

## ENHANCING SUSTAINABLE LIVELIHOOD IN THE MANAGEMENT OF NIGERIAN COASTAL FISHERIES

Agbeja, Y. E. and Adetola Jenyo-Oni

Department of Aquaculture and Fisheries Management, University of Ibadan, Nigeria

Correspondence e-mail: [eniolagbeja@yahoo.com](mailto:eniolagbeja@yahoo.com)

### ABSTRACT

*The Sustainable Livelihoods Approach (SLA) has become prominent in recent development programmes that aim to reduce poverty and vulnerability in communities engaged in small-scale fishing, fish processing and trading. The sustainable livelihoods approach helps formulate development activities that are: people-centered; responsive and participatory; multilevel; conducted in partnership with the public and private sectors; dynamic; and sustainable. The objectives of this paper is to highlight the advantages of sustainable livelihood approach to fisheries management, highlight the opportunities that will aid the enhancement of the approach and investigate the challenges and avenues of overcoming the challenges of the sustainable livelihood approach in the Nigerian coastal fisheries.*

**Keywords:** Sustainable livelihood, fisheries management, coastal fisheries, management approach.

### INTRODUCTION

Coastal areas are characterized by diverse, varied and complex livelihoods. In addition there are institutions that have related and overlapping characteristics and which have conflicting policies and priorities; these include agriculture, fisheries and industrial activities. These diverse economic activities and stakeholders with conflicting interests, diverse environments, and specific market contexts results in different features of poverty.

Coastal areas are characterized by seasonal variations and fluctuations and these variations affect fisheries production in terms of the availability of different species, and seasonal changes in weather influence livelihoods by providing peaks of employment, income and expenditure. The variation also contributes to seasonal under-employment and migration of both skilled and unskilled labour.

The Sustainable Livelihoods Approach (SLA) has become prominent in recent development programmes that aim to reduce poverty and vulnerability in communities engaged in small-scale fishing, fish processing and trading.

Livelihood is a process by which people make a living through specific capabilities, assets, and activities (Ellis, 2000; Carney, 1998; Chambers & Conway, 1992). Anthropological studies have indicated that livelihood extends beyond basic life necessities to include information sharing, holistic phenomenon, connecting different aspects of social life with resources and their utilisation. A livelihood is also defined as follows- "the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determined the living gained by the individual or household" (Allison and Ellis, 2001).

Livelihoods of fisheries communities are highly dependent on the health and sustainability of fish resources, the ecosystems that support them, and the institutional arrangements governing their social relationships management, and identity maintenance (Wallman, 1984). Livelihood is exploitation; therefore any significant threats to the resource base pose immediate threats to the livelihood security of very large numbers of poor people (Scullion, 1999).

“Sustainability of fisheries and other aquatic resources is a state in which these resources, and the ecosystems that support them, are managed in such a way that their long-term viability and productivity are maintained for the benefit of future generations” (’Knuth et al., 1999). ‘Achieving sustainability has proven elusive to date, but it is internationally recognised as a primary goal of fisheries management (FAO, 1995; NMFS, 1999; NRC, 1999; Garcia, 2000; Garcia and Staples, 2000; Rudd, 2002).

Nigeria, a coastal state with a coastline of 853km and a 200 nautical miles Exclusive Economic Zone (EEZ) adopted the United Nations Convention on the Law of the Sea (UNCLOS) in 1982. The coastline is faced with numerous challenges that have predisposed it to rapid and ill-managed degradation as a result of the diversified uses of the zone which includes Fisheries (artisanal, industrial and aquaculture), gas exploration and exploitation, shipping, agriculture and tourism.

The objectives of this paper are to highlight the advantages of sustainable livelihood approach to fisheries management, highlight the opportunities that will aid the enhancement of the approach and investigate the challenges and avenues of overcoming the challenges of the sustainable livelihood approach in the Nigerian coastal fisheries.

The British Government, through its Department for International Development (DFID) and acting in partnership with the FAO, provided £21million (USD33.87 million) to establish a regional fisheries programme entitled the "Sustainable Fisheries Livelihoods Programme in West Africa"(SFLP). The programme aimed at eliminating poverty in some of the poorest countries of the world by securing and improving fisheries livelihoods and food security in inland and coastal communities. It used the Code of Conduct

for Responsible Fisheries (CCRF) as a means of improving fisheries policy, planning and management in favour of the poor, and the Sustainable Livelihoods (SL) approach of DFID. Central to this people-oriented approach is full participation of resource users, community organisations, local government and NGOs to achieve effective "bottom- up" planning and management. Concern for the environment was also of paramount importance and the approach presented the opportunity to mainstream environmental issues adversely affecting the sustainability of peoples' livelihoods.

#### **Principles of the sustainable livelihoods management**

Sustainable livelihood is the premise for sustainable development. The chapter 3 of Agenda 21 is focused on ‘Combating poverty’ and the program area of this chapter proposes action for enabling the poor to achieve sustainable livelihoods. The Agenda recognizes that the eradication of poverty and hunger, greater equity in income distribution and human resource development remain major challenges worldwide. It also recognizes that in order to manage resources sustainably, a country’s environmental policy while focusing on the conservation and protection of resources, should take due account of those who depend on the resources for their livelihoods. That is, if development is to generate lasting and continuous benefits, it has to offer the world’s population a means of making a living that does not lead to loss of biodiversity, environment degradation, the exclusion marginalisation of large groups of people, the deepening of equity gaps, the spread of poverty, or the weakening of the institutions on which human security depends. For development to be sustainable, it must create and preserve sustainable livelihoods, in all their diversity (IUCN, 2002).

The Sustainable Livelihoods principles make provision that poverty-focused development activity should be:

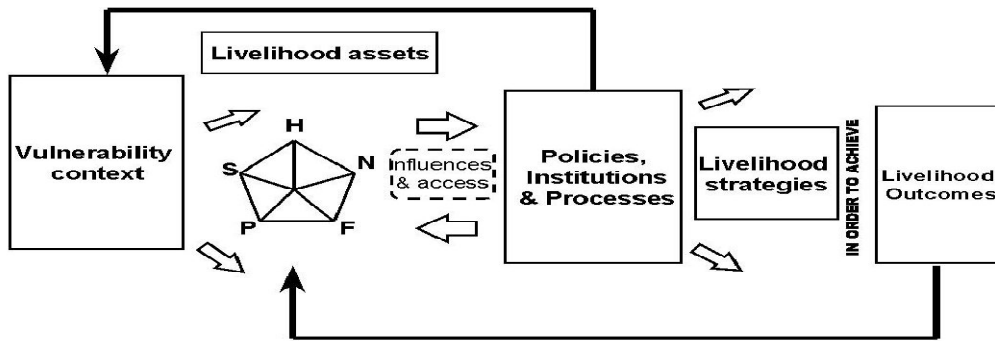
- ‘people-centred: sustainable poverty elimination will be achieved only if external support focuses on what matters to people's lives, understands the differences between people and works with them in a way that is congruent with their current livelihood strategies, social environments and ability to adapt;
- responsive and participatory: poor people themselves must be key actors in identifying and addressing livelihood priorities, and 'outsiders' need to adopt processes that ensure they listen and respond;
- multi-level: the scale of the challenge of poverty elimination is enormous, and can only be achieved by working at multiple levels, ensuring that micro-level activity informs the development of policy and an effective enabling environment and that macro-level structures and processes support people to build upon their own strengths;
- conducted in partnership: with both the public and the private sector (including civil society/ non-governmental organisations);
- sustainable: there are four key dimensions to sustainability - economic, institutional, social and environmental sustainability. All are important - a balance must be found between them; and

- dynamic: external support must recognize the dynamic nature of livelihood strategies, respond flexibly to changes in people's situation, and develop longer-term commitments of support'. (FAO, 2005-2013)

#### **Benefits of sustainable livelihood approach to fisheries management**

The sustainable livelihoods approach as mentioned earlier, helps formulate development activities that are; people-centred; responsive and participatory; multilevel; conducted in partnership with the public and private sectors; dynamic; and sustainable. The livelihood focused approach also contributes towards understanding the capability of fishers to cope with crises in times of natural disaster such as flood, or disease out-breaks and seeks “to identify what the poor have rather than what do not have”. The livelihood focused approach can help to understanding of fishers’ adaptive capacity in to the policy arena of small-scale fisheries management. Figures 1 and 2 illustrate sustainable livelihood framework.

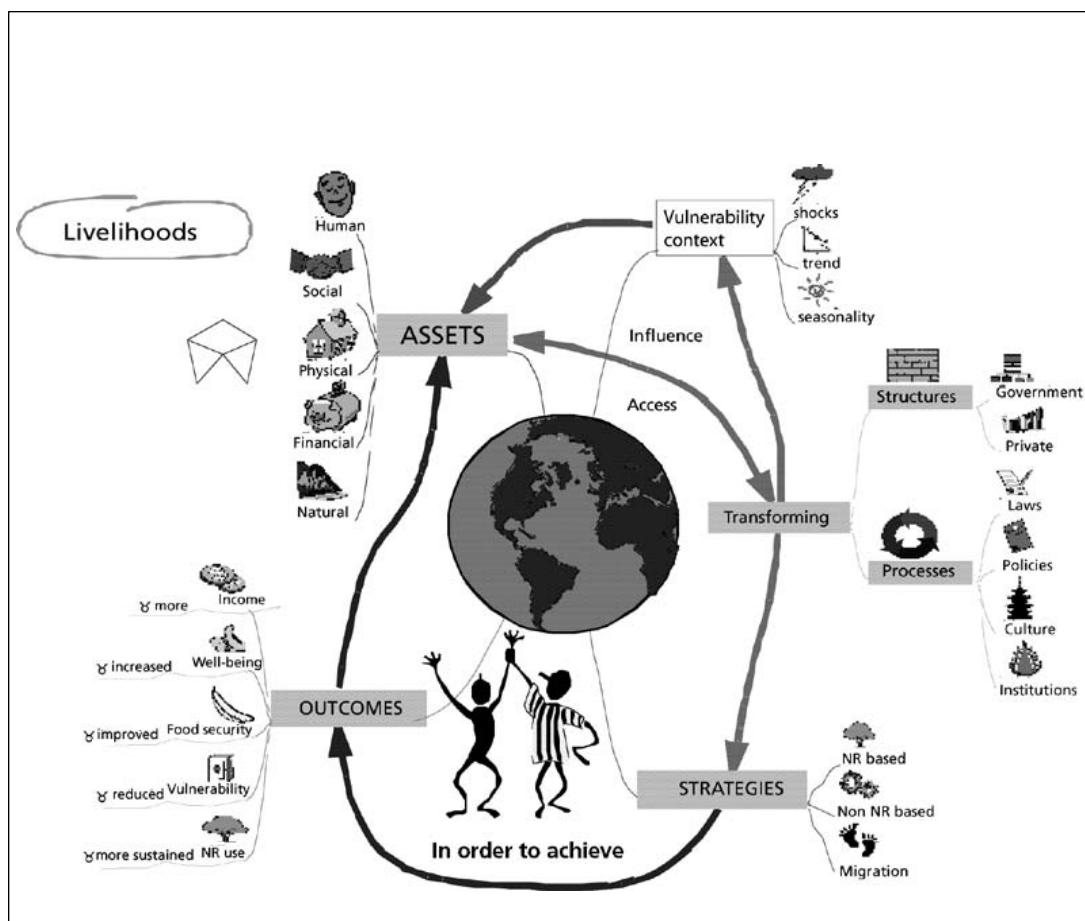
Internal coping capability is determined by assets (land, food stores, savings, and support from kin or community, or government safety net policies) and different asset holding pattern make big differences in the ability of fishers to withstand shocks (Swift, 1989 in Allison and Ellis, 2001). The SLA recognizes that fisherfolks are also involved in other economic activities.



**Figure 1: Sustainable management Approach Framework.**

Source: Adapted from DFID, 2002 (In Kollmair, M. and St. Gamber)

Key: H = Human Capital N=Natural Capital F = Financial Capitals S = Social Capital P= Physical Capital



**Figure 2: Livelihood analytical framework illustrating the major components of livelihoods analysis and the links between these elements.**

Source: SFLP, 2002

Numerous international agreement have evolved over the years, contributing to the sustainable development goals of the Agenda 21 that serves to ensure that people have a sustainable

means of livelihood whilst protecting the natural resources and the environment. These include:

1) Convention on biological diversity- the aims of this convention include; “the conservation of

biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding". "The CBD considers that an ecosystem-based approach is the primary framework for the implementation of the Convention. Parties to the CBD have formulated and agreed the broad conceptual basis for the application of an ecosystem-based approach with practical guidance for its application." Ratifying the CBD indicates that the nation is committed to developing national strategies and programs for the conservation and sustainable use of biological diversity, promoting protection of natural habitats, ecosystems and maintenance of viable populations of species in natural environment, develop , where appropriate guidelines for the selection, establishment and management of protected areas etc.

2) The 1995 FAO Code of Conduct for Responsible Fisheries- provides international standards and principles for responsible fishing activities to ensure effective conservation, management and sustainable utilisation of living aquatic resources with respect for the integrity of the ecosystem and biodiversity.

### **Challenges to SL in the Nigerian Coastal Fisheries**

#### **i) Environmental Degradation**

In Nigeria, degradation along the coast of different states of the country is diverse examples include soil mining, oil spills, solid waste dumps etc.

Risks from petroleum pipeline development and accidental spills of petroleum products and operational discharges from shipping (e.g. ship

wastes) and the accidental introduction of toxic chemicals and exotic species cause damage the ecosystem, leading to food and habitat loss.

Urban expansion and industrial growth has led to mangrove reduction to such an extent that several species once present are no longer found. In many instances mangrove areas have been reduced to saline grasslands. In the coastal communities mangroves are an important resource. They are used for firewood, fish smoking, building materials, salt production, medicinal purpose and oysters and fisheries are also found in them. Unfortunately, overuse and pollution has severely damaged the mangroves. Mangroves, typically *Rhizophorasp*, *Conocarpussp*, *Avicenniasp*, *Mitragynainermis*, *Lagunculariaap*, occur almost everywhere along the coast in and are dominant in the Niger Delta area of Nigeria. Mangrove forest provide the nutritional inputs to adjacent shallow channel and bay systems that constitute the primary habitat of a large number of aquatic species of commercial importance. The importance of mangrove areas as spawning and breeding grounds for many transboundary fish species and shrimps is well known. Another problem with the mangrove is the invasion by *Nympa* palm, this non-native invasive species of palm, *Nypafruticans*, has been identified to be quickly colonizing the areas where the indigenous *Rizopora* species are destroyed. This invasive species has a shallower root system that destabilizes the banks along the waterways, further impacting sediment distribution lower in the delta system. *N. fruticans* also impedes navigation and decreases overall biodiversity. In places where *N. fruticans* has invaded, communities are investigating how the palm can be used by local people.

#### **ii) Climate change**

Nigeria is one of the countries expected to be most affected by the impacts of climate change

through sea level rise along the 800 km long coast line, intensified desertification, erosion and flooding disasters and general land degradation. One prediction is that 'Nigeria will lose close to \$9 billion as a result of the catastrophe while, at least, 80 per cent of the inhabitants of the Niger Delta will be displaced due to the low level of the oil-rich region(Guardian Newspaper,2011).

Climate change has led to increase in flooding in the in the coastal regions. Apart from coastal erosion, flood in general has impacted negatively the livelihood of many communities in the region. Flood and erosion remove top soil, destroy roads, affect fresh water resources and threaten lives and properties. Many people have been rendered homeless by floods and several roads have been made impassable.

Climate change will cause decrease in the productivity of marine resources which have large impacts on the livelihoods of coastal communities.

#### **Opportunities to enhance SLA**

In the coastal area there varied opportunities for livelihood that is available throughout the year, and they are predominantly associated with agriculture or natural resources exploitation.

The Sustainable Fisheries Livelihoods approach (SLA) to fisheries management, as said earlier is based on embedding the need for fisheries management in a wider development context and recognizing that the collective-action of institutions involved in resource management could also be used to mobilize finance and services in support of other aspects of peoples' lives besides resource management (Lenselink, 2002)

One of the objectives of the fisheries management policy in Nigeria proposes a livelihood centred management approach as it aims to achieve self-sufficiency (FDF, 2011). The following are approaches being pursued by the Nigerian government to achieve these desired goals

and improvement upon these actions will definitely enhance livelihood sustainability in the country's fisheries sector;

1. National fisheries plans and policies improved through adoption of relevant principles and guidelines of the FAO Code of Conduct for Responsible Fisheries (CCRF) and national poverty alleviation planning which accounts for fisheries communities' needs. Nigeria's economic development and poverty reduction strategy document is the National Economic Empowerment and Development Strategy (NEEDS). It is a blue print aimed at reforming the all sectors of the Nigerian economy, stimulating growth and addressing the rising poverty. It's focused on addressing the social issues of the country while trying to improve and develop various sectors of the economy. NEEDS is said to have three main pillars: building human capital by investing in a social charter that improves health, education and employment; promoting private enterprise, and changing the way government delivers services. Part of effort to address these social issues in the past few years have been investment in the social sector by instituting programs for primary health care, immunization, malaria and HIV/AIDS prevention. In many states, primary and secondary school enrolment has significantly increased, while new universities have been licensed. All these activities have contributed to improving the social status of Nigerians (of which coastal fishing communities are included).

2. Empowerment of local communities: focus on community based initiatives and discourses such as Community Based Natural Resource Management (CBNRM). Community Based Conservation (CBC) and Community Based Adaptation (CBA) have increased over the years. This indicates that the focus of development policy has indeed shifted as there is increased recognition that communities

have the expertise on how to manage natural resources more sustainably. There is need to improve capacity of communities and their partners to participate in planning and management for fisheries livelihoods. In the coastal communities of Nigeria it has been reported that peoples' awareness of the government policy on environmental protection was generally low (Akinwale, 2010). In most of Nigeria, especially in rural areas, community self-organisation is strong. The traditional communities are self-reliant and have traditional knowledge that could be explored to encourage participatory management. In other words the establishment of functioning Co-management systems to enhance Community participation in decision-making processes regarding resource monitoring and control through formulation and enforcement of fisheries regulations will be key elements in these arrangements.

3. Employment: Apart from empowering local communities and establishing national frameworks for doing so, the 'Chapter 3 of Agenda 21 makes provision on the need

4. For countries to invest in infrastructure and human resources including employment opportunities for women and access to education and healthcare including maternal health'. Investment in activities that require minimal input such as growing of crops like sugarcane, maize etc. will contribute to the employment of many labourers beyond the household level. Investment

in Aquaculture is also a strategy which is being promoted at the national and state levels, as a means of creating jobs and increasing income in coastal areas.

5. Creation of protected area in the coastal region as protected areas has been suggested as a means to manage uncertain events which can cause fisheries to collapse (Grafton and Kompas 2005). The definition of MPAs as developed at the 4th World Wilderness Congress and adopted by IUCN at its 17th General Assembly in 1988 is as follows: 'Any area of intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment' (Christie, 2005). The table below shows the total economic value of protected areas.

**Table 1: Total economic values of protected areas**

Use values			Non-use values	
Direct use value	Indirect use value	Option value	Bequest values	Existence values
<i>Recreation</i>	<i>Ecosystem services</i>	Future information	Use and non-use	<i>Biodiversity</i>
<i>Sustainable Harvesting</i>	<i>Climate stabilization</i>	Future uses (indirect and direct)	Values for legacy	Ritual or spiritual values
Wildlife harvesting	<i>Flood control</i>		Culture, heritage values	Community landscape
Fuel-wood	Groundwater recharge			
Grazing	<i>Carbon sequestration</i>			
Agriculture	Habitat			
Gene	Nutrient retention	harvesting		
Education	Natural disaster prevention			
Research	<i>Watershed protection</i>			

Source: Adapted from Barbier *et al.*, (1997) in IUCN, 1998

The aims of management that have led to the creation of MPAs in different parts of the world are as follows (Claudet and Pelletier, 2004);

- (a) conservation and protection of natural resources in areas that are recognized as particularly important in terms of ecological diversity to ensure their long term viability and to maintain their genetic diversity or to allow populations to recover to more pristine levels.
- (b) restoration of damaged or over-exploited areas considered as critical to the survival of such species, or of significant importance for the life cycles of economically important species;
- (c) improvement of the relationship between humans, their environment, and economic activities, by maintaining traditional uses and the sustainable exploitation of resources, by preventing outside activities from detrimentally affecting the MPA, and by protecting and managing historical, cultural and aesthetic sites;
- (d) improvement of fishing yields, by protecting spawning stock biomass, by acting as a source of recruited and post-recruited stages for surrounding

areas, by restoring the age structure of natural populations, and by acting as an insurance against mismanagement in fishing areas;

- (e) resolution of present or anticipated conflicts between coastal area users;
- (f) improvement of knowledge about marine environment by dealing with research and educational aspects; and
- (g) valuation of heritage for the local administration through tourism and economic profitability for the residents. Creating a MPA on the coastline of Nigeria will be a daunting task based due to the fact that the marine and coastal environment has a very wide and diversified use and human population is escalating in the country as a result the human impacts on the marine environment is on the increase and communities along the coast line have come to be highly dependent on the marine resources for their livelihood.



## CONCLUSION

Livelihoods of fisheries communities are highly dependent on the health and sustainability of fish resources, the ecosystems that support them, and the institutional arrangements governing their exploitation. Any significant threats to the resource base therefore pose immediate threats to the livelihood security of very large numbers of poor people.

In view of the need to effectively achieve sustainable livelihood in the Nigerian coastal area, it is necessary to promote coastal zone management and encourage diverse fishery livelihoods and thereby reduce vulnerability to poverty. Fisheries management plans should address social, political, legal, economic and biological factors. Thus, fisheries management should involve full participation of fisherfolks in the formulation and enforcement of fishery laws and by-laws, as well as the mitigation of conflicts between various interest groups in the coastal area.

## RECOMMENDATIONS

In order to mitigate and adapt to the varied changes it will be necessary to establish effective institutional network for programme implementation. Integrated coastal management (ICM) is increasingly seen as an effective means to manage coastal resources around the World Integrated Coastal Management (ICM) is a management framework increasingly being adopted by governments, non-governmental organisations (NGOs), practitioners, coastal communities, and others to help societies align their patterns of coastal resource use in order that ecosystems and communities maintain their productivity and viability. ICM processes attempt to address the complex array of issues present in coastal areas, including: over fishing, destructive fishing techniques, illegal cutting of mangroves, pollution

from coastland upland sources, and conflict over access to resources. The goal of ICM typically is to maximize human benefit from coastal zone resources by maintaining fundamental ecological processes (Christie and White, 1995 in Milne and Christie, 2005).

The general principles for the implementation of ICZM include the following:

- (1) The integration principle: integrated data collection, monitoring, research, synthesis, and information sharing, communication and education (the full range of relevant knowledge is applied to the planning process and decision-making process, including scientific studies and local and traditional knowledge); inclusive and collaborative oceans governance structures and processes; flexible and adaptive management techniques to deal with uncertainty and improvements in the understanding of marine species and ecosystems; and planning on the basis of natural and economic systems together, rather than principally on political or administrative boundaries. Also several dimensions of integration have been recognized in ICZM process. That is (i) intersectoral; integration among different sectors, horizontal integration among coastal and marine sectors e.g. fisheries and coastal tourism, oil and gas, port development. Vertical integration between coastal and other land based sectors that affect the coastal and ocean environment e.g. agriculture, forestry, aquaculture, mining etc. (ii) intergovernmental integration (national, provincial and local) etc (Cicin-Sain and Knecht, 1998).
- (2) Ecosystem integrity: a principal focus on maintaining ecosystem structure and function, including a recognition that ecosystems are dynamic, changing and sometimes poorly understood (therefore requiring precautionary decision-making);
- (3) The Precautionary Principle; The precautionary approach can be described as “erring on the side of

caution,” it is a key principle to be applied in the management of coastal activities. The Strategy is committed to promoting the wide application of the precautionary approach to the conservation, management and exploitation of marine resources in order to protect these resources and preserve the marine environment.

(4) Human uses and values: this principle is focused on the recognition that human knowledge (including scientific and traditional), uses and values are central to management;

(5) Active adaptive feedback management: “planned, pro-active management that responds to changing conditions through feedback management and embodies the principles of performance assessment using indicators and continuous improvement; and

(6) Participation; ICM recognize that stakeholder participation is a key to successful management”. Commitments to the Strategy are further addressed by the application of the following;

- the application of conservation measures necessary to maintain biological diversity and productivity of the marine environment, including the establishment of marine protected areas;
- the promotion of progressive improvement in understanding of the marine environment; and the priority given to maintaining ecosystem health and integrity, especially in the case of uncertainty.( EBM of Ocean Activities, workshop 2003)

As at time of this writing there no governance structure for climate change in Nigeria, but efforts is being made to put one in place. Such efforts include; submission of first national communication to the UNFCCC, and the second national communication is in preparation; Nigeria adopted the ECOWAS sub-regional Action Plan to reduce vulnerability to climate change in March 2010; Special Climate Change Unit (SCCU) was

established within the Federal Ministry of Environment; in 2010, the National Assembly passed a bill to create a national Climate Change Commission, which, once established, will likely facilitate coordination and support for the multi-level and cross-sectoral adaptation responses; ongoing development of a National Climate Change Response Strategy and Policy; public awareness/enlightenment campaigns.

There is need to direct concerted towards reducing the impacts of sea level rise and storm surge by encouraging the dyke construction and mangrove restoration particularly in the Niger-Delta region.

#### REFERENCES

- Akinwale, A.A. (2010) Livelihoods and Environmental Challenges in Coastal Communities of Nigeria in *Journal of Sustainable Development in Africa* (Volume 12, No.8, 10pp)
- Allison, E.H. and F. Ellis, 2001, ‘The Livelihoods Approach and Management of Small-Scale Fisheries’, *Marine Policy*, Vol. 25, No. 5, pp. 377-388
- BARBIER, E., ACREMAN, M. and KNOWLER, D. (1997) *Economic Valuation of Wetlands*. IUCN, Cambridge, UK
- Carney, D. (1998). *Sustainable rural livelihoods: What contributions can we make?* London: London Department for International Development.
- Chambers, R. & Conway, G. (1992). *Sustainable rural livelihoods: Practical concepts for the 21st century*. Brighton: Brighton Institute of Development Studies.
- Christie, P. (2005) Is Integrated Coastal Management Sustainable? *Ocean & Coastal Management* 48, 208–232

- Christie, P. and White A. T. Trends in development of coastal area management in tropical countries: from central to community orientation. *Coastal Management* 1997;25:155–81.
- Cicin-Sain, B and Knecht, R.W. (1998) *Integrated Coastal and Ocean Management: Concepts and Practices*. Island Press, Washington, D.C. 517pp
- Claudet, J and Grorud-Colvert, K. (2011) *Management – Transitioning from single-sector management to ecosystem-based management: What can marine protected areas offer? Marine Protected Areas. A Multidisciplinary Approach*. 11-34 Developing an ecosystem-based approach for managing ocean activities. Outcomes from the Workshop on “Ecosystem Based Management of Ocean Activities”, Cairns, Australia, June 2003
- Claudet, J. and Pelletier, D. (2004) Marine Protected areas and artificial reefs: a review of the interactions between management and scientific studies. *Aquatic living Resources*, 17, 129-38 in
- Ellis, F. (2000). *Rural livelihoods and diversity in developing countries*. Oxford: Oxford University Press
- FAO (1995). *Precautionary approach to capture fisheries and species introductions*. Elaborated by the Technical Consultation on the Precautionary Approach to Capture Fisheries (Including Species Introductions). Lysekil, Sweden, 6-13 June 1995. FAO Technical Guidelines for Responsible Fisheries. No. 2. Rome, FAO. 1996. 54p
- FAO (2005-2013). *Fisheries and Aquaculture topics. The sustainable livelihoods approach. Topics Fact Sheets*. Text by Benoit Horemans. In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 27 May 2005. <http://www.fao.org/fishery/topic/14837/en>
- Garcia, S.M., 2000. The FAO definition of sustainable development and the Code of Conduct for Responsible Fisheries: an analysis of the related principles, criteria and indicators. *Marine and Freshwater Research* 51, 535-541.
- Garcia, S.M., Staples, D.J., 2000. Sustainability reference systems and indicators for responsible marine capture fisheries: a review of concepts and elements for a set of guidelines. *Marine and Freshwater Research* 51, 385-426.
- Grafton, R.Q. and Kompas, T. (2005), Uncertainty and the active adaptive management of marine reserves, *Marine Policy* 29, 471-479.
- Guardian Newspaper, Nigeria, Monday September 17, 2001, p.80 at [http://www.nestinteractive.org/climate\\_change.php](http://www.nestinteractive.org/climate_change.php) 25/11/11
- IUCN, (1998) *Economic Values of Protected Areas: Guidelines for Protected Area Managers*. Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Service Unit of IUCN, Gland, Switzerland and Cambridge, UK. xii+52pp.
- Knuth, B. A., Birely, L., Burger, C., Claussen, J., DiStefano, R., Franzin, W., Habron, G., Martin-Downs, D., Miller, D., Pereira, D., Van Den Avyle, M., Brouha, P., 1999. *The Strategic Plan of the American Fisheries Society, 1999-2004*. *Fisheries* 24, 14-24.
- Kollmair, M. and St. Gamper, the sustainable livelihoods approach compiled Input Paper for the Integrated Training Course of NCCR North-South Aeschirried, Switzerland (9. - 20. September 2002). Development Study Group, University of Zurich (IP6). <http://www.nccr->

[pakistan.org/publications\\_pdf/General/SLA\\_Gamper\\_Kollmair.pdf](http://pakistan.org/publications_pdf/General/SLA_Gamper_Kollmair.pdf)

- Lenselink, N.M. Participation in artisanal fisheries management for improved livelihoods in West Africa. A synthesis of interviews and cases from Mauritania, Senegal, Guinea and Ghana. FAO Fisheries Technical Paper No. 432. Rome, FAO. 2002. 72p
- Milne, N. and Christie, P. (2005) Financing integrated coastal management: experiences in Mabini and Tingloy, Batangas, Philippines. *Ocean & Coastal Management* 48 (427–449).
- NMFS (National Marine Fisheries Service), 1999. Ecosystem-based fishery management. A report to Congress by the Ecosystems Principles Advisory Panel. U.S. Department of Commerce, Silver Spring, MD.
- NRC (National Research Council), 1999. *Sustaining Marine Fisheries*. National Academy Press, Washington D.C., 184 pp.31
- Rudd, M.A. (2002). An institutional framework for designing and monitoring ecosystem-based fisheries management policy experiments. Fisheries & Oceans Canada Policy & Economics Branch Maritimes Region. [http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/136/Rudd\\_%28OMRN%29.PDF.txt;jsessionid=74FD7E0519D0DD1690A3B175ED212C4A?sequence=2](http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/136/Rudd_%28OMRN%29.PDF.txt;jsessionid=74FD7E0519D0DD1690A3B175ED212C4A?sequence=2)
- Scullion, J. (1999) West African Fisheries Programme relevant to the Mekong in Mekong Fish Catch and Culture, Vol. 5, No. 2, December, 1999
- Swift, J., 1989, 'Why Are Rural People Vulnerable to Famine?', *IDS Bulletin*, Vol.20, No.2, pp.8-15