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Globalisation of the Nile perch: Assessing the socio-cultural implications of the Lake Victoria fishery in Uganda

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This is a review article that combines research findings to highlight the negative effects of Uganda's adoption of the liberalization policies in its fisheries sector. Using Lake Victoria as a case study, the paper discusses the impact of a liberalised fisheries industry on the socio-cultural landscape of small-scale/artisanal fishers and fishery-dependent communities in Uganda. Dominated by the Nile perch, Uganda's fish export industry is an important foreign exchange earner following the adoption of trade liberalisation policies by Government in the late 1980s. Although considered a 'success story', the positive effects of the industrial fishery have hardly 'trickled down' to the small-scale fishing communities. Conversely, small-scale fishers have been marginalised as they can ill afford to remain competitive amidst declining fish stocks. In early 1990s, there was considerable increase in the fish exports to the international market unmatched with effective measures to balance between local and international demand, ecological sustainability and sound fisheries conservation and management practices. By the late 1990s there was inevitably a noticeable decline in total Nile perch catches owing to widespread over fishing, harvesting of undersized Nile perch, and use of illegal fish gear and fishing methods. This unsustainable exploitation of the fishery resources undermined the 'conservation ethic' and the traditional fisheries resource management institutions and practices that governed sustainable exploitation of resources and ensured ecological stability and cultural homogeneity. As a consequence, the fishery is today characterised by unemployment, malnutrition, food insecurity, environmental health hazards, and criminal activities such as thefts and piracy. The paper recommends a series of policy measures with a view to integrating social and cultural issues in the policy and regulatory framework.

Key words: Trade liberalisation, commercial fishery, artisanal fishery, socio-economic livelihoods, ecological degradation.

INTRODUCTION

Until the late 1980s and early 1990s Uganda's fisheries sector was largely subsistence and artisanal, serving the local and regional markets. In the 1980s Structural Adjustment Programmes (SAPs) were introduced for the purpose of revamping the then sagging economy by liberalizing trade and removing all fetters that hampered a free market regime. Thus embracing a new package of liberal investment and trade policies, Uganda's fisheries sector was catapulted into an enviable position of a major foreign exchange earner in the past one and half decades, to the extent of it becoming the leading non-traditional source of revenue, and contributing 2.5% to Uganda's GDP (Daily Monitor, May 20, 2009). The fisheries sector was considered to be the fastest growing,

having earned \$90m, \$101m, \$142, \$146m and \$117m in 2003, 2004 (The New Vision, May 30, 2005) 2005 (Daily Monitor, January 3, 2006), 2006 and 2007 respectively and providing direct employment for 175,890 fishers (The Monitor, August 13, 2004) and livelihood support for about one million people (¹Plan for Modernisation of Agriculture (PMA) Bulletin, March 2004 quoted in ACODE Policy Briefing Paper No. 8, 2005). Nile perch constitutes over 90% of total fish exports thus becoming the backbone of Uganda's commercial fishery. However, by late 1990s as investments and fishing effort in the Nile perch fishery increased, catch rates started to decrease (Mkumbo et al., 2005). According to fisheries acoustic surveys carried out between 1999 and 2001, Nile perch

in Lake Victoria fell from 1.9 million tonnes to 1.2 million tonnes, and had reached 5440,000 tonnes in 2005, a figure that further dropped to a mean of 299,000 for the two surveys conducted in February/March and August/September, 2008. Contribution of the Nile perch to the overall annual fish harvest including other species like Silver fish dropped from 60% in 1999 to 30% in 2005 and further to 23% in 2007 (LVFO, Mputa Newsletter, Issue 1, December 2008 pp.7). Although Nile perch catches are declining in comparison to a decade ago, their long term impact on the socio-cultural parameters of the fishery is far from subsiding.

This paper reviews Uganda's Nile perch export industry on the socio-cultural landscape of the Lake Victoria fishery. It argues that whereas the fisheries sector has been an 'economic success story' courtesy of the conducive environment of liberalization and investment policies, the achievement has ignored the social and cultural parameters of the fishing communities and not least the ecological sustainability of the lacustrine ecosystem. The paper is outlined as follows: The first section provided an introduction, the second gives a brief background of the fishery; the third section is an overview of liberalisation trade policies in the fisheries sector, the fourth section discusses the implications of the commercial fishery on the socio-cultural waterscape of the fishery. The paper ends with a conclusion and a set of recommendations.

"The increasing fish revenues in the late 90s and early 2000 attracted more fishermen, which negatively impacted on the lake. 'In the mid 80s, we were about 25 fishermen here at Kasenyi. But now, we have over 200 fishing boats. This is the situation in all fishing areas of the lake', laments Erias Kisuule at Kasenyi" (The New Vision, Thursday July 30, 2009).

BACKGROUND TO THE LAKE VICTORIA FISHERY

Lake Victoria is Africa's largest and the world's second largest freshwater lake. It is one of the most important shared nature resources of Eastern Africa. It straddles across the common borders of the East African Community (EAC) Partner States of Kenya, Tanzania and Uganda, and features the world's largest freshwater fishery with significant local consumption and exports, in particular to the European Union, and it is a global centre of aquatic biodiversity. The lake and its catchments form a Basin that is valued for its socio-economic potential in addition to its immense ecological values. The economic potential of the catchments is based on the rich agricultural soils, abundant rainfall, and significant minerals deposits, among others. Further, the lake is one of the unifying factors for the three Partner States in addition to having a critical importance to the region. The lake populations are the most rapidly growing geographic sectors in countries that have among the highest population growth rates in the world. The lake, the lake shore

and the lake basin are certainly the engines of economic growth in countries where poverty alleviation is on high priority.

Fish catching and processing for export, as well as for the supply of local markets, are, next to agriculture, one of the most significant economic activities in the lake basin. The fisheries sector employs over 500,000 people directly or indirectly and the total landings from the three riparian countries are more than 500,000 tonnes per year. The EAC Private Sector Strategy Report states that this accounts for 95% of all landed fish catches in the three countries as well as nearly all foreign exchange earnings from the fisheries sector. The commercial fisheries industry is largely dependent on the European, Middle Eastern and East Asian export markets for processed fish products. The result of this high level of activity has been severe over harvesting of Nile Perch and a corresponding drastic reduction in the quantities of other species despite attempts by the governments to enforce various control measures. Besides, the tempo of commercialisation of the fishery has endangered traditional fishery management systems, thus sending ripples of social, cultural, economic and environmental reverberations within the entire ecosystem. This paper will focus on the social and cultural dimensions of the commercialised Nile perch fishery on Lake Victoria in Uganda (Figure 1).

ROAD TO GLOBALIZATION OF UGANDA'S FISHERIES SECTOR

Nile perch 'explosion' and subsequent decline

The trade liberalization environment in Uganda coincided with the massive landings and dominance of the Nile perch in Victoria and Kyoga, the two lakes that contribute between them about eighty per cent of the total landings. The Nile Perch regime was a consequence of the 'explosion' in the catch and the ways in which the fish was used. Although the Nile perch domination begun in 1978 in the Kenyan part of the lake (registering 1,000 tonnes), by 1993 the total catch in the three riparian countries (Kenya, Uganda and Tanzania) amounted to approximately 363,000 tonnes with twenty-nine per cent landed in Kenya, twenty-seven per cent in Uganda and forty-four per cent in Tanzania (Greboval and Mannini, 1992 quoted in Jansen et al., 1999). Along with the massive increase in Nile perch catches, landings of all other species dropped, excepting the *Oreochromis niloticus*, an introduced species and the native *Rastrineobola argentea* (Muhoozi et al., 2005) "Trends in the exploitation of the fisheries resources" in The State of the fisheries resources of Lake Victoria and their management (2005), LVFO, Jinja pp 2.55-72}. Today, Nile perch constitutes 90% of Uganda's total fish exports {"Reduce L. Victoria's fishing by 40%" (Daily Monitor, Monday October 13 2008 pp.8.}). Fish export have been



Figure 1. Map of Uganda showing all the major water bodies in the country.

for a long time the leading income earners in the non-traditional sector. However, there was a marked decline in fish export revenues from \$146m in 2006 to \$117m in 2007. The figure is projected to fall to about \$85 in 2008 due to dwindling fish catches in Lake Victoria {Government to close illegal fishing sites" (The New Vision, 3 September 2008 pp.33)}.

Expanded market

Trade liberalisation policies in the fisheries sector could not have come at a better time. The Nile perch 'explosion' overwhelmed the local and regional markets, not least the local fishing technology. In the past Uganda's fish was consumed locally and the surplus exported by road to neighbouring countries namely, Kenya, Rwanda and DR Congo. Today Nile perch is exported mainly to Europe, Far East, Middle East, USA, and South America in fresh, chilled, and frozen forms (Yongo et al., 2005). The export-led (industrial) fishery is largely dependent on Lake Victoria for its raw materials, whilst the local and regional markets get their raw materials from all the water bodies (Keizire, 2001). According to the Uganda Export Promotion Board (UEPB), Uganda exports per month about 2500 tonnes of chilled Nile perch fillets to the inter-

national markets. Table 1 shows the quantities and values of Nile perch fish exports between 1991 and 2007.

According to the Uganda Fish Processors and Exporters Association (UFPEA), Nile perch catches from the Uganda-owned part of Lake Victoria (That is 31,000 km²) are estimated to be 10,000 tonnes per annum (UFPEA, 2002). With the dramatic increase in the stock of the Nile perch in the early 1990s, the ichthyomass in the lake changed drastically (Mkombo et al., 2005). Being a predator, the Nile perch feeds on most of the indigenous fish species in the lake. As a consequence, Lake Victoria has gradually degenerated into a 'tri-species commercial fishery' dominated by one voracious predator, caught, processed and sold for export to external markets (G. L. Gettum "Two fishermen, five kilos and a fishery in crisis" Daily Monitor Wednesday, June 11, 2008). It is significant to note that today the Nile perch biomass is rapidly declining owing, largely, to the immense fishing pressure its preponderant status unleashed on the entire fishery.

Technological innovations

To successfully exploit the Nile perch –a huge and fatty fish- new fishing and processing methods were required

Table 1. Nile perch exports from Uganda (1991 - 2007).

Year	Quantity (tonnes)	Value (millions US\$)
1991	4,751.00	5,308.70
1992	4,831.00	6,450.50
1993	6,037.10	8,806.90
1994	6,563.00	14,768.90
1995	12,970.90	25,902.80
1996	16,396.40	39,780.90
1997	9,839.00	28,800.00
1998	13,805.25	34,920.79
1999	13,379.98	36,608.30
2000	15,876.38	34,368.14
2001	28,672.17	80,398.47
2002	25,169.14	87,574.36
2003	25,110.60	86,343.28
2004	29,830.92	101,914.82
2005	39,201.00	142,691,000
2006	36,461.00	145,837,000
2007	30,544.19	117,684,021

Source: UEPB, 2007 and UBOS, 2007.

(A mature Nile perch can weigh over 100 kg thus requiring state-of-the-art fish gear) (Harris et al., 1995). Both local and foreign factories needed adequate capital to purchase more high-powered boat engines and high-tech machinery to manufacture synthetic multi-filament large mesh gill nets, hooks and lines. On the side of processing, this required substantial investments to build modern processing plants, installation of cold storage facilities and ice-making machinery (Harris et al., 1995). This marked the entry of national and international capital into Uganda's hitherto artisanal fishery; exploited by small-scale fishers (Jansen et al., 1999). Being the largest lake and hence the largest single contributor of fisheries resources, virtually all fisheries industries were built around Lake Victoria (By 2007 Uganda had eighteen (18) fish factories although, owing to rapidly declining fish landings, six (6) have closed down). Moreover, Entebbe International Airport which would later become the hub of the fish export industry is located at the shores of Lake Victoria. Thus, it was such heavy investment in the fishery sector coupled with the proximity of the airport that led to the rapid growth of the fish export industry (Odongkara and Okaroron, 1999). Fish exports phenomenally grew from a value of US\$ 1.3 million in 1990 to US\$ 146m in 2006. To this end, this research work concurs with Connolly (1997), ACTS-IUCN (1999), Newell and Ommer (1999), FAO (2000a), McGoodwin (2001), Kurien (2001), Gladstone (2002) and Hamilton (2003) that switching from traditional technologies (artisanal fishery) to highly mechanised ones (commercial fishery) engenders resource depletion and unprecedented asymmetries in the right to use and access fisheries resources as small-scale fishers get more and

more marginalized and disempowered.

Paradoxically, the phenomenal success of the Nile perch industrial fishery and the concomitant technological innovations were the source of its undoing (Muhoozi et al., 2005). The excitement over its economic success was too overwhelming for the fisheries management and policy makers to realise that fisheries resources were but finite. Consequently, today Lake Victoria and the entire lacustrine ecosystem are facing considerable environmental stress (Ong'ang'a et al., 2001; Yongo et al., 2005) and resource depletion, which translate into the degeneration of the livelihoods of the fishing communities. This paper specifically examines the cultural and social conditions of the fishers and fishery-dependent communities after the liberalisation of the fisheries industry.

IMPLICATIONS OF THE NILE PERCH EXPORT-LED FISHERY ON LOCAL FISHING AND FISHERY-DEPENDENT COMMUNITIES

Social implications

Demographic trends increased fishing effort and illegal fishing methods: The increased landings of Nile perch and its entry into the external market attracted more people and investments into the Victoria fishery (Geheb and Crean, 2000; SEDAWOG, 2000b). The influx of land-to-lake migration turned farmers into fishermen, leading to rapid population growth around the Victoria basin, and it is at the very root of today's fishery crisis {G. L. Gettum, "Two fishermen, five kilos and a fishery in crisis" (Daily Monitor, Wednesday, June 11, 2008 pp.24)}. The number of fishermen in Lake Victoria increased from 153,066 in 2004 to 199,242 in 2008; the number of fishing vessels also increased during the same time from 51,592 to 70,004. The beach seines increased from 3,653 in 2006 to 4,187 in 2008; and the cast nets from 775 to 1,174 in 2008 (LVFO. Mputa Newsletter, Issue 1 December, 2008 pp.8). The major increase is seen in the monofilament nets which have risen from 2,293 in 2006 to 20,194 in 2008. The monofilament net is indiscriminative and non-biodegradable and a 'ghost fisher' once lost (LVFO, Mputa, 2008). The total number of gillnets used in the lake increased by 88%, while the use of long line hooks increased by 61%. Against this backdrop, it is hardly surprising that Nile perch catches are rapidly declining {G. L. Gettum, "Saving the 'fish basket' from drying up" (Daily Monitor, Wednesday, June 25, 2008 pp.30)}. Further, in 2001, boats caught an average 160 kilos of Nile perch each trip, today they catch less than 20 {G. L. Gettum, "Saving the 'fish basket' from drying up" (Daily Monitor, Wednesday, June 25, 2008 pp.30)}. The rate at which Nile perch stocks in Lake Victoria are declining raises concern, yet no mitigation measure has so far reversed the downward trend of the fisheries resources known to support millions of people, and significantly contributes foreign exchange to Uganda and the three

East African economies sharing the lake (Call for stakeholders involvement and commitment to recovery of the Nile perch stocks" *The New Vision*, Tuesday October, 2008 pp.19).

The increasing demand for fish due to growth in fish exports has led to increased fishing intensity and use of ecologically deleterious methods thus leading to a corresponding reduction in fish catches (Yongo et al., 2005). The fishing effort is hardly controlled owing to an 'open access regime' prevailing on Lake Victoria which implies that anybody can practise fishing. Furthermore, processing industries have made in-roads in the production process by purchasing their own fishing craft and hiring their own crew in order to obtain higher supplies. The ensuing competition for the scarce aquatic resources has therefore stimulated adoption of novel and more efficient technologies (Pitcher, 2001). It is noteworthy that the overcapitalisation of the fishery led to resource depletion as small-scale fishers resorted to illegal fishing methods as a coping strategy. A case in point was the introduction of poison during the late 1990s. Empirical evidence demonstrates that it was due to the declining fish catches, fuelled by the cut-throat competition between the small-scale and industrial fishery that led unscrupulous fishers to use poisonous chemicals to maximise their landings as a coping strategy. This act was not only ecologically destructive, but it caused loss of lives and also took a heavy toll on Uganda's economy following a subsequent ban by European Union on the country's fish exports. What is more, there is rampant use of prohibited fish gear such as beach seines, cast nets and small size (under two inch) gillnets which destroy nursery grounds and catch immature fish (National Fisheries Policy, 2004; LVFO Mputa, 2008). This negatively impacts the fish recruitment process; besides, it fuels conflicts between fisheries managers and Beach Management Units (BMUs) and within BMUs themselves as law abiding fishers tussle it out with their counterparts using illegal fishing gear.

Social differentiation and the loss of the conservation ethic: Until the mid 1970s (That is prior to the pre-Nile Perch explosion), the fisheries resources of Lake Victoria were exploited by small-scale fishermen with limited investment in equipment in the production sector (Jansen et al., 1999; Jjuuko, 2001; NEMA, 1998; Reynolds et al., 1995). Very few fishermen owned more than one canoe or more fishing gear than they were able to control. The ownership pattern was more decentralised and the income from the fish catches was fairly evenly distributed. A fisher was the owner of the canoe and at the same time its operator; and the social organisation of the fishing activities was patterned along his household unit. The fisher's (That is the owner-operator) crew consisted of his family members {sons (In the traditional setting fishing was a male-dominated activity. However, fish processing was conversely a female-dominated activity.)} or close

kinship relations and fish production was traditionally a gendered activity. The processing and trading sectors of the fisheries were virtually controlled by small-scale operators, most of whom were wives of the fishermen or women whose spouses were engaged in subsistence agro-based activities within the local communities.

However, the increased landings of Nile perch and its entry into the external market attracted more people into the Lake Victoria fishery. The majority of these were unemployed youth in search of a living and rich people outside the fishery sector who started to invest in water craft and expensive, modern gear (Jansen, 1997). As a consequence, new different categories of fishermen have emerged consisting of absentee owners, managers, operators and crew (ACTS-IUCN, 1999; Harris et al., 1995; Jjuuko, 2001). There is no doubt that these 'non-native' fishers and foreign investors are alien to the socio-cultural milieu of the fishery and would hardly be inclined to espouse a 'conservation ethic' and a strong sense of custodianship characteristic of the native fisher folk (Nikijuluw, 1994; Stoffle, 2001). A conservation ethic is an awareness that one can deplete or otherwise damage one's natural resources, coupled with the commitment to reduce or eliminate the problem (Freeman, 2001; Hamilton, 2003; Hamilton and Johannes, 2002; Johannes, 1981; Kurien, 2001; Stoffle, 2001). In a research carried out in Wakiso district, the researcher was informed that most of the inimical fishing methods on Lake Victoria were introduced largely by non-native fishers who migrated to Lake Victoria from other different parts of the country. Empirical evidence proves that non-native fishers have a lower propensity to guard against environmental degradation and its attendant socio-economic hazards than the native and long-resident fishers whose livelihoods are almost exclusively tied on the lake, its aquatic resources and the entire ecosystem.

Unemployment and impoverishment: The penetration of international capital into the fisheries sector coupled with its external market has impacted the socio-cultural dimension of the Victoria fishery. Processing industries have made in-roads in the production process by purchasing their own fishing craft and hiring their own crew in order to obtain higher supplies (Pitcher, 2001). This twist of events set into motion the marginalization of the small scale fisher who, due to his largely labour-intensive fishing methods and limited capital, can hardly match the novelty and efficiency of more capital-intensive technologies (Jansen, 1997). Therefore, while the Nile perch industry contributes significantly to Uganda's export earnings, anticipated economic benefits of the industry have not accrued to the majority of the people living around the lake (Odongkara et al., 2005; Yongo et al., 2005). Thousands of people living in the fishing villages are living on the margins of subsistence. The recent plunge in catches directly threatens the livelihoods of fishers and fishery-dependent communities around the lake (Gina L. Gettum, "Two fishermen, five kilos and a

fishery in crisis" {Daily Monitor, Wednesday June 11 2008 pp.24}). Besides, fish profits accruing to the rich non-native fishers and/or investors are not reinvested in the fishery or within the periphery of the fishing communities (Jansen, 1999; Mugabe et al., 2000). As a consequence, there is widespread unemployment and poverty within the stratum of small-scale fishers. This is testified to by the remarks of Mr Kamuturaki, executive director of UFFCA;

The liberalisation of the fish trade around Lake Victoria basin has resulted into negative social trends like loss of jobs and livelihoods, food insecurity, poor nutrition and adverse economic effects being felt by the fishery-dependent communities (Seremos Kamuturaki, "Lake Victoria fish under threat" in *The New Vision*, Thursday February 1, 2007 pp 21).

What is more, thousands of traditional small-scale fish processors and mongers (of whom women form a considerable portion) have also become unemployed as factories have taken over the processing role, and there is far less fish for them to trade in. The fishermen who sold those fish are today contracted to sell their catch directly to factories as they pay higher prices. Although to some extent fish processing factories seem to have created employment for processors and mongers, in reality the number of people employed in the factories is by far small compared to the number that lost their jobs in the traditional processing industry (Jansen, 1997). Furthermore, although it was the Nile perch explosion that ignited the proliferation of the fish factories along the lakeshore, paradoxically it is the declining Nile perch catches that is responsible for the closure of six out of eighteen fish factories, leaving many others limping {Government to close illegal fishing sites (*The New Vision*, 3 September, 2008 pp.33)}. This is tantamount to a double tragedy since, in the first place, the creation of the factories ipso facto led to marginalisation and subsequent massive unemployment of small scale fishers and processors, consequent to excessive fishing pressure that subsequently led to rapidly declining Nile perch stocks.

HIV/AIDS and other communicable diseases: There is no doubt that the influx of land-to-lake migrations as a consequence of the Lake Victoria commercial fishery has gravely impacted the health of fishers and fishing communities. Despite being the engine of the fisheries sector, many fishing communities are at the margins of fisheries development (Tanzarn et al., 2005). The fisheries sector is highly vulnerable to HIV/AIDS; empirical evidence shows HIV prevalence as much as three times the national average. The national HIV prevalence rate is 6.4% (Uganda Aids Commission, 2009; UAC, 2007 emphasis added). Fishing communities are disproportionately affected by other diseases namely, bilharzia, malaria, cholera and other water borne diseases. This is attributed to a combination of several factors such as poor sanitation, poor nutrition, limited access to medical care, exposure to contaminated water, and high mobility of the fisher folk. The increase in the incidence of diseases

is attributed to rapid growth of lakeshore settlements due to the growth of the fishery (Yongo et al., 2005). This implies that the health infrastructure is by no means commensurate to the huge population of fishers and fishery-dependent communities attracted by the booming commercialised fishery.

Malnutrition and fish food insecurity: The export-oriented fishery has led to the marginalization of women in the post harvest sector (processing and trade). This is a big blow dealt to the status of nutrition and fish food security within fishing households and local communities. Traditionally, Lake Victoria was the major source of fish which is the cheapest source of protein for local communities. Today there is a high prevalence of protein deficiency especially in children. This is because most of the fish catches are sold to processing factories which offer higher prices unaffordable by local people (ACTS-IUCN, 1999). In turn, the factories sell the processed products to the external markets within the European Union, the USA and the Middle East. The commercialisation of the fishery has pushed fish prices beyond the reach of many households, leading to diminished livelihoods and fish food insecurity among the fisher folk and local communities, for whom fish was the traditional source of animal protein (ACTS-IUCN, 1999; Jansen, 1997; Mugabe et al., 2000; Ogutu-Ohwayo, 1999). Throughout the 1990s, as the Nile perch catches steadily increased, more and more of the fish was exported and less and less was consumed locally – the Nile perch had become a major source of foreign exchange for Uganda {G. L. Gettum, "Two fishermen, five kilos and a fishery in crisis" (Daily Monitor, Wednesday, June 11 2008)}. The export-oriented fish industry leaves very little on the local market for local consumption. For many years FAO has warned about the detrimental effects a too large export of fish may have on the people around the lake (Jansen, 1997). Although it is hitherto difficult to conclusively assess the impact of the export-oriented fishing industry, there are sufficient indicators that substantial population groups that depended on the traditional fisheries in the past have lost out. Thus the globalisation of the fishing industry has heightened malnutrition and food insecurity within millions of poor people in Uganda (Töpfer, 2002).

That aside, there are some species such as mudfish and haplochromines which are increasingly being harvested to be used as food baits to catch Nile perch. Thus, the withdrawal of these species from the local market has exacerbated food insecurity since the targeted Nile perch, being an export-oriented fish, is too expensive for the local communities.

SOCIO-CULTURAL IMPLICATIONS

Loss of traditional resource conservation institutions and practices

The increased fish exports of which Nile perch constitutes about 90% has meant that local people can no longer

Table 2. Socio-cultural functions of 3 fish species.

Fish species	Cultural function	Frequency	Percentage
Lungfish (Mamba)	Treats kwashiorkor	15	19.48
	Revitalizes Body	5	6.50
	Increases sex prowess	5	6.50
	Increases food appetite	2	2.60
	Treats breast cancer	2	2.60
	Treats backache	6	7.80
	Increases immunity for PLHA	7	9.1
Haplochromines (Nkejje)	Cures gonorrhoea		
	Treat measles	11	14.28
	Performing traditional twin children ceremonies	7	9.1
Pelagic fish (Mukene)	Performing second funeral rites	6	7.80
	Treats kwashiorkor	6	7.80
	Food nutrition	5	6.5
Total		77	100

Source: Primary data (Key informants, Wakiso district): 2006.

no longer access endemic fish species that served several social and cultural functions. The introduction of the Nile perch led to the depletion of over 200 endemic fish species. Before it was introduced, Lake Victoria had over 350 known fish species; however, only five (Nile perch, Nile tilapia, silver fish, haplochromines...) are now commonly seen. The others have either become extinct or are too few to be harvested regularly. Even among the five, Nile perch and tilapia are the commonest. *Bagrus docmac*, *Protopterus aethiopicus* and *Clarias gariepinus* are facing extinction. Others are fast disappearing including enkejje (The New Vision, Wednesday February 6, 2008). Therefore, it is significant to note that Uganda's 'successful' Nile perch fish export industry has been achieved at the detriment, *inter alia*, of indigenous fish species and the age-old traditional fisheries resource conservation and management institutions and practices of the native fishing communities. In a study carried out in Wakiso district to assess the use of the indigenous knowledge, local fishers reported a host of lost fish species that were highly cherished and served a variety of social functions and cultural festivities to the fisher folk and local communities. As a consequence traditional values and customs of the local communities have been eroded. Table 2 indicates the socio-cultural functions of some of the popular endemic species whose biomass should be protected from depletion.

Therefore, the depletion of endemic species marks not only the demise of a multi-species fishery offering a wide gastronomic choice to local communities, but also the loss of the social and cultural values attached to some of the extinct endemic fish species. Table 2 indicates some of the endemic fish species which possessed nutritional and medicinal values to the local communities (Nsimbe-Bulega et al., 2003) "Production and marketing of value-added fishery products in Eastern and Southern Africa:

FC/FAO/COMESA Fishery project. Dagaa-Mukene fishery. Uganda country study. Final Report August 2003).

Taboos; A conservationist perspective

The Nile perch export fishery has gravely impacted the traditional conservation and management systems in the riparian communities. In a research carried out in Wakiso district based on the indigenous knowledge of fishers and processors, 88.3% acknowledged awareness of cultural institutions (e.g. taboos) and practices that governed fisheries conservation and management (Table 3). They noted, however, that whereas these institutions prevailed in the past and governed the actions of fishers in practising sustainable exploitation of resources, they were today largely neglected owing to, *inter alia*, western civilisation and modernisation, the current multicultural composition of the fishing communities and market forces.

Question: Are you aware of any traditional institutions (e.g. spatial and temporal taboos/sharing-systems) that were used to promote fisheries conservation and management?

In the realm of traditional fisheries management, taboos are spiritual-temporal rules that govern and regulate fisheries resource use by members of the community (Ruddle, 1995; Hickey and Johannes, 2002; Luna, 2003). They act as customary prohibitions or restrictions declared against harvesting fishery resources in a specific locale over a specified time span. Retired local fishers in Wakiso district informed the researcher that in the past taboos were used to enforce seasonal and spatial restrictions on the exploitation of fisheries resources.

Table 3. Rate of awareness of the role of traditional institutions in conservation.

Response	Frequency	Percentage
YES	68	88.31
NO	9	11.69
Total	77	100

Source: Primary data (Key Informants, Wakiso district): 2006.

This was a conservationist intervention to ensure the sustainability of the resources and the entire ecosystem. Besides, retired fishers observed that in the past it was a taboo to trap a juvenile fish. Out of a socio-cultural instinct, a fisher would release back into the water a young fish caught in his net. This is in sharp contrast with the current practice whereby many unscrupulous fishers illegally catch immature fish {GBMU (Guidelines for Beach Management Units), 2003; Njiru et al., 2005; LVFO, Mputa, 2008} and, worse still, bury several thousands of unsellable fish fry into the ground to escape the wrath of the enforcement arm of the fishery. It is noteworthy that the Nile perch explosion sucked into the fishery an influx of a multi-racial/ethnic composition of national and foreign investors and a huge local labour force, thus throwing overboard a conservationist regime buttressed by homogeneous cultural institutions and practices.

Taboos

- 1) On Kitobo Island, cooking of sweet potatoes together with fish is tabooed lest one risks thunder. If one is to cook the two food items, one has to use separate hearths.
- 2) On Bubeke Island, lungfish (mamba) was tabooed to be consumed in homes. In case a fisher caught lungfish, they would prepare and consume it at landing sites only and never homesteads.
- 3) On Ssesse Islands (in Kalangala district), owning sheep was prohibited. In fact, the respondent remarked that he had never seen sheep on the island.
- 4) Women were prohibited from bathing at landing sites/in the lake.
- 5) Women were prohibited from entering or peering into a fishing boat.
- 6) Whistling was prohibited on water
- 7) It was prohibited to urinate or defecate in water.
- 8) It was prohibited to hold an oar upside down in a boat (It was believed that *kisoke* (thunderbolt emerging from the rainbow) could enter the boat and make it capsize. The *kisoke* appeared mainly in March).
- 9) It was a prohibited to utter obscenities on the lake
- 10) A woman in her menstrual periods was prohibited from squatting on the lakeshore.

Taboos; A security perspective

Illegalsities: Piracy/thefts: The commercialisation of the Nile perch fishery and its resultant high demand in the external market increased the demand for the fish and its raw materials (Kirema-Mukasa et al., 2005). The steep demand ignited an increase in the fishing effort and use of illegal gears and methods on the lake {G. L. Gettum "Saving the 'fish basket' from drying up" (Daily Monitor June 25, 2008 pp.30)}. There is a considerable increase in thefts particularly of better-quality fish gear (fish nets and high-powered boat engines) and the trapped fish (Harris et al., 1995; Yongo et al., 2005). To guard against theft, fishers are obliged to stay out on the lake guarding their gear and fish; this is a constraint to their family lives. According to the local cultural traditions of the riparian native communities, theft and piracy were taboos observed by all who exploited the aquatic resources or travelled on the lake. However, the 'invasion' of the fishery by the outside non-native communities (Some non-native fishers come from as far as Kenya and Tanzania) resulted into a degeneration of cultural values and practices that were the symbol of identity of an indigenous fisher and a cornerstone of the conservation ethic. Additionally, thefts and piracy could be explained as a survival strategy by the impoverished fishers who can no longer afford to stem the tide of competition fuelled by heightened appetites for the Nile perch in the external market vis-à-vis rapidly dwindling fish catches. It is not uncommon for fishers to spend nights on water guarding their catch and fish gear. This was not the case in the pre-Nile perch export-led fishery when customs and cultural values were more strictly observed. On many occasions, these acts of lawlessness have resulted into loss of lives and property thus rendering fishing and water navigation a hazardous venture. The gravity of the problem is demonstrated by government's initiative of launching an anti-crime crack force to tackle piracy on Lake Victoria (According to The Daily Monitor of 21 June 2004, the Director General of the Internal Security Organisation (ISO), Colonel E. Kayanja, launched an operation code-named 'Operation Clean' whose objective was to tackle rampant crime on Uganda's lakes).

Traditional religion

Traditional fisheries resources management in pre-contact societies was buttressed on the traditional cosmologies or belief systems and maintained through a high form of ritualisation (SEDAWOG, 2000; Foale, 2002; Hickey, 2003; Barker and Ross, 2003). Traditional cosmologies consisted of spiritually based moral codes or ethics that governed the interaction between the human, natural and spiritual worlds (Johnson, 1992; Calamia, 1999; Pinkerton, 1999; Thoms, 1999; Poepoe et al., 2003; Mangahas, 2003). Wallace and Steiner (1999) observe that in these societies, traditional culture was

Table 4. Purpose of traditional religious rites.

Response	Frequency	Percentage
Maintain good fishing practice	18	23.37
Search for luck	11	14.28
Conservation	5	6.49
Spiritual guidance and Protection	25	32.46
Instil manners in people	6	7.79
Preserve nature	12	15.58
Total	77	100

Source: Primary data (Key informants, Wakiso district): 2006.

highly structured and was governed by strict religious customs which related the people to their natural and socio-political environment. In Wakiso district, active and retired fishers informed the researcher that in the past, religious rites would be performed prior to a fishing trip. They gave varied answers to explain the rationale of such spiritual rites. Table 4 indicates the multiple purposes of the religious rites that preceded a fishing expedition. The majority of the informants (35.71%) indicated that the rites served as a source of spiritual guidance and protection. The lake-god {In case of Lake Victoria, the lake-god was called Mukasa and the cultural, pre-colonial name of the lake was Nalubale (literally meaning 'Seat of gods')} was believed to be the spiritual medium between the earthly human beings and the aquatic realm. Therefore, to promote conservation and sustainable exploitation of the aquatic resources, resource users' activities had to conform to the spiritual tenets of custodian-god of the lake. However, with the commercialisation of the Nile perch, Mukasa (the lake-god) lost customary custodianship over the fisheries resources, hence the lake-wide profanation and desecration of his aquatic 'kingdom'.

Conclusion

That the export-led fish industry was a boon to Uganda's economy- especially as Uganda's revenue from the chief traditional export, coffee, was in the doldrums- need not be overemphasised. However, socio-cultural parameters have been largely scarified on the altar of short-term macroeconomic gains. That Lake Victoria is experiencing an acute environmental stress is hardly contestable. Trade liberalisation has opened Uganda's fisheries to a large, insatiable overseas market that hardly takes cognisance of the finiteness of the fisheries resource base. However, neither the management policies nor the legal framework are adequately poised to mitigate the negative social and cultural reverberations of globalisation that accompany its short-term economic successes. Overcapitalisation of the fishery to meet a gigantic external market has forced out small-scale fishers and fish workers. A good many of those who tenaciously stayed on can only survive by engaging in illegal and destructive

fishing methods such as prohibited gear, exploitation of immature fish and use of poisonous substances. Already there are high levels of unemployment, impoverishment and hence diminished livelihoods, malnutrition and fish food insecurity. Against this backdrop, it is imperative to develop a fishery that is economically viable, ecologically stable and sensitive to the social and cultural conditions of the local fishers and fishery-dependent communities. Otherwise, the end result might be what Kurien (2001) aptly terms "fisheries development without fish workers development" (p.5).

Recommendations

- 1) Government should pursue an export-led fishery but at the same time give adequate attention to social and cultural dimensions of the small-scale (artisanal) fishery.
- 2) A comprehensive and supportive legal framework and management policy that is sensitive to the social and cultural dimension of the fishery. The Fish Act (1964) is currently anachronistic.
- 3) Enhancement of governance in fisheries resource management with a view to promoting equity among all stakeholders, access and user rights of the fishery resource base and all other forms of resource management that pertain to aquatic resources within the entire ecosystem.
- 4) Empowerment of local small-scale fishing communities through participation in the decision-making processes of fisheries management.
- 5) Introduction of community-policing predicated on the existing community-based fisheries co-management structures. This will enable fishing communities to participate in the enforcement of fisheries regulations on resource conservation and management.
- 6) Promote the restoration of endemic fish species to cater for the local market. This will ensure food security, employment and ecological sustainability.
- 7) Promotion of an ecosystem-based management of the Lake Victoria fishery. This will include collaboration with other natural resources –based sectors with an impact on fisheries resources.
- 8) Use of indigenous/local knowledge of the riparian fish-

ing communities in conjunction with scientific/modern methods and practices of fisheries conservation and management.

9) Promotion of multidisciplinary research with a view to highlighting the nexus of ecological, economic, political, social and cultural parameters of the fisheries resources.

10) Enhancement of poverty-alleviation schemes including, *inter alia*, microfinance projects and fish farming to uplift the livelihoods of marginalized small-scale fishing communities.

11) Increase co-operation in security matters between the East African countries (sharing Lake Victoria) to combat piracy and the rampant thefts of trapped fish, fish gear and water vessels.

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