishing as a source of employment and sustenance have progressed in terms of physical development and social services, although it has not been determined to what extent these assets have been generated through fishery-based earnings and employment. In most communities, more and more fishers are interested in becoming active participants in resource and fisheries management, fisher education and training programs, and negotiations with other marine users. This is a good sign and such changes need to be constantly encouraged and supported. Nonetheless fisher cooperatives continue to complain of lack of unity among fishers in their respective communities. As coastal uses increase and fisher communities compete with business-minded individual companies and organizations within alternative economic sectors, fisher unity and strong fisher organizations will be required to secure continued benefits to the fisheries sector.

Education programs run by the Department of Fisheries and other government and non-governmental agencies over time have led to a better integration of coastal marine issues into the school curricula, and created a younger generation that is more aware of marine resource issues. However, illegal fishing (e.g., the capture and sale of sub-legal lobsters, the use of dynamite and poisons, fishing in the close season, illegal killing of nesting turtles and collection of their eggs) still occur. Are the majority of fishers and coastal residents involved in such practices? Probably not, but the educational activities, targeting specific groups such as fishers, school children, etc, need to be sustained and updated with new information and new technology as time evolves. Education also needs to be supported by effective enforcement, whenever necessary, so as to provide a real deterrent to those who are informed yet choose to be non-compliant.

As more youth enter the sector as fishers, boat owners, aquaculture farmers and the like, they may benefit the sector through their higher education levels and greater capacity for innovation, but may also bring lower levels of awareness and respect for national laws and resource limitations unless adequately sensitized and trained to use the resource base sustainably and responsibly. Thus, formal education and awareness of potential and new fishers remains a critical ongoing need for viability of the fisheries sector.

It is evident that in the context of Saint Lucia little work been carried out in making the link between regulation/management and livelihood benefits This appears to be largely due to the limitations in human and financial resources faced by small island states which yield little in-depth focused work, involving the full range of environmental indicators/factors. As a result it is difficult to put in place consistent monitoring programs to collect, analyse and interpret relevant information for feeding into existing adaptive management approaches. In future, such constraints will continue to necessitate a focus on developing effective community-based management arrangements wherever suitable institutional and user environments allow for formal delegation of authority to competent community organizations. Small islands, such as Saint Lucia, will also need to continue to pursue project opportunities of the type illustrated by the People and the Sea Project, where a wide range of environmental factors can be assessed for a given time period to better select management and monitoring priorities for particular



communities or resources. The final option is to continue the conservation and resource management work, irrespective of the limited ability to monitor specific levels of biological, social or economic impact, but confident that many outcomes will be positive for both the resources and the people who depend on them.

***Target activities for integrating socio-economic and demographic indicators into coastal and fisheries management***

In order to better integrate the use of socio-economic and demographic indicators into coastal and fisheries management, the following initiatives are suggested (Table 5). Although they are specifically relevant to Saint Lucia, the suggested activities may well be applicable for other countries within the region.

**Table 5:** Target activities for integrating socio-economic and demographic indicators into coastal and fisheries management

<b>Need/Constraint to be Addressed</b>	<b>Activity</b>	<b>Implementing Agency</b>	<b>Support Agencies</b>
<ul style="list-style-type: none"> <li>• Need for country-specific estimates for economic and social contribution of fisheries sector/individual fisheries to GDP and to national development.</li> </ul>	<ul style="list-style-type: none"> <li>• Create survey format to guide national baseline studies (for assessing a range of factors and aimed at identifying appropriate indicators for long-term national monitoring).</li> </ul>	<ul style="list-style-type: none"> <li>• CRFM: draft survey format; provide implementation guidelines/training; seek funding to support national efforts.</li> </ul>	<ul style="list-style-type: none"> <li>• National governments (ministries/departments responsible for fisheries, trade, economic, social development).</li> </ul>
	<ul style="list-style-type: none"> <li>• Facilitate focused socio-economic/demographic graduate/post graduate studies related to the fisheries sectors by students enrolled in educational institutions.</li> </ul>	<ul style="list-style-type: none"> <li>• CRFM working with relevant tertiary education institutions within the region and beyond: provide study grants for priority research areas.</li> </ul>	<ul style="list-style-type: none"> <li>• National governments to generate country-specific priority areas for such research.</li> </ul>
<ul style="list-style-type: none"> <li>• More effective integration of socio-economic and demographic considerations in fisheries/coastal area planning and development.</li> </ul>	<ul style="list-style-type: none"> <li>• Improved sharing of information among fisheries authorities and economic planning authorities</li> </ul>	<ul style="list-style-type: none"> <li>• National fisheries agencies; economic/social agencies: production and circulation of annual/biannual statistics/information</li> </ul>	<ul style="list-style-type: none"> <li>• Funding and technical assistance:                             <ul style="list-style-type: none"> <li>○ CRFM/OECS/FAO</li> <li>○ Donor governments</li> <li>○ Other national/regional/international agencies</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>• Improved integrated planning among agencies responsible for fisheries, coastal and national development through joint planning and review initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• CZM advisory committee/permanent/ad-hoc national economic and social advisory bodies</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries Department; other Departments/Units and community/user organisations responsible for elements of coastal and marine use and management</li> </ul>
	<ul style="list-style-type: none"> <li>• Providing support to projects which assess and integrate socio-economic factors for sustainable coastal and marine resource use and management.</li> </ul>	<ul style="list-style-type: none"> <li>• Fisheries Department, community development organisations, fisher organisations</li> <li>• Donor agencies: national, regional and international</li> </ul>	<ul style="list-style-type: none"> <li>• Government and community organisations in assisting in the design and implementation of such projects.</li> </ul>

<b>Need/Constraint to be Addressed</b>	<b>Activity</b>	<b>Implementing Agency</b>	<b>Support Agencies</b>
<ul style="list-style-type: none"> <li>Integration of socio-economic and demographic factors into national fisheries management and development plans (FMPs)</li> </ul>	<ul style="list-style-type: none"> <li>Provision of guidelines to countries in integrating socio-economic and demographic factors and indicators into revised/new fisheries management plans</li> </ul>	<ul style="list-style-type: none"> <li>CRFM: provision of format for revising/developing FMPs (advancing prior CFRAMP initiative and products in this regard).</li> <li>Fisheries Department: revising FMPs</li> </ul>	<ul style="list-style-type: none"> <li>Fisher organisations</li> </ul>
	<ul style="list-style-type: none"> <li>Strengthening/supporting integrated planning at the national level</li> </ul>	<ul style="list-style-type: none"> <li>CRFM/OECS: provision of guidelines on integrating fisheries and coastal development into sustainable national development (with a particular emphasis on issues relevant to SIDS)</li> </ul>	<ul style="list-style-type: none"> <li>International/regional funding agencies</li> </ul>
<ul style="list-style-type: none"> <li>Information sharing on case studies where socio-economic and demographic factors have been integrated into fisheries and coastal area planning and management</li> </ul>	<ul style="list-style-type: none"> <li>Use of existing electronic mailing links in circulating relevant documents</li> </ul>	<ul style="list-style-type: none"> <li>Caribbean Fisheries electronic network</li> </ul>	<ul style="list-style-type: none"> <li>CRFM/OECS/CANARI/ national agencies/university and other research institution libraries</li> </ul>
	<ul style="list-style-type: none"> <li>Provision of relevant current books/scientific papers on this subject to expand existing libraries at Fisheries Department</li> </ul>	<ul style="list-style-type: none"> <li>CRFM</li> </ul>	<ul style="list-style-type: none"> <li>Funding support from donor governments and agencies where such texts are available</li> </ul>
<ul style="list-style-type: none"> <li>Improvement of fisheries data systems to include relevant socio-economic and demographic data collection/use</li> </ul>	<ul style="list-style-type: none"> <li>Development of systems to collect data for socio-economic and demographic indicators</li> </ul>	<ul style="list-style-type: none"> <li>Fisheries Department</li> <li>CRFM: upgrade of existing CARIFIS database (if necessary)</li> </ul>	<ul style="list-style-type: none"> <li>Technical and financial assistance from CRFM.</li> <li>National economic and social agencies</li> </ul>
<ul style="list-style-type: none"> <li>Identification of socio-economic costs and benefits likely with the development of a common fisheries regime (CFR) within CARICOM</li> </ul>	<ul style="list-style-type: none"> <li>Conduct of relevant consultancies for undertaking a cost/benefit analysis of the CFR and provide recommendations relevant to the way forward</li> </ul>	<ul style="list-style-type: none"> <li>CRFM with donor countries/agencies for funding of consultancies</li> </ul>	<ul style="list-style-type: none"> <li>National agencies in providing relevant quantitative and qualitative information.</li> </ul>

There is variability among CARICOM states in the degree to which past/current practice has integrated socio-economic issues and demographics into fisheries and coastal area management and planning. In many cases it has been limited but, as has been shown in this report, there are important lessons from which we can learn. The consideration of case studies from the Caribbean region and beyond can provide an important starting point. For more consistent progress, however, social and economic disciplines must become integral to our fisheries management practice. This will require that such expertise exists within fisheries and/or

planning departments. It also means that the range of information we routinely gather on the fisheries sector and the way in which we develop and assess national fisheries development management plans and programmes will need to be broadened in this regard. In order for a fundamental shift in national and regional capacities and approaches avenues must also be provided for reporting to and influencing the decisions of the political directorate, both at national and regional levels.