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DIAGNOSTIC STUDY TO DETERMINE POVERTY LEVELS IN CARICOM FISHING COMMUNITIES

POLICY DOCUMENT

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Diagnostic Study to Determine Poverty Levels in CARICOM Fishing Communities - Policy Document

> CRFM Secretariat Belize 2012

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Diagnostic Study to Determine Poverty Levels in CARICOM Fishing Communities - Policy Document

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Foreword

Within the Caribbean region, fishers and their communities are often characterized by sub-standard living conditions, poor housing, low levels of formal education; inadequate access to basic services like water, schools, health care; inadequate access to credit and low savings; poor infrastructure such as roads or markets; and limited alternative employment opportunities. In the past, there have been many initiatives aimed at reducing poverty. Unfortunately, many of these have failed in their objective of significantly reducing or eliminating poverty. This failure has been attributed to the tendency to focus on promoting economic growth and development through the application of technology, investment in infrastructure projects and the application of market oriented economic policies, rather than being focused on improving the living conditions of the poor based on an in-depth understanding of the underlying causes of poverty.

It is now widely recognized that poverty is a very complex, multi-faceted issue that varies considerably from country to country and from community to community. The Diagnostic Study to Determine Poverty Levels in CARICOM Fishing Communities will assist us in better understanding and defining the nature, extent and underlying causes of poverty in a comprehensive and scientific manner. This will assist national and local governments and interested organisations in developing and implementing more focused interventions aimed at improving the quality of life of fishing communities by dealing with poverty and the underlying factors that give rise to it in an informed manner.

The Diagnostic Study was conducted in ten selected CARICOM countries – Barbados, Belize, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Vincent and the Grenadines, Trinidad and Tobago and The Bahamas. The main objective of the Study was to assess poverty levels in fishing communities, including its effects on quality of life and community structure, in order to identify suitable planning models and implement alternative livelihood and poverty alleviation programs in these communities. A secondary objective was to identify the demographic and socio-economic variables underlying low standards of living.

The report of the Study is presented in two Volumes. Volume I contains the full Technical Document. It is organized into five sections which provide an introduction to the Study, including a description of the methodology; background information on the history, geography, demography, socio-economic and political aspects of the CARICOM region; the findings of the Study; the recommendations; and an introduction to the concept of alternative livelihoods. The report of the Regional Validation Workshop, 1 - 2 February 2012, St. Vincent and the Grenadines is published as Supplement 1 to Volume I. Volume II is a Policy Document in which the main findings and the recommendations are summarised.

It is hoped that the findings of this Study will not only contribute to a greater understanding of poverty and its effects on quality of life in fishing communities across the CARICOM region, but that it will also assist in the identification and development of alternative livelihood projects and programmes that will positively impact the livelihoods of Caribbean fisherfolk and their families, while promoting the sustainable use of the fisheries resources.

I would like to extend our sincere thanks to the Kingdom of Spain for the funding and technical assistance provided through AECID under the Caribbean Community (CARICOM) / Kingdom of Spain Scientific and Technical Cooperation Agreement. Also, we would like to thank the Spanish consultants, Tragsatec, who in collaboration with the CRFM Secretariat and the Member States, undertook the Study and prepared the reports.

Milton Haughton Executive Director CRFM Secretariat

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Acronyms and abbreviations

AIGs	-	Alternative Income Generating Activity
CARICOM	-	Caribbean Community
CRFM	-	Caribbean Regional Fisheries Mechanism
UBN	_	Unsatisfied Basic Needs

I. SCOPE OF THE STUDY

1. Background

The **"Diagnostic Study to Determine Poverty Levels in CARICOM Fishing Communities"** is framed in the "Scientific and Technical Cooperation Agreement between the Kingdom of Spain and Caribbean Community", signed in Port of Spain, Trinidad and Tobago, on 4 July 1999.

Recognising the importance of the use of socio-economic and demographic data in the planning and execution of programmes and projects for the management of integrated coastal zone and coastal communities, the CRFM Secretariat sought assistance under the cooperation agreement between CARICOM and the Government of Spain to undertake a diagnostic study of the socio-economic and demographic situations in fishing communities in selected CRFM Member States.

The main objective of the project is to determine poverty levels of fishing communities in selected CRFM members States, and its effects on quality of life and structure, in order to identify suitable planning models and implement alternative livelihood and poverty alleviation programs in these communities. The second objective of the project is the identification of the demographic and socio-economic variables underlying low standards of living.



Chart 1: Methodology used to meet the objectives of the Diagnostic Study to Determine Poverty Levels in Fishing Communities of the CARICOM / CRFM Member States.

The project was implemented in ten CARICOM Member States - The Bahamas, Barbados, Belize, Grenada, Guyana, Jamaica, Montserrat, St. Kitts and Nevis, St. Vincent and the Grenadines and Trinidad and Tobago. The selected countries had to be representative of the

fishing sector in the region as a whole, as well as reflect the most common problems affecting this sector in the Caribbean.

The direct beneficiaries of this intervention encompass the fishing communities, fishermen, fishers' organisations. Processors, members of the aquaculture sector, fisheries administrations and other stakeholders.

2. Planning the Study and the methodology utilised

As mentioned before, this Diagnostic Study is framed on the study of the living conditions of the individuals engaged in the fisheries sector (extractive fishing, aquaculture and processing sector) from fishing communities of ten selected countries of the CARICOM Region.





Chart 2: Phases of the Diagnostic Study.

Phase one: The Countries selection

The criteria for the selection of the ten countries was determined using several **socioeconomic variables** for the classification of the countries within an economic context; and several **variables related to the fisheries sector**, in order to be able to justify the relationship between the different countries and the fisheries sector.

A marking system was elaborated to assess the importance of each variable in each country. This marking system gives priority to those countries in which variables were scored with high and low marks, and allows the selection of both, countries with better living conditions for members of the fisheries sector; as well as countries with the worst living conditions. Studying both ends ensures the representation in the Study of all the countries of the Region.

• Phases two, three and four: Data collection method; sample survey design and sampling techniques used in the fieldwork

The choice of the sample size for each country and sector was made using previously estimated populations. The result of sampling studies is always subjected to a degree of uncertainty due to the fact that only a part of the population is studied and therefore sampling errors will exist. In this study, the degree of precision aimed for is 5% for a confidence level of 95%. This means that for 95% of the cases taking into a sample of size "n", the total population will be represented with an error of 5%.

The selected method for data collection was the **direct personal interviews** by means of a field surveyor. To obtain the labour and household conditions data of the members of the three sectors participating in this Study: the extractive fishing, aquaculture and processing of fishery products sectors, three different types of surveys were designed.

The sampling technique used by Member State's surveyors for the fieldwork was the **random stratified sample model**. The use of this type of model allows surveyors to obtain communities or groups of communities with the most homogeneous auxiliary variables possible and with the greatest possible differentiation between groups.

• Phase five: Data analysis

Information obtained from the questionnaires was stored in a centralized database. Before analysing data, the information was processed and edited to mitigate or correct detectable errors.

The "Unsatisfied Basic Needs Method", was used to determine the levels of poverty in fishing communities in selected CARICOM Member States. This method classifies the households participating in the Study into the categories of poor (more than one Unsatisfied Basic Need), vulnerable (one Unsatisfied Basic Need) or non-poor (no unsatisfied basic needs) households depending on its degree of satisfaction of the four basic needs defined in the Study: dwelling quality; access to running water and / or toilet; the schooling of children between 5 and 15 years old, and household's economic capacity.

Poverty and fishing activity indicators were used to identify the demographic and socioeconomic variables underlying low standards of living.

The multivariable analysis was the other statistical methodology used for data analysis. **Cluster analysis** was used to show the relationship between countries and fishing communities based on their common characteristics. A tree diagram, named Dendrogram, from which hang clusters or groups of countries with similarities in the variables studied, was the format used to represent the results of the multivariable analysis.

• Phases six, seven and eight: Draft the report, results validation and final report.

The main findings obtained from the data analysis were included in a Draft Report which would later serve as the basis for data and results verification at a Validation Workshop. During the Workshop, the consultants received valuable feedback from the representatives of the CARICOM Member States and other stakeholders to be taken into account in preparing the final report.

II. MAIN FINDINGS OF THE STUDY

3. Poverty levels in fishing communities in selected CARICOM States

A. The extent of poverty by country

The percentage of non-poor, vulnerable and poor households present in each country was obtained by means of the **Unsatisfied Basic Needs method**. Table 1 shows the distribution per country of households in these three categories.

Country	Non Poor	Vulnerable	Poor	Total general
BAHAMAS	94.39%	5.61%		100%
BARBADOS	92.63%	7.37%		100%
MONTSERRAT	92.50%	7.50%		100%
SAINT KITTS AND NEVIS	90.14%	9.86%		100%
SAINT VINCENT AND THE GRENADINES	83.78%	10.81%	5.41%	100%
TRINIDAD AND TOBAGO	83.44%	15.23%	1.32%	100%
GRENADA	67.77%	25.62%	6.61%	100%
JAMAICA	61.15%	27.39%	11.46%	100%
BELIZE	54.70%	19.66%	25.64%	100%
GUYANA	50.30%	25.45%	24.24%	100%
Average selected countries	70.47%	1976%	9.77%	100%

Table 1: Poverty distribution over the 10 selected countries

Taking into account the results obtained by the Unsatisfied Basic Needs method, and combining them with the ones obtained by the multivariable analysis (dendrogram), three groups of countries were established. Figure 1 shows the distribution in groups of the ten selected countries using the dendrogram tree representation.



Figure 1: Distribution in groups / clusters of the ten selected countries according to their similarities. Dendrogram

GROUP 3: Guyana and **Belize** are the countries with the highest proportion of poor and vulnerable households. In fact the proportion of poor households seems to exceed the proportion of vulnerable ones. Poor households are distributed all over the regions / districts

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but special attention should be paid to the regions / districts displayed in the following table. Table 2 only reflects the regions (Guyana) and districts (Belize) in which households with more than two unsatisfied basic needs are present, and / or in which the percentage of vulnerable and poor households exceed the percentage of non-poor households. The constraints detected in each region / district are marked with a tick and those that are more serious are also shaded in yellow.

Country	Region/district	Dwelling quality	Access to services	Education	Economic capacity	Households with more than 2 UBN.	% vulnerable + poor households > %non- poor households
	REGION 3	V		V	V	V	V
GUYANA	REGION 5	V		v	v	v	V
	REGION 2	V		v	V		٧
	CAYO	V	٧	v	V	v	
	STANN CREEK	v		v	V	v	
BELIZE	TOLEDO	V	٧	٧	V	٧	٧
	COROZOAL	V	٧	V	V		V
	ORANGE WALK	v		٧	V		V

 Table 2: Main constraints detected in regions / districts with more than 2 Unsatisfied Basic Needs, or in which % of vulnerable and poor households exceeds the % of non-poor households. Guyana / Belize

GROUP 2: Trinidad and Tobago, Saint Vincent and the Grenadines, Jamaica and **Grenada** have in common the presence of poor households, but their percentage does not exceed the percentage of vulnerable ones.

After Belize and Guyana, **Grenada** and **Jamaica** are the next countries to have a high percentage of poor and vulnerable households. In Jamaica poor households are present in all the parishes surveyed. Table 3 only reflects the parishes in which households with more than two unsatisfied basic needs are present, and/or in which the percentage of vulnerable and poor households exceed the percentage of non-poor households. The constraints detected in each parish are marked with a tick and those that are more serious are also shaded in yellow.

Country	Parish	Dwelling quality	Access to services	Education	Economic capacity	Households with more than 2 UBN.	% vulnerable + poor households > %non-poor households
	ST. THOMAS	v	٧	٧	٧	٧	
	KINGSTON	v	٧		V	v	
	ST. JAMES	V	٧	٧	٧	٧	
	HANOVER	v	٧	٧	٧	٧	V
JAWAICA	ST. MARY	V	٧		V	٧	V
	ST.ANDREWS	V	٧	٧	٧	٧	V
	MANCHESTER	v	٧	٧	٧	٧	V
	PORTLAND	v	٧	٧	٧	٧	٧
	ST. JOHN'S		٧	٧	٧	٧	
GRENADA	ST. ANDREW'S	v	٧	٧	٧	٧	V
	ST. PATRICK'S	v	٧		٧		V
ST. VINCENT AND	FITZ HUGHES	V		٧	V	٧	V
THE GRENADINES	BARROUALLIE		V		٧		v

 Table 3: Main constraints detected in parishes with more than 2 U.B.N, or in which % of vulnerable and poor households exceeds the % of non-poor households. Jamaica, Grenada, St. Vincent and the Grenadines.

GROUP 1: Bahamas, Barbados, Saint Kitts and Nevis and Montserrat have in common the absence of poor households and a low proportion of vulnerable ones.

B. The extent of poverty by sector

In general terms, in the three types of sectors studied, the percentage of non-poor households by sector is above 75% with the exception of Belize, Guyana, Jamaica, and Grenada.

No household belonging to the **processing sector** was found to be poor. Some vulnerable households belonging to this sector were found in Barbados, St. Kitts and Nevis, St. Vincent and the Grenadines, Jamaica, Trinidad and Tobago, Belize and Guyana.

Poor households in the **aquaculture sector** were found only in Belize and Guyana and in a very small proportion in Jamaica. Vulnerable homes belonging to aquaculture sector members were found in Barbados, Belize, Guyana, Jamaica and Trinidad and Tobago.

Poverty in the **extractive fishing sector** households is widespread in all the countries studied except in The Bahamas, Barbados, Montserrat and Saint Kitts and Nevis. In general terms this is the **sector in which households have more difficulties in having their basic needs met**.

Key points:

- ✓ Belize and Guyana, followed by Grenada and Jamaica, are the countries with higher percentages of poor and vulnerable households. These are the countries in which their households have more trouble in having their basic needs met.
- \checkmark **Extractive fishing** is the sector, of the three sectors studied, most affected by the presence of vulnerable and poor households.
- \checkmark According to the results of the Study, there are no poor households in the **processing** sector.
- ✓ More detailed information can be found in Appendix 1 of the Technical Document: Diagnostic Study to Determine Poverty Levels in CARICOM Fishing Communities.
- 4. Demographic and socio-economic variables underlying low standards of living in the fishing communities

After analyzing the information collected through the surveys, some significant differences between poor and non-poor households have been detected.

A. Demographic differences:

- In countries in which the existence of poor households has been detected, the average number of individuals who live in each poor household is significantly higher than the average number of **individuals per household**, if the entire sample of the country is considered (the poor, vulnerable and non-poor).
- **Overcrowding** (number of household members that have to share a room) in poor households is also much higher than if the entire sample of the country is considered.

• The impoverished population dependent on the fishing sector is comprised of a **significant percentage of young people**. In poor households, the percentage of members by age class decreases as the population grows older, having in a few cases, household members over 65 years.

Table 4 compares the average number of members living in a household considering the entire sample of a country with the averages of number of members living in poor households. The same comparison is made using overcrowding criteria. While in the general sample the average of members constituting a household is around 3 members, in poor households the average is close to 5.9 members. In the case of overcrowding, in the general sample the average number of persons sharing a room is 1.21 while in poor households the average increases to 2.96 members sharing a room.

Country	n ^a of members	s per household	n ^a persons per room (overcrowding)		
	country media	Poor households	country media	Poor households	
CARICOM participant countries (Average)	3	5.9	1.21	2.96	
Belize	4.37	6.7	1.89	3.55	
Grenada	3.58	6.8	1.20	3.25	
Guyana	4.37	5.8	1.78	2.9	
Jamaica	3.63	5.7	1.42	3.05	

Table 4: Comparison between the average number of members living in a household considering the entire sample of a country, and the average number of members living in a poor household. The right part of the table shows the same comparison but referred to overcrowding,

B. Economic differences:

When designing the Basic Need "**Economic capacity**" it was established that for it not to be considered unsatisfied, the average household income must cover US\$ 1500 per year for each household member. Due to the high average of members per household detected in poor households, some homes do not receive enough income to sustain all of its members.

The high proportion of young household members in Belize, Grenada, Guyana, Jamaica and St. Vincent and the Grenadines determines a high **Degree of Economic Dependency**. In countries with the highest percentage of poor and vulnerable households, each household member with a job has to financially support a greater number of unemployed household members than in the rest of countries.

This study shows also that the **Importance of fishing in poor household's economy** is greater than in non-poor and vulnerable households. This is because in contrast to the latter, poor households do not receive substantial financial contributions from other sectors. Belize is the only country in which poor households receive important economical contributions from other sectors.

Country	Degree of Economic Dependency Index (DED) (No employees/employees)	Importance of Fishing within Families Index (IFF)
Bahamas	1.47	71,76%
Barbados	1.3	77,58%
Belize	2.8	71,61%
Grenada	2.02	87,63%
Guyana	2.6	78,08%
Jamaica	2.28	85,98%
Montserrat	1.55	100%
Saint Kitts and Nevis	1.63	81,77%
Saint Vincent & Grenadines	1.99	92,04%
Trinidad & Tobago	1.62	84,22%

 Table 5: Average degree of household's Economic Dependency and Importance of fishing within Family index.

 Ten selected countries

C. Dwelling quality differences:

In this Study, the use of low quality materials for house construction has only been detected in vulnerable and poor households from Belize, Guyana and Jamaica. However, the percentage of homes built with low quality materials in each of these countries is less than 5.5%.

D. Access to services differences:

In general terms vulnerable and poor households have more problems in accessing services.

% of households without access to services						
Service	non poor	vulnerable	poor			
electricity	0.61%	8.77%	12.23%			
water	0%	20.7%	17.99%			
toilet	0%	17.54%	18.71%			
kitchen	0.4%	8.07%	3.6%			
telephone	7.79%	21.75%	23.02%			
Dreinage system	2.73%	15.44%	11.51%			

Table 6: Percentage of households from the whole sample (ten selected countries) without access to services.

E. Degree of literacy:

It is noteworthy that in all countries studied, the household members' level of illiteracy detected is very low. However, the highest percentages were observed in Belize and Guyana, the countries with the highest levels of poor households.

% ILITERACY (CONSIDERING ALL HOUSEHOLD MEMBERS)							
Country	Poor households						
CARICOM participants (Average)	2.30%	0.69%	0.92%				
Bahamas	0.37%	0%	0%				
Barbados	0%	0%	0%				
Belize	5.18%	1.25%	2.68%				
Grenada	1.64%	0.47%	0.47%				
Guyana	6.08%	1.74%	2.17%				
Jamaica	1.36%	0.5%	0.62%				
Montserrat	0%	0%	0%				
Saint Kitts and Nevis	1.09%	0%	0%				
Saint Vincent & the Grenadines	0.55%	0%	0.55%				
Trinidad & Tobago	0.71%	0.71%	0%				

 Table 7: Percentage of illiteracy in vulnerable and poor households.

Key points:

- \checkmark Poor households tend to be composed of a number of members per household greater than the average of the country. In most cases these members are of school age so household income must meet the needs of more people.
- \checkmark Poor households belonging to the fisheries sector do not tend to receive incomes from other sectors.
- \checkmark Constraints in accessing services and the use of low quality materials for dwelling construction are more common in poor households.
- \checkmark Although illiteracy rates are low, the highest percentages are found in countries with a higher proportion of poor and vulnerable households.

5. Main findings of the analysis of the tree sectors studied.

General key points:

- $\sqrt{}$ In the three sectors studied, a low participation of young workers has been observed.
- \checkmark In the three sectors studied, a low participation of women workers has been observed; especially in the processing sector, in which a large participation of women would be expected due to their skills being normally suited to those required for that sector.
- \checkmark In general, members of the three sectors require greater investments in infrastructure such as asphalting of roadways, drainage system improvements and the need for more health centers.
- ✓ Although governments and NGOs have developed training and educational programmes, the Study reveals a not particular high percentage of training among members of the three sectors studied. Given the results, it is noteworthy that as a mean value only 17.61% of respondents in all countries of the study had received any training in the last five years.

Extractive fishing sector key points:

- $\sqrt{}$ In the three sectors studied, a low participation of young workers has been observed.
- With the exception of Barbados, Guyana, Jamaica, Montserrat and Trinidad and Tobago, members of the fishing sector in the other countries are devoted almost exclusively to harvesting, with very few people diversifying their work and carrying out processing and marketing tasks or constructing and repairing fishing gear and boats.
- \checkmark Guyana has the least economically productive fleet in terms of catch per vessel. The negligible selling price that the fishery products earn in the market is their main weak point.
- ✓ Fleets from Montserrat, Jamaica, Belize and Saint Kitts and Nevis also have a low economic productivity, due to the low fishing capacity of their vessels and in some cases also due to the low selling prices.
- ✓ Hurricanes and floods appear to be the major environmental hazards which households have to face in Caribbean region. 37.19% of households surveyed claim to had been adversely affected by an environmental hazard, with Montserrat, Jamaica, Guyana, St. Vincent and the Grenadines, Belize and Grenada the countries most affected.
- ✓ With the exception of fishermen from Barbados, Belize, Guyana, St. Vincent and the Grenadines and Trinidad and Tobago, a significant interest in investing in fleet modernization has been observed in all countries. More than 78% of respondents in each country claimed that they will invest in the next 5 years in improving their fishing activities, buying new gears, boats, engines and equipment to continue are the main objectives of fishermen.
- ✓ In Barbados, Belize, Guyana, St. Vincent and the Grenadines and Trinidad and Tobago, between 40% and 62% of fishermen claim that they will invest in the next 5 years in improving their fisheries activities.
- $\sqrt{}$ More than half of the fisher-folk interviewed were not participating in a social security system.
- ✓ Grenada appears to be the country with the highest percentage of fishermen benefiting from a subsidy in the last five years (42% of respondents). Less than 8% of fishermen from St. Vincent and the Grenadines, Jamaica, Guyana, Belize and Bahamas claimed to have received any form of subsidy.
- ✓ The study shows that fishermen from all selected countries (with the exception of Belize and Jamaica) do not feel that they are involved in the decision making processes as they are not consulted (neither as individuals or through associations) by the fisheries administration. Furthermore, they show a low-medium level knowledge concerning the existence of fishery policies, strategies and management plans (with the exception, again, of Belize and Jamaica). By contrast, an average of almost 80%

of the interviewees is familiar with the laws and regulations that govern the fishing sector in their countries.

- ✓ With the exception of some fishermen in Grenada, Montserrat and St. Vincent and the Grenadines, CARICOM region fishermen are aware of the necessity of preserving the resources, with most of them having observed a reduction in catches and fish sizes in the recent years. Fishermen are also aware of the importance of marine protected areas and think that they have a positive impact on fishing.
- \checkmark The main concerns of fishermen are related to problems regarding infrastructure for unloading and in meeting their supply and maintenance needs. In terms of issues related to marketing, their main constraints appear to be the lack of adequate markets and the low price of fish.

Aquaculture sector key points:

- $\sqrt{}$ In general, aquaculture is an emerging sector in CARICOM region, in which most facilities operate at a small or subsistence scale.
- \checkmark Most aquaculture facilities do not operate at full capacity. Only Belize, Guyana and Jamaica reported to having a percentage (14, 24 and 32% respectively) operating at full capacity. On average, the aquaculture facilities are working at half of their potential.
- \checkmark The aquaculture industry appears to be financed mainly by personal savings
- ✓ With the exception of Jamaican farms, aquaculture farms plan to continue investing in enlarging the facilities, constructing new ponds and buying fingerlings.
- The use of production is almost entirely limited to human consumption, except for Belize, where part of the production is intended for restocking (15.38%), Guyana (17.39%) and Jamaica (1.69%). Furthermore, in Jamaica there can be found some facilities that produce ornamental fish.
- \checkmark Aquaculture products are mainly sold in the local and national market but a small percentage of exports at the regional level also exist.
- $\sqrt{}$ Only Guyana and Jamaica export aquaculture products at an international level (in Guyana, more than 40% of the total aquaculture production).
- \checkmark For the most part farms do not have government concessions regarding access and land tenure.
- \checkmark The industry employs more full-time workers than part-time, in both cases most of the employers are men.
- \checkmark Almost all jobs have the status of semi-skilled or unskilled, regardless of sex. Seasonal staff occupies fewer skilled positions.

- $\sqrt{}$ More than half of the members of the aquaculture sector interviewed were not participating in the social security system.
- \checkmark A high percentage of companies do not have any insurance coverage, nor receive any type of subsidy by the government (except for Guyana, where 22% of companies had received it) or have not received any non-governmental assistance in the last five years.
- ✓ With the exception of Saint Kitts and Nevis (no respondent from the aquaculture sector stated that he/she belonged to any cooperative or association), the cooperatives seem to be present in all countries but very few companies claim to be part of any. The survey results indicated that only aquaculture facilities in Belize and Jamaica fully supported the work of associations and cooperatives.
- \checkmark With regard to knowledge of the fishery policy, except for Guyana, the majority of respondents of each country were not updated with in-force legislation concerning the activities of the aquaculture industry.
- ✓ On average more than 88% of all businesses of the aquaculture industry do not carry out any wastewater treatment and more than 50 % are not re-circulating water. Only Guyana and Jamaica report high percentages of facilities (50 and 71% respectively) using filters.
- \checkmark When interviewees were asked about the main problems that they have to face when managing a farm, they highlighted among other issues the bureaucracy, difficulties in gaining access to markets, to electricity and problems with supplies.
- When interviewees were asked about the strategic actions that they consider would benefit most the development of their productive activities, they highlighted among other issues the training of specialized technicians, improvements in health control and product quality and the promotion of producers' organizations and market opportunities for aquaculture products.

Processing sector key points:

- \checkmark The processing industry has been operating in the countries of CARICOM for more than sixteen years.
- $\sqrt{}$ With the exception of Bahamas and Guyana, the owners of processing businesses do not own the land where the plant is operating.
- $\sqrt{}$ Most of the facilities do not have any government concession regarding the use of land.
- \checkmark The processing industry appears to be financed mainly by domestic bank credit and personal savings.
- $\sqrt{}$ Most of the companies surveyed intended to continue working in the future and continue investing in the modernization of the company. However, some companies

in Belize (33%), Grenada (3%), Guyana (25%), Jamaica (20%) and Barbados (14%) have indicated their intention to cease production in coming years.

- ✓ In general, almost all companies of all countries provide training courses to their workers, especially in the Bahamas, Grenada, Jamaica and Saint Vincent and the Grenadines. The main courses are related to the handling of food and machinery and Hazard Analysis and Critical Control Points (HACCP).
- Most processing plants do not operate at full capacity. Only Belize and Grenada have more than 65% of their processing plants operating at full capacity. In other countries the plants, on average are operating at 30% of capacity. In the case of Barbados the average of processing businesses operating capacity is below 10%.
- $\sqrt{}$ With the exception of Belize and Saint Kitts and Nevis, most plants in the other states surveyed, do not have the capacity to supply their products throughout the whole year.
- \checkmark Employment in the fish processing industry is affected by the closed periods for some fish species, migration, etc., with lay-offs during closed seasons and the hiring of extra staff during peak catch periods.
- \checkmark In Belize, Jamaica and Saint Kitts and Nevis processing companies had a 100 per cent participation rate in a social security system. In the rest of the countries membership in a social security system ranged between 56 and 85 per cent, except in Barbados, where the participation rate was less than 50 per cent of businesses.
- \checkmark In general processing companies do not have any insurance contract, nor receive any type of subsidy by the government or have not received any non-governmental assistance.
- With the exception of St. Vincent and the Grenadines, the cooperatives seem to be present in all countries but very few companies claim to be part of any. The survey results indicated that only processing facilities in Belize fully supported the work of associations and cooperatives.
- ✓ With the exception of Barbados, the majority of respondents of each country were upto-date with in-force legislation concerning the activities of the processing industry.
- As for the relationship of the processing industry of the ten selected countries and the environment, with a few exceptions, there has not been observed a high involvement in wastewater treatment neither in the solid waste generated during processing activity. On average more than fifty-three percent of all businesses of the processing industry did not undertake wastewater treatment of any kind, and forty-five percent of them threw the generated solid waste on a garbage dump, or into the river or the sea.
- ✓ The hygiene and sanitary controls of raw materials are fully implemented in countries like the Bahamas, Belize and Jamaica. In Grenada and Guyana the implementation of these controls are held respectively by 66% and 87% of companies. In the remainder of the countries such checks are carried out in less than half of the companies surveyed.

- \checkmark When interviewees were asked about the main problems that they had to face when managing a processing plant, they highlighted among other issues the difficulties in finding specialized staff and in waste water treatment.
- When interviewees were asked about the strategic actions that they consider would benefit most the development of their productive activity, they highlighted among other issues, speeding up administrative procedures, training of specialized technicians, improvements in technology transfer, improvements in health control and product quality, promotion and investment in the processing industry, promotion of the consumption of processed products, promotion of market and opportunities, promotion of producers' organizations and the design and implementation of action plans.

NOTE: For a more in depth description of the three sectors, please check Appendix 1 of the Technical Document: Diagnostic Study to Determine Poverty Levels in CARICOM Fishing Communities, in which per each country, it is included an analysis of the sectors studied.

III. RECOMENDATIONS

The following is a summary of the recommendations contained in the Technical Document: "Diagnostic Study to Determine Poverty Levels in CARICOM Fishing Communities".

Recommendations related to the improvement of policy processes

In striving to improve policy processes, States should:

- \checkmark carefully identify all small-scale fisheries stakeholders that need to be involved in policy formation;
- $\sqrt{}$ consider the need for legislation and/or formalization of processes to ensure appropriate involvement by small-scale fisheries interests;
- $\sqrt{}$ allow sufficient time and financial resources to ensure wide stakeholder participation in policy development;
- $\sqrt{}$ formalize methods to ensure transparency;
- ✓ decentralize policy processes, to increase both the potential for involvement of smallscale fishers and fishworkers, but also accountability by bringing decision-making closer to the people;
- $\sqrt{}$ work with small-scale fisheries organizations to strengthen the ability of their representatives to participate meaningfully in the process;
- adapt and specify policy development tools (e.g. workshops, meetings, Participatory Rural Appraisal [PRA]) to encourage contributions to be made by small-scale fishers and other fishworkers;
- $\sqrt{}$ make specific use of the knowledge and experience of small-scale fishers and fishworkers;
- \checkmark conduct regular reviews and analysis of policies (to assess their impacts on small-scale fisheries), and of policy processes (to assess the extent to which small-scale fisheries interests are being included); and
- ✓ consider how fisheries policy development can be linked to the specification of national poverty reduction strategies and Poverty Reduction Strategy Papers (PRSPs).

Recommendations related to social issues

Social security

A Fishermen's Pension and Social Security Benefit Scheme should be established within a legal framework. The main objectives of the scheme should be to:

 \checkmark Provide social security to fisher folk during old age or disability to them and their families

- \checkmark Provide relief to dependents in the event of death of fishermen
- \checkmark Encourage the fishermen to continue in the fishing industry
- \checkmark Attract young persons to the fishing industry
- \checkmark Promote the habit of saving and thrift among fishermen.

Credit facilities

Inadequate access to financial services hampers small-scale fishermen's investement and constitutes a serious deterrent to his development.

A financial support plan should be developed and introduced, in strong collaboration with related financial agencies and governments, to provide fisher folk and fishers' organizations with access to credit for investment in responsible fishing gear and technologies, safety gear and safer practices.

The financial plan should include micro-finance schemes.

Recommendations related to education and skills

In order to improve the sector training, it would be necessary to implement a training program aimed, firstly, at trainers in the field of administration (planning and management), professionals / graduates (in Oceanography, Biology, Marine Ecology and Aquaculture), fishermen's associations (in practice of navigation, fishing, use of technology, safety on board vessels, handling and safety of fishery products, self-management) and business associations (in handling and hygiene, associations, accounting).

In addition to training, sector awareness on relevant issues that directly affect its activity must be heightened, such as resource conservation, the need for team management, participation in decision-making process, etc. This awareness can be accomplished by holding workshops and, if appropriate, by distributing leaflets or other graphic materials adapted to suit varying levels of literacy.

Recommendations related to impact on the economy

Improvement in the fishery products market structure is considered a prime objective. To make improvements, certain infrastructure that facilitates the marketing of fishery products from their landing points to the country's major markets must be put into place. Amongst others, docks, markets, refrigerated storage and processing areas all need building or renovating.

Marketers' organisational structure needs reinforcing and the several agents should be registered and use well-defined marketing channels.

Also, inland distribution should be improved by extending distribution channels allowing fish to reach as many inland areas as possible in the best condition.

Suitable preservation will minimise value loss. Measures designed to reduce post-capture loss may include the use of key material resources for guaranteeing the cold chain: (packaging, ice-makers, refrigerated storage and transport); awareness and training in the use of suitable hygiene practices through distribution of best practices guides; application of product inspection systems; application of analysis and critical control point systems (HACCP) from capture to retail and the enabling of processing alternatives through practical training workshops.

It is necessary to ensure a regular supply of fish to facilitate the organization of the market. In this regard, the professionalization of the sector and the return of profits will contribute to mitigating the seasonality of supply and to an increase in landings in the country.

In addition to strengthening the infrastructure necessary for fishery development and management, certain basic infrastructure will need reinforcing, building or maintaining, such as paved roads to improve access and facilitate inland distribution.

To facilitate exports, organization limitations must be overcome and a favourable climate for private investment in the fishery sector created. To do so, the country's legal, fiscal and administrative frameworks should be adjusted. On the other hand, improvements to conditions for valuing fishery products, as well as health and quality controls - in compliance with international quality and sanitary and hygiene standards - will greatly increase hygiene and sanitary safety of the product, thus increasing opportunities to export.

A market analysis would provide information on use of the resource and the marketing and new market opportunities.

Recommendations to the improvement of fisheries management

The administration in charge of managing fisheries should aim: to monitor fishing effort and enforce fishing regulations (MCS); to monitor fish stocks and advise on appropriate levels of exploitation of major commercial stocks; to report on the volume and value of production in the sector; to inform and instruct fishers on new technology through extension services.

- ✓ Suitable resource management: If Caribbean countries are to manage their fisheries resources properly, they must improve their knowledge of the nature and exploitation level of those resources in order to implement and develop fishery management plans. This knowledge can be extended by fostering fishery research and regular information collection.
- Assessment and management of overcapacity and IUU: IUU (illegal, unreported and unregulated) fishing affect the sustainability and economic efficiency of smallscale fisheries, reducing or even jeopardizing their capacity to contribute to poverty alleviation.
- Monitoring, control and surveillance: Reinforcing inspection, control and monitoring activities is essential for controlling the implementation of marine resource protection measures. The Fishery Law must define the infractions and sanctions related to the activity. Improvement to fishery control and surveillance operations will also be done by adopting new technical means such as satellite monitoring of vessels.

- ✓ Data collection and Fisheries Information Systems: To properly manage fishery resources good knowledge of their status and evolution is required. This is obtained through a permanent programme of information capture within the framework of a fishery information system. To implement such a system, the fishing boat must be defined as an information collection and fishery capacity control unit. All catch data collected (amounts, fishery areas, etc.) and control measures applied after evaluation of the data will be based on this unit. It is therefore essential to compile a census of all fishing boats and their characteristics in an official register.
 - As a first measure of control, the right to carry out fishing activities must be restricted to registered boats.
 - The sum of all GTs (Gross Tonnage) of boats in the census must be limited to the available fishery resources.
 - Fishing licences in waters of Caribbean countries must be delivered in an orderly manner. The licences issued must be registered in the information system, and linked to a specific management conditions (such as the delivery of data / information on catches and fishing effort).
 - It is essential to define a systematic data capture system Data Collectionencompassing all information sources. These sources must be capable of being interrelated.
- ✓ Institutions: Fisheries management institutions must deliver the policy through the formulation of legislation, regulations and by ensuring their implementation. Decentralized management of fisheries is likely to enhance the possibilities of management being more sensitive to issues of poverty.

Recommendations to the improvement of fisheries co-management

The community-level organizations, working in partnership with other stakeholders and the government, could develop a resource management and community development plan, whose objectives and strategies include a co-management agreement.

The co-management agreement may include, specifically stated, a definition of roles, responsibilities and authority; identification of fora for meetings; conflict management mechanisms; and rule-making procedures. The agreement should be widely circulated to inform and obtain comments from relevant communities and stakeholders. A co-management body may be established at the end of the process of developing the agreement to represent all the partners.

Recommendations to women empowerment in fisheries

Governments should introduce policies and programs that meet the needs of women in the fisheries sector, recognise and value the role they play and empower them at all decision-making levels - from the household to government.

At the community level, some recommendations are:

- \checkmark Encourage the participation of women and women's groups in decision-making processes.
- \checkmark Improve women's access to training and information on the fisheries sector.
- \checkmark Enhance sensitivity to gender issues.
- \checkmark Ensure food security, developing marketing; i.e. improving women access to markets and storage facilities will help improve the quality of the fish catch.
- \checkmark Improve capabilities:
 - By supporting entrepreneurship
 - By facilitating access to fish resources and decision making women's organizations

At Ministry / Department level:

- \checkmark National policies on fisheries development should take the role of women into account. A specific policy on gender mainstreaming and strategy in the fisheries sector would be a good way to do so.
- \checkmark Fisheries departments should make the designation of gender focal points and form gender working groups.
- \checkmark Maintain a contact list of national network members and those supportive of its activities (per country).
- \checkmark Policy makers should be trained on gender issues.
- \checkmark Government staff and extensionist should be trained to raise their awareness of gender issues and to improve their skills in gender analysis and to develop gender-sensitive projects.
- $\sqrt{}$ Increase the number of women officers in ministries and departments, especially those in decision-making posts.
- \checkmark Collect information on research done to date on gender in fisheries.
- $\sqrt{}$ Put in place systems to monitor gender-related fishery issues and indicators that report the quality and quantity of gender information.
- \checkmark Promote research that focuses on gender issues in fisheries.
- $\sqrt{}$ Develop indicators that are specific to the achievement of gender equity and the empowerment of women in fisheries.

Recommendations related to vulnerability to natural hazards.

Priorities include:

- \checkmark expanding innovative partnerships and networks to meet critical needs;
- \checkmark enhancing regional cooperation;
- \checkmark standardizing and harmonizing risk management methodologies and practices;
- $\sqrt{}$ undertaking baseline studies to identify the strengths and weaknesses of disaster reduction programs;
- $\sqrt{}$ documenting best practices and lessons learned; and
- \checkmark implementing an insurance plan to protect fisher folk's income and compensate for injury and property loss.

Recommendations related to the protection of the environment

- \checkmark Introduction of good environmental practices:
 - Measures to evaluate environmental impacts must be introduced and the principle of precaution must come into play.
 - Directives for improving good environmental practices must be introduced and rare species must be protected, their capture, as well as the commercialisation and ownership of products or sub-products, forbidden.
 - Measures must be taken to avoid accidental capture; these include using selective equipment, limited mesh sizes, confiscation of captures, establishment of closed seasons, prohibition of unloading small fry and the creation and suitable management of marine reserves.
 - In the long term, degraded areas may be considered for recovery and artificial reefs built to foster resource recovery.
- ✓ Creation of Marine Protected Areas: Marine Protected Areas have been strongly advocated as beneficial instruments for fisheries management.
- ✓ If properly designed through a comprehensive scientific and participatory process, with due account taken of social and economic implications, protected areas (or reserves) might play a useful role, especially for coastal, small-scale fisheries that are multi-gear, multi-species and/or involve primarily sedentary stocks. Such protected areas can therefore contribute to long-run poverty alleviation through the improvement of the resource-base on which fishers and the rest of the community rely for their livelihoods e.g. through fishing, and / or local (eco)-tourism.

Recommendations related to the aquaculture sector:

- ✓ The most detailed information possible must be obtained to determine the target species, selection of cultivation techniques, categorisation of most suitable areas, identification of water or structural needs, conditions and opportunities for commercial exploitation, financial needs, etc. For this reason, a study to determine the aquaculture potential of the different States must be made to provide conclusions that will support decisions on how to develop the sector in the various Departments in the country, both inland and on the coast.
- \checkmark Some of the opportunities to be analysed are options for managing aquaculture integrated with irrigation, farming of continental species tanks at different scales and intensities and farming in tanks or enclosures in salt or sea water. The selection of species with the best market perspectives or highest commercial value, the use of foreign species for farming or the farming of non-food species are other aspects to be studied.
- ✓ It would be extremely useful to have a tool to store and analyse the basic data of the aquaculture sector and that could contribute to decision-making in the planning and management authorities. An information system could be designed and implemented, to include basic data on the sector such as the number of facilities / units of cultivation, active or inactive condition, geographical location, water use, cropping patterns, crop species and their production, human resources involved, availability of agricultural products for inputs, closest rural and urban center of population, markets, etc. This system may take the form of a Geographic Information System (GIS).
- $\sqrt{}$ The establishment of a network will contribute to improvement in the planning of the activity and the effective exchange of information between different agents.
- \checkmark All information collected should be used for the preparation of Action Plans (national and regional) for the development of aquaculture, which should provide confidence to invest.
- ✓ In order to enhance the productive capacities: carry out projects to improve the production conditions of the growth units which are in operation by improving the management of infrastructure, the acquisition of fishing equipment, building structures for fish manipulation and storage, etc. They should also assess the technological needs of energy supply and technology for the cultivation among others, and boost their acquisition, operation and maintenance.
- \checkmark On the other hand, a pilot culture project on a commercial scale could be launched, taking into account the results of small-scale projects that are being developed to propose the location and cultural practices which are more appropriate to the situation of each country.

IV. PLANNING AND IMPLEMENTING ALTERNATIVE LIVELIHOOD PROGRAMMES SUITED TO THE SOCIO-ECONOMIC AND NATURAL ENVIRONMENTS

The need for sustainable livelihoods for fishing communities is critical. Population growth rate continues to increase, while marine resource stocks continue to dwindle. Alternative livelihoods are seen as essential for both the development of fishing communities and for the conservation of marine and coastal biodiversity and ecosystems.

The goal of alternative livelihoods is not simply to come up with an alternative activity that theoretically provides choice and hopefully promotes sustainability as much of the current work in this area seems to do. Rather, the goal is to find solutions that fit with people's current livelihood strategies and that will have positive impact on their livelihoods and the use of natural resources.

Alternative livelihoods are not a short cut to quick development and conservation wins. Rather it is an intervention that requires a thorough understanding of the livelihoods of the community. Interventions to support livelihoods should take place over a spectrum and be relevant to people's needs and aspirations.

Proposal for Livelihoods Assessment

The objective of the fishing livelihoods assessment is to demonstrate the feasibility of building up a more comprehensive understanding of fishing livelihoods and the context in which fishing communities are currently surviving in order to identify appropriate entry points for supporting the achievement of sustainable livelihoods.

The proposed framework (should be adapted to the local context in which it is being applied) is as follows:

- **Phase 1:** Identify fishing community and contacts within the community.
- Phase 2: Collect secondary data on the environment, previous socio-economic and household studies and other research/literature to build up a background to the area. Emerging macro-economic issues identified from literature.

In addition to the literature review, household interviews can be considered as an effective method to collect data. Household interviews are a method of making detailed examination of the way that a household thrives and survives.

- ▶ Phase 3: Undertake a stakeholder analysis to build up an understanding of who is involved with, has an influence over or has an interest in the identified coastal community. Through use of a selection of analytical tools, build an understanding of the different assets, skills, capacities, needs and aspirations of the community. Identify vulnerabilities and external influences (policies, institutions, organisations and processes) that affect the community.
 - Identify the activities performed by men and women in society; to find out who does what, how and when.

- Identify who has access to and control over the resources and benefits.
- Identify the gender needs in a given society.

Phase 4: Alternative Analysis.

Once the required information has been collected, the analysis of the best livelihood alternatives for the community should be carried out. The ones selected should be put in writing in order to materialize them as a project (project design).

▶ Phase 5: Project design.

The project design should include, but not be limited to, the following information: Name; Background and Rationale; Objectives; Definition of activities and outputs; Definition of inputs; Identification of stakeholders, Beneficiaries and benefits; Risk analysis and assumptions; Timetable for implementation; Estimated Budget.

Phase 6: Project implementation and monitoring.

In order to implement a fisheries livelihood project, it is necessary to have a monitoring plan in place that is feasible and effective.

Monitoring can be defined as the systematic and continuous collecting, analysing and using of information for the purpose of management control and decision-making. Monitoring considers the question 'Are we doing the project correctly?' Its purpose is to alert management to any problems that arise during implementation.

The implementers and planners have to agree on monitoring indicators. Monitoring indicators are quantitative and qualitative signs (criteria) for measuring or assessing the achievement of project activities and objectives. Monitoring indicators should be explicit, pertinent and objectively verifiable.

Monitoring Indicators are of four types, namely:

- **Input indicators:** describe what goes on in the project (e.g. number of bricks brought on site and amount of money spent);
- **Output indicators:** describe the project activity (e.g. number of classrooms built);
- **Outcome indicators:** describe the product of the activity (e.g. number of pupils attending the school); and
- **Impact indicators**: measure change in conditions of the community (e.g. reduced illiteracy in the community).

The results of the Household surveys provide extensive background information that can be used as indicators to monitor alternative livelihood initiatives in the ten selected countries of the study. For instance:

• Percentage of poor / vulnerable and non poor households

- Home income
- Percentage of households that manage to make ends meet
- Percentage of households engaged in the activity
- Others...

Key points for the success of an alternative livelihood activity:

- $\sqrt{}$ There is a need for a clear vision by both the community and the supporting agency as to what the expected outcome is.
- \checkmark All stakeholders should participate in the identification and design of the intervention.
- \checkmark Skills and knowledge have to be established and developed (technical and management skills as well as an understanding of the wider context in which the activity is developed) through the provision of training opportunities in the longer term.

Technical guidance is necessary over the long term rather than only at the start of an activity.

- \checkmark An activity will be taken up and made successful if the people who are to carry it out have chosen to carry it out, even if the activity was introduced or initially supported by external sources.
- \checkmark An activity will be carried out if it brings equal or superior economic returns to a previous activity of the individuals involved, or it brings supplementary income. Cultural compatibility is paramount.
- \checkmark Access to micro-credit is essential. Without access to micro-credit people are generally reluctant to take forward an AIG.
- ✓ Understanding the market and accessing the market targeted by the activity developed is core to the financial sustainability of an AIG.
- $\sqrt{}$ If the development of AIGs is promoted to reduce pressure on resources, the pressure on this resource needs to be clearly understood in the first instance.
- \checkmark Favourable policies will increase the success of an activity.
- \checkmark Infrastructure will affect the success and rate of development of an activity.
- \checkmark Use business models and approaches to plan and take forward the alternative livelihood activity.
- \checkmark Understanding people's attitude to risk is key when supporting livelihood initiatives.

 \checkmark It is important to understand that community groups are not homogeneous. Opportunities may be easily taken by some individuals and not by others.