

PROGRAMME FOR INTEGRATED DEVELOPMENT OF  
ARTISANAL FISHERIES IN WEST AFRICA

**IDAF PROGRAMME**

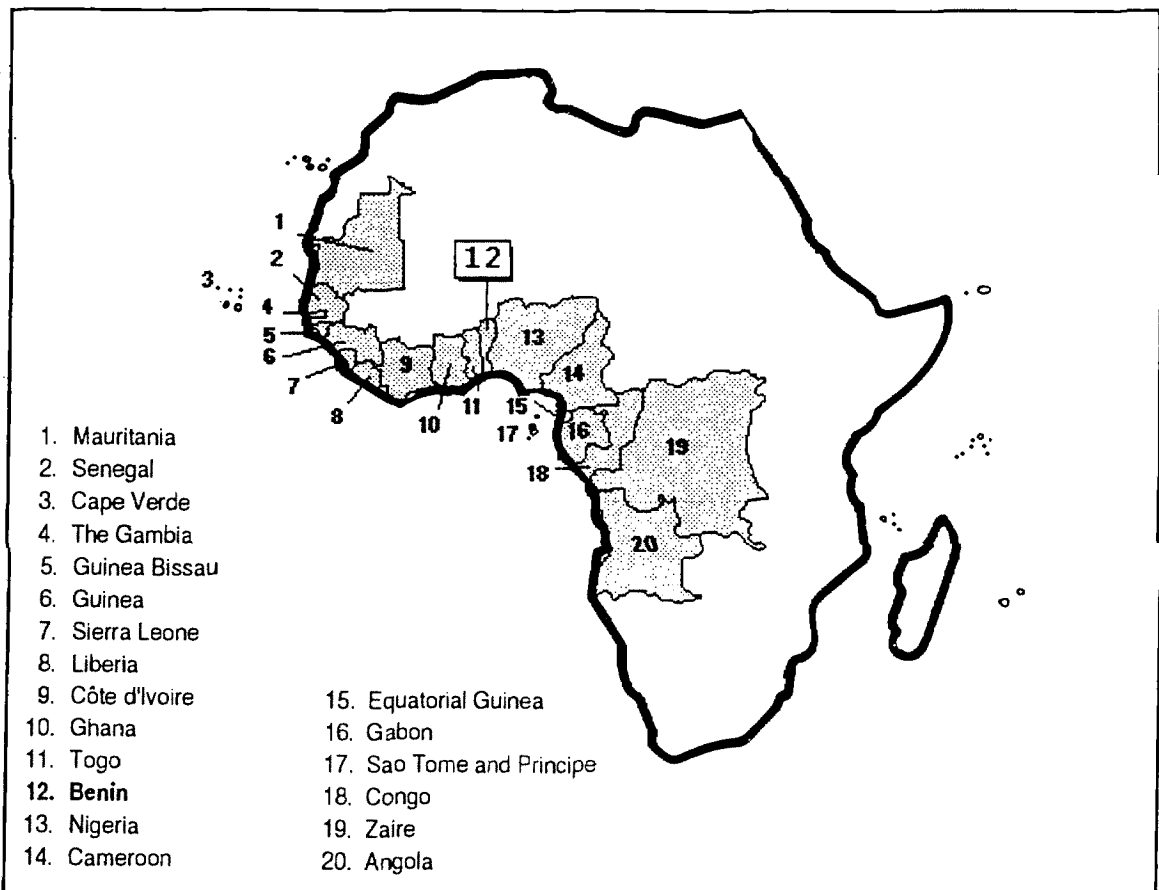
Technical Report N°131

August 1998

**Data Compendium on safety at Sea  
in the IDAF Central Region**

**Liberia, Ghana, Benin, Nigeria**

1991 - 1997



**DANIDA**

DEPARTMENT OF INTERNATIONAL DEVELOPMENT COOPERATION OF DENMARK



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS



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by

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**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS**

Cotonou, August 1998

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# THE VISION FOR IDAF PHASE III

## INTRODUCTION

Development strategy during the 1960 and 1970s was based on the philosophy that developing countries lacked improved technology and capital for speeding up their development. Industrialization was promoted in order to capitalize on the abundant fish resources. However, the anticipated expansion of the economy did not happen and the development approach shifted towards an integrated rural strategy where emphasis is put on the community as a whole to upgrade incomes and the quality of life through technical assistance and the active participation of fisherfolk and the community.

In this context, emphasis was initially placed on the Community Fishery Centre (CFC) concept as a means of promoting artisanal fishery development. But it became apparent that the presence of a complex of facilities and services tailored to meet local needs was no guarantee that the structures/facilities would be used or that development would occur. The active participation of fisherfolk and the mobilisation of local and community resources was imperative in order to assure sustainability of initiatives undertaken by development projects and/or the community.

So far and in general terms, the IDAF Programme has worked under the context of abundant or seemingly adequate fishery resources with moderate population pressure. The scenario is however changing (and very fast for that matter) and we would soon face the triple constraints of reduced or depleting fish stocks, degrading environment and increasing population pressure. Like in other sectors, it must be anticipated that just to survive, parts of the population surplus in the fishing communities will enter the artisanal fisheries, which will increase the competition for the resources among the small scale fisherfolk in addition to the prevailing competition between the artisanal and industrial fisheries, with their attendant effect on the environment.

This scenario calls for a continuation of the integrated participatory strategy which remains relevant to the development of artisanal fisheries in West Africa. However, the emphasis needs to be placed on the elements and mechanisms that favour the sustainability of initiatives: responsible fishing, the empowerment processes that ensure the devolution of major resource management and development decisions to the local community, the strengthening of national human and institutional capacities at all levels for a sustainable and equitable fisheries resources management and development, as well as in the follow-up and consolidation of past achievements.

## DEVELOPMENT OBJECTIVE

Thus the development objective of the Programme in the present phase III which started on 1 July 1994 is to ensure twenty coastal West African countries a sustainable development and management of their artisanal fisheries for maximum social and economic benefit of their fishing communities in terms of employment, proteins and earnings. This will be done through an integrated and participatory approach in which emphasis will be laid on equity, gender issues, the transfer of technology for development, environment protection, as well as the strengthening of human and institutional capacities.

**The immediate objectives are:**

1. To identify, assess and disseminate strategies and mechanisms for sustainable management and development of the artisanal fisheries in fishing communities,
2. To improve the competence of national Fisheries Departments staff in development and management planning of artisanal fisheries,
3. To enhance regional technical competence in the fisheries disciplines, particularly in fishing and fish technology;
4. To improve information and experience exchange related to artisanal fisheries within the region,
5. To promote regional and sub-regional collaboration for the development and management of artisanal fisheries

**In this context, IDAF will among other things tackle the following major aspects in its work :**

- assisting in the elaboration and implementation of a clear and coherent national development policy for the artisanal fishery sector,
- providing advice on management and allocation of resources between artisanal and industrial fishing fleets, both national and foreign,
- involving users in the design and management of on shore infrastructures,
- monitoring the sector's evolution by the setting up of an economic indicator system for the sector adapted to the financial and human availabilities,
- improving fishing technologies in accordance with the available resources,
- increasing the final product's value by improvement in processing and marketing;
- promoting community development in accordance with the lessons learned from Phase I and II and oriented towards the sustainability of actions undertaken;
- reinforce the Programme's information/communication system.

It is anticipated that by the end of the third phase of the Project, the region will have a nucleus of field oriented experts capable to respond to the challenges of the artisanal fisheries sector and to spur development in their individual countries in keeping with the aspirations and needs of fisherfolk.

## SUMMARY

Awareness on the importance to be given to Safety at Sea in Artisanal Fisheries is becoming a reality on the West African coastline. At the moment where it is of actuality to speak about Responsible Fisheries, it is also judicious to train the operators of the sub-sector in behaviour and in responsible navigation practices. Also to sensitize the fishermen and boat owners on the needs to have permanently on board a minimum of safety and survival equipments.

At sub-regional level, very few information exists about the problems related to Safety at Sea and existing means for safety. While referring to accidents, whatever the kind, such as simple loss of fishing material or shipwreck with serious consequences leading to the death of several persons or the complete loss of the canoe, the data is not always recorded systematically.

As a result, to benefit of a minimum of information on the causes of the accidents at sea in the artisanal sub-sector, and their human and material consequences at sub-regional level, a survey has been carried-out in cooperation with the Department of Fisheries of Liberia, Ghana, Benin et Nigeria.

The results obtained could be useful for the researchers, consultants and all those interested by the fat of the artisanal fisheries sub-sector in West Africa.

This analysis describes 149 cases of accidents at sea declared by the fishermen and boat owners in the four countries mentioned above between 1991 and 1997. The accidents are dues to various causes declared to the investigators along the coastline.

The field work was entirely carried-out by Officers from the Department of Fisheries of the concerned countries. It has been noted that the precision of the information gathered decrease for the accidents occured several years ago. Usually ones remember more easily the death than the injuiriies on board.

The data remitted to the IDAF Programme was compiled with the software d BASE III. The processing and analysis for the preparation of the tables and graphics was carried-out with the software Excel 5.

To permit IDAF member countries to stock and analyse by themselves the results of the future surveys, a software in d BASE III has been prepared at IDAF H.Q. in four languages : English, French, Portuguese and Spanish. A copy of the software has been given to the twenty IDAF Member countries from Mauritania up to Angola.

The analysis shows that the information collected lack of precisions in various parameters. Accordingly, the results should be often considered as informative only.

Nevertheless, the analysis for the main causes of the accidents revealed that for the 149 accidents declared, 71 cases of capsizing occured on a seven years period. This seems to be the most important cause on the dramatic events observed, whose various origins are the wind, the waves, the thunderstorm, boarding, etc.

Entanglement of nets on the sea bottom leading often to shipwrecking of canoes was recorded in 19 cases.

Injuries, collisions between canoes and other boats, falls on board or out board, grounding, piracy and explosions are worsening causes contributing to risks of accidents at sea in artisanal fisheries.

· As far as the contributing factors leading to drama are concerned, on 149 accidents declared to the investigators, it has been noted that strong waves contributed to 101 accidents provoking sometime the capsizing.

The wind come in second position of the contributing factors with 66 cases recorded.

Accidents because of discord on board where everybody gives orders in an anarchic fashion was observed in 29 cases.

Inattention provoked accidents in 18 cases. Engine failure in 12 cases.

Overload of canoes was observed as a contributing factor to accident in 10 cases.

Panic is often associated to consequences in a wreckage and was noted in 10 cases.

Leaks, 7 cas, lead to serious consequences when there is no caulking material on board.

Thunderstorm offshore provoked 6 accidents on fragile canoes.

Disorientation has been observed also 6 times.

No emergency fuel on board because of lack of precaution was noted one time as well as fight among fishermen leading to accidents.

The main propulsion means of the artisanal canoes is dominated by the out-board motors of 40 horse power (65 % of the total of 149 canoes being the victim of an accident). This figure is followed by the out-board motors of 25 horse power (32 % of the total concerned).

The auxiliary engines as a propulsion means are not frequently kept on board. This contribute greatly to accidents such as drifting of the canoe offshore etc. The same phenomena is observed along the whole West African coastline from Mauritania up to Angola.

Observation of the sea conditions as well as luminosity and meteorological factors suggest that the majority of the accidents happen by choopy sea and large waves.

Regarding the luminosity factor, we noted that the majority of the accidents occurred in day light. A complementary survey will permit to identify clearly the reason. However, it is probable that this happen because the majority of the canoes does not operate at night.

Looking at the meteorological factor, we observed that the majority of the accidents occurred first by strong wind followed by the accidents occurred by rainy conditions, then by foggy conditions (boarding or grounding).

Loss of human life and costs of the material damaged revealed that among 149 accidents declared, we registered 129 injured and 59 death on a seven years period for the four countries. The loss or deterioration of materials reached US.\$ 127,439 for the four countries during the same period. These figures seems under estimated. It is probable that a complementary survey will permit to identify many more cases of accidents whose declaration never reach the authorities concerned, or that the fishermen simply omitted to declare it to the investigators during this survey.



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## 1. INTRODUCTION

The idea of taking appropriate measures to attempt to decrease accidents at sea at artisanal fisheries level in west Africa is perhaps a old one; however, it should be admitted that at sub-regional level, up to now, very few studies or practical work has been done for this subject.

Within the actual context, to be able to benefit of a minimum of information on the causes of accidents at sea in the artisanal fisheries sub-sector, as well as the human and material consequences at sub-regional level, a survey has been carried-out in co-operation with the Department of Fisheries of the four following countries : Liberia, Ghana, Benin et Nigeria.

The field investigation was carried-out by the Officers of the Department of Fisheries of the respective countries. Prior to the investigations, they benefitted of the technical support of the IDAF Programme for the preparation of the data sheets for data collection. The analysis was done by IDAF.

The results obtained could be used by competent authorities, researchers, consultants, as well as all those concerned by the fat of the operators of the artisanal fisheries sub-sector.

## 2. GENERAL CONTEXT

Great changes occurred within the artisanal fishing fleets of the sub-region more than twenty years ago. These changes appears mainly because of the development of new fisheries, of the introduction of new fishing techniques, and what is the most important, the increasing confidence in the motorization.

Technological advances favoured the spread of opportunities of artisanal fishermen to exploit their own resources. As a result, in the traditional fishing coastal zones, the number of operating units increased considerably. Therefore, the fishing zones moved progressively further offshore.

This modification of habits and traditional coastal practices generated accrued risks of disasters at sea, often caused by lack of training of the operators.

Moreover, accumulated conflicts appeared between industrial and artisanal fisheries, both neglecting existing rules by operating in zones reserved to one or the other.

The declarations of the accidents and conflicts to the responsible authorities don't reach always to an agreement because of the difficulties met in the determination of the responsibilities.

The non respect of the basic principles related to safety and survival at sea in artisanal fisheries and coastal transport canoes generate repited disasters coming from simple capsizing

without serious consequences up to a fatal collision between small and big boats, which could lead to tenth of deaths and injured peoples. Often also the total loss of the canoe is observed.

### 3. OBJECTIVES

The present document is a synthesis of the information collected in the four countries mentioned above. The purpose of it was :

- i- to put emphasis on the general conditions in which the accidents happened;
- ii- to supply informations on the main causes of the accidents and the contributing factors;
- iii- to inform on the losses derivated from the accidents such as : (number of death, injured, costs of the material damaged);
- iv- to make an inventory of the safety equipments and rescue available on board at the moment of the accident;
- v- to make appropriate recommendations which could help to reduce accidents at sea.

### 4. METHODOLOGY

This paper present the results of the survey on accidents at sea along the coastline of the following countries : Liberia, Ghana, Benin and Nigeria between 1991 and 1997.

The result of this sensus gives 149 cases of accidents dues to various causes declared to the investigators during this field work. It is expected that this preliminary work pave the way to a systematic monitoring of accidents at sea in these countries.

Unfortunately, no data was received at IDAF level regarding similar accidents in Côte d'Ivoire and Togo at the moment of drafting this Technical Report.

#### 4.1. Field work and access to information

The field work has been entirely completed by Officers from the Department of Fisheries and other services concerned by safety at sea. This was done by moving along the coastline in fishing villages and landing sites by transport means available such as : canoe, motorcycle, or other vehicule available.

The data was gathered by discussing with the fishermen at village and landing site level. According to circumstances, (some fishermen being at sea), the Chief of the village or the boat owner were interviewed. Sometime, the Chief of Station of the Department of Fisheries supplied the complementary information when it was needed. It has been observed that the precision of the data collected decrease for accidents occurred several years ago.

#### **4.2. The questionnaire**

The field survey was carried-out with the help of a standard data sheet elaborated by DIPA-GANT former IDAF antenna based in Conakry, Guinée).

This data sheet has been already utilised for similar surveys in seven countries of the IDAF northern zone (from Mauritania up to Sierra Leone), as well as in six countries of the IDAF southern zone (from Cameroon up to Angola).

This data sheet has been reviewed and amended with the assistance of the participants during the workshop on Safety at Sea held in Banjul, The Gambia, from 26 to 28 September 1994. It was further translated to four versions : English, French, Portuguese and Spanish.

#### **4.3. Analysis of data**

The data collected by the investigators was sent to IDAF for analysis. Compilation was done with the software d BASE III. The analysis and the preparation of the tables and graphics was carried-out with the software Excel 5.

#### **4.4. Preparation of a software for data collected in d BASE III**

To permit IDAF member countries to stock and analyse by themselves the results of the future surveys, a software in d BASE III has been prepared at IDAF H.Q. in four languages : English, French, Portuguese and Spanish. A copy of the software has been given to the twenty IDAF Member countries from Mauritania up to Angola.

## 5. RESULTS

### 5.1. Main reasons of the accidents

The circumstances in which the accidents happened being compiled and identified, comments on the main causes which provoked the events are detailed in table 1 as follows :

**Table 1. - Main reasons of the accidents**

	Liberia	%	Ghana	%	Benin	%	Nigeria	%
Capsizing	7	100	0	0	58	60	6	35
Grounding	0	0	0	0	0	0	2	12
Collision	0	0	3	11	0	0	4	24
Dragging of nets by trawlers	0	0	22	79	5	5.2	0	0
Encroached nets on the bottom	0	0	0	0	19	20	0	0
Fire on board	0	0	0	0	0	0	0	0
Fire, canoe being on the beach	0	0	0	0	0	0	0	0
Explosion	0	0	0	0	0	0	1	5.9
Falling in/out board	0	0	0	0	1	0	1	5.9
Injuries	0	0	0	0	9	9.4	1	5.9
Piracy	0	0	0	0		0	2	12
Others	0	0	3	11	4	4.2	0	0
<b>Total</b>	<b>7</b>	<b>100</b>	<b>28</b>	<b>100</b>	<b>96</b>	<b>100</b>	<b>17</b>	<b>100</b>

Figure 1, here below, gives the synthesis on the causes of the events. The survey recorded 149 cases of accidents occurred because of various reasons and disseminated in the four countries for a seven years period (1991 - 1997).

However, because of the lack of precision in the information collected, and since it was the first survey of this kind for the central IDAF sub-region, it is obvious that a complementary survey will permit to identify more cases of catastrophe at sea whose declaration never reached the hands of the concerned authorities.

Nevertheless, the data collected revealed that **capsizing** of canoes is the most important cause of accidents in the sub-region, with 71 cases declared on the four countries for a seven years period.

The second case of accident is coming from the **dragging of nets** or gillnets of artisanal fishermen by trawlers, 27 cases recorded. It should be mentioned that while a trawler is pulling his trawl through a zone operated also by artisanal fishermen, should the nets of the artisanal fishermen being cast on the bottom, when the trawl is passing through, he will damage or destroy the gillnets. Furthermore, in the case or the artisanal fishermen is using the gillnets in sub-surface, if the trawler is passing above the gillnets, the propeller of the trawler will also seriously damage the nets. Most of the time, the nets are definitively lost. Furthermore, sometime this action provoke the capsizing of the small canoe if the nets are fitted to the bow of this canoe.

According to the discussions with various fishermen in the region, it seems that the data obtained is far below the reality, because this kind of accidents are common along the littoral of the countries surveyed.

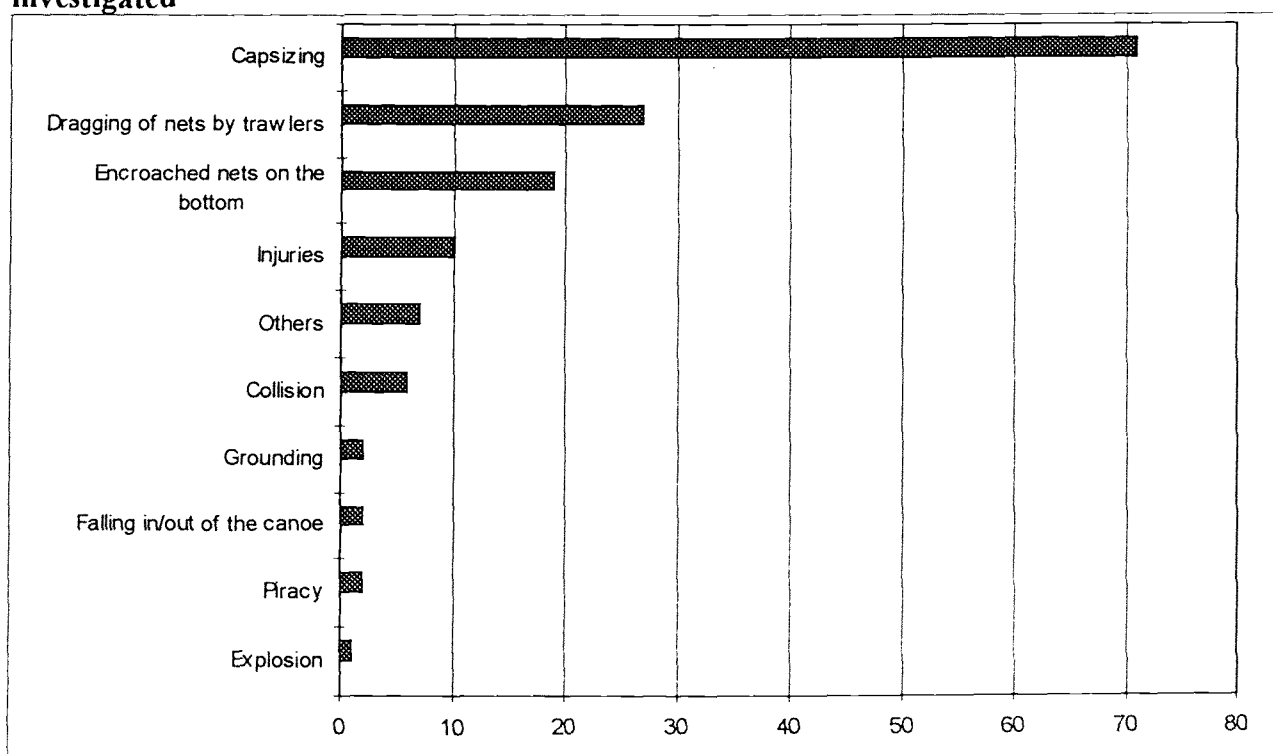
**Encroached nets on the bottom** causing the partial or total loss of the fishing gears (19 cases registered), is a cause of accidents leading to an important financial loss. This could also contribute to the capsizing of the canoe in the case of a small and unstable unit.

**Injuries** from various origins are also frequently observed on artisanal fishing canoes.

**Collisions** between two canoes or between a canoe and a trawler are cited as a cause leading often to financial consequences during the subsequent repairs of the canoes

Finally, we have the fishermen **falling on board or out board, the grounding, the piracy and explosions.** (Explosion occurs while manipulating fuel without any precaution).

**Figure 1. - Main causes of accidents by decreasing orders noted in the four countries investigated**



## 5.2. Factors contributing to accidents

The table 2 gives the details of the information collected. The figure 2 show the synthesis of the data. According to the contain of this table it appears that :

- The waves provoking often capsizing and other dramatic events come on top with 101 cases recorded.
- The wind come in a second position of the contributing factors with 66 cases reported.
- Discord on board where everybody gives orders, often in an anarchic way, thus leading to accidents was observed in 29 cases.
- The innatention coming often from negligence during a difficult and routine manoeuver on board has been observed in 18 cases.
- Engine failures making the canoe to drift offshore for several days, without paddles or emergency sail on board, led sometime to death of the crew, 12 cases were recorded.
- Overload of the canoes, 10 cases, is an important factor whose magnitud is probably not faithfully reflected in the present data. It is very common to see traditional canoes greatly overpassing their normal loading capacity, either in carrying fish or passengers or any other cargo, thus provoking capsizing or sinking of the canoe, associated to collective drowning of tenth of people at the same time.

**Table 2. - Contributing factors**

	Liberia	%	Ghana	%	Benin	%	Nigeria	%
Engine failure	4	7.1	0	0.0	3	2.2	5	10.6
Leaks	0	0.0	1	3.3	1	0.7	5	10.6
Overload	6	10.7	0	0.0	1	0.7	3	6.4
Thunderstorm	0	0.0	0	0.0	5	3.6	1	2.1
Wind	0	0.0	0	0.0	60	43.8	6	12.8
Waves	36	64.3	0	0.0	63	46.0	2	4.3
Fog	0	0.0	0	0.0	2	1.5	1	2.1
Lack of fuel	0	0.0	0	0.0	1	0.7	0	0.0
Disorientation	0	0.0	0	0.0	1	0.7	5	10.6
Panic	10	17.9	0	0.0	0	0.0	0	0.0
Fight	0	0.0	0	0.0	0	0.0	1	2.1
Innatention	0	0.0	0	0.0	0	0.0	18	38.3
Discord	0	0.0	29	96.7	0	0.0	0	0.0
Anchor line	0	0.0	0	0.0	0	0.0	0	0.0
Others	0	0.0	0	0.0	0	0.0	0	0.0
<b>Total</b>	<b>56</b>	<b>100.0</b>	<b>30</b>	<b>100</b>	<b>137</b>	<b>100.0</b>	<b>47</b>	<b>100</b>

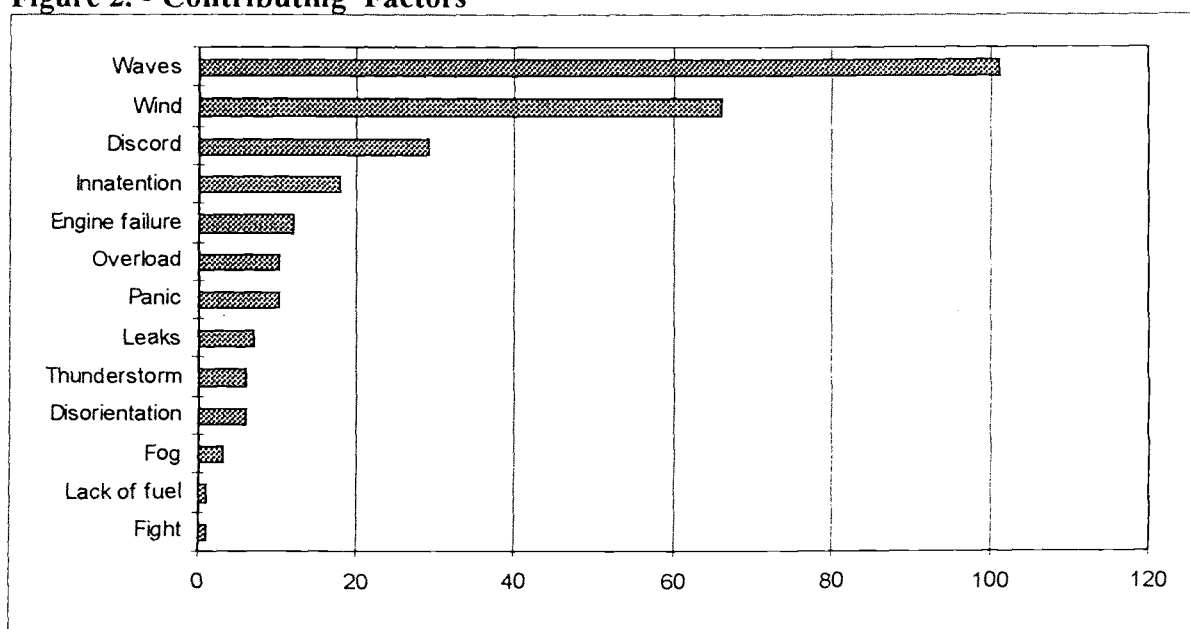
Panic is a factor which is often asociated to consequences of shipwrecking. This was recorded in 10 cases.

Leaks occuring in canoes with limited maintenance and without any caulking material onboard, or not enough bailers on board generates often the loss of the canoe with or without loss of human life.



- Thunderstorm offshore in which a undecked, fragile and unstable canoe is caught by surprise, provoked 6 cases of accidents.
- Disorientation happening because of lack of compass on board, asociated sometime to a limited visibility was responsible for another 6 accidents.
- Lack of emergency fuel on board by lack of precaution, although not frequent, was however recorded one time.
- Fight among fishermen on board was also noted one time.

**Figure 2. - Contributing Factors**



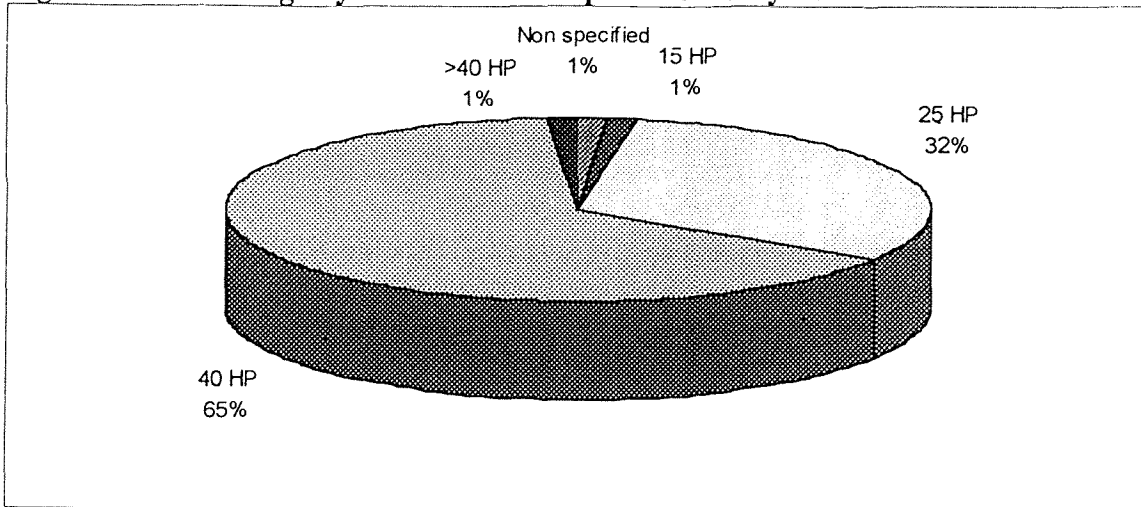
### 5.3. Motive power of the accidented canoes

Table 3 here below gives the detail of the motive power of the accidented canoes for the four countries concerned. Figure 3 gives the synthesis of the related data, showing the domination of the out-board engines of 40 HP, followed with the 25 HP out-board engines. Those engines reflect the same picture met all along the west african coast in general.

**Table 3. - Motive power of the canoes concerned by this survey**

Motive power (HP)	Liberia	Ghana	Benin	Nigeria	Total
15	0	0	1	0	1
25	0	5	13	4	22
40	0	5	22	18	45
> 40	0	0	0	5	5
Non specified	0	0	0	1	1

**Figure 3. - Percentage by classe of motive power used by the artisanal canoes surveyed**



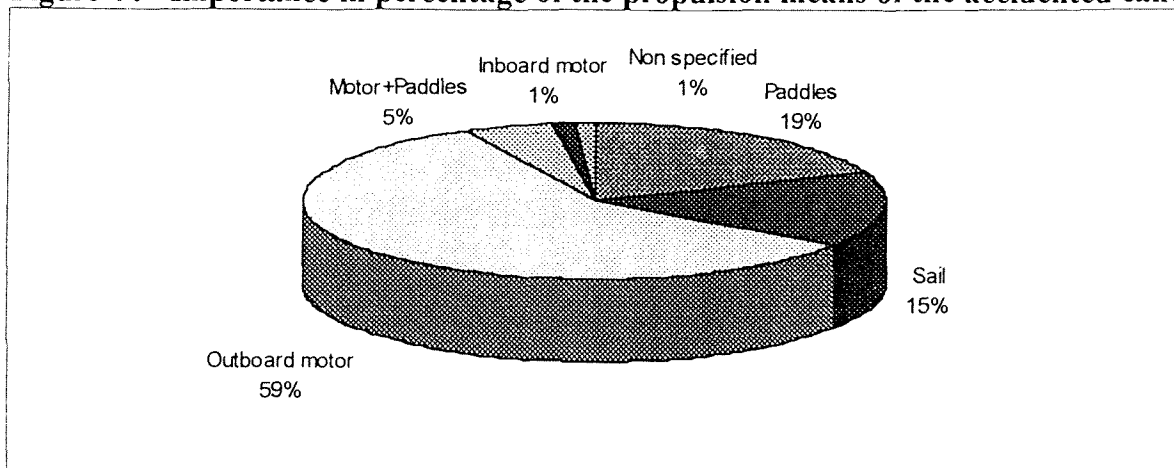
**Table 4. - Characteristics of the propulsion systems of the accidented canoes**

	Liberia	Ghana	Benin	Nigeria	Total
Paddles	5	1	21	5	32
Sails	0	0	26	0	26
sails and paddles	0	0	0	0	0
Out-board motor	7	29	36	26	98
Motor +sail	4	0	0	4	8
Inboard engine	2	0	0	0	2
Non specified	0	0	0	2	2
<b>Total</b>	<b>18</b>	<b>30</b>	<b>83</b>	<b>37</b>	<b>168</b>

**5.3.1 Propulsion means**

Table 4 above, shows the importance of the out-board motors used as a main propulsion system in the artisanal canoes in the concerned countries. It can be noted that the auxiliary propulsion means are not frequently kept on board. Therefore, in case of engine failure, this contribute greatly to accidents such as drifting offshore, etc. The same phenomena is also observed along the west african littoral from Mauritania up to Angola.

**Figure 4. - Importance in percentage of the propulsion means of the accidented canoes**



### 5.3.2 Accidents and sea conditions

Looking at the table 5, we note that the majority of the accidents happen by choopy sea and large waves. Futhermore, the limited number of accidents by stormy wheater means probably that the majority of the canoes remain ashore in such a circumstances.

**Tableau 5. - Accidents and sea condition**

	Liberia	Ghana	Benin	Nigeria	Total
Calm smooth	n/a	0	3	1	4
Choopy sea	n/a	13	68	2	83
Large waves	n/a	2	6	7	15
Storm	n/a	1	0	5	6
<b>Total</b>	<b>n/a</b>	<b>16</b>	<b>77</b>	<b>15</b>	<b>108</b>

n/a : Not available

### 5.3.3 Accidents and luminosity factors

The data registered in table 6 taking into consideration the factor luminosity shows that the great majority of accidents of canoes occured by day light. The first explanation which come to the mind is that this phenomena is probably due to the fact that the majority of the artisanal canoes don't work at night, or that the sailing traffic in coastal waters is less intensive at night, thus, limiting the risks for accidents. A complementary survey will permit to answer the question more precisely.

**Tableau 6. - Accidents and luminosity factors**

	Liberia	Ghana	Benin	Nigeria	Total
Moonlight	0	1	0	1	2
Day light	7	24	68	7	106
Dark night	0	3	12	21	36
<b>Total</b>	<b>7</b>	<b>28</b>	<b>80</b>	<b>29</b>	<b>144</b>

### 5.3.4 Accidents and meteorological factors

In table 7 we observe that the majority of the accidents related to meteorological factors happen by strong wind. This is followed with the accidents by rainy conditions, then in foggy conditions were the reduced visiblity which provoke often collisions among canoes or boats. This is due to the difficulty to appreciate the distances and the lack of orientation facilities.

**Table 7. - Accidents and meteorological conditions**

	Liberia	Ghana	Benin	Nigeria	Total
Wind	3	2	69	4	78
Fog	2	1	7	7	17
Rain	2	25	1	0	31
Thunderstorm	0	0	0	5	5
<b>Total</b>	<b>7</b>	<b>28</b>	<b>77</b>	<b>16</b>	<b>131</b>

### 5.3.5 Accidents of canoes by class of length

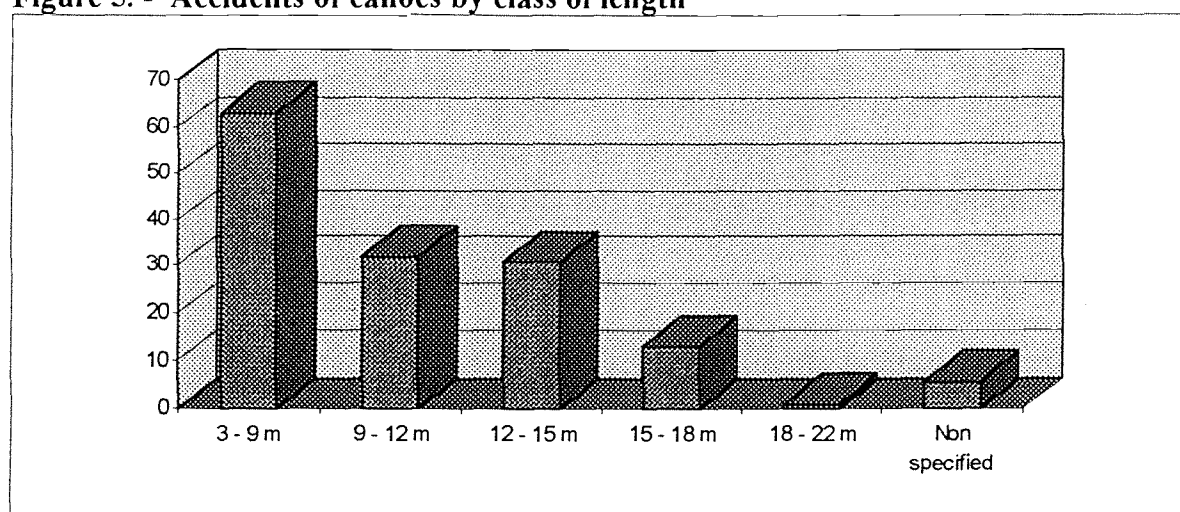
Observation of the table 8 as well as the figure 5 permit to verify the class of length of the units most concerned by perils at sea.

One can note that the three first classes are those which are the most concerned by accidents whatever the responsible factor.

**Table 8. - Accidents of canoes by class of length**

	Liberia	Ghana	Benin	Nigeria	Total
3 - 9 m	0	8	32	23	<b>63</b>
9 - 12 m	3	5	21	3	<b>32</b>
12 - 15 m	4	3	22	2	<b>31</b>
15 - 18 m	0	6	7	0	<b>13</b>
18 - 22 m	0	0	0	1	<b>1</b>
Non specified	0	1	0	1	<b>2</b>
<b>Total by country</b>	<b>7</b>	<b>23</b>	<b>82</b>	<b>30</b>	<b>142</b>

It should be mentioned that these classes of length are the most commonly met along the littoral. As a result, they are the most potentially exposed to accidents.

**Figure 5. - Accidents of canoes by class of length**

## 6. DAMAGES

Since the data collected did not allow a detailed analysis of the costs, element by element, for each one of the concerned countries, global results obtained by country is however mentioned for information in table 9.

The declarations of the whole material lost represent nevertheless a prejudicial amount reaching US \$ 127,439, which is to be supported by the economic operators because of the accidents.

**Tableau 9. - Loss of human life and costs of the material lost**

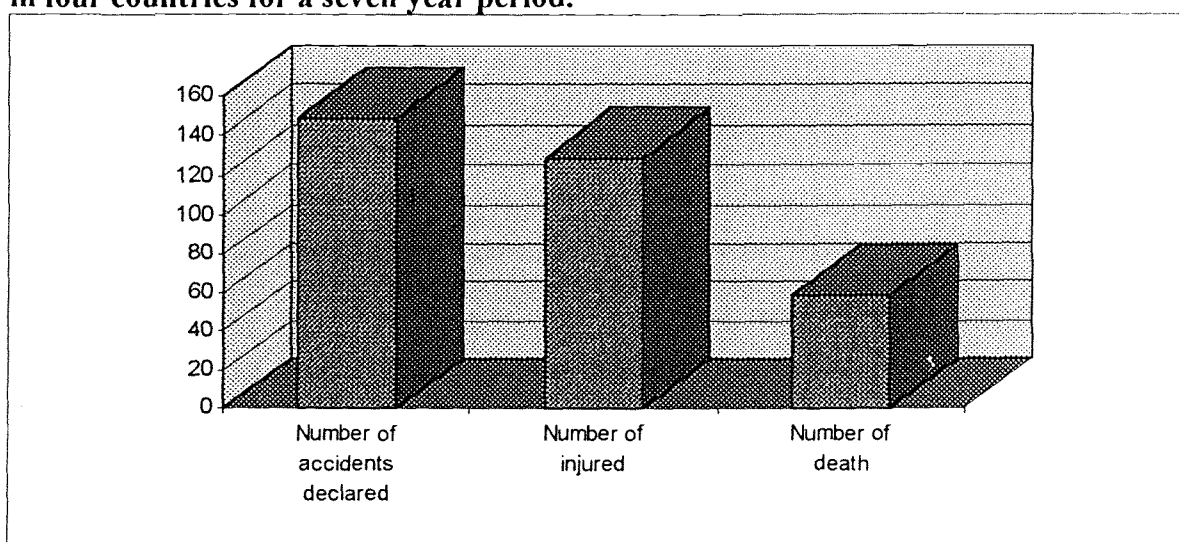
	Liberia	Ghana	Benin	Nigeria	Total
N° of accidents déclarés	7	29	83	30	<b>149</b>
Number of injured	59	n/d	35	35	<b>129</b>
Number of death	n/a *	n/a *	10	49	<b>59</b>
Costs of materials lost in US \$	52,700	5,485	52,933	16,321	<b>127,439</b>

\* n/a : not available

Looking the table 9 and the figure 6, we note that 149 cases of accidents were declared to the investigators for the four countries concerned. During these accidents, 59 persons died and 129 others were injured.

It is probable that a complementary survey will help to discover more cases of accidents, whose declaration never reached the concerned authorities. Most of all, those concerning material losses whose costs are probably underestimated, taking into consideration the high-price of the fishing material in all the coastal States of the sub-region.

**Figure 6. - Accidents of canoes declared, with the number of death and injured in four countries for a seven year period.**



**Table 10. - Safety and security equipment present on board at the moment of the accident**

Material on board at the moment of the l'accident	N° of canoes concerned on a total of 149 units	% of the 149 canoes
Navigation lights	2	1.3
Radar reflector	2	1.3
Extinguisher	2	1.3
Compass	3	2.0
Flare up lights	4	2.7
First aid kit	5	3.4
Ring buoy	7	4.7
Tools box	11	7.4
Life jacket	17	11.4
Markers for fishing gears	19	12.8
Sail	26	17.4
Paddles	32	21.5
Emergency fuel	34	22.8
Bamboo	37	24.8
Lampe torche	49	32.9
Food provisions	63	42.3
Scoop	80	53.7
Drinking water	83	55.7

## 7. COMMENTS ON SAFETY AND SECURITY EQUIPMENT ON BOARD

The survey did not permit to get answers to the four questions on the security and safety equipment (see appendix 1(a) and 1(b). The questionnaire was asking if :

- (1) the material referred to was on board ?
- (2) we can reach it / take it ?
- (3) we try to use it ?
- (4) it was or not operational ?

Nevertheless, according to the responses obtained for the first question : the material referred to was on board ?, it was possible to gather the information of the table 10. This table gives an idea of the number of security and safety material present in the 149 canoes concerned at the moment of the accidents along through the four countries of this sub-region.

We noted that on a total of 149 canoes concerned by this survey, the distress signals etc. such as navigation lights, radar reflector, and any other signal does not seem to be frequently kept on board of the canoes. Only three were mentioned to be on board of 6 canoes on a total of 149.

Hand torches were mentioned to be on board of 49 canoes for a total of 149, or only 33 per cent of the total.

Three accidented canoes among 149, or 2 per cent of the total have declared to have a compass on board.

Two units declared having a first aid kit on board.

Seven canoes were having ring buoy on board, and seventeen canoes were having life jackets on board. Bamboos used as an emergency floating device in case of shipwrecking were used by 37 canoes.

Scoops or bailers were present on board of 80 canoes or 54 per cent of the total.

Auxiliary propulsion means such as sails and paddles does not reach 50 % of the accidented 149 units. Only 23 % accidented canoes were having emergency fuel on board.

Food provisions were embarked by 63 units and 83 units were having drinking water on board on a total of 149 canoes.

## 8. CONCLUSIONS

The analysis of the results for this survey shows the complexity met to solve the problems related to Safety at Sea within the artisanal fisheries sub-sector as well as for the transport canoes. This document permitted to measure the magnitude of the factors which provoked those accidents.

The difficulties of fishing operations carried-out by the west african artisanal fisheries, often with unstable canoes, and the gravity of the events derived from these activities, vary according to the country, and in a given country, as per the location of the fishing communities along the littoral. However, many factors are common to the whole littoral surveyed.

The document could not detail each accident, per canoe and per country, because of the disparity of the data collected and the uncomplete character of the questionnaires received. However, the analysis of the data permitted to appreciate the magnitude of the human losses as well as the financial implications on the economic operators of the sub-sector. The contributing factors related to the dramas have been identified and commented.

It should be kept in mind that because of the limited free space on board of a canoe, priority is often given to the stocking for a maximum of fishing gears, as well as using free space for stocking fish, instead of embarking life jackets and other safety devices.

Another factor which is limiting also the presence of safety devices on board is the relatively low economic level of some operators in the sub-sector.

Finally, another limiting factor, is the low knowledge in management matters of these operators which consider that it is more convenient to keep the investments and operational costs to a minimum, and that an additional investment in safety material will decrease their potential profit. As a result, the Safety at Sea of the crews and canoes is put back to a second level in the day to day priorities.

It is convenient to underline also that it is not all the techniques, technologies and others rescue systems, conceived for boats sailing in the countries with advanced artisanal fisheries, which could immediately be adopted technologically and economically to the canoe fisheries in west africa.

## 9. RECOMMENDATIONS

A deep and concerted though between economic operators, responsible Authorities and researchers will help to open the way in the near future to a concept for test and adoption of rescue systems adapted to the particular context in which operate the artisanal fishing fleets all along the West African coast.



Within the Department of Fisheries of the sub-region a training of trainers on the questions attached to Rescue and Safety at Sea appears more than ever as a high priority.

As a result, these trainers will provide a practical training on the landing sites and other fishing bases. They will also carry out and demonstrate the right attitude to be adopted while sailing, in rescue matters, Safety at Sea in the canoes and the first aid to be given to injured peoples at sea, etc.

Frequent practical workshops should be associated to this practical component. This concept should be incorporated to the work programme of the Fisheries responsible authorities.

It is probably at this cost that one can expect to foresee a decrease in the loss of human lives at sea, and also a decrease on implicated financial costs in the West African artisanal fisheries in general.



  <p style="text-align: center;"><b>DANIDA</b></p> <p style="text-align: center;"><b>ACCIDENTS AND INCIDENTS OF FISHING AND TRANSPORT CANOES</b></p> <p style="text-align: center;"><b>DATA SHEET</b></p>	<p><b>5. Type of boat</b>          Immatriculation :          Year of construction :</p> <p><input type="checkbox"/> Fishing unit                      Length :  <input type="checkbox"/> Transport unit                      Length:  <input type="checkbox"/> Planked/framed  <input type="checkbox"/> Other material of construction :</p>
<p>COUNTRY :          Year :          Date of the enquiry :</p> <p>Nam and address of the investigator :          Address of contact :</p> <p>Name of the boat :          Registration number :</p>	<p><b>6. Mode of propulsion</b>  <input type="checkbox"/> Inboard engine, HP :      Age :      Marque :  <input type="checkbox"/> Outboard engine, HP :      Age :      Marque :</p> <p><b>Type of fuel used ?</b>          1. <input type="checkbox"/> Pure petrol      2. <input type="checkbox"/> Petrol      3. <input type="checkbox"/> Diesel          4. <input type="checkbox"/> Premix fuel</p>
<p><b><u>GENERAL INFORMATIONS</u></b></p> <p>Date of the accident :          Time of the accident :          Area of the accident :</p> <p><b>1. Luminosity</b></p> <p><input type="checkbox"/> Light  <input type="checkbox"/> Day  <input type="checkbox"/> Night</p> <p><b>2. Meteorological conditions</b></p> <p><input type="checkbox"/> Wind  <input type="checkbox"/> Fog  <input type="checkbox"/> Rainstorm</p> <p><b>3. Sea conditions</b></p> <p><input type="checkbox"/> Calm smooth  <input type="checkbox"/> Choopy sea  <input type="checkbox"/> Large waves  <input type="checkbox"/> Storm</p> <p><b>4. Movement of the boat</b></p> <p><input type="checkbox"/> Moored alongside the pier  <input type="checkbox"/> Running  <input type="checkbox"/> Fishing  <input type="checkbox"/> Anchored</p>	<p><b>8. Main causes of the accident</b></p> <p>1. <input type="checkbox"/> Capsizing          2. <input type="checkbox"/> Grounding          3. <input type="checkbox"/> Collision          4. <input type="checkbox"/> Dragging of nets by a trawler          5. <input type="checkbox"/> Entanglement of nets on the bottom          6. <input type="checkbox"/> Fire on board          7. <input type="checkbox"/> Fire (canoe on the beach)          8. <input type="checkbox"/> Explosion          9. <input type="checkbox"/> Falling on board / off the boat          10. <input type="checkbox"/> Injuries          11. <input type="checkbox"/> Piracy          12. <input type="checkbox"/> Others</p> <p><b>9. Contributing factors</b></p> <p>1. <input type="checkbox"/> Engine(s) failure(s)          2. <input type="checkbox"/> Leaks          3. <input type="checkbox"/> Overload          4. <input type="checkbox"/> Thunderstorm          5. <input type="checkbox"/> Wind          6. <input type="checkbox"/> Waves          7. <input type="checkbox"/> Fog          8. <input type="checkbox"/> Lack of fuel          9. <input type="checkbox"/> Disorientation          10. <input type="checkbox"/> Panic          11. <input type="checkbox"/> Fight          12. <input type="checkbox"/> Innattention          13. <input type="checkbox"/> Discord          14. <input type="checkbox"/> Anchor line          15. <input type="checkbox"/> Others</p> <p><b>10. Damage / loss</b>                      <b>Costs per element</b></p> <p><input type="checkbox"/> Hull  <input type="checkbox"/> Fishing gears  <input type="checkbox"/> Transport equipment  <input type="checkbox"/> Engine  <input type="checkbox"/> Cargo          Total value :</p>

**I. CREW AND PASSENGERS ON BOARD  
AT THE MOMENT OF THE L'ACCIDENT**

Total number of crew on board : .....

Number of injured .....

Number of death .....

Total of passengers on board .....

Number of injured .....

Number of death .....

**III. Complementary informations**
**1. Antecedents of the accident :**
**2. Description of the accident :**
**3. Identification of the injuries :**

O. Light            Number :

O. Severe            Number :

O. Fracture            Number :

O. Contusion            Number :

O. Burn            Number :

**4. Causes of the death ?**
**5. Equipment on board at the moment of the accident ?**

6. Do you think that the weight, or the area, where the fishing material or the load were placed, may have contributed to the accident ?

**7. Safety equipments available on board  
at the moment of the accident**

(Please mark) :

Were any of the following items on board ?

↓            Could you reach it / take it ?

↓            Did you try to use it ?

↓            Was it operational ?

- |     |   |   |   |                                  |
|-----|---|---|---|----------------------------------|
| ↓   | ↓ | ↓ | ↓ |                                  |
| 1.  | O | O | O | O Life jackets                   |
| 2.  | O | O | O | O Paddles                        |
| 3.  | O | O | O | O Bamboo                         |
| 4.  | O | O | O | O Scoop                          |
| 5.  | O | O | O | O Sail                           |
| 6.  | O | O | O | O Tools box                      |
| 7.  | O | O | O | O Emergency engine               |
| 8.  | O | O | O | O Emergency fuel                 |
| 9.  | O | O | O | O Ring buoy                      |
| 10. | O | O | O | O Navigation lights              |
| 11. | O | O | O | O Radar reflector                |
| 12. | O | O | O | O Marker buoys for fishing gears |
| 13. | O | O | O | O Flare up light                 |
| 14. | O | O | O | O Hand torch                     |
| 15. | O | O | O | O Compass                        |
| 16. | O | O | O | O Radio marine transceiver       |
| 17. | O | O | O | O First aid kit                  |
| 18. | O | O | O | O Drinking water                 |
| 19. | O | O | O | O Food provisions                |
| 20. | O | O | O | O Exctinguisher                  |
| 21. | O | O | O | O Caulking material              |
| 22. | O | O | O | O Knife                          |
| 23. | O | O | O | O Others                         |

**8. Assistance offered**

**What kind of rescue operation and / or action taken by the Fishermen, the Official Authorities, and /or the Project ?**



