Results Appendix 1

Field Work Report (Ghana)

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Executive Summary

1. The fieldwork in Ghana was carried out between 23/03/00 – 19/5/00. The survey covered 62 villages and focused on both the fishermen and the fish processors. This sample represents 33% of the villages listed in the latest Canoe Frame Survey (1995) conducted by the Department of Fisheries (Ghana).

2. Interviews were conducted in collaboration with the Ghanaian Department of Fisheries, with focus groups from selected villages along the coast. Usually present were the chief fishermen and his elders along with any other villagers who were available at the time, this included women. Where possible the Regional fisheries officer (RFO) and the District Fisheries Officer (DFO) were also interviewed.

3. The survey used three separate questionnaires. One for use in the fishing communities (PISCES), one each for the inshore vessel /semi-industrial vessel owners and a further one for use with Departmental and ministerial staff.

4. PISCES (Participatory Institutional Survey and Conflict Evaluation Exercises) was developed for use with the fishing villages. PISCES is a hybrid of traditional PRA techniques and standard semi-structured questionnaires. PISCES consists of a number of different elements:

5. A mapping exercise conducted with a focus discussion group. This map recorded information related to fishing and conflicts within both the village in question and the neighbouring villages. The map covered both land and marine-based resources. The Institutional Wheel exercise again conducted in a Focus Discussion Group. The Institutional Wheel was used to map the positive, negative or perhaps neutral relationships between various stakeholders in the community. Time-lines were conducted at the end of the meeting and were used to record information on the history of the community with specific emphasis on conflicts. Semi-structured interview (SSI) were divided into a number of sections. Section one was used to establish if there was any conflict (and if yes, what sorts of conflict), how that conflict was solved, if the method could be improved, what were the most frequent conflicts and the hardest to solve. Section two put those conflicts into some sort of context, asking questions about the legal status of the community, the political and economic influences on their life, and the worst and the best change that had happened to the community during the life time of the respondents and the degree of control they felt they had over their fishing practices.

6. The most commonly reported conflicts were: Struggle for fish at sea (fishermen racing to encircle shoals of fish such as sardinella), net entanglements (deliberate or accidental, often associated with the race to encircle fish), fish pricing (cited by both fish ‘mammies’ and fishermen), clashes with semi-industrial vessels, clashes with inshore vessels (both of these involved these vessels fishing too close to artisanal grounds) and theft from the beach.

7. Other significant factors affecting fisheries management in Ghana, and frequently mentioned by respondents were sea erosion and the encroachment of development on village land.

8. The villages with the lowest reported number of conflicts also had low numbers of fishermen and canoes.

9. There are four administrative regions along the coast: Western Region shares a border with Ivory Coast, Central Region, Great Accra Region and then Volta Region which shares a border with Togo. Villages in Western Region were happiest with current conflict management arrangements, villages in Volta Region were the least happy. More villages in Central Region reported a greater decrease in conflicts than any other region.

10. Tentative explanations of these results are as follows: Western Region is the least populated and the furthest away from large ports (thus avoiding extensive interaction with semi-industrial and in-shore vessels). Central Region has had the greatest success with recruitment to the World Bank funded Community Based Fisheries Management programme and Volta Region has the highest proportion of beach-seine users and also the region worst affected by sea-erosion – competition for rapidly disappearing beach space is therefore high.

11. Conflicts whose source was external to the community were considered to be the most damaging and the hardest to resolve. This includes conflicts between the canoes and the semi-industrial and in-shore vessels. Time and spatial factors make external conflicts hard to resolve.

12. Conflicts that were internal to the community were the easiest to solve. This is a direct consequence of the traditional village structure where the Chief Fisherman and his Council of Elders command respect over the fishermen in the village and negotiate more easily with Chief Fishermen in neighbouring villages.

13. Although Ghanaian waters are legally open access, a powerful sense of culture and tradition, shared amongst all groups has maintained a common-property system in the face of an open-access regime. The collective will to protect their right to the resource, and the fact that that collective will is recognised and respected by all the villages is probably the key to the success of the management systems here.

14. Rising transaction costs, i.e. the costs of negotiating agreements or conducting day-to-day transactions are a significant issue in Ghanaian fisheries management – both at the local and national level. Increasing economic and social pressures are making the day-to-day life in the communities harder. Externally generated conflicts are the ones that put the most pressure on the local institution's ability to contain or prevent conflict.

15. Economic policies have had an impact on the communities. The rising costs of inputs impacts upon conflicts over the price of fish as both buyers and sellers aim to maximise their profits under increasingly difficult circumstances. When the cost of fishing rises which, whilst not immediately causing more conflicts, puts added pressure on the day to day existence of fishermen and brings economic pressure to bear on the rest of the community.

16. Despite the increasing costs of living around them the fisheries management institutions within the communities appear strong enough to be able to rebuff external shocks.

17. The intrusion of trawlers into coastal waters is another factor that has seen transaction costs rise. Reporting the incident takes time and effort, resolving the issue requires

even more. Despite mechanisms to resolve such conflicts, they often remain the most costly conflicts in terms of time and money. As the incidence of trawler incursions rises, so presumably will the transaction costs associated with this.

18. Increased funding of the monitoring and enforcement capacity and more effective negotiation with the trawler owners is needed to deal with the problem of trawler incursion. This is supposed to be covered under the remit of the FSCBP, but is likely to be a long-term goal. The root cause of the trawler issue – declining catches and rising costs pushing the trawlers into illegal areas—has a number of long-term solutions. However, the trawler sector is facing severe economic pressures and any solutions are probably too painful to contemplate at this juncture and beyond the capacity of the State (economically and politically) to implement currently.

19. The Community Based Fisheries Management Programme (CBFM) would appear to have had positive benefits to the communities. By using the existing institutional structure, the CBFM has enabled more formalised management to be introduced to communities without upsetting what was clearly a system that worked well to begin with.

20. CBFM has helped provide local institutions with a firm basis both within their own community and in the district as whole. This has no doubt helped maintain transaction costs at a stable level, and where the incidence of conflict has declined, may even help reduce transaction costs.

21. The only communities that appeared indifferent to the CBFM were those in urban areas (principally Accra). The reason given for this attitude is that fishermen in these communities tend to be better educated and have greater access to media and other information. They are more cynical of government promises of how things will get better in the future and more likely to rebuff any attempts by the government to interfere. Outside urban areas, the CBFM was the reason cited for the decrease in conflict or the satisfaction with the conflict management system in place.

22. Although the CBFM has had a number of positive benefits, it has also inserted bureaucratic systems into institutions that worked quite happily without them before. Further research needs to be done on this issue to see if CBFM has actually increased the transaction costs of communities in terms of time spent at CBFM meetings, costs incurred in travel to meetings and the added costs of bureaucracy involved.

Country Context

Ghana lies in West Africa, bordered by Togo to the East, Ivory Coast to the West and Burkina Faso to the north. Climatically, it is tropical, although the north is considerably more arid and affected by sub-Saharan climatic influences. It has a population of 20 million and economically is considered to be a 'developing' country.

1.1 Cultural and Political History

Ghana, the former British colony of the Gold Coast, became the first African colonial state to gained independence in 1957. In the 43 years since independence Ghana has made some remarkable advances in development and has also suffered some serious set-backs. It has had a number of military coups, but is set, in December 2000 to become the first African state in which a military ruler has handed power to a civilian government through the ballot box. Unlike many other countries in the region, Ghana has experienced comparatively little unrest with its neighbours or amongst its diverse tribal and linguistic groups, and it is perhaps this aura of stability and peace at a national level which influences conditions at a local level.

1.2 The Coastal Environment

The coastal plane of Ghana is tropical. There is a widespread complex of lagoons along the coast line which have traditionally been used to supplement marine fishing activities. The lagoons, however, are under threat from a number of factors: pollution and erosion. Erosion along the coast of the Bight of Benin is considerable, with Volta Region in particular suffering from a rapidly disappearing coast line. Although major efforts are underway to stem the disappearance of land, there is a strong possibility that the largest lagoon in Volta Region (Keta) will soon become a marine bay as the spit of land that separates it from the sea disappears. The reasons for the erosion are many but a chief factor is the hydrological action of the Volta River and the sea currents. The construction of Tema harbour in the 1960s is said to have greatly affected the long-shore drift which helped protect the coastline to the east and the construction of the Volta Dam, again in the 1960s has had a large impact on the action of the river and the way sediments are deposited at the river's mouth. Together with the marine fisheries, Lake Volta has an important role to play in the fishing industry. Widespread environmental concern was raised at the time of the construction of the lake which dammed the Volta River. Concerns are now being raised about the rapidly dropping water levels on the Lake – caused in part by dam construction in neighbouring Burkina Faso. Evidence of how far the water levels have dropped can be seen in Figure 1. The trees visible were once completely submerged by the water. The implications of the declining water levels are that fish populations in both the lake and the river have been affected, and further effects are seen down stream.

1.3 The Economy

Despite significant advances made in improving some of the standard development indicators (life expectancy has risen by 4 years since 1995; adult literacy has risen by 44% since 1970), Ghana is currently struggling with the dual effects of economic

adjustment measures and external shocks. Economic reforms have seen public sector budgets slashed – whilst this helps the government conform to IMF conditionality terms, the impact in the natural resources sector, to name but one, has been devastating. All departments are under funded: in the fisheries department for example, this has lead, in particular to a reduced ability to monitor fisheries effectively and enforce regulations. The government's need to raise revenue has seen the introduction of VAT at 10% which is set to rise to 12.5% later this year. Despite well intentioned publicity campaigns to educate the public as to the need for VAT, this is unlikely to ease the blow of a significant price rise on all VATable. Coupled to this is the rapidly devaluing national currency which, while making Ghanaian exports cheaper, makes paying the national debt increasingly expensive and dramatically increases the costs of imported industrial inputs. Ghana is an oil importer, and recent OPEC price rises have hit the economy hard – not only is the State's fuel bill rising, but these costs are passed onto the consumer. While exports have grown due to favourable terms of trade and export initiatives put in place as a result of economic reforms, these have tended to concentrate on cash crops such as cocoa which were hit by rapidly falling prices in the latter half of 1999 and legislation enacted by the European Union concerning the legal definition of 'chocolate'[1].

In the context of fisheries, the prevailing economic conditions are having a number of effects. Firstly the day to day costs of fishing are rising as fuel prices and input prices rise. As the cost of fishing rises, so the price received for the catch has to rise to compensate. The women who buy the catch, are, however, also experiencing rising costs and are therefore trying to beat down the cost of a day's catch to compensate. The knock-on effects are widespread. Education and health at the local level both suffer as more and more income is diverted away from the add-on luxuries into the basic needs for survival. Despite this catalogue of economic woes, some very interesting results emerged from a recent study of conflict, its management and its causes in coastal Ghanaian fishing villages.

2 The Fishing Industry

The country has a coast line of about 550 km, and narrow continental shelf (15 -75 m depth) with a total area of about 24,300 km^2 or 11 percent of the country's territorial waters. Ghana has a narrow continental shelf which due to cold upwellings produces catches of sardinellas, anchovy and mackerel and other species which account for the majority of fish caught. The marine fisheries include tuna in offshore waters inside the EEZ and beyond. Off shore, tuna accounts for about 10% of marine catch, 70% of which is exported for further processing or is canned in the many processing factories along the coast. The country's seasonal coastal upwelling supports a number of the commercially important pelagic and demersal fish species caught in the continental shelf area, sardinellas, anchovy, and chub mackerel are the most important small pelagic fish species. The most important demersal fish species are of the families *Sparidae*, *Pomadasidae*, *Mullidae* and *Sciaenidae.* Fishing is an important economic activity for many communities along the coast and in inland areas (principally on

[1] Briefly, by allowing an increased proportion of vegetable solids in 'chocolate' major manufactures (and thus major importers of cocoa solids) are able to reduce costs without losing the right to sell their product as 'chocolate'.

Lake Volta), marine fishing accounts for 85% of national catch while inland waters account for the other 15%.

There are around 50 lagoons of various sizes along the coast, many of which continue to provide an important role to the marine fisheries: they serve as spawning or nursery grounds for some marine fishes, molluscs and crustaceans and provide alternative employment during times of scarcity. They are also used for salt production in a number of place. Many lagoons have been subjected to excessive fishing pressure resulting in over-exploitation of the fishery resources – partly because the traditional taboo system that governed the use and management of the lagoons has fallen into disrepair over the years.

Fishing accounts for about 5% of Ghana's agricultural GDP, although the World Bank estimates that this figure could be higher – the potential for substantial tax revenues from fishing activities has not yet been fully exploited. About 75% of total national production is consumed domestically and a further 35,000 tonnes is imported to meet this demand. In 1997, some 472,000 mt of fish was landed by Ghanaian fishing crafts; this was made up of 296,000 mt from Ghanaian marine waters, 76,000 mt from inland waters and 100,000 mt caught by Ghanaian vessels fishing outside Ghana. The value of the marine fish was put at over US$350 million. Although inland fisheries are locally important, for the country as a whole, the marine fisheries are important in terms of both export value and national employment and nutrition supply. Fish is the country's largest non-traditional export earner accounting for earnings of about US$17 million in 1995 (IBRD/IDA, 1995:4)[2]. The potential yield from the lake and river fisheries is estimated at about 80,000 tonnes, of which half is attributable to the fishery on Lake Volta.

Fishing enterprises in Ghana range from the very small scale through to the industrial vessels operating off shore on the high seas. There are estimated to be some 500,000 fishers, fish processors, traders and associated trades making up about 10% of the total population.

Table 1 demonstrates that while some aspects of fishing have changed dramatically since statistics began in 1969, others have changed comparatively little. Data on outboard motors was not collected until 1981, although most villages had at least one outboard by the early to mid 1970s. The number of outboards has risen dramatically, although the dip between 1989 and 1992 could reflect growing economic difficulties within the country and the rising cost of fuel. The introduction of SAP into Ghana resulted in relaxed import regulations, which is reflected in the sharp rise in outboard motors between 1992 and 1995 as they became more readily available. Although the number of fishermen has risen over the course of the survey (with the exception of the dip between 1986 and 1989), there has not been a corresponding rise in the fishing boats, although as is explained below, the power and capacity of those fishing boats has increased.

[2] Cocoa is Ghana's most significant traditional export, accounting for 29% of exports and earning US$ 195 million in 1998. Accounting for 23% of exports and earning 693 million cedi in 1995

Table 1 : Summary statistics of artisanal fleet

Number of	1969	1973	1977	1981	1986	1989	1992	1995
Fishing villages	198	191	200	174	188	192	189	189
Landing beaches	269	257	238	222	276	264	206	310
Outboard motors	-	-	-	3698	4250	4631	4262	5076
Fishermen	-	-	81000	84100	104700	91400	96400	101700
Canoes	8728	8238	8472	6938	8214	8052	8688	8641

Number of canoes includes all types of canoe (including one-man canoes)
Source: Report on the 1995 Ghana Canoe Frame Survey, MFRD, Tema, June 1997, pg. 38

The Ghanaian fishing fleet can be divided into 4 sectors: The industrial fleet, the semi-industrial and in-shore fleet and the artisanal fleet.

a) The Industrial fleet employs imported steel vessels for fishing and consists of deep sea trawlers, shrimpers and tuna boats. The trawlers are normally over 35 m in length and have engines of over 600 hp while the shrimpers are up to 30 m in length with engines of over 350 hp. Originally, the trawlers fished off the west and south-west coast of Africa particularly in the area from Sierra-Leone to Mauritania and also in the Angola to Namibia area. With the inception of the EEZ law on fishing, most of these vessels have returned to fish in Ghanaian territorial waters. The industrial trawlers by law are to operate in waters greater than 30 m deep. However, due to the untrawlable nature of the bottom beyond 75 m depth contour, these vessels operate between the 30 and 75 m depth contours. The industrial fleet have undergone radical expansion in numbers since the launching of the Ghana Economic Recovery programme in 1984. The aim of the programme, among other things, is to promote non-traditional export to earn foreign exchange for the country. The number of operating trawlers have increased from 10 in 1984 to 483 in 1997. These vessels target species such as cuttle-fish, sea breams, groupers, snappers, soles and cassava fish for export. The industrial fleet have freezing facility for preserving fish at sea and can stay for months at sea. The tuna bait-boat fishery (pole and line)comprises about 30 vessels.24 Baitboats and 6 purse seiners(1998). Their target species are the skipjack (*Katsuwonus pelamis*), yellowfin (*Thunnus albacores*)and the big-eye (*Thunnus obesus*). Exploitation of the resource is mainly offshore and of late various techniques such as the bird radar technique and 'payaols'(rafts) have been used to enhance the capture of the species. Annual catches of the tuna species have averaged 35,000 t in the past 5 years contributing approximately 13% of the overall marine landings. The fleet is majority owned by Ghanaians, although in practice the Korean co-owners tend to run the operation.

b) The Semi-industrial fleet. This small sector consists of locally-built wooden fishing vessels, fitted with in-board motor engines of up to 400 H.P. Most of them

are dual purpose vessels (purse seine/trawler)operating as purse seiners during the upwelling season(July-September), and trawling for the remaining part of the year. Harbour facilities for the large trawlers are available at two landing sites located along the coastline; Tema and Takoradi while mooring for the smaller trawlers is available at Winneba, Apam, Mumford, Elmina and Sekondi.

c) There are about 300 inshore vessels[3] mainly bottom trawlers. This fleet became established in the 1970s on the basis of a number of bumper years of trigger fish catches. Not surprisingly, this stock collapsed in response to the large increase in pressure and, because of the non-transferability of fishing capital the inshore fleet is now in a state of serious economic difficulty.

d) By far the largest sector(according to the latest figures available) is the fleet of artisanal canoes totalling some 8641 vessels and employing an estimated 101,700 fishermen as crew. The size of this fleet has remained stable over the last 15 years or so, although the size of vessels is increasing[4]. This sector contributes about 78% of the total annual fish landings in Ghana and is characterised by the use of several gears employed by dug-out canoes often powered by out-board motors. These gears include purse seines (Watsa and Poli), beach seines, setnets, hook/line and drift gill nets all targeting different fish resources. The purse seine gears (encircling) and beach seines are the main exploiters of the small pelagic resources (Sardinellas and chub mackerel). This is the largest sector in Ghana. All canoes with outboard motors are classed as artisanal irrespective of size or capacity. Artisanal canoes are found in all fishing villages along the coast.

2.1 Government and local level management institutions

The Department of Fisheries is sited in the Ministry for Food and Agriculture based in Accra. The Department of Fisheries comprises five sub-divisions: marine fisheries, inland fisheries, fisheries research and utilisation, administrative and operations branch and monitoring, control and surveillance. There are 4 regions along the coast, each of these has a Regional Fisheries Office and within each region are a number of districts which again have a number of staff assigned to them. The political administration of Ghana has changed considerably in the last ten years, many departments have been decentralised resulting in reduced budgets and staffing loads at the regional and district level. The central government in Accra is responsible for fisheries management, although the local communities are able to exercise considerable influence over the day-to-day running of their community fisheries.

At the local level, each village has a Chief Fisherman who is responsible to the Chief. In some villages this post is relatively new, in others it was established over 100 years ago. The Chief Fisherman, in consultation with his counsel of elders manages the fishery. Legally, Ghanaian fisheries are open access (ie, all citizens have a right to

[3] The inshore fleet can also be sub-divided into steel hulled vessels operating mainly out of Tema and Takoradi and wooden hulled vessels operating out of Shama, Elmina, Axim. Wooden vessels are generally smaller than steel vessels, overall the fleet ranges from 27 – 70 feet in length.

[4] Between 1984 and 1995 (latest date for which figures are available), the average length of all types of canoes has increased: one man canoes which in 1984 were between 4 – 5 metres long, had increased to 8.5 in length. Likewise ali, poli or watsa net canoes had increased from 12-18 metres long to 15.2-16.2 metres.

fish the sea). Practically, however, the Chief Fishermen exercise considerable control over who can and cannot land or launch their canoe on their beach. In order for anyone to fish at the beach, permission has to be sought from the Chief Fisherman, and a small gift of either money or alcohol be presented. By seeking permission, the Chief Fisherman becomes responsible for the welfare of the canoe and its crew. Although bound by nationally formulated legislation (eg no towing gear is allowed to be used in coastal waters of depths less than 30 metres: PNDCL 256), the villages operate their own rules regarding sanitation, fishing methods, fishing hours (all villages have a no fishing day) and social behaviour on the beach. There appears to be no specific effort or catch management exercised by the Chief Fishermen, although this is probably happening in an indirect fashion through the control of nets and canoes.

The local institutional structure of Ghanaian fisheries has, on the face of it, changed very little over the past centuries, and it is perhaps this stability and consistency that helps it remain comparatively peaceful. However, economic reforms, as described above have caused many significant negative changes to the national organisation of fishing in the past five years. In some areas, however, these changes have also bolstered the local structures rather than threaten them. The most significant positive change has been the introduction of the Community Based Fisheries Management Programme (CBFM) under the auspices of the Fisheries Sub-sector Capacity Building Project.

2.2 The Fisheries Sub-sector Capacity Building Programme

The CBFMP is part of the Fisheries Sub-sector Capacity Building Project (FSCBP), a World Bank/IDA funded project run by the Government through the Fisheries Department. The FSCBP was started in October 1995 with a loan from the World Bank and formed part of wider 'structural adjustment' lending to Ghana. 'Structural Adjustment' is a blanket term that describes a process of neo-liberal economic reforms to bring a country's economy back from collapse. Structural Adjustment programmes often have two parts: stabilisation funding from the IMF to correct immediate balance of payment difficulties and longer-term adjustment loans from the World Bank to assist in a process of restructuring and realigning the economy onto a more efficient footing. The two parts are inter-connected insofar as World Bank project loans are needed to support the deeper structural adjustments needed once the IMF funding has corrected the balance of payments problem.

A fundamental tenet of neo-liberal economic reforms is the reinsertion of the market in the functioning of the economy and the opening up of the economy. These generally requires the privatisation of state companies and interests, the abolition of import and export controls, the deregulation of the foreign currency market and the boosting of exports to kick-start the economy and keep the current account positive.

It was in this context of rapid economic reforms, in particular the emphasis on fishing that the FSCBP was formulated[5]. The key objective was to improve the long-term

[5] The FSCBP is part of a wider Medium-Term Agricultural Development Strategy (MTADS) formulated by the Government of Ghana and the IDA in 1990. The underlying themes of the MTADS were the potential for, and the need to accelerate agricultural growth (including therein fisheries). (World Bank/IDA, 1995: 10)

sustainability of Ghanaian fisheries through structural changes in management at Ministerial, Directorate and the local level (World Bank, 1995). Also somewhat paradoxically its aim was to create a platform that would make Ghanaian fish production more competitive on the global market thus boosting export earnings from the sector[6].

More specifically, the FSCBP aimed to: improve the capacity of the Department of Fisheries, address the issue of lack of an active management regime, weak institutional and legal frameworks for fisheries and a growing financial and resource crisis in the industry. Many of these objectives have been tackled to varying degrees of success.

Fundamental to the successful outcome of a large part of the FSCBP was the inclusion and participation of the largest group of fishers in Ghana – the artisanal fleet (see below). Without significant support at the local level, efforts at more efficient management of stocks and fishing effort would come to nought. The issue of capacity building at both a local and national level was central to the programme and had in fact been a basic tenet of the Country Assistance Strategy (the document upon which all World Bank lending is now based) formulated in 1990 (World Bank, 1995:12). The document establishing the FSCBP recognised that:

> "Classical marine fisheries management tools […] can only be applied with limits in Ghana in a fishery dominated by a large number of artisanal fishermen holding traditional beliefs and in the presence of some fishing stocks of which the biomass is largely unaffected by human effort" (World Bank, 1995:14)

and that in order for management at the artisanal level to be implemented at all, it would, for the time being have to be restricted to improving the information on effort and participation in the fishery whilst:

> "establishing trust and co-operation with the traditional authorities to promote community-based rational management" (World Bank, 1995:14)

Two clear issues arise from these statements, a) that marrying traditional and 'classical' management tools was going to be problematic but that b) co-opting the local artisanal communities was the only way to achieve any degree of success in the programme. Echoing the modernists arguments of the 1950s (Lewis et al) the argument now seemed to be that with increased pressure on stocks, management needed to be rooted in something beyond traditional superstitions or taboos, but that scientific evidence was likely to prove a hurdle on both sides (fishermen believe, and in some cases scientific evidence shows, that there is little cause and effect between effort and catch rates). The only logical way down the road to greater sustainability of Ghanaian fisheries and improved economic conditions was to educate fishermen, get

[6] The World Bank report on this project (1995:10) makes these two objectives inter-dependent, although sceptics might argue that without substantial support and infrastructure (which appears to be partially missing in Ghana) it is not possible to pursue increased exploitation and exports together with greater resource sustainability.

local communities on the side of government bodies and ultimately to modernise the traditional system.

In order to address the objective of fostering trust, cooperation, education and improved management at the community level, the Community-Based Fisheries Management Project was established.

Although community-based management in its truest form already existed in Ghanaian artisanal fishing villages, in order for this system to feed into a wider government initiative, networks had to be created to link the two parts. To this end 'Community Based Fisheries Management Committees' (CBFMCs) were established as the linking mechanism between the traditional and the state system. These committees were

> "formed in a fishing community based on existing traditional leadership authority and local government structures, legally empowered by common law, and comprising all stakeholders, to oversee the management and development of the fishing industry. It is to ensure the active participation of the local people in decision making and implementation."

Because the committee would act as a link (or go-between) between the two systems mentioned above, it was also recognised that the Committees would face additional pressures because they would have to a) harmonise relationships between individual community members and b) act on behalf of the government and the community in terms of by-law enforcement (Family Haven/Graceland Consult Ltd, 1998:23). In short, using the Bush and Opp framework[7] there was a distinct potential for the committee to cause or exacerbate latent conflicts in the community rather than mitigate conflicts.

The make-up of the committees varies but as a rule will consist of:

- the traditional chief, chief fisherman or his representative who acts as chair.
- representatives of all ethnic groups involved in fishing (one each).
- representatives of fishmongers/leader of fish processors.
- A representative of the Inland Canoe Fishermen Council/Ghana National Canoe Fishermen Council.
- two representatives of Unit Committees of the District Assembly, including one woman

The setting up and functioning of the committees has been somewhat patchy. To date, 47 committees have been set up, the majority of these in Central Region (which has a strong commitment to the project). The region with the least number of committees was Western Region; the reason for this appears to be the isolated nature of many of the villages which, coupled with the lack of transport has made contacting these villages much more problematic. The region with the least enthusiastic

[7] Kenneth D Bush and Robert J Opp (1999) 'Peace and Conflict Impact Assessment in D Buckles (ed) *Cultivating Peace : Conflict and Collaboration in Natural Resource Management*. IDRC/World Bank: Washington DC

response to the programme was Greater Accra Region where many communities are reported to be sceptical about government initiatives.

The Committees have a constitution which usually states that they will a) ensure that laws and rules are abided by; b) educate fishermen on the need for the laws and train them on fisheries matters; c) ensure sanitary conditions on the beach; d) use their financial resources to support development programmes in the communities and e) develop a management plan for sustainable exploitation of fisheries resources.

The first task of the committees was to draw up a list of by-laws governing fishing activity on their beaches and landing sites. By drawing up their own by-laws and submitting them to the relevant Assembly for ratification,[8] local norms would be lent weight and legitimacy. This has a two-way function. Firstly the community feels that its laws are valued because they are recognised by a higher authority and secondly, it engenders a sense of trust and liaison between the communities and the higher levels of government authority.

The by-laws usually contain sections on conservation of the fish stock, sanitation, restriction of children, conduct at the beach, conflicts and their resolution and safety at sea. While many of these by-laws are simply legalised local lore, many of the elements go one step further in attempting to manipulate and improve local community life. Conflict management measures in the by-laws vary between the most basic of provisions to lengthy details on infringements and fines. A review of by-laws from Central Region reveals that basic by-laws prohibit fighting at sea (although any definition of this is omitted) and invoking the wrath of the gods. The more complex and comprehensive by-laws go into far more detail as the by-laws for Shama Ahanta East Metropolitan CBFMC demonstrate:

1) fighting of any form either at sea or at beach is prohibited. Offenders will be fined a sum of money ranging from c20,000 to c100,000 each
2) any conflict between two canoes and/or vessels at high sea will attract c100,000 each before arbitration and c50,000 if the case is withdrawn
3) if one fishing group encounters a shoal of fish and casts its nets and a second group casts its net behind the first one, the group shall give one-third of its catch made to the first group. Failure will attract a fine not exceeding c100,000.
4) It is an offence for any group of fishermen to cast their net over net already cast by another group of fishermen. Offenders will be fined c400,000 and be made to repair and damage resulting from that act
5) Should any fisherman haul in more fish than he could load on this canoe and gives part of it to another fisherman to cart to land, the quantity of fish landed by the helper shall be equally shared between them. Defaulters will be made to pay a fine ranging from c100,000 to c400,000

3 The survey

The survey was carried out between 23 March and 19 May 2000 by a team of researchers from CEMARE and two researchers from the MFRD in Tema. Due to restrictions imposed by both time and money, it was decided to concentrate on a

[8] This can be a district assembly, municipal assembly or metropolitan assembly.

comprehensive study of the coastal fisheries, with a pilot study being conducted on one sector of Lake Volta.

3.1 The problems as posed by collaborators in year 1

- Economic-based conflicts (involving the trade-offs between local consumption and export)
- Spatial and technical conflicts (involving conflicts amongst fishermen competing for the same stocks, between gear types and sections of the fleet: eg the artisanal, semi-industrial and industrial fleets)
- Political conflicts (particularly regarding international disagreements on water flows on the Volta rivers)

3.2 Theoretical Framework

The purpose of the project is to examine conflict management in tropical fisheries and to ascertain a) the incidence and cause of conflicts; b) how they are managed and c) how present institutional arrangements might be strengthened to better deal with conflict management. The project is working within a new institutional theoretical framework, but specifically interested in how changes in communities affect institutional ability to manage conflict. In particular, the project is interested how transaction costs impact upon the ability of the fisheries management institutions to manage conflict. Bearing in mind that it is not possible to measure transaction costs (although recent work by Kuperan et al[9] may now refute this), the field work had to investigate issues around the subject of transaction costs in order to be able to ascertain a definition of the transaction costs present and the influence they were having on the institutional structure.

3.3 Methodology

In collaboration with the Ghanaian Department of Fisheries, interviews were conducted with focus groups from selected villages along the coast and were generally with the chief fishermen and his elders along with any other villagers who were available at the time, this included women. Ghanaian artisanal canoe communities are organised around the Chief Fisherman. A complex set of procedures has to be undertaken before any interviewing can take place and no interviewing can be conducted without permission from the Chief Fisherman. Because of the politics involved we chose to target the Chief Fishermen and, if he was agreeable to also speak to other fishermen and women traders. Where possible the Regional fisheries officer (RFO) and the District Fisheries Officer (DFO) was also interviewed. Three interviews were also conducted specifically with the fish processors.

3.4 Sampling Techniques used

[9] Kuperan, K; Abdullah, N M R; Pomeroy, R S; Genio E L and Salamanca, A M. 1999. Measuring transaction costs of fisheries co-management in San Salvador Island, Philippines. *Naga, the ICLLARM Quarterly*, 24:2, 45-48

The survey covered 62 villages and focused on both the fishermen and the fish processors. This sample represents 33% of the villages listed in the latest Canoe Frame Survey (1995) conducted by the Department of Fisheries.

Table 2: sample size by region

Region	Number of Villages Surveyed
Volta	9
Greater Accra	15
Central	14
Western	24
TOTAL	62

Table 3: distribution of respondents

Number of Fishermen/women participants in PRA sessions	810
Number of PRA sessions conducted	65

With no information on the variability of the population it was decided to select one third of all the villages in each region on a random basis. In order to gain a complete picture of conflicts within the coastal zone, interviews were also conducted with inshore-vessel owners and a number of industrial fleet operatives.

Table 4: sample distribution by region and village characteristics

Region	Total no. of villages (sample)	Rank no. of villages (sample)	Rank no. of fishermen (sample)	Rank no. of canoes (sample)
Volta	27 (9)	4 (4)	4 (4)	4 (4)
Greater Accra	48 (15)	2 (2)	2 (1)	2 (3)
Central	42 (14)	3 (3)	1 (2)	1 (1)
Western	75 (24)	1 (1)	3 (3)	3 (2)
TOTAL	189 (62)			

3.5 The questionnaire

There were three questionnaires in operation during the course of the survey. One was written for use in the fishing communities and was the most extensive and detailed. One was written for use with the inshore vessel owners and a further one for use with Departmental and ministerial staff.

The questionnaire for use with the fishing villages

For reasons of simplicity and speed a number of tools were adapted from the extensive PRA 'toolbox' to help build the Participatory Institutional Survey and Conflict Evaluation Study (PISCES). PISCES was developed by Bennett and Jolley (2000) for use with artisanal fishing communities to gather information on institutional arrangements in general and conflicts specifically. Whilst PRA is very useful to gaining a detailed yet rapid picture of a community, it does not lend itself easily to gathering information on a specific subject such as conflict. PISCES therefore combines a number of PRA-type techniques and the more formal semi-

structured interview format. An initial questionnaire was used in a pilot test in the Greater Accra Region, subsequent iterations in collaboration with staff in the Fisheries Department led to a modification of the format and content.

The five parts of the Questionnaire

Part One consisted of a Participatory Geographic Information Exercise (PGIE) first devised and used by Jolley and Neiland (1999) in the Chad Basin. PGIE is a more advanced version of a spot map, enabling vital information about the context of the village to be gathered. Thus details such as neighbouring villages and their fishing or farming grounds could be gathered along with information about land use inland of the beach (often including a lagoon) and important infrastructural points such as major roads and tourist resorts.

Part Two consisted of a conflict Time Line. The purpose of this devise was to place the community in an historical context and also to elicit possible clues as to major changes within the village. In particular the community was asked to identify periods of conflict on this line.

Part Three was a modified Venn Diagram called the Institutional Wheel. It was felt here that the status and nature of relationships between institutions was the important aspect to be studied. Therefore the community (usually represented by the Chief Fisherman) was asked to represent the relationships between a number of pre-determined and volunteered institutions, organisations, groupings and individuals using lines and + and – signs to indicate the nature of the relationship (positive, negative or 0 for neutral).

Parts Four and Five contained the semi-structured interview questions. Part Four was concerned specifically with conflict, Part Five with a number of political and economic issues. The questions were constructed in such a way as to allow the community to volunteer information, rather than asking them leading questions and eliciting information on the 'non-problem'[10].

The questionnaire for use with the inshore fishing fleet

The inshore fleet in Ghana is not unlike the commercial fishing fleet in the United Kingdom: it is highly organised, bureaucratic and the owners look to the President of their representative association for guidance rather than to a Chief Fisherman A number of the key points from the village survey were drawn up as questions because it was felt that the PISCES exercises were not appropriate. The Fisheries Department had a number of issues that they also wished to have covered in the questionnaires; these were duly incorporated.

The questionnaire for use with Departmental and Ministerial staff

Again, a set of questions was drawn up that best reflected the role of these staff. As above, the Departments own needs for information on conflict was used as a guide as to the sort of questions to be asked.

[10] Acknowledgements to Andy Thorpe for highlighting the non-problem problem.

Training the Enumerators

Local Fisheries Department staff familiar with the villages and conversant in the local languages were trained to conduct the surveys. Whilst it was at first hoped that the enumerators could be trained and then sent into the field to conduct the interviews at their leisure, it soon became clear that this was not going to be possible in all cases due to transport problems. It was thus decided that at least one member of the conflict team should be with an enumerator at all times.

A workshop was held in each region where 1 or 2 enumerators were trained. Each Workshop lasted a couple of hours during which each of the first three exercises listed above was explained in detail. Enumerators in Ghana are familiar with a question and answer type format, but not so familiar with PRA type material, attention was thus focussed on the new material. Each enumerator received a training manual that outlined the objectives of the project and explained the purpose of each technique. A complete version of the questionnaire was attached to the back of the manual so that the enumerator would always have a blank copy to hand.

4 Conflicts

Prior assumptions about the impact of macro-economic changes on local economies and the general state of fisheries along the West African coastline supposed that there would be considerable levels of conflict in Ghanaian fishing communities. What transpired was that whilst low-level conflict was widespread, it rarely escalated to anything more serious, and there was, moreover, a comprehensive and well functioning system for mediating and resolving conflicts at the local level.

4.1 Major conflicts identified

Based on the answers recorded, conflict in Ghanaian coastal artisanal fisheries can be divided into a number of categories: conflict that results from outside influences, conflict that results from the internal allocation of resources and that which could probably be better described as competition. The typology below attempts to categorise the most frequent problems encountered, it should be noted that at the margins some conflicts could happily sit in a number of boxes. Those conflicts caused by outside influences are the hardest to solve because they involve elements beyond the immediate control of the village.

Table 5: conflict typology by source of influence and competition

External influences	Internal influences	Competition
Trawler incursions	Race to encircle a shoal of fish	Pricing of fish
Sea erosion	Political disputes between the Chief and the Chief fisherman	Race to purchase fish from canoes
Economic pressures	Operational problems at sea (net entanglements)	Abuse of credit facilities
	Thefts at the beach	

Because violent conflict is almost unheard of, it is perhaps useful to establish a conflict scale for Ghana that better distinguishes between the various degrees of day-to-day squabbles.

Table 6: conflict typology by scale of conflict

Class	Description	Example
1	Violent conflict	Deliberate bloodshed or physical damage to canoes
2	Long term, major disputes affecting the day-to-day life in the community involving those outside the village	Land disputes, trawler incursions
3	Long term disputes located solely in the village affecting the day-to-day life in the community	Arguments over succession of Chief fishermen, thefts
4	Mild disputes over resources	Deliberate/accidental encircling of another's shoal, entangling of drift nets
5	Petty quarrels over competitive practices	Pricing of fish, canoe building contracts

Table 7 identifies the incidence of conflict reported within each region. The villages with few conflicts typically had a low number of fishermen and a low number of canoes. Across the entire survey the average number of fishermen per village was found to be 727, while the average number of canoes was 66. Across the villages that reported few or no conflicts the average number of fishermen was 162 and the average number of canoes was 12.

Table 7: degree of conflict reported by region

Region	% of villages that reported current conflict
Volta	89%
Greater Accra	93%
Central	86%
Western	79%
Overall	87%

The high percentages of villages that have reported the existence of conflict is not a representation of the magnitude of conflict within the Ghanaian artisanal marine fishery, it is merely a result the broad definition of conflict which included non-violent disputes.

Table 8 gives a clearer indication of the nature of conflicts within the study areas and is discussed in detail below.

Table 8: Ranking and frequency of the 6 conflicts most cited by villages by region

Conflict	Struggle for Fish	Net Entanglement	Fish Pricing	Clashes with Semi – industrial vessels	Clashes with Inshore Vessels	Theft From the Beach
Volta	6	5	4	0	0	4
Rank	1	2	3	4	4	3
Gt Accra	12	6	8	10	2	1
Rank	1	4	3	2	5	6
Central	10	8	5	2	2	4
Rank	1	2	3	5	5	4
Western	10	15	3	6	11	4
Rank	3	1	6	4	2	5
TOTAL	38	34	20	18	15	13

- The struggle for fish and net entanglement

The two most cited examples of conflict, by the villages, were the struggle for fish (61%) and net entanglement (55%). Though both conflicts ultimately involve the clashing of the canoes or the fishing gear at sea the difference is that the net entanglement is considered to be accidental, while the struggle between two canoes over fish is classed as deliberate.

The 'struggle for fish' will generally occur between two canoes using active gear, for example a purse seine. The key to this conflict is that the first canoe to sight a shoal of fish has the right to cast its net around that shoal. If that canoe decides to wait and watch the movement of that shoal before casting its net it still retains "ownership" over that shoal. Conflict arises where a second canoe casts its nets after a shoal has already been sighted. Where this conflict occurs the skipper of the first canoe will complain to the chief fishermen who will then question the fishermen from both crews to establish which canoe sighted the shoal first and therefore determine which canoe is liable to pay compensation. This is a commonly encountered problem and has been addressed in the CBFM laws.

The other example of this conflict occurs when a canoe casts its nets inside nets already been cast by another canoe. This may either be another purse seine or a beach seine (incidence of this is rare) when this occurs it is again reported to the chief fisherman who will determine liability and fine the canoe as appropriate.

Net entanglement is a conflict that occurs mostly among the static gears, such as the surface set net. Before a skipper casts his nets he must take into account the direction of the prevailing wind and the sea current. By doing so he should be able to predict the direction in which the nets will drift. Quite often it will be the case that nets drift into each other, where they become entangled it may require one of the nets to be cut. Again the conflict that arises from this will be taken to the chief fishermen who along with his elders will establish liability and fine the fishermen as is appropriate.

- Fish Pricing

The pricing of fish is regarded as a conflict (32%), although it could be argued that this is an essential and integral part of how markets work and is a sign of competition

not conflict. The fishermen are often tied into buying agreements, though loans, with the fish processors who were always female and usually family. Fishermen reported that the women demand a lower than reasonable price for the fish, which spurs the fishermen to break their buying agreements with the fish processors which is a source of many conflicts. The 3 groups of fish processors interviewed also cited fish pricing as a conflict although they maintain that the men demand an unreasonably high price for the catch and abscond from repaying credit.

- Semi Industrial Vessels

Conflict between canoe and semi industrial vessels was the fourth most cited conflict with 27% of villages reporting incidents with the semi industrial vessels. The focus of this conflict is Greater Accra Region where 60% of the villages reported conflict with semi industrial vessels, the proximity of the villages to Tema along with the type of gear used (static nets) within this area being the simple explanation for such a high level.

Conflicts with the semi industrial vessels were also reported within the Western region, with 25% of the villages reporting incidents, here the edge of the continental shelf is relatively close to the shore and is reachable by the canoes, which brings them into contact with the semi industrial vessels

National legislation (PNDCL 256) forbids trawlers to operate in coastal waters in depths of less than 30m. Since enforcement of this law is weak, non-compliance is significant, thus bringing the semi industrial vessels into contact with the artisanal canoes. Those who operate static gear such as bottom set nets and lobster nets are far more likely to experience such conflict.

In the majority of cases the conflicts with the semi industrial vessels went unresolved, the main reason being lack of identification, but another significant reason was that the conflicts must be reported to the fisheries office at Tema. For those villages in the Western region who experience such conflict this means a long journey and a lot of time and effort. The fishermen are therefore reluctant to follow up such incidents.

- Inshore Vessels

24% of villages along the coast reported conflicts with inshore vessels. Since the inshore fleet, by definition fish inshore and relatively close to their port the incidence of conflict with the inshore vessels are clustered around the main inshore vessel ports which are Sekondi, Elmina, Shama and Tema. Many inshore vessels are based in Western Region which would explain why this region records the highest incidents of this conflict (11 out of 24 villages). There have been moves to include skippers of the inshore vessels in the CBFM legislation. This is because they operate out of the same ports and within the same fishing grounds as the canoes. The omission of the inshore fleet from the CBFM legislation in Elmina caused a great deal of resentment from the canoe fishermen and moves are now being made to rectify this.

- Theft from the beach

Of the 6 most frequently cited conflicts, this was the lowest, but is interesting in the overall explanation of conflict and its causes. Theft comes from two sources:

infrequently from those external to the village, but more commonly from those within the village. Although not a 'classic' fisheries conflict, theft from the beach was associated with the frequently mentioned breakdown and deterioration of social order. This problem was cited mostly by villages in Greater Accra Region with 33% reporting a decline in social order to be the worst change to have happened within the village. A number of villages commented on a decline or an absence of social order, which meant that the traditional rules and regulations were not being respected. The issue of a decline in social order is linked with that of juvenile delinquency. A problem possibly fueled by the increasing intrusion of Western media, which is causing expectations of the young to rise. This might explain why this issue is cited mostly in the villages of the Greater Accra region where exposure to Western culture and wealth is greatest. In Kingsbeach (Accra) this problem had manifested itself firstly in the rising crime (mostly stealing) on the beach, and also in the general rejection of any government proposals for change.

Other lesser conflicts reported

- Merchant vessels

Though conflicts with merchant vessels (non-fishing vessels) was not one of the most common conflicts cited it does provide another interesting example of a spatial conflict. This conflict was localised and cited only in the villages in the proximity of both Tema harbour and Takoradi harbour.

In the case of Tema there is an area that has been declared the anchorage for the port, which is shown on maps but not clearly marked by buoys. Tema harbour is a relatively recent construction, and the anchorage area is a traditional fishing ground and so is tempting for the fishermen to fish there. The lights from the moored ships act as fish aggregating devises, which again attracts the fishermen. Canoes operating within this area do so at their own risk and will receive no compensation if their nets get spoiled. From an interview with the fisheries director in Takoradi (Mr Insaidoo) it became evident that no such shipping lanes are in place in Takoradi which does of course cause confusion amongst the fishermen and the authorities particularly in the process of conflict resolution.

The District Director of Fisheries (Tema) had a detailed record of fisheries conflicts brought to his office. Tema is a significant fisheries office since this is where all conflicts between the canoes and the semi industrial fleet are reported. It is interesting to note the different conflicts identified and reasons given for them by urban and rural dwellers. While fishing communities in rural areas identified a number of wide-ranging and often socially based issued when asked about conflicts, the DFO in Tema has identified conflicts based on immediate issues. The main causes of conflicts were:

- Insufficient number of markers or indicators on nets.
- Bad weather
- Competition for fish
- Carelessness
- Fishing in darkness
- Ignorance of navigational rules

If nothing else, this disparity between the two sets of data shows that in order to gain a deeper understanding of conflict one needs to investigate the context around which conflict is occurring and to cross-reference information received. Failure to do so can often lead to the identification of immediate 'symptoms' rather than of underlying causes.

- Land Disputes

Pressure by the tourism industry for beachfront land around Accra has started to cause disputes between the fishermen and the alleged land owners. In the village of Nungoa just outside Accra the fishermen are fighting for control over land adjacent to the beach which they claim is theirs on the basis that it forms part of the beach. A similar case was reported at Bortianor (about 1 hour's drive outside the capital). Here fuzzy property rights and rising real estate prices are causes conflicts between two villages over rights to a piece of land. These conflicts are now being transferred out to sea where a willingness to assist neighbouring village fishermen is decreasing.

- Price Rises

The cost of nets, fuel and canoes has risen dramatically over the last 2 years. The declining exchange rate is forcing the prices of engines and nets upwards. At the beginning of 1999 there was approximately 3800 cedi to the Pound, by June 2000 this had risen to 7000 cedi and by January 2001 the exchange was at 10,200 to the pound. The rising price of oil is having obvious impacts on the cost of fuel for the canoes while the increasing scarcity of the wawa tree is resulting in a sharp rise in the cost of new canoes.

Of all of the villages interviewed 25% mentioned the recent price rises as being the worst change that had occurred within the village.

- Credit

This is not unrelated to the previous conflict over fish pricing. The fishermen are faced with rising prices and falling catches which is placing an increasing importance on the role of credit, without which, it is becoming increasingly hard to pre-finance the inputs required for each new fishing season.

Table 9: availability of credit by region

Region	Villages with no Credit Facility	Villages with bank credit	Villages with credit with Women	Villages that have access to credit from banks and women
Volta	7	0	2	0
Greater Accra	11	1	2	1
Central	9	0	5	0
Western	11	1	11	1
TOTAL	38	2	20	2

Table 9 shows that in the majority of villages fishermen do not have access formal credit facilities with only 4 villages getting credit from the banks. The majority of the

fishermen who do have access to credit get this from the women fish processors. This credit arrangement was reported in 35% of the sample villages, the level and organisation of the credit varied considerably with some women having access to banks and others financing the credit from the profits of their sales.

The credit system devised by the women has proved to be far more robust than that offered by the government or banks in credit schemes over the last 20 years. It was reported that fishermen consider the government loans to be public money and will think nothing of defaulting on the payments, and may even move away from their villages to avoid the payments. This is not common when they take a loan from the women, since the women will find them and discredit them, unless a total breakdown in traditional village social order has occurred (see Lower Prampram). It is not uncommon for a fish mammy to place a curse on a fisherman with whom she is having a dispute. This is taken very seriously and has indeed been addressed in the CBFM laws. We found an example of this in Princess Town, where following an argument a woman had placed a curse on a fisherman who had not been to sea since, fearing the wrath of the sea god.

Fishermen seem to have a great deal more difficulty in obtaining money from the banks than the women processors do, this is largely due to the poor track record of fishermen all along the coast. It was reported by Fisheries Officers that in many cases where credit had been obtained from the banks the fishermen did not repay it. This may be due to the uncertainty of fishing but it is more likely to be a result of an attitude expressed by the fishermen that money from the government or the bank is free. There was a general bewilderment amongst the fishermen over the fact that banks now refuse to lend them money. Co-ops may be the way forward, since they represent a certain degree of stability for the banks, but they will have to build a good credit record before they can get the substantial loans needed to replace nets or canoes.

In Lower Prampram the fishermen's co-op had been successful in securing a loan of 40,000,000 c (about £5,700 in June 2000) from the local Agriculture Development Bank (ADB) this was to be released in traunches, but after the first traunch of money the fisherman failed to make the required repayments and so the rest of the loan was withheld.

In certain cases the fishermen were able to fund themselves, in British Komenda they were able to earn enough money on Seasonal migrations, to the Ivory Coast, to pre-finance their fishing. In other cases fishermen received credit from the fish mammies, who in turn received credit from the banks.

4.2 Explanatory factors of conflict

The following are by no means definitive causes of conflict, but were frequently mentioned in connection with discussion about conflict

- Increased number of Canoes

In several villages along the coast the rising number of canoes was cited as a reason for an increase in conflict. The conflicts that would stem from such increases would

be spatial, i.e. increase in net entanglement, struggles for fish and problems with landing.

In Shama (Western Region) the canoe fleet has expanded, on the back of the shark fin fishery, through investment from Asians and also local people hoping to cash in on this market. Such investment is also common in Dixcove where the drift gill net fishery is also significant. In Old Ningo, however, local people who have moved away from the village either overseas or into the towns, who wished to have an investment/nest egg back in their home village, fueled this increase. With the devaluing exchange rate it has particularly encouraged investment from those who work overseas. Within Old Ningo it was recognised that this increase in canoes raised the number of conflicts while it was also accepted that it had been beneficial in terms of employment and income to the village. Kingsbeach Accra suffers from its proximity to the city centre and all the urban poverty problems associated with it. Here the Secretary to the Chief Fisherman mentioned that the landing beach was no longer able to cope with the number of canoes and there were many conflicts over landing canoes and off-loading catches. In Mumford, a well documented fishing village also reported problems with lack of landing facilities exacerbated by the increased number of canoes present in the village.

Conflict between the canoes is common place in Elmina, due to the high concentration of canoes and inshore vessels, but because of the strong local institutions it is dealt with effectively. Here guards have been posted on the beach to address conflicts as soon as they arise; the guards are funded by the fines that they raise. Though local institutions are adequate to deal with the local problems it is recognised that, at present, they provide little protection against the semi industrial vessels and the inshore fleet. It is hoped that with the advent of CBFM and the expected inclusion of the inshore fleet into this management system that conflicts with the inshore fleet, at least, will at last be effectively dealt with.

- Credit facilities and the sale of catch

The women who buy, processes and market the catch are not a cause of conflict, but their role within the villages is very important, and it would be remiss to ignore this role in an attempt to understand why some conflicts arise – particularly those related to credit.

The majority of canoes will have a fish mammy to sell their fish to. A woman can become a fish mammy if she pre-finances the canoe, or in certain cases if she is related to the canoe owner. Canoes may have several fish mammies if several women help finance it. If this is the case it is up to the fishermen to satisfy them all. If they are in the same village they will share the catch but it gets tricky if they are from separate villages and disputes can arise.

Elmina provided an example of perhaps the most organised fishing community along the coast, in terms of both the men and the women. Fishermen that require fishing inputs (new motor, gear, fuel, canoe) will ask the women for a loan, they then go to the bank to secure a loan for the required amount (effectively acting as agents). The loans provided by the bank do carry a certain level of interest. This interest in not passed onto the men, but covered by the women. They are able to do so by binding

the fishermen to them as their sole buyer. The money made from the sale of the fish is enough to provide an income for the women and also to repay the loan.

The woman have formed a cooperative that provides them with a greater level of security and thus a better chance for credit. They are also able to arrange flexible loan repayments with the banks, so that during the peak fishing season (June, July and August), they are able to over pay their repayments while in the off season they can under pay them. Such a system is interesting because on several occasions the fishermen had stated the reason that they are not able to attain credit from the banks is that they are unable to meet the repayments in the off season.

- Economic and political factors

Rising economic pressures on communities contribute indirectly to the rise in conflict: rising fuel prices exacerbate conflicts over the buying and selling of fish and put added pressure on the fishermen to make ends meet. Politically, Ghana is stable and it is hard to see how the political climate in itself is adversely affecting conflict. What is certain is that the economic climate is affecting the manner in which political administration works – not least as a result of the IMF stipulations for a slimming down of the state structure – an issue dealt with in more depth later on.

5 Conflict management and resolution institutions

Conflict management at the village level is highly structured and organised and it is perhaps a reflection of this that serious conflicts are few and far between. All villages in the survey reported that any conflict between fishermen is reported first to the Chief Fisherman who then, along with his panel of elders, comes to a decision on the issue[11]. In the case of damage to nets or boats caused by other canoe owners, the culprit is usually made to pay 2/3 of the damages (recognising thus that fishing is a dangerous activity and incidents are rarely deliberate). Although these cases may take a while to resolve – establishing fault and liability – they are not considered to be onerous. The conflicts that do take longer to solve are those between different types of vessel - trawlers damaging the nets of canoe fishermen cause a frequent problem. Even when there are a number of witnesses and it has been possible to collect the name and registration details of the offending vessel, the cases can take months to resolve. Such cases are reported to the relevant local fisheries office that then deals with them. Trawler owners often deny all responsibility for the damage and communication and transport difficulties between the administrative centres and the villages further lengthens the process. Table 10 shows a clear differentiation between the 4 regions in terms of the current levels of conflict. 70% of the villages survey reported that there are less conflicts now, the most common reason given for this was the imposition of new laws either informally by the chief fisherman or through the introduction of CBFM legislation.

Table 10: reported satisfaction with conflict management by region

Region	% of villages that reported a decrease in conflict	% of villages happy with current conflict management arrangements
Volta	78%	22%

[11] The only exception to this is in cases of violent crime resulting in physical injury. Such cases are reported directly to the Police.

Greater Accra	40%	74%
Central	86%	71%
Western	75%	79%
Overall	70%	64%

While much of the data on conflict resolution and management was collected in the villages, a valuable source of information proved to be the Fisheries Officer in Tema harbour. Tema is the largest harbour in Ghana and as such the Fisheries Officer there was very familiar with fisheries conflicts.

He reports that the major problems in settling accident at sea cases are:

a) Difficulty in ascertaining the exact length of nets fishermen took to the sea
b) How to deal with cases involving merchant vessels when the vessels leave port before the case is reported. Captains of such vessels often deny responsibility for damages caused when complainants are sent to them through their local agents.
c) Difficulties in getting culprits to pay the damages awarded against them.

He also commented fishermen will often come to a case expecting payment when quite often they are at fault.

Interviews with Fisheries Officers along the coast of Ghana revealed a certain amount of disenchantment with the process of decentralisation within the fisheries department. This process seems to have spread the limited resources in the fisheries department even more thinly making them almost ineffective at a local level. In many instances the management of fisheries has been placed in control of officers trained only in agriculture. The successful resolution of a conflict between two villages in different districts is heavily reliant on two DFOs being fisheries orientated.

Where cases are handed to the courts it was reported that there is often a poor understanding of fisheries and that the law leaves a great deal open to interpretation.

With regards the level of satisfaction with the conflict resolution procedures, table 10 shows that there is comparative satisfaction within the villages. Within the Central region 71% of the villages reported satisfaction with the current conflict resolution arrangement. This owes much to the recent inauguration of the CBFM bylaws. The implementation of CBFM has been extensive within the Central region and the villages have broadly accepted it. The implementation of the CBFM bylaws was frequently cited as having been the reason for an improvement in the means of problems solving (ie resolution and management).

Within Western region CBFM has been implemented but due to basic logistical problems caused by the remoteness of many of the villages a large number of the smaller villages have not formed a CBFM committee. Despite this many of the villages reported that local conflicts had been reduced through an increased understanding between the local fishermen.

Although just 22% of the villages in Volta Region said they were happy with current arrangements, a further 44% qualified this with the fact that they thought problem solving would improve once the CBFM bylaws were inaugurated.

The satisfaction, with conflict resolution, expressed by 70% of the villages nationally relates to their ability to deal with small scale local conflict. A strong social hierarchy exists within the villages and this will be enforced on a legal basis with the introduction of CBFM, but this institution does not and cannot cope with conflicts caused externally, e.g. with the semi industrial vessels. For such conflicts the villages rely on national legislation and regional power to enforce and resolve. When asked about their satisfaction with this process the answer in almost all cases was dissatisfied.

It is rare for conflicts between canoes to escalate above the village chief fishermen, when they do it becomes the responsibility of the district fisheries officer to resolve (unless it is violent, in which case the police become involved). It is common for the DFO to form a committee, comprising chief fishermen from around the district, to sit and determine an appropriate resolution to the conflict.

6 Transaction costs and conflict management

Change is often cited in the literature as a reason for conflicts to emerge. In order to find out if this were the case, the villagers were asked to identify the best and worst changes that had occurred within their lifetime – the chief fishermen was often elderly which resulted in changes over a period of 70 or 80 years being identified.

In terms of the worst changes, many of the responses correspond with the conflicts mentioned earlier on: high costs of inputs, delinquency and trawlers in their waters being the obvious examples and have been discussed earlier. Other issues mentioned were environmental damage (erosion and algae blooms) and falling catch levels

- Environmental Change

Though this cannot be classed as a direct cause of conflict it will, in certain instances raise the probability of the occurrence of conflict. Changes related to the environment were cited in 18% of the villages and fall into 2 categories, erosion and the presence of algae blooms.

Coastal erosion in the Bight of Benin is particularly serious and there are a number of internationally funded projects currently underway to help stem erosion on the Ghanaian coast, particularly in the Ada and Keta Lagoon region. The cause of the erosion in Ghana can be put down to a number of factors: firstly the natural process of sea-erosion, secondly, the physical effects of the Akosombo Dam which has greatly changed the effect the Volta River has on the coast, thirdly the presence of Tema Harbour. Although this last issue is somewhat unclear, it would appear that longshore drift patterns have changed significantly, exacerbating the natural sea erosion process. Evidence of the erosion was experienced at Nmetsokope**,** rapidly pushing the shoreline into the village. Whilst this had had no immediate impact on fishing, it was of serious concern to the villagers who had had to move the village on a number of occasions. At Otuam, erosion caused fishing days to be lost when the sea is rough because landing is not possible on the rapidly disappearing beach. This problem was focused within the Greater Accra region, with 33% of the villages reporting erosion as either a cause of conflict or at least of detriment to their fishing efforts.

Between the years of 1994 and 1998 many of the villages to the west of Axim reported the occurrence of algae blooms, which were believed to originate from the C⊥te d'Ivoire. This particular problem occurs where the algae is concentrated within the near shore waters and it will destroy nets that it gets entangled with. This impacts on the beach seine fisherman, who were not able to use this gear when the algae was present.

- Declining Catches

15% of the villages considered the problem of falling catches to be the worst change that had occurred within their village. Of the 42 villages that were able to, 48% stated that their worst catch had occurred in the past 3 years, and only 6% stated that their best catch had been more recent than their worst catch.

It is possible that the bad catches over the last 2 years are related to the steep increases in the price of the fishing inputs, particularly fuel. This coupled with the lack of access to credit, may mean that fishermen are not able to afford the fuel to undertake long voyages.

When asked to identify the best changes that had occurred, the most common response was that there had been no best change, this was stated by 27% of the villages. This particularly high percentage may have been influenced by the fact that the fishermen had spent the past 30 minutes discussing problems with their fishing activities and so had became negative. On the other hand it may be a genuine reflection of the lack of change within the artisanal fishing communities in recent times.

However, where answers were forthcoming 3 of the 6 most frequently cited answers related to non fishing changes and involve external investment into the village, i.e. the provision of electricity, schooling and sanitation facilities. The provision of premix for the fishermen, is also an example of this though it does directly impact on the fishing activities. All these changes are the result of external intervention in the villages, the only change cited that had come from within the villages themselves was 'increased understanding between the fishermen', which was cited by 10% of the villages

6.1 Change as an indication of changing transaction costs.

The lack of change from within is an issue that will certainly have to be addressed for the future development of the fishing villages. The implementation of CBFM will certainly facilitate this process since it will place a greater emphasis on the communities themselves to generate ideas and to provide funding for fisheries development projects. Where CBFM has not, or cannot, be implemented it will place a great deal of pressure on the government and other external agencies to stimulate positive change. Rising transaction costs, i.e. the costs of negotiating agreements or conducting day-to-day transactions are a significant issue in Ghanaian fisheries management – both at the local and national level. Increasing economic and social pressures are making the day-to-day life in the communities harder. Through analysis of the results so far would it is would appear that externally generated conflicts are the ones that put the most pressure on the local institutions to prevent conflict.

Economic policies have also caused the price of inputs to rise. This has a number of knock-on effects in the community. The rising costs of inputs impacts upon conflicts over the price of fish as both buyers and sellers aim to maximise their profits in increasingly difficult circumstances. The cost of fishing rises which, whilst not immediately causing more conflicts, put added pressure on the day to day existence of fishermen and brings economic pressure to bear on the rest of the community. Despite the increasing costs of living around them the fisheries management institutions within the communities appear strong enough to be able to rebuff external shocks.

The intrusion of trawlers into coastal waters is another factor that has seen transaction costs rise. Reporting the incident takes time and effort, resolving the issue requires even more. Travel and communication between many of the very isolated villages and the district headquarters is costly and time-consuming. The trawler owners are often based in ports far from the site of the incident and are reluctant to admit liability and often deny all charges. Despite mechanisms to resolve such conflicts, they often remain the most costly conflicts in terms of time and money. As the incidence of trawler incursions rises, so presumably will the transaction costs associated with this. Only increased funding of a monitoring and enforcement capacity and negotiation with the trawler owners is going to be able to better deal with this problem. This is supposed to be covered under the remit of the FSCBP, but as it liable to be a long-term goal. The root cause of the trawler issue – declining catches and rising costs pushing the trawlers into illegal areas—has a number of long-term solutions. However, the trawler sector is facing severe economic pressures and any measures are probably too painful to contemplate at this juncture and beyond the capacity of the State (economically and politically) to implement currently.

The Community Based Fisheries Management Programme (CBFM) would appear to have had positive benefits to the communities. By using the existing institutional structure, the CBFM has enabled more formalised management to be introduced to communities without upsetting what was clearly a system that worked well to begin with. The only communities that appeared indifferent to the CBFM were those in urban areas (principally Accra). The reason given for this attitude is that fishermen in these communities tend to be better educated and have greater access to media and other information. They are more cynical of government promises of how things will get better in the future and more likely to rebuff any attempts by the government to interfere. Outside urban areas, the CBFM was the reason cited for the decrease in conflict or the satisfaction with the conflict management system in place. The gazetting of local by-laws was looked upon favourably by all those spoken to. So, in terms of transaction cost analysis, it could be argued that providing local institutions with a more firm basis both within their own community and in the district as whole has helped maintain transaction costs at a stable level, and where the incidence of conflict has declined, may even help reduce transaction costs. There is, however, a corollary to this argument. Although the CBFM has had a number of positive benefits, it has also inserted bureaucratic systems into institutions that worked quite happily without them before. Further research needs to be done on this issue, but it would be interesting to see if CBFM has actually increased the transaction costs of communities in terms of time spent at CBFM meetings, costs incurred in travel to meetings and the added costs of bureaucracy involved.