AQUACULTURE AS A TOOL IN RESOURCE USE CONFLICT RESOLUTION IN COASTAL COMMUNITIES OF NIGERIA

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Abstract
Social tensions and conflicting situations among the users of fishery resources in coastal communities is on increase as a result divergence of interest, values, priority, resource exploitation approach and power. The study employed desk review to identify various types of conflict, impacted areas and approaches in resolving conflict in coastal fishing communities. The study also employed SWOT analysis to identify the prospect and potentials of aquaculture in coastal communities. Findings revealed that aquaculture development can be a key tool in addressing social conflict, livelihood opportunity and alleviating poverty hence, incorporating the concepts and practice in stakeholder’s involvement, policy making, planning and management is crucial in resolving conflict among rural coastal communities.

Keywords: Aquaculture development, resource exploitation, livelihood

INTRODUCTION
Coastal zones comprise specialised interdependent systems which are of particular importance from environmental, social and economic points of view. Due to the many habitat types and wealth of genetic diversity, coastal ecosystems provide multiple services, which have recently been estimated to be at least 40% of the value of the world’s ecosystem services (Gattuso and Smith, 2007). Their unique ecosystems are also important for biodiversity refuge and coastal protection. Furthermore, coastal zones act as both environmental regulators and sinks, presenting important feedbacks in land-coast interactions that determine thresholds and boundaries for system resilience to global environmental change (Turner et al., 1995). In addition, they are also important socioeconomic zones, ‘sustaining livelihoods through flows of income derived from the in situ utilisation of natural coastal capital and through global trading networks’ (Turner, 2004).

People living around the coastal areas in the world rely heavily on the resource to support their well-being and livelihood. Over-fishing has led to the collapse of many of the worlds fisheries, in many instances because of the existence of open access regimes where the fisher chooses where and when to fish and how much fish to take. Such regimes were justified largely on the erroneous belief that the oceans and other water bodies hold infinite fish resources. In addition, the oceans, in particular the high seas, were res communis so that everyone had a right to fish and no one had ownership over the resource or the right to limit access. While many large areas of oceans are now subject to the jurisdiction of coastal states, and high seas fishing is subject to rights and obligations under the 1982 UN Convention, one may be surprised to find that many states have only recently begun to regulate domestic fishing or to consider stringent control over fishing.

Moreover, FAO (2000) states that “fish are an integrated part of an aquatic ecosystem, a system in which modifications in one area have the potential to affect other areas. Thus, it is increasingly regarded as necessary, first to monitor the state of the aquatic ecosystem, and then to manage human interventions within that ecosystem. Only within such a framework will it be possible for capture fisheries to continue to be a source of food and income for future generations” (FAO, 2000).

The Nigerian Fishery Sector is characterised by a rich resource base, comprising coastal waters and inland waters, natural lakes and wetlands. These resources together provide a basis for the long-established industrial and artisanal capture fisheries in content and output. In general, Nigerian fisheries can be divided into: marine capture (industrial and artisanal); inland capture (mainly artisanal); and aquaculture (commercial and subsistence) FAO (2007).

The coastal/marine subsector is the most active in Nigerian fisheries and it poses the greatest challenges to sustaining fish supplies due to growing fishing pressure. Fishing serves as source of food and income for the growing number of fishing households living at the subsistence level in Nigeria. This sector is also under pressure from the commercialization of both the industrial and artisanal fleets exploiting the resources. This has significant effects on the Nigerian economy, in terms value of its fishery output and in terms of food security and socio-economic factors. Nevertheless, the activities of these fleets are intricately linked, as they target a number of common stocks which on occasion results in conflicts of interest. The paper undertakes a desk review of the various types of conflict, impacted areas and approaches in resolving conflict in coastal fishing communities. The study also employed SWOT analysis to identify the Strengths, Weaknesses, Opportunities, and Threats of coastal communities of Nigeria. Secondary data were collected from journals, bulletin and observation in coastal communities.
LITERATURE REVIEW

Conflict is a natural phenomenon in the life of human beings which occur as a result of interaction for socio-cultural, economic and political purposes. According to Džuverović (2011) in Tasew-Tafese (2016), the universe itself revolves through conflict. Thus, it is impossible to avoid conflict from the life of human beings rather treat in a positive way for functional outcomes. Džuverović (2011) emphasised that conflict is an integral part of our lives.

Broadly speaking, conflict emerges when ‘the interests of two or more parties clash and at least one of the parties seeks to assert its interests at the expense of another party’s interests’. Conflicts of this type do not necessarily have to be violent or highly disruptive. In fact, many conflicts that arise as a result of differing interests are low-level, non-violent phenomena. Although conflict involves one group asserting its interests at the expense of another, conflict is not always negative. Positive conflict highlights incompatible goals or objectives, thus focussing attention on something that needs to change for the benefit of all concerned.

Reasons for conflicts in fishery

Conflicts in coastal zones arise as a result of the variance between divergent interests, within limited and dynamic socio-spatial and ecological dimensions, with little effort at critical consensus. Coastal zones worldwide exhibit three classical internal trademarks – high pressures for development, management weaknesses to protect coastal ecosystems and the deterioration of environmental conditions – all of which exacerbate conflicts over use and access of coastal zones.

Fishery environment is a special one with diversity of resources and livelihood opportunities which attracts various interests. Marschke (2012) opined that conflict scenarios have increasingly arisen as stagnating fishery harvests have coincided with pressures from population growth and a growing range of resource users from outside the area. Over time, competition between traditional and new entrants to the fisheries, along with institutional weakness have become major causes of conflict.

Charles (1992) analysed conflicts in fisheries by introducing a trio of fishery paradigms which are, i) conservation, ii) rationalization and iii) social paradigms. These three paradigms and the policy objective (or development priorities) at which most groups of fishery resource users operate explain why there are conflicts. The three corners of the triangle represent the extreme cases of the three philosophical paradigms and their unique policy objectives.

The conservation paradigm operates with a policy objective centred on resource maintenance or conservation. This paradigm is based on the premise that the primary duty of the fishery manager is to take care of the fish, and fishers are viewed as a “predatory fleet” that must be directly managed through restrictive fishing hours, fishing location, fishing effort and catch quota.

The rationalisation paradigm emphasizes the pursuit of economic performance and productivity. The policy context related to this paradigm is founded on the assumption that society should seek to maximize fishery rents, comprising economic benefits over and above payments to fishers and vessels; and those fisheries that cannot attain this objective are “supposed to be rationalised”.

The social or community paradigm focuses on fishers as members of coastal communities, rather than as components of a fishing fleet. It focuses on community welfare, distributional equity, and other social and cultural fishery benefits. Charles noted that this paradigm tends to be popular among fishers’ unions, fishing cooperatives and those living in or involved with fishing communities. However, these groups were underrepresented among the staff and management of government fishery administrations during the time of his research. More recently, there has been an overwhelming interest in this paradigm and the “advocacy” element in this paradigm has contributed to a better understanding of its policy objectives even at the lower levels of the policymaking hierarchy.

Conflicts arise when the many dynamic interactions among natural resources, humans and institutions contradict each other because of the underlying differences in priorities pursued by various fisheries players. Wamer (2000) identified four issues that may explain the emergence of conflict:

1. Demographic change (a sharp influx of newcomers into a community).
2. Natural resource competition (increased dependence upon the natural resources which increases competition for space and resources).
3. Developmental pressures (as government policy switches from livelihood protection to food production).
4. Structural injustices (changes in legislation that deny or severely restrict access to a resource by dependent groups of society).

Typology of fisheries conflicts

Charles (1992) organised the wide range of fisheries conflicts into four interrelated categories: (i) Fishery jurisdiction; (ii) Management mechanisms; (iii) Internal allocation; and (iv) External allocation. These categories were intended to be comprehensive but not mutually
exclusive. In a more recent study, Bennett et al. (2001) extended the four conflict categories into five to include conflicts between fishers and those outside the fishing communities.

Table 1: Charles’ typology of fisheries conflicts

<table>
<thead>
<tr>
<th>Fisheries Jurisdiction</th>
<th>Management mechanisms</th>
<th>Internal allocation</th>
<th>External allocation</th>
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<tbody>
<tr>
<td>Conflicts over who owns and controls access to what; the optimal form of management and the role of government in the fishing system</td>
<td>Conflicts over how policy is carried out – often short-term, conflicts over harvest levels, (over) enforcement and the consultative process</td>
<td>Conflicts resulting from how different fishery stakeholders interact</td>
<td>Conflicts resulting from how fishery groups and ‘outside’ activities interact</td>
</tr>
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</table>

Bennett et al. (2001) developed a revised typology to Charles which extended the four conflict categories into five categories:

Type 1: Who controls the fishery (Access issue on who among the fishers can fish).

Type 2: How the fisheries is controlled (Enforcement issues on how management systems are implemented; quota allocation, fishing seasons).

Type 3: Relations between the fishery users (User groups-related issues such as small- vs. large-scale fishers; ethnic and religious groups).

Type 4: Relations between fishers and other resource users (Conflicts arising from multiple use of resources: farmers, tourists, conservationists, industrial developers).

Type 5: Relations between fishers and non-fishery issues (Conflicts external to but affecting fisheries such as corruption, politics, elite groups, environmental concerns, and economic change).

Areas affected by conflicts

Increasing urbanisation in the coastal zones can bring into conflict the balance between economic development, the livelihood of local communities, and protection of the natural environment. Such conflicts may occur in a more extreme form where the natural livelihood of the indigenous population and their access to the coastal resources is taken over by economic interests. Such conflicts may occur in a more extreme form where the natural livelihood of the indigenous population and their access to the coastal resources is taken over by economic interests. These include tourism and leisure development that will not necessarily benefit the low income people and the local community. In this extreme form indigenous people are displaced from their original spaces and places and may need to relocate in informal settlements with limited basic services, unacceptable environmental conditions and few or no work opportunities.

The Nigerian coastal zone sprawls a total of nine states, out of the thirty-six states of the federation, namely: Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Lagos, Ogun, Ondo and Rivers. The coastal states are estimated to account for 25% of the national population. The coastal areas stretch inland for a distance of about 15 km in Lagos in the West to about 150 km in the Niger Delta and about 25 km East of the Niger Delta. The coastline stretches for about 853 km comprising inshore waters, coastal lagoons, estuaries and mangrove especially in the Niger Delta.

In West Africa, the coastal artisanal canoe fatality rates have been given in 1991-1994 to be 300 to 1,000 per 100,000 fishermen. Thus, the fatality rate in Nigerian artisanal fisheries, (coastal states) has been estimated to be 999 to 3,329 per 100,000 fishermen. The high rate is due to piracy, boundary disputes between fishing communities, unemployment, societal low value for human life and human labour.

Also, others who operate in the Nigeria coastal theatre come under threats essentially from financially motivated criminal gangs operating for personal gain; and, local community base factions, wanting concessions from international organisations operating in the region (Uadiale, 2012). Many of the attacks have involved the kidnapping of crew members that have been held for ransom and, or the hijacking of vessels. piracy, kidnapping, theft, and property destruction (Uadiale, 2012). It is note-worthy that landward and maritime insecurity are inter-dependent; as insecurity on-land, eventually, causes maritime insecurity.

Approaches for resolving conflicts in coastal communities and enhancing rural development

Different approaches have been employed in solving conflicts which includes;

- Multi-stakeholder meetings and interaction,
- Workshops and training on alternative sources of income,
- Communication as a strategy
- Strengthening of regulations in fisheries
- Temporary withdrawal of fishing license
- Sensitisation of boat owners, fishing masters and crews to the biological and
- Promoting effective training of crews in order to permit the exploitation of fishing
Since livelihood or resource control is a major source of conflict in Nigeria coastal communities, this study considered aquaculture as a veritable tool to solving conflict in the coastal communities. Aquaculture is one of the fastest-growing food production systems in the world and in developing countries. Aquaculture offers a number of opportunities and contributes to poverty alleviation, employment, community development, and reduction of over-exploitation of natural aquatic resources and food security in Africa in general and Nigeria in particular. 

Aquaculture as a tool within conflict communities 

Aquaculture is the farming and husbandry of aquatic organisms, such as fish, crustaceans, mollusks, and seaweed, and the production of freshwater and marine pearls and a variety of other aquatic species, such as crocodiles, frogs, sponges, and sea cucumbers. FAO defines aquaculture as the farming of aquatic organisms in inland and coastal areas, involving intervention in the rearing process to enhance production and the individual or corporate ownership of the stock being cultivated.

The integration of aquaculture into conflict areas for rural development can bring about benefits, which include economic growth, more stable and diversified livelihoods, poverty alleviation, wealth creation, employment and increase in income and food security. Aquaculture practices in the coastal communities can be done in a range of systems for the management of aquatic and associated terrestrial resources. The systems are divided into intensive, semi intensive and extensive systems.

Effective aquaculture system requires adequate and reliable resources such as land, water and quality seeds of various aquatic species. Furthermore, appropriate environmental, social, and cultural conditions are essential in order to have sustainable aquaculture development.

Table 2: Status of Aquaculture using Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis

<table>
<thead>
<tr>
<th>Strength</th>
<th>Weakness</th>
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<tbody>
<tr>
<td>i. Availability of Land to practice pond culture; water (Lagoon, Brackish, sea) for pen/cage culture, Acaja and quality seeds of various aquatic species</td>
<td>i. Weak infrastructure</td>
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<td>ii. Political will</td>
<td>ii. No training</td>
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<td>iii. High social and economic capital</td>
<td>iii. Weak information systems</td>
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<td>iv. Experience of the actors in the operation</td>
<td>iv. Weak management</td>
</tr>
<tr>
<td>v. Desire for change in the sector</td>
<td>v. Insufficient infrastructure storage and processing (post harvest losses)</td>
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<tr>
<td>vi. In the marine environment, fishing is better regulated, qualified players</td>
<td>vi. Weak ownership arrangements</td>
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<tr>
<td>vii. Existence of a major river system and unpolluted</td>
<td>vii. Open access fishery</td>
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<tr>
<td>viii. Knowledge of traditional artisanal fishermen for resource development</td>
<td>viii. Weak policy</td>
</tr>
<tr>
<td>ix. xii. Existence of fisheries policies and legislation</td>
<td>ix. Lack of good governance</td>
</tr>
<tr>
<td>x. xi. Demand for fish products particularly for those with value added</td>
<td>x. lack of access to loan</td>
</tr>
<tr>
<td>xi. for those with value added</td>
<td>xi. Insufficient collaboration and coordination amongst difference agencies (nationally and internationally)</td>
</tr>
</tbody>
</table>

Opportunities

i. Different Kinds of fish can be culture
ii. Human resources (fish culture, feed production)
iii. Opportunity for commodity market
iv. The Political Will (Country Level) willing to engage and Reform their Fisheries and develop sustainable aquaculture.
v. The Potential of the Fisheries Sector to Generate Wealth, Reduce Poverty and create job opportunities (Both Capture and Aquaculture)
vi. Existence of Large and Diverse Fisheries

Threats

i. Foreign Fish Subsidies
ii. Production Costs (Fuel, Gears, etc.)
iii. Impacts of Exchange Rates
iv. Environmental Risks (flood, pollution, Forest Depletion)
v. Health Risks – With Mobility (HIV/AIDS)
vi. Privatization of Coastal Areas
vii. Foreign Fishing (Legal & Illegal)
viii. Insecurity (e.g. Piracy)
ix. High Demand (Sustainability)
CONCLUSION
The different types of conflict identified were; fishery jurisdiction; management mechanisms; internal allocation; and external allocation and relations between fishers and non-fisher issues. The areas impacted by conflict in Nigeria were the coastal environment, which are Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Lagos, Ogun, Ondo and Rivers.

However, the government can tap into the strength, identify the opportunities, strengthens the weaknesses and look into ways to ameliorate threats to develop aquaculture curb conflict, piracy, unhealthy rivalry in the coastal communities.

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