PROPOSAL TO CIDA:

UPGRADING THE FISHERY SECTOR IN UPPER NILE STATE, SOUTH SUDAN

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### Abbreviations

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<tr>
<td>ACP Fish II</td>
<td>Africa, Caribbean and Pacific Fish II Programme</td>
</tr>
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<td>CFSAM</td>
<td>Crop and Food Security Assessment Mission</td>
</tr>
<tr>
<td>FAO</td>
<td>(The United Nations) Food and Agricultural Organization</td>
</tr>
<tr>
<td>DoF</td>
<td>Department of Fisheries (Upper Nile State)</td>
</tr>
<tr>
<td>DoFAD</td>
<td>Directorate of Fisheries and Aquaculture Development (GRSS)</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
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<td>GIZ</td>
<td>Gesellschaft fur Internationale Zusammenarbeit</td>
</tr>
<tr>
<td>GRSS</td>
<td>Government of the Republic of South Sudan</td>
</tr>
<tr>
<td>MARF</td>
<td>GRSS Ministry of Animal Resources and Fisheries</td>
</tr>
<tr>
<td>PHL</td>
<td>Post-Harvest Loss</td>
</tr>
<tr>
<td>SMARF</td>
<td>Upper Nile State Ministry of Animal Resources and Fisheries</td>
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<tr>
<td>SME</td>
<td>Small and Medium Enterprises</td>
</tr>
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<td>SPCRP</td>
<td>Sudan Productive Capacity Recovery Programme</td>
</tr>
<tr>
<td>SSCCE</td>
<td>South Sudan Centre for Census, Statistics and Evaluation</td>
</tr>
<tr>
<td>SSP</td>
<td>South Sudan Pound (currency)</td>
</tr>
<tr>
<td>UNDAF</td>
<td>United Nations Development Assistance Framework</td>
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<tr>
<td>UNIDO</td>
<td>United Nations Industrial Development Organization</td>
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<td>UNS</td>
<td>Upper Nile State</td>
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<td>WFP</td>
<td>World Food Programme</td>
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I. Executive Summary

Livelihoods in Upper Nile State have traditionally revolved around agro-pastoral activities, such as cattle herding and small-scale agriculture. The fishery sector is most often a secondary source of livelihood, undertaken by the populations along the Sobat and Nile rivers corridors as a buffer against the effects of harvest failures, agricultural product price volatility, violent conflict and other factors that threaten rural stability, economic development and food security. However, through the up-scaling of fishery practices from artisanal to commercial-orientated, there is considerable potential for the fishery sector in Upper Nile State to play a greater role in the economic development and food security situation of the state and the entire country.

While the potential for income generation and food security are high, the sector in constrained by multiple challenges that must be addressed in a coordinated and comprehensive manner.

Main challenges to the Upper Nile State Fishery Sector:

- Weak institutional capacity in terms of human resources, logistics and coordination;
- Inadequate information on the fishery sector, including number of fisherfolk and fish;
- Limited organization of fisherfolk at the community level;
- Limited harvest capacity due to basic fishing gears and techniques;
- Limited ability to transport fish products, due to a lack of motorized river transport and no road access during the rainy season;
- High fish post-harvest losses resulting from improper handling throughout the fishery chain;
- Absence of fishery infrastructure such as market stalls, storage facilities, collection points and landing sites; and
- Fishing season that limits the amount of fish harvested for approximately six months per year.

With the appropriate support, the fishery sector of the Upper Nile State can have a positive impact on the state on multiple levels:
• With approximately 412,000 people involved or dependent on the fishery sector in Upper Nile State to some degree, food security and livelihoods will be positively impacted through increased incomes and availability of alternative food sources.

• A strong fishery sector selling a greater number of quality fish will provide an economic boost to the Upper Nile State through increases incomes of fishery sector workers as well as those small businesses that supply goods and services to the sector.

• With possibly up to 46 percent of households in Upper Nile State headed by a female, women in fishing communities have the opportunity to benefit from fishery-related interventions.

• Greater knowledge of the fishery resource will allow the government to plan and coordinate fishery sector interventions to best ensure the sustainable use of the fishery resource.

• The alternative means of livelihood provided through a strong fishery sector will also have an impact on the security situation in Upper Nile State. Youth that are engaged in income generating activities are less likely to become involved in cattle raiding and other activities that are potentially destabilizing.
II. South Sudan Development Context

Almost one-and-a-half years after gaining its independence on 9 July 2011, South Sudan remains one of the most under-developed countries in the world. South Sudan has a population of 9.6 million\(^1\), the majority of whom are young and rural, with seventy-two percent below the age of thirty and 83 percent living in rural areas.

Although South Sudan’s Gross Domestic Product (GDP) in 2012 was US$ 13.22 billion and saw healthy growth rates of 6 percent for 2011 and 2012, the poverty rate remains at 50.6 percent. The South Sudan UNDAF states that, “at least 80 percent of the population is income-poor, living on an equivalent of less than USD 1 per day. More than one-third of the population is food insecure and even in a good year, 20 percent of households cannot support themselves.”\(^2\) According to the South Sudan Centre for Census, Statistics and Evaluation (SSCCE), the average per capita consumption in South Sudan is 100 SPP per month. This drops to 88 SPP per person in rural areas.\(^3\)

South Sudan is composed of ten states and is covered by grassland, swamps and tropical rain forest along the banks for the Nile River. The total area of South Sudan is 644,329 km\(^2\).

III. Upper Nile State Development Context

Upper Nile State (UNS) is located in the north-east of South Sudan, straddling the White Nile and Sobat rivers. Upper Nile State measures 77,773 km\(^2\) and is divided into 13 counties, with the state capital in Malakal. The population of Upper Nile State is estimated is at 1,114,474. The state can be divided into two distinct livelihood zones: Sobat and Nile river zone; and the Eastern Flood zone.

The dominant tribe in the state is the Shilluk, but Nuer, Dinka and Bari-speaking groups are also present. Seventy-five percent of the population lives in rural areas and 59 percent depend on crop harvesting or animal husbandry as their primary source of livelihood.\(^4\) There is a wide variation in the size of the population between counties, with Nasir having a population of 210,002 (21 percent of

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\(^1\) FAO/WFP Crop an Food Security Assessment Mission to South Sudan 8 February 2012. p. 7
\(^3\) South Sudan Centre for Census, Statistics and Evaluation (SSCCE). Key Indicators for Southern Sudan, 2011. p. 10
\(^4\) South Sudan Centre for Census, Statistics and Evaluation (SSCCE). Key Indicators for Upper Nile State, 2011. p.1
the population) and Fashoda having a population of 36,518 (4 percent of the population). The average household in Upper Nile State has eight members, one higher than the South Sudan average. Average consumption in Upper Nile State is 144 SPP per month, higher than the South Sudan average (SPP 100); but this drops to 88 SPP per persons per month in rural areas.\(^5\)

**The Agricultural Sector in Upper Nile State**

Agriculture is the main economic activity in the Upper Nile State. Most people are agro-pastoralists engaged in both agriculture and livestock rearing. Sorghum and maize are the main cereals grown in the state. The average area for those households that cultivate sorghum and maize is 2.7 feddans (just under one hectare) each. Most households cultivate 1-2 feddan and produce roughly 2-4 sacks of sorghum or maize per season,\(^6\) the presence of larger mechanized farms in Manyo, Renk and Meluk counties have increased the average. Based on the *Crop and Food Security Assessment Mission (CFSAM) 2010*, the estimated cereal area cultivated was 77,790 ha with 0.79 t/ha yield (range 0.60-0.85 t/ha). The estimated net cereal production was 48,985 tonnes.\(^7\)

**The Fishery Sector in South Sudan**\(^8\)

The fishery sector provides an important, though secondary, source of food security and livelihood for the peoples of South Sudan. South Sudan has vast wetland area measuring over 29,000 km\(^2\), with an additional 26,000 km\(^2\) during the rainy season. The wetland area between the communities of Bor and Malakal, known as the Sudd swamps, host over 100 species of fish. Formed by the While Nile, the Sudd swamps cover roughly 15 percent of the total area of South Sudan. The potential for fish harvest in the swamps is estimated at 75,000 tonnes per year – and possibly up to 140,000 tonnes per year – and around 220,000 for South Sudan in total; however, current reported fish landings are estimated at between 30,000 and 40,000 tonnes per year.

There are approximately 35,000 fishers in South Sudan with approximately 10,000 of them full-time.\(^9\) Thousands more individuals are involved part-time in the fishery sector and in secondary activities undertaking processing, transporting and retailing activities. The *Policy Framework and

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\(^7\) South Sudan Needs and Livelihood Assessment Analysis 2011. p. 58.

\(^8\) It is important to note that one of the biggest constraints to the fishery sector in South Sudan and Upper Nile State is a lack of reliable information and statistics on the fishery. An effort to collect fishery sector information only begun at independence, but the capacity of the Ministry of Animal Resources and Fisheries (MARF) at the national and state levels is limited. As a result, the number of fishers, fish stock levels, production and sales are reliant on the rough estimations of fishery experts.

\(^9\) Interview with independent fishery consultant in South Sudan. 14 October 2012.
Strategic Plans 2012-2016 of the GRSS Ministry of Animal Resources and Fisheries estimates that 12 percent of the South Sudan population is involved in fishery sector activities.  

In total, about 115 different species of fish are found in the Nile basin most of which are of economic importance. The most important species are *Tilapia, Nile Perch, Gymnarchus niloticus, Heterotus niloticus, Synodontis, Lates nilotica, Alestes, Hyrocynus, Labeo, Barbus, Distichodus, Citharinus, Clarias, Protopterus, Mormyrus, Bagrus, Shilbe, Heterobranchus, Heterotis, Polyterus, Gnathonemus, Marcusenius, Petrocephalus, Hyperropisus, Eutropius, Malapterurus, Clatrotes, Tetradon, Auchionoglans, Chrychythis.*

Map III.1: Fishery Areas in South Sudan

The Fishery Sector in Upper Nile State

The region around the confluence of the Sobat River and the While Nile provide another plentiful source of fish. According to the South Sudan Centre for Census, Statistics and Evaluation “the [Nile and Sobat rivers area] clearly has a high potential for expansion of the commercial and nutritional
value gained from its fish resources. Fish was an export commodity in the past, and should be recoverable with sustainable development of the industry.  

In the Nile and Sobat river zones, fishing is an important, but not the primary, source of food and livelihood. Fishing is done mainly when there is a break in prominent income-generating activities such as crop cultivation and cattle rearing. Cattle in particular, are important in South Sudan as a means of wealth and savings. Fishing is perceived to be for those of low socio-economic status. Fishing is sometimes a means to buying more cattle, in order to better one’s social standing in the community. In the Eastern Flood zone fishing is also a secondary source of livelihood and food security, although there is also potential for increased fishing in the swamps and seasonal rivers of the zone. The *South Sudan Needs and Livelihoods Analysis Report* states that 37 percent of households in the Upper Nile State are involved in fishing activities. Based on a population of 1,114,474 and an average household of eight people, this means that approximately 412,000 people are involved or dependent to some degree on the fishery sector in Upper Nile State.

Arriving at a clear number of fishers is made difficult by the irregular nature of many of those who participate in the sector. While there are certainly many full-time fishers, many more are involved on a part-time basis when there is no agro-pastoral work to be done, or in intermittent cases of food insecurity or the need for gaining extra income quickly. One estimate is that there are roughly 35,000 fishers in South Sudan with approximately 10,000 of them full-time. As stated above, many thousands more are involved in secondary fishery activities or are dependent to some degree on fishery-derived incomes and food sources.

According to the *South Sudan Needs and Livelihoods Analysis Report*, 56 percent of fishing households sell their surplus harvest at local markets. Upper Nile State households assessed in the report indicated that fish is consumed 1.9 days per week and 3.1 days per week in fishing households.

A fisher with his cast net on the Nile River

13 Interview with independent fishery consultant in South Sudan. 14 October 2012.
A fisher with his cast net on the Nile River

Fishing as a livelihood is greatly influenced by the dry and wet seasons. In the wet season – May to October in Upper Nile State – rural peoples practice mainly agriculture and livestock production. In the dry season, as the water levels recede, fish harvesting plays a greater role in income generation. This is reflected by the abundance of fish in the marketplace in Malakal during this period – October to April. The price for fish in the market drops during this period. The rainy season from May to October sees a drop in fish harvests as higher water volumes make fishing less effective and transport more difficult. In the Upper Nile State, road transport during the rainy seasons is extremely limited, leaving almost all travel to be done by water transport, such as riverboats.

Table III.1: The primary fishing areas of Upper Nile State are along the Nile and Sobat rivers.

<table>
<thead>
<tr>
<th>River</th>
<th>Community</th>
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<tr>
<td>Nile</td>
<td>Jelhak (Renk), Kaka Thorwang (Manyo); Khor thak (Melut), Ditwak, (Zurzur), Lul (Kodok); Papwojo (Panyikang).</td>
</tr>
<tr>
<td>Sobat</td>
<td>Nasir, Jikmir (Nasir); Ulang (Ulang); Adong (Baliet)</td>
</tr>
<tr>
<td>Seasonal rivers</td>
<td>Maban, Maiwut and Lungochuk</td>
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</table>

There are seven communities in the Upper Nile State that were important fishing camps in the past. Years of internal violent conflict left the camps neglected and they are presently in disrepair. The state Ministry of Animal Resources and Fisheries (SMARF) is currently exploring the possibility of
rehabilitating the fishing camps at these communities. The communities are located on the Sobat and Nile rivers.

a. Nile River: Kaka (Fashoda County), Renk (Renk County), Melut (Fashoda County) and Tonga (Fashoda County)
b. Sobat River: Baliet (Baliet County), Ulang (Ulang County) and Nasir (Nasir County).

Market facilities exist in Malakal, but sanitary conditions are poor. A market facility was also built with USAID funding in Nasir in 2012. Four species are particular economic importance in Upper Nile State: Tilapia, Nile Perch, Gymnarchus niloticus and Heterotus niloticus. In addition to the consumption of fresh fish, fish is usually preserved and consumed in one of two manners: sun-dried (with or without salt) and wet-salted. Despite an abundance of fish, fishing communities are generally characterized by a low socio-economic level and limited harvest capacity. The high amount of fish preservation reflects the lack of ability to keep fish fresh over longer periods of time. Already, post-harvest loss in South Sudan is estimated between 30 and 40 percent, due to inappropriate handling and storage.\(^{16}\)

**Food security Context of Upper Nile State**

According to the *South Sudan Needs and Livelihoods Assessment 2009/10*\(^ {17}\) report, 19 percent of households in Upper Nile State were severely food insecure, while an additional 34 percent were moderately food insecure with risk of becoming severely food insecure.\(^ {18}\) The number of those deemed severely food insecure drops to nine percent in areas close to the Nile and Sobat rivers, with the increased opportunity for fishing, and facilitated travel and trade along the water routes. Flooding in the Eastern Flood Plains continues to threaten crop production, while cattle raiding and inter-tribal conflict also contribute to displacement and the disruption of agricultural practices.


\(^{17}\) *The South Sudan Needs and Livelihoods Assessment 2009/10* provides a useful background on food security in the Upper Nile State (UNS). The conceptual framework used in the report to determine food security is based on the World Food Program (WFP) methodology using a combination of three factors: (1) Food Consumption; (2) Food Access; and (3) Coping Strategies. Food consumption is based on frequency of meals, dietary diversity and nutrition. Based on a score, households are then put into categories of poor, borderline or acceptable consumption. Food Access is the ability of a household to obtain food through either own production, purchase/barter or food aid. As many households depend on markets to purchase/barter for food, household income spent on food is a good indicator of Food Access. Income-generating activities – diversity and number – also help to ascertain income and therefore Food Access. For Coping Strategies, a Coping Strategy Index was established based on a subject weighting developed during group discussions. This allows groups to be put into categories of high, medium and low coping. The three factors combine to provide a single Food Security indicator. This allows communities and regions to be assessed as Severely food Insecure, moderately Food Secure or Food Secure. The below percentages are based on such calculations. For more information see *South Sudan Needs and Livelihoods Assessment 2008/09: Upper Nile State*. 2009.

Sorghum is the most important food staple in the Nile and Sobat river zones, while Maize is more important in the Eastern Flood zone from a food security standpoint. Fast growing vegetables are also grown close to households to supplement other crops.

The Nile and Sobat river zones are differentiated from other zones due to the prominence of fishing and its contribution towards livelihoods. The counties of Nasir, Ulang, Baliit, Malakal, Panyikang, Fashouda, Renk and Manyo line the Nile and Sobat rivers. Communities in these counties have access to abundant water sources, making fishing, aquaculture and agriculture attractive. Abundant vegetation also attracts livestock herders. However, the clay and black cotton soils along the banks of the rivers turns to mud in the rainy season, severely hindering overland movement.

Table III.2: Share of household income sources in Upper Nile State

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
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<tbody>
<tr>
<td><strong>Highly Reliable</strong></td>
<td></td>
</tr>
<tr>
<td>Sale of Cereal</td>
<td>31</td>
</tr>
<tr>
<td>Sale of Livestock</td>
<td>3</td>
</tr>
<tr>
<td>Sale of Animal Products</td>
<td>7</td>
</tr>
<tr>
<td>Skilled Labour</td>
<td>10</td>
</tr>
<tr>
<td>Salaried Work</td>
<td>22</td>
</tr>
<tr>
<td>Petty/small trade business</td>
<td>3</td>
</tr>
<tr>
<td><strong>Medium Reliability</strong></td>
<td></td>
</tr>
<tr>
<td>Sale of Other Crops</td>
<td>2</td>
</tr>
<tr>
<td>Sale of Alcoholic Beverages</td>
<td>3</td>
</tr>
<tr>
<td>Casual Labour (Agriculture)</td>
<td>6</td>
</tr>
<tr>
<td>Sale of Fish</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Low Reliability</strong></td>
<td></td>
</tr>
<tr>
<td>Casual Labour (Construction)</td>
<td>1</td>
</tr>
<tr>
<td>Other non-agri casual labour</td>
<td>2</td>
</tr>
<tr>
<td>Sale of Firewood</td>
<td>5</td>
</tr>
<tr>
<td>Sale of Charcoal</td>
<td>1</td>
</tr>
<tr>
<td>Sale of Grass</td>
<td>3</td>
</tr>
<tr>
<td>Kinship/gifts from others</td>
<td>0</td>
</tr>
<tr>
<td>Begging</td>
<td>0</td>
</tr>
<tr>
<td>Sale of Food Aid</td>
<td>1</td>
</tr>
<tr>
<td>Borrowing</td>
<td>0</td>
</tr>
</tbody>
</table>


Household income is gained primarily through the sale of surplus crops. Natural resources such as charcoal, firewood and fish are also sold. Casual labour adds to household income, particularly in urban areas. Expenditures on food also provide an indication of food security. The *South Sudan*
\textit{Needs and Livelihoods Assessment 2009/10} found that roughly 40 percent of households in Upper Nile State spend more than 65 percent of their income on food. An additional 27 percent spent between 50 and 65 percent on food items.\textsuperscript{19} Such expenditures suggest that households are forced to choose between food or non-food needs, or a reduction of one of both groups below required levels.

As a consequence of food insecurity in the Upper Nile State, many households employ coping strategies. These include reducing the size and number of meals; selling household assets; moving to urban areas and increasing the consumption of fish.

\textit{Security Situation in Upper Nile State}

Upper Nile State witnessed a disproportionate amount of fighting during the civil conflict, owing to the number of militias present in the state. Inter- and intra-tribal violent conflict and civilian clashes with security forces continue to affect the state periodically.\textsuperscript{20}

Violent conflict has a considerable effect on livelihoods in Upper Nile State through multiple factors: crops and other assets may be lost; travel is impeded; people cannot access market and social services and commercial goods are limited in their movement. It is noted in the \textit{South Sudan Annual Needs and Livelihoods Analysis Report 2011} that there is a strong correlation between seasonality and conflict. Violent conflict is most prevalent during the dry (or lean) season when competition to resources such as grazing land and water is highest.\textsuperscript{21}

The alternative means of livelihood provided through a strong fishery sector has the potential to positively impact the security situation in Upper Nile State. Youth that are engaged in income generating activities are less likely to become involved in cattle raiding and other violent activities. Moreover, the greatest fishing effort takes place in the dry season, precisely when incidents of violence increase.

\textit{Energy Production}

Limited energy infrastructure is a factor that continues to hamper the economic development of South Sudan, including Upper Nile State. Roughly 5 percent of the population has access to the power grid, including 20 percent of urban populations and 1 percent of rural populations. Diesel-fueled generators produce South Sudan electricity. These are costly and already overloaded,

\textsuperscript{20} For more info see: South Sudan Needs and Livelihoods Analysis 2011. p. 30.
resulting in frequent power outages. Constant maintenance, spare parts and fuel keeps the cost of operating these generators high. There are five generators operating in Juba producing 5 MW; one generator in Malakal and another in Wau each produce 2 MW.

Map III.2: Agro Climatic zones in South Sudan

Source: USAID. Expanding Agriculture and Food Security activities in Southern Sudan, 2009.

IV. Approach to Food Security

Food security can be divided into four aspects, each of which is addressed by the project:

Production

Increasing food production is an important aspect of food security and the project. Under Intermediate Outcome 1, the project will implement activities aimed at increasing the harvest of fish in the Sobat and Nile river areas. This will be complemented through interventions aimed at decreasing PHL. Combined, these two intervention areas will increase the overall amount of fish available for consumption. There will be multiple beneficiaries from the food security standpoint: (1)
fishing communities will benefit from an increased amount of fish, even during the rainy season; and (2) the general population will benefit from an increased amount of fish sold in market places, putting downward pressure on prices. Fish is often a cheaper source of protein that more tradition meat sources, making it more accessible to a larger segment of the population.

**Access**

Improving access to food is another important aspect of food security that the project is addressing. In terms of physical access, the project is improving market chain efficiency with training and materials inputs, ensuring that more of the general population has the access to food in market places in Malakal, as well as other communities along the Sobat and Nile corridors.

In terms of financial access, the project is also helping ensure access to food through the development of sustainable livelihoods. A strong and well-managed fishery sector in the Upper Nile State has the potential to create jobs for people along the entire fishery chain: from fishers, to processors and transporters, as well as distribution and market retailers in larger urban centers. A strong fishery sector in Upper Niles State will contribute to the economy of the entire state, allowing more people the financial ability to access fish products.

**Stability**

The fishery sector is more stable than other food production sectors by its nature. Fishing is not as susceptible to climatic shocks and civil conflict as other food production sectors. The potential to supply the market with a stable supply of fish throughout the year is high. However, the project will thoroughly explore increasing fish production during the rainy season. It must be understood why fishing drops during this period. Multiple reasons may exists for the decrease in production, such as increased water levels diffusing the amount of fish in specific locations; or the attention of part-time fishers focused on other food production activities such as crop production and animal herding.

**Nutrition/Usage**

Fish is an especially important contributor to food security because of its high nutritional content. Fish is high in protein, low in saturated fat and is a good source omega-3 fats, vitamin D and selenium. Fish is also important in the diets of infants, young children and pregnant women. Making sure that fish is consumed properly is also important. This can be accomplished through basic information seminars and cooking demonstrations.
V. Links to Government of South Sudan Priorities

The project outline falls within the confines of the United Nations Development Assistance Framework (UNDAF) for 2012-2013, signed by the UNIDO Representative. UNDAF Outcome 2: *Chronic food insecurity is reduced and household incomes increase* is of particular relevance to the proposed project. Paragraph 26 states, “In support of Government efforts to reduce food insecurity, the UNCT will support initiatives that increase cereal crop production and improve livelihoods of small-holder farmers, vulnerable groups including women and returnees. In addition, the UNCT will help to improve animal disease control, increase fish production and strengthen extension services.”

The proposed project is also aligned closely to the mission of the Government of the Republic of South Sudan (GRSS) Ministry of Animal Resources and Fisheries (MARF) which is “to increase and sustain fisheries production and utilization through management of capture fisheries, while promoting aquaculture and reducing post-harvest losses, thus ensuring food security, generation of income, creation of employment, whilst maintaining conservation of the fisheries resources for sustainable development.”

23 Strategic objectives of the MARF’s Department of Fisheries and Aquaculture Development (DoFAD) for the 2012-2016 period are:

1) Ensure maximum sustainable fish production to meet local demand
2) Develop local entrepreneurs capacity (in SME) to access markets
3) Support procurement of fishing gear and equipment to enhance production
4) Establishment of demonstration fish ponds in four states
5) Strengthening of institutional capacity of the directorate for effective services delivery
6) Strengthening collaboration with all stakeholders at information sharing forum

VI. Project Context

*Fishery Sector Legislation*

A draft Fisheries Bill was prepared in 2006 and was recently re-edited as a draft Fisheries Bill for 2012 by the GRSS Ministry of Animal Resources and Fisheries (MARF) and its Department of Fisheries.

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22 UNDAF 2012-2013 for the Republic of South Sudan, p. 9.
and Aquaculture Development (DoFAD). The *Policy Framework and Strategic Plans 2012-2016* has been submitted to the national legislature, but has yet to be ratified.

The bill is comprehensive, but promotes a very top-down style of fishery management. Policy is drafted at the national level, but implementation is mainly left to the states. Although the transitional constitution requires the DoFAD to manage the fisheries resources of the country in a participatory and sustainable manner, the draft fisheries bill does not address co-management, does not adopt an eco-system approach for the fishery and says little about post-harvest loss reduction.

**VII. Counterparts**

*GRSS Ministry of Animal Resources and Fisheries*

The GRSS Ministry of Animal Resources and Fisheries (MARF) has a mandate to formulate legislation, regulations, policies and standards for the development of the animal and fisheries resources of South Sudan, in addition to a list of other functions and duties.\(^{24}\) According to the GRSS, “the role of the Ministry of Animal Resources and Fisheries in the Republic of South Sudan is to guide, regulate, promote, facilitate and document sustainable increases in production and productivity in the livestock and fisheries sectors through the provision of services to livestock producers and fisher-folk, encouraging increased commercialization of livestock and fisheries enterprises, promoting improved quality and value addition to livestock and fisheries products, facilitating access to credit and local and international markets, with the aim of harnessing the vast wealth of livestock and fisheries resources in the Republic of South Sudan to support improved food security, poverty alleviation and socio-economic development of the people of South Sudan.”\(^{25}\)

The MARF is also candid about its limitations, stating in the *Policy Framework and Strategic Plans 2012-2016*, “that although the Ministry has a foundation, it lags far from the requisite infrastructural, organisational, operational and professional standard to adequately fulfill its obligations and mandate.”\(^{26}\)

\(^{24}\) These can be found at [http://www.goss-online.org/magnoliaPublic/en/ministries/Animal-Resources-and-Fisheries.html](http://www.goss-online.org/magnoliaPublic/en/ministries/Animal-Resources-and-Fisheries.html)


\(^{26}\) Ministry of Animal Resources and Fisheries, GRSS. The Policy Framework and Strategic Plans 2012-2016, p. ii.
**Directorate of Fisheries and Aquaculture Development**

The MARF is divided into nine Directorates including the Directorate of Fisheries and Aquaculture Development (DoFAD). The DoFAD is further sub-divided into the Department of Capture Fisheries and the Department of Aquaculture. The Department of Capture Fisheries has 14 professional staff, although five posts remain vacant. According to the MARF, “the Directorate of Fisheries and Aquaculture Development (DoFAD), is responsible for the overall coordination, provision of policy and regulatory framework aimed at creating a conducive environment for fisheries sector growth and investment in the country. In carrying out this mandate, the DoFAD has strong and direct linkages with the State Governments to ensure that the available fisheries resources are managed and developed in a harmonized manner. Implementation of activities is carried out at the state level with technical support from donors and national government staff.”

The functions and responsibilities of the DoFAD are as follows:

1) Management and conservation of fishery resources.
2) Promotion of aquaculture development.
3) Promotion of fish quality control and preservation techniques.
4) Enhancing good fish marketing.
5) Development and enforcement of fisheries laws and regulation.
6) Development of research, training and extension services.
7) Strengthening the institutional framework.
8) Conducting surveys on fisheries stocks and potential and sharing data on production.
9) Supporting the States in institutional and human resources development (trainings, and provision of fishing gear and equipment).
10) Formation of strong linkages with States governments to ensure effective management of fisheries resources.

**Department of Gender Analysis and Mainstreaming**

Within the MARF, the Department of Gender Analysis and Mainstreaming is under the Directorate of Planning, Statistics and Documentation. The objectives of the Department of Gender Analysis and Mainstreaming are to collect, analyze and disseminate credible gender-disaggregated information needed for rational planning and timely decision-making within the Ministry and by other stakeholders; to provide a focal point within the Ministry for ensuring gender consideration in project design and implementation; to promote development in the livestock and fisheries sectors.

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targeted towards women and to ensure mainstreaming of gender in all of the Departments and Directorates of MARF.\textsuperscript{28}

\textit{Upper Nile State Ministry of Animal Resources and Fisheries}

The Upper Nile State Ministry of Animal Resources and Fisheries (SMARF) has a mandate to implement fishery policy developed at the national level. The Ministry is divided into five directorates: Animal Production; Animal Health; Fisheries; Research and Training; and Finance and Administration. The Directorate of Fisheries (DoF) has a mandate to undertake the following:

- fisheries-related extension work, such as production and post-harvest issues;
- collection of fishery data and statistics;
- provision of fishing licenses and permits for transporting fish within the state; and
- inspection of fish

The DoF also has two experimental aquaculture ponds: one in Malakal and the other in Longuchok. The DoF has 24 extension staff located in the counties and another 12 in Malakal. In 2011 and 2012 the DoF provided training courses to fishers in three communities on processing and conservation, with the support of Care International.

\textit{Upper Nile State Ministry of Social Development, Religion and Gender}

The Upper Nile State Ministry of Social Development, Religion and Gender is responsible for gender promotion in the state. The Directorate of Gender undertakes the following activities:

- coordinates activities with NGOs
- creates awareness for issues such as domestic violence and rape
- provides information on women’s health

The state ministry is linked to the national ministry through the development of a national-wide policy for gender development. At present, however, each state in South Sudan has its own gender policy. The current policy in Upper Nile State focuses on income generation capacity building and the establishment of community development centers. There are 35 people employed in the Directorate of Gender.

The proposed project will seek to build the capacity of these institutions.

\textsuperscript{28} Ministry of Animal Resources and Fisheries, GRSS. The Policy Framework and Strategic Plans 2012-2016, p.15.
VIII. Development partners

**UNIDO Projects**

UNIDO is currently implementing projects in South Sudan and Upper Nile State. The proposed project will build on the experiences and knowledge gained by the current projects, especially with regard to training of youth and counterpart staff, identification of beneficiaries, logistics and procurement issues. There are also clear advantages to sharing resources (such as office space and staff) in South Sudan and Upper Nile State.

A) UNIDO is implementing a CIDA-funded project in collaboration with the FAO. The project (TFSUD11003) titled **Sustainable Food Security through Community-based Livelihood Development and Water Harvesting** began in August 2011 and runs to August 2014. The purpose of the project is to improve agriculture productivity, increase household employment opportunities and productive skills, and to ensure equitable access to water resources for pastoralist and agriculturalist communities in Jonglei and Upper Nile States.

B) The UNIDO project (TFSUD12001) **Integration and Progress through protection and Empowerment of Displaced Groups in South Sudan** is also currently operational in South Sudan. The project began on 1 April 2012 and runs to 31 March 2013. The purpose of the project is to promote economic integration and peace-building in selected communities by increasing employment opportunities and incomes through skills development, a rise in productive capacities and the set up of viable micro- and small-industries.

**Other Development Projects**

With regard to other development projects, there are already some areas of cooperation that can be developed. The most important issue is to not duplicate activities already being undertaken by the other projects. The details of collaboration will be elaborated during an inception period. Below are other development projects that are currently collaborating with the Ministry of Animal Resources and Fisheries (MARF).

A) **ACP Fish II**

Under the EU-funded Africa, Caribbean and Pacific (ACP) Fish II Programme, the overall objective of the intervention in South Sudan is to contribute to the sustainable and equitable management of the
The fishery sector and to provide technical assistance to the Directorate General of Fisheries and Aquaculture Development (DoFAD) in Juba in preparing a Fisheries Policy to guide future development and decision-making in the sector. Another aspect has examined fish product marketing opportunities in South Sudan.

B) Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
A GIZ project titled Fisheries Production and Marketing Project, under the EU-funded Sudan Productive Capacity Recovery Programme (SPCRP) is concluding in November 2012. It addressed local marketing of fish and developed some infrastructure and landing sites in important fish producing areas in the Sudd swamps region.

C) World Food Programme (WFP)
The WFP is implementing agricultural projects focusing on alleviating food insecurity. According to the WFP, the Purchase for Progress (P4P) initiative is helping 4,000 smallholder farmers improve the quality and quantity of their agricultural produce and helping them access markets by training them on post-harvest handling of grains and warehouse management. The WFP is also contributing towards maintenance and up-grading of feeder roads needed to connect remote, agriculturally productive areas to main roads and markets.

IX. Beneficiaries

a) Artisanal fishing communities
A focus on direct training and introducing fishing technologies for artisanal fishers and their communities will help ensure that fishers can increase incomes, create more jobs and assure a greater degree of food security. Fishing is not always done full-time, especially in agro-pastoral communities. Therefore, a focus not only on full-time fishers, but on the river-side communities that depend on the fishery resource, is the best approach to ensure that more community members can benefit from the resource.

b) Women in fishing communities and throughout the entire marketing chain
Women play a key role in agricultural activities throughout Africa. This is especially true in Upper Nile State, where 46 percent of households are headed by a woman. The success of agricultural initiatives is often dependent on their participation and motivation. As such, a particular focus on women in the artisanal fishery marketing chain, including skills training, micro-enterprise development and technologies introduction will be undertaken to ensure the most effective possible interventions and help ensure that women share in the benefits of the fishery economy.

c) General population receiving a greater supply of fish products at lower prices

According to the Food and Agricultural Organization (FAO), “[in South Sudan] fish and fish preparations contribute to the food security of a wide sector of the rural and urban communities.” The general population of the Upper Nile State will benefit from increased production of fish products. An increased supply of fish products, especially during the rainy season, will help drive down fish prices, making fish more widely available for all. Ensuring a reliable supply protein is all the more important given the high number of returnees to the state and the refugee challenge that affects the Upper Nile State, particularly the counties bordering Sudan.

d) Government of Southern Sudan and Upper Nile State

Effective management of the fishery resources requires government institutions have adequate human resources and technical capacity. The proposed project is closely aligned with the objectives set out in the MARF Policy Framework and Strategic Plans 2012-2016. The project will work mainly with the Upper Nile State Ministry of Animal Resources and Fisheries (SMARF) and its Department of Fisheries (DoF), the main body tasked with implementing fishery policy. The project will work to build the capacity of DoF extension staff, to provide the support required by fishing communities. The fish stock assessment proposed under the project will be undertaken in close cooperation with the DoF and is an important exercise of capacity building and developing a database of fishery sector information to help inform future interventions. The project will also work with the Upper Nile State Ministry of Social Development and Gender to build their capacity to provide extension services specific to women in rural communities.

X. Fishery Value Chain Description

29 South Sudan Annual Needs and Livelihoods Analysis Report 2011. p. 58. The report states that 46 percent of households surveyed were headed by a female. The survey visited 199 households in Upper Nile State.
The following section outlines the fishery chain for the Upper Nile State and Juba. The mapping gives a picture of the sequence of activities, actors and relationships involved fishery market chain.

**Inputs and Supplies**

Fishing inputs used by fisher throughout South Sudan and the Upper Nile State are very basic. The main fishing inputs used are gill nets and cast nets. There is no input enforcement to regulate fish harvests. Due to a lack of quality fishing inputs, fishers resort to whatever means are at their disposal to harvest fish. In some instances, bed sheets and mosquito nets are reportedly used to harvest juvenile fish.

In Upper Nile State, most fishing gear was previously sourced from Khartoum, but that trade diminished significantly with the closure of the border. At present, fishing gear comes from Uganda and Nairobi via Juba.

Fishers repair their net after depositing their harvest

There are two types of boats used for fishing: (1) the palm boat is a dugout canoe. It measures about 4-5 meters; and (2) timber boats are slightly larger, but are more difficult and expensive to construct. Outboard engines are used very little by artisanal fishers. Boats are powered almost exclusively by paddling. The very basic technologies used by fishers and limited resources required to go fishing allows fishers to finance their own trips. As a result, they are not obliged to sell their harvest to any trader/fish collector in particular.
Constraints

- Limited access to appropriate fishing gear
- Small fishing boats (not good for traveling distances)
- No monitoring of fishing inputs

Production Capacity and Technologies

Fishers in Upper Nile State do not use ice to chill fish, although fiberglass ice boxes donated by organizations in the past are sometimes used to transport fish. Fish is landed fresh every morning and sometimes in the afternoon. Due in part to the lack of ice, fishing trips are only overnight or one day. The absence of ice combined with an absence of motorized fishing vessels also forces fishers to stay very close to home. This has two negative consequences: (1) fishers are unable to transport their harvest fresh to larger markets where they may receive a better price; and (2) higher instances of localized over-fishing in areas close to fishing villages and camps, whereas water bodies located further than a few hours distance from a settlement may be greatly under-fished.

High post-harvest loss (PHL) is a major factor in the South Sudan fishery sector. PHL is estimated between 30 and 40 percent, due to inappropriate handling and storage throughout the marketing chain.30

In small fishing settlements along the Nile and Sobat rivers, local populations cannot absorb the amount of fish harvested. As a result, fish is preserved mainly through solar drying – and smoking in the southern states – before it can be transported to larger urban centres. Most fishing camps only function during the dry season, when pastoral-agriculturists return from their fields and herds to harvest fish.

Constraints

- Limited ability to harvest areas located more than a few hours from fishing camp or community
- Unable to transport fresh fish long distances
- Absence of fish preservation equipment and practices
- High post-harvest losses (PHL)

Malakal

In Malakal there are 28 fulltime fishing boats operating, with an additional 20 boats partaking in other activities such as ferrying goods and people across the Nile River. There are three landing sites around Malakal. There are 8 boats in the north; 14 in the south; and 6 at the central landing site. Some engines are used in fishing efforts around Malakal. According to DoF records, there are 15 boats with engines registered in Malakal. Fishing activities around Malakal are done only during the day.

Fishers harvest only very small amounts per trip. This is partly due to their inability to travel long distances and spend significant amounts of time on the river. As a result, fishers come to the landing site with anywhere between 15-100 kg.

The boats are brought to the river bank from where the harvest is unloaded on to the river bank. Fish is not kept on ice in the boat, and most often not even in any type of box or bag. Instead, the fish is simply placed in the bottom of the boat. At the landing spot at the river bank, the fish is unloaded by the fishers themselves and placed directly on the shore at the river bank. River water is used to clean any mud or slime that is on the fish. In some instances, the fish is placed on a wet burlap sack on the ground. Otherwise, the fish is placed directly in the ground.

Consumers and retail ladies come directly to the landing spot to inspect and purchase fish for consumption and retail sale in the market. Four species have particular economic importance in Upper Nile State: Tilapia, Nile Perch, Gymnarchus niloticus and Heterotus niloticus. There is not a variation on prices for the different species. Each is approximately 10 SSP/kg at the landing sites.

Despite ice not being currently use by fishers, is it available in Malakal. However, the water is sourced from the Nile River and the possibility of contamination is high. A 15 kg ice block costs 10 SSP.

Constraints
- No fish landing infrastructure
- Limited post-harvest fishing handling techniques
- Poor sanitary conditions at landing site and market site
- Absence of Standard Sanitary Operating Procedures (SSOP) and Good Hygienic Practices (GHP)
**Fishing Group Formation**

Cooperatives were introduced to Sudan roughly 30 years ago in accordance with national policy. However, cooperatives offered no clear benefit to members and ultimately failed to become firmly established. As a result, although they remain cooperatives in name, active and paying membership is reportedly low in Upper Nile State.

Fishing groups do exist however. But, the establishment of formal fishing groups – such as cooperatives or fishing societies – tend to be opportunistic in nature, grouping together simply to receive goods and support from the government or a project. There is very little knowledge on the benefits of self-help groups and few positive examples; as a result, there is very little intrinsic desire for such groups. Various small-scale fishery-related interventions have provided fishing communities with fishing inputs such as nets, boats and ice boxes.

There is a union of fisherfolk located at Malakal. It comprises of fishers from the three local landing sites. The union is mandated to advocate on behalf of fisherfolk interests in Malakal and sell member’s fish harvest in the local market. However, fisherfolk were not convinced of the effectiveness of the cooperative at advocating on their behalf with local and state authorities and voiced their mistrust of the organization to buy member’s fish and sell at the market.

**Constraints**

- Negative experiences for past cooperative formation
- Limited trust among members of current cooperatives
- Limited apparent intrinsic desire to form self-help groups

**Processing**

The lack of transport options in Upper Nile State places on large dependence on preserved/processed fish products. Fish drying is the main form of processing done in the Upper Nile State. With local communities not able to absorb large quantities of fresh fish and limited options for quickly transporting fresh fish to larger market locations, large quantities are preserved through solar drying. The drying process begins as soon as fish is landed. The fish is gutted and cut into thin strips that are braided together. The braids are anywhere from 70 cms to 150 cms. The braids can sometimes combine up to 5 or 6 fish. The braids are sundried for three to five days, although more
in the wet season. The fish drying and braiding is usually done by women in local fishing communities. After the fish is sufficiently dry, the processors sell their braids to traders who transport the fish usually by river barge to larger markets, such as Malakal.

Appropriate storage of processed fish is also lacking. Fishing villages do not have proper storage containers that protect the processed fish from insects and dirt/dust contamination.

One serious constraint noted with dried fish was the infestation of the *Dermestes sp* beetle. The beetle and its larvae attack the dry fish flesh, hollowing-out the flesh, reducing the nutritional value of the product and leaving holes. In addition to damaging the meat, local consumers claim that the dried fish attacked by the beetle has an unfavourable bitter taste.

**Constraints**

- *Dermestes sp* beetle infestation
- Insufficient storage capacity and facilities
- Unhygienic drying practices

**Traders/Fish collectors**

After fish is braided and dried, it is often collected from the various fishing camps by fish collectors or traders. These individuals collect gather large quantities for sale to wholesale markets in larger market centers.

**Constraints**

- Most fishers and fishing communities do not own a means of long distance transport, leaving them dependent on fish collectors

**Transport**

Limited transport capacity is a central challenge facing the fishery sector in South Sudan, including Upper Nile State. The vast majority of fishers do not own motorized transport capable of bringing their harvest – fresh or preserved – to larger market centres. Fish is transported longer distances using river barges, river boats, motorbikes and trucks. During the rainy season, land access to most fishing communities is not possible, putting a high reliance on the use of river boats to transport fish.
In Upper Nile State, this task is undertaken by a small number of boat owners who own and operate motorized river boats. The boats are long and narrow, measuring about 1.5 meters in width and up to 10 meters long. Engines used are the *Yamaha Enduro* model – common throughout Sudan –, with power ranging from 15 to 75 horsepower (hp). These transport boats are not limited to transporting fish products. Throughout the year they are used to transport all manner of goods up and down the Nile and Sobat rivers.

Some fishing communities own boats and use these boats to transport dried fish to larger centres, such as Malakal. Another option that is sometimes used is renting a transport boat from a boat owner in Malakal. Fishers and government officials cited a lack of spare parts for engines as another constraint hindering the increased use if engines in Upper Nile State.

### Constraints
- Limited transport options, especially during the rainy season
- Limited use of motorized transport by fishers and fishing communities
- Lack of spare parts available in Upper Nile State
- Insufficient number of boats to ensure rapid transfer of products to market

### End-markets
#### Upper Nile State

There are only two physical market locations – in Malakal and Nasir – constructed specifically for fish sales in Upper Nile State. Fresh and dried fish is sold at the market in Malakal. Hygienic conditions of the market site are poor. Otherwise, fish is sold mainly at the shore where it is landed. The fish are placed on the ground where they are inspected by buyers.
Fresh fish is landed in Malakal and placed on the shore

Hygiene

Higienic measures at the wholesale and retail markets in South Sudan are limited. Fresh fish is displayed on tables with no ice and are exposed to heat, insects and dust. Dried fish braids are often lying on the ground and are also exposed to dust and insects.

Market Demand in Malakal

The absorption capacity of markets for increased production is not known. There have been no comprehensive market studies that have examined fish marketing in South Sudan. What is clear, particularly in the Upper Nile State, is that there is little demand for value added and high quality fish products. The market in Malakal is very under-developed, as the purchasing power of the local population is extremely low. As a result, people purchase what is cheapest and do not often value quality over price. Moreover, the trade that existed formerly between Upper Nile State and Khartoum – estimated at 10,000 tonnes per year – is considerably reduced since the closure of the border, further limiting the market option in Upper Nile State and cutting off the only relatively developed market. This leaves very little room for value addition and other activities that add to the price of fish for the consumer.

Constraints

- No landing site infrastructure
- Limited market site infrastructure for fish sales
- Absence of SSOP and GHP at landing sites and markets
- Limited demand for high quality fish products

Finance

Access to finance is an important aspect of ensuring a healthy fishery sector and generating incomes for fishing communities. In the fishery sector, financing is a combination of both long-term (for items such as boats) and short-term (for a fishing trip). Currently, fishing practices require very basic inputs that fishermen already own. Moreover, fishers only go out for a day (or night) at a time, reducing their need for a large amount of expendable inputs; as a result, they are not reliant on others to finance fishing trips. Moreover, the main bottleneck for small-scale fishers on the Nile and Sobat rivers is the storage and rapid transportation of their harvest. These needs entail more long-term financing. In general, women have more difficult accessing financial services than men (see section XI for more details on gender specific issues).
Although some rural communities have community development organizations, it is not known if these organizations provide such services as loans to community members.

**Constraints**

- Insufficient access to financial services to purchase capital goods for fishery development
- Women have higher difficulty accessing loans from formal financial institutions

*Juba Fish Market Chain*

There is little evidence of direct links between fish harvested in the Upper Nile State and fish sold in markets places around Juba. This, however, does not mean that Upper Nile fish is not sold in Juba. Even if Upper Nile State fish is currently not sold in Juba, it remains a large and ever expanding market and is an option that the project must examine. A survey of several market places in Juba and discussion with government officials and fisher experts provides the below description of the fish marketing system in Juba.

*Fresh Fish Markets in Juba*

There are several fish markets in Juba. The main fresh fish market in Juba is located near the Konyo Konyo market place. The fish market sells approximately 300 kg of fish per day. Old freezer units are used to hold the fish, usually on crushed ice. The main species sold is Tilapia. Fish come mainly from two sources:

1) Uganda: Most of the Tilapia is brought from Uganda once per week. The fish are transported already gutted and on crushed in refrigerated trucks.

2) Bor: a smaller amount of fish from Bor (and area) is brought to Juba on river barges. The barges carry between two and three tonnes and travel between Bor and Juba on average twice per month.

Fishmongers near the Konyo Konyo market in Juba are from Uganda and have links to the fish traders importing the fish. The Ugandans use mobile phones to transfer information about fish supply and prices, in addition to using the phones to transfer funds, a growing practice in the fishery sector that has yet to take hold in South Sudan.
The market site stays relatively clean because fish are gutted prior to arriving at the market. As a result, only fish scales are left. The main consumers of fish are hotels, restaurants and individuals. Tilapia from Uganda costs 22 SSP/kg. Fish is sold only fresh, there is no other processing done.

Locally harvested fresh fish is available in most market places in Juba, but in small quantities. Each market has a small section dedicated to the sale of fish.

Fresh fish imported from Uganda is de-scaled and chopped before sale to a customer

Fresh fish is brought to Juba from Bor (and area) using motorbikes. Each motorbike can carry between 70-80 kg of fish. Approximately 12-15 motorbikes make the trip from Terekeka to Juba each day, suggesting that approximately 1,200 kg per day is coming into the Juba market direct from Terekeka. The fish are placed in wood boxes with a wet burlap sack on the back of the motorbike. Sometimes, if the fish is large enough, the fish is tied directly on to the back of the bike. No ice is used at any point of the process. This fish is often collected from lakes north of Juba, as they can often consistently supply tilapia, compared to the river fishery that has a more varied harvest. The bikes deliver to retailers in Juba and directly to consumers.
There is at least one commercial company transporting larger amounts of fresh fish to Juba from Bor using a refrigerated truck. The GIZ-SPCRP report (2011) states that a commercial company brings on average 6 tonnes of fresh fish to Juba from Bor each month. The report also states that there are several companies bringing fresh fish to Juba from Jonglei State using river barges. Fish are reportedly kept on ice in fiberglass insulated fish boxes. This chain accounts for 62 percent of the fresh fish in Juba. The report states that total fresh fish supply to Juba is 1,427 tonnes per year.\textsuperscript{32}

\textbf{Dried and smoked fish}

Dried and smoked fish is brought to Juba on river barges from as far downstream as Nyal and Bentiu and as far upstream as Uganda. Fish brought on river barges is off-loaded at a large whole dried/smoked fish market located near the Konyo Konyo market. Small-scale retailers purchase their fish from the wholesale market and transport it to retail shops either by foot, taxi or motorbike.

Smoked fish is also available in most market places in Juba. Its origin is often Terekeka or other stations near to Juba where firewood is available. Smoked Nile Perch is often imported from Uganda and is sold by Ugandans working in the various Juba markets. Smoked fish is sold for roughly 30 SSP per piece, while smaller fish in groups of 3-4 were also sold for 30 SSP.

\footnotesize{\textsuperscript{32} GIZ-SPCRP, Fishery Production and Marketing Project. Economic Assessment for Fresh Fish in Juba/Equatoria State. 2011. p. 14.}
Dried and braided fish is also widely available in retail food markets in Juba. The long braids are usually cut into smaller pieces for consumer purchase, since many consumers cannot afford a whole braid. Dried fish is popular with local consumers because it is easy to transport and small amounts can be used to flavour stews and other local dishes. From the wholesale dried fish market in Juba, the braids are transported throughout the three Equatorial states and even into the Democratic Republic of Congo (DRC) via Yei.

**Constraints**

- Absence of fish landing site infrastructure
- Absence of fish wholesaling infrastructure
- Absence of SSOP and GHP at landing sites and market sites
- Limited use of ice or use of contaminated ice
- Inappropriate storage facilities for fresh and dried fish
- *Dermestes sp* beetle infestation

**XI. Cross-cutting issues**

**Gender**

Social norms in Upper Nile State confine women to mainly reproductive and domestic roles in the community. As a result, despite many women heading households, women do not play a significant leadership role in the economic and political lives of their communities. Coupled with often limited education and advocacy of women’s rights, the capacity of women to contribute to the economy of their respective communities is diminished, but not impossible.

According to the Upper Nile State Ministry for Social Development and Gender, women have difficulty attending community development meetings, citing their heavy workloads. With regard to domestic chores, gathering water from the river was voiced as the most time consuming task. Early marriage is one of the main constraints keeping women from attaining higher education and participating to a greater degree in community affairs. Moreover, in traditional rural communities women are prohibited from owning and inheriting property. The lack of assets, in turn, impacts their ability to receive finance from formal institutions to establish micro-enterprises.

Each county has community-based organizations that examine development issues in each county. The Directorate of Community Development has one staff that provides extension services. In spite of their apparent limited role on community government, the *Annual Needs and Livelihoods Analysis*
Report states that 46 percent of households in Upper Nile State surveyed were headed by a female. Women also play an important role in the food security of the family. It is women who most often attend to small-scale subsistence agriculture near the house or village.

In Central Equatoria State there is evidence of women participating directly in fishing activities. A report by the GIZ-implemented SPCRP states that there are 411 women fishing in the Terekeka area. In Upper Nile State, women do not fish, but are involved in fish processing activities, such as fasiekh and drying. Women purchase fish from fishers in order to braid and dry fish. Other small-scale income generating activities include farming by the river bank and near houses, as well as selling tea/coffee and other petty trading. The collection and processing of gum Arabic is another potential income generating activity that the Ministry of Social Development and Gender noted as particularly promising in several counties in Upper Nile State.

There are at least two women’s development organizations in Malakal. The Women’s Action for Development (WAD) and the Women’s Empowerment for Development (WED) associations provide women with training on human rights, skills for enterprise development and adult education. Both organizations are supported by a Juba-based NGO SKILLS.

Constraints

- Limited leadership roles in rural fishing communities
- Limited opportunity and time for additional income-generating activities
- Predominance of traditional family-centered roles for women
- Lack of access to capital from formal financial institutions

Environment

The main environmental issue pertaining to the fishery sector in Upper Nile State is the health of the fish population. Without a comprehensive stock assessment, it is difficult to assess whether or not over-fishing is occurring. However, anecdotal evidence suggests that there may be localized over-fishing in areas immediate near fishing established fishing camps and communities that depend highly on the fishery resource for food security. Based on the large amount of fishing areas available and the amount of fish being sold in market places, it is safe to conclude that there is under-fishing

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33 South Sudan Annual Needs and Livelihoods Analysis Report 2011. p. 58. The report states that 46 percent of households surveyed were headed by a female. The survey visited 199 households in Upper Nile State.

on the Nile and Sobat rivers (and tributaries) in the Upper Nile State. Moreover, fishing inputs remain very basic, limiting the amount that can be harvested.

**Constraints**

- Absence of reliable fishery sector information, including a stock assessment

**Governance**

Governance of the fishery sector is limited. This is the result of various factors. First, a national fisheries policy has been drafted, but has not yet been ratified by parliament. The policy is very ambitious and it is not clear how the national and state Ministries of Animal Resources and Fisheries (MARF) will be able to implement it effectively. At national and state levels, the MARF has limited human resource capacity to undertake all that is outlined in the policy. The MARF lacks a highly skilled and motivated human resource base and the logistic capability to undertake any input and output monitoring or provide extension services. South Sudan is a new country and as a result statistics on the fishery sector are insufficient. The MARF is also not well placed at the moment to provide leadership on the fishery value chain in Upper Nile State. Second, the SMARF is constrained by the large size of Upper Nile State and the many fish grounds. With limited transport options and the high cost of fuel in the state, it is very difficult for SMARF to access fishing grounds to collect information and provide extension support.

**Constraints**

- Human resource base at the MARF – state and national – has limited skills and motivation
- Lack of information about the fishery sector, including overall stock stats and production stats
- Very limited logistical ability to access disparate fishing grounds, particularly in the rainy season
## XI. Risks

<table>
<thead>
<tr>
<th>Anticipated Risks</th>
<th>Risk Management Approach</th>
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<tbody>
<tr>
<td>Unequal distribution of project benefits may cause increased tension among tribal groups in Upper Nile State, contributing to insecurity.</td>
<td>Build on existing knowledge of Upper Nile State gained by UNIDO project TFSUD11003 to help construct a map of beneficiary groups. All project interventions in the Upper Nile State will be subject to a beneficiary criteria that ensures a fair distribution of project benefits.</td>
</tr>
</tbody>
</table>
| The security situation in the Upper Nile State remains satisfactory for implementing project activities, in Malakal and in the selected counties. | (a) Project management will ensure the latest security information is available and disseminated to all project staff. Field-based staff are equipped with satellite telecommunications equipment.  
(b) Project interventions increasing incomes through fishery production will provide an alternative livelihood for traditionally pastoral tribes, decreasing the desire to resort to violent means for gaining additional wealth, such as cattle raiding.  
(c) Project interventions will not occur in regions of Upper Nile State where the risk of instability and violent conflict is deemed too high. |
| Incomplete information at the community level – traditional, social, cultural practices – can reduce project intervention effectiveness and sustainability. | A strong community presence consisting of staff with local knowledge is crucial for ensuring that all constraints – traditional, social, cultural practices – are identified and addressed with participation from the communities. The placement of Community Development Agents in each target community will help ensure that complete and accurate information is provided to the project management team. |
| Building the capacity of women in fishing communities for economic activity and the increased role of women in the fishery sector may not be welcomed by all community members. | (a) Solid knowledge of the local community traditional and social context is required before project interventions to ensure that traditional and social sensitivities are not ignored.  
(b) Community sensitization concerning the important role women can play in the economic and political life of the community will be undertaken in each target community.  
(c) The project will take a community approach to project interventions. This will help ensure that traditional and social sensitivities are not greatly over-reached, while also allowing for an inclusive dialogue that aims to enhance the role of women in the community. |
| Counterpart staff may have little motivation to participate in a project that requires significant inputs in terms of time and energy. | The project will address limited capacity and motivation in counterpart institutions through working closely with the SMARF and other ministries to develop an effective working relationship and identify motivated and skilled staff to take on increased responsibility with the scope of the project. |
XII. Project Intervention Narrative

This section outlines the project’s proposed interventions, based on a logic model approach. Under the Ultimate Outcome of “increased food security of men and women in targeted regions of the Upper Nile State”, the logic model divides the project into three Intermediate Outcomes, each with two Immediate Outcomes and multiple Outputs.

**Intermediate Outcome 1: Increased sale of quality fish by artisanal men and women fisher folk in the Upper Nile State.**

The project will achieve Intermediate Outcome 1 through two Immediate Outcomes:

**Immediate Outcome 1.1: Increased access to fish receiving centres/collection points/landing sites/markets for artisanal men and women fisher folk in the Upper Nile State.**

*Output 1.1.1: Fish receiving centres/collection points/landing sites/markets are constructed, equipped and operational.*

The Upper Nile State lacks infrastructure for the fishery market chain. Fish is collected along the river from small villages, either fresh or dried, and is brought to Malakal where it is either sold locally or distributed further. In response to this constraint, the project will construct basic fish receiving centers at strategic points along the Nile and Sobat rivers. Fishing camps existed previously and the state Ministry of Animal Resources and Fisheries (SMARF) has already identified various communities as important to the development of the fishery sector in the Upper Nile State. This will be taken into account along with prioritizing the greatest impact possible. Achieving the greatest impact may require that fishing communities located in counties close to Malakal receive priority for project interventions. Geographic proximity will allow for greater hands-on implementation and monitoring and evaluation by the project. Proximity to Malakal also has the benefit of facilitating fish transport and sale in the relatively large market of Malakal.

**Receiving Centres/Collection Points**

Fish receiving centers will be basic concrete and steel structures where fish can be landed, stored and processed when required. This is important to respond to the insufficient storage constraint. The centres will also provide basic equipment for processing and handling fish. Plastic boxes and cool box options will provide a more sanitary and effective method of storing and preserving fresh fish.
The project will establish a receiving centre/collection point in several selected strategic fishing communities.

Processing technologies appropriate to local circumstances will also be provided. Solar drying racks that reduce spoilage and reduce contamination from dirt and insects will be designed and provided to fishing communities.

**Landing Sites**

Malakal requires the appropriate infrastructure for landing fish to respond to the constraints highlighted in the value chain assessment. The current practice of landing fish on the shore is unsanitary and leads to rapid spoilage. A landing site will consist of an enclosed concrete and steel structure where fish can be landed, washed, stored, processed and displayed for (whole) sale in Malakal. This will improve the sanitary conditions in which the fish are kept and will help reduce post-harvest losses through the better storage of fish and facilitate the introduction of SSOP and GHP.

**Markets**

A market place dedicated to the retail sale of fish products will also be established. Fresh fish should be displayed in a manner that ensures minimum spoilage and good quality. The market will also include environmental provisions to ensure the proper disposal of fish waste, to avoid local environmental contamination and odor issues. Furthermore, micro-enterprise options for processing fish waste will be established.

**Output 1.1.2: Stakeholder consultations held to determine community requirements and priorities.**

Extensive stakeholder consultation is critical to ensuring that project interventions achieve the best possible intended outcomes. This approach is important to help best identify key constraints, develop solutions in collaboration with community members, build trust between the project and the communities and ensure a greater degree of local ownership over project interventions.

The project will undertake a stakeholder analysis in order to identify and map the primary/secondary stakeholders, their interests and what (potential) capacity building is required to enable them to better participate in the consultation process. It is important that a wide spectrum of people are included in the consultation process. While the government and community leaders will be relied on
to help identify participants, the project will use its own judgment to assure that marginalized groups are not left out of the process.

The consultation process will also aid the transparency of the project, introducing stakeholders to the outlines of the project and explaining how decisions will be made; what role stakeholders have in decisions; and how issues can be raised to the project by concerned stakeholders. An inclusive and transparent approach to project development has the added benefit of managing the expectations of stakeholders, helping to make sure that there are no excessive expectations and the resulting disappointment when they are not realized.

Stakeholder consultation is also a continuous process. Consultations and monitoring will carry on during implementation to ensure the intended outcomes are reached and to respond appropriately if adjustments are required for under-performing interventions.

The stakeholder consultations will commence with the Inception Mission and will continue with national experts on a regular basis. Consultations will take various forms, including public group discussions, one-on-one discussions with selected community members, workshops (to address single issues, for example) and multiple small focus groups to enable greater participation.

This approach requires a greater amount of time, resources and patience at the beginning of the project, but will help make certain the most effective solutions to the constraints, in addition to the sustainability of interventions.

Output 1.1.3: Technical support provided to selected community leaders to develop management capacity at fish collection infrastructure.

Any partnership between the selected communities and the government that is established with the support of the project will require a considerable level of involvement by community members. Such an approach will help ensure a sense of community ownership of the infrastructure and business; create employment; and build capacity in rural communities for small-business management. However, capacity for small-business management is often very limited in rural communities, hindering effective local participation. In order to ensure effective local participation, the project will provide technical training to selected community member in the selected project sites. A variety of approaches may be employed to best prepare local peoples for a management role in collection centres. These include: study tours to observe working facilities in regional countries with more
advanced, though familiar, artisanal fishery sectors; the recruitment of national and/or international trainers to provide courses to local peoples on management issues ranging from bookkeeping to Standard Sanitary Operating procedures (SSOP); CDAs in each community working closely with selected community members on a daily basis to help build local capacity for daily management of sites; and facilitating exchanges between the communities to share experiences and discuss common challenges to all sites.

Emphasis will be placed on private sector or community ownership and management of each facility, depending on the capacity of communities to effectively manage facilities. The receiving centers will be managed by the community-based fishing groups with the (short-term) help of the CDA. The landing site and market in Malakal would be managed by a Public-Private Partnership (PPP) involving fishing groups, fish traders, retailers and the local and state government. The composition of a PPP will be addressed during an Inception Period.

**Immediate Outcome 1.2: Increased capacity of male and female fisher folk for the sustainable harvest and marketing of quality fish.**

*Output 1.2.1: Community/fishery development associations are established.*

The development of self-help groups in selected target communities is important for the development of the fishing communities and for project implementation. Self-help groups can take any form that the community decides best matches their requirements for development. Such groups may take various forms such as fishing societies, associations, cooperatives or small-business groups.

At present, many fishing communities in South Sudan have fishing cooperatives, but most are not functional. Constraints include previous negative experiences with cooperatives and lack of trust in leadership; this leaves little intrinsic interest in forming groups. The project must first understand the underlying reasons for the current state of organization, work to avoid the same missteps and produce formal groups that work for their members. This vital information will be gained through the comprehensive consultation process (Output 1.1.2).

A lack of intrinsic desire on the part of the beneficiaries for group development is a common challenge familiar to many development projects. Groups are often quickly assembled in an effort to receive material and training from development and aid projects; once the provision of goods and
training ceases, the group disbands. For that reason, the project will take the approach of working with interested community members, through the CDA, to develop a small group of individuals in each community around a common goal or interest. An example could be the pooling of funds to purchase fishing gear or boat rental for fish transport.

Once a small group is established and is functional around a common goal, the project will examine the expansion of the group in terms of members and focus. If groups are able to successfully form around a common objective, demand for membership will increase on its own. Depending on the type of group selected by the members, the groups will be registered with the relevant authority.

Each group will also be provided with material goods to support their income-generation activities and their organizational capacity. The provision of goods and training will be partly dependent on the intrinsic interest as demonstrated by the actions of the group’s members. When possible, the project will requests that groups provide inputs themselves in terms of funds, when available, or in-kind contributions such as labour or materials. Such an approach will help reduce opportunistic group formation and will help foster a greater sense of asset ownership.

Finance to establish and expand business operations – small-scale agriculture and fish harvesting – is required in fishing communities. Formal groups present an ideal entry point for the establishment of revolving finance funds to support the business interest of members. This will be a core aspect of each of the groups.

With guidance from the project, the group could invest in operational equipment (petrol, for example) or in more large-scale equipment (additional ice boxes, for example). In practice, the funds would be under the control of the organization, although the project would provide guidance and shoulder some of the risk. With multiple community groups, the project would have the ability to assess what works best. For instance, the project would be able to establish an air of competition, where less successful groups would emulate the more successful groups. Successful groups would also receive some additional attention from the project, which would encourage other organizations to apply the best management possible. While the project would provide inputs, it is the revolving fund that will make possible the sustainability of fishing operations and development in the long-term. As such, a careful balance of input provision and self-reliance (revolving fund) is required.
In an effort to form links directly with the target communities and make project management decisions based on the best information, the project will recruit Community Development Agents (CDAs). The CDAs will provide a close link between the project beneficiaries and the management team, ensuring that the reality of activities in fishing communities is reflected in project decisions. CDAs will be expected to mobilize and lead the communities toward their development objectives as defined by the communities and the project. CDAs will be selected from the target communities or region and will be placed in each community. The CDA will be provided with 5-7 weeks of training from the project and training courses abroad where other UNIDO CDAs have been operating successfully. Given the importance of the CDA posts, their recruitment will be a rigorous process combining criteria established by the project in conjunction with all stakeholders at the outset of the project.

Output 1.2.2: Community-based fishing associations are provided with improved technologies and relevant training to decrease PHL and increase overall fish production.

As with the previous activity, the provision of fishing materials will be based on the organization and demonstrated desire to work with the community and project toward development goals, as defined by the community and the project. In order to address the constraints highlighted in the value chain assessment, community-based fishing groups will receive fishing inputs and training in conjunction with the SMARF in order to increase production. The project will also procure outboard engines to allow fishers to access under-fished areas that are currently unreachable by traditional means. Through the stock assessment and regular monitoring of project activities, careful attention will be paid to ensure that project interventions do not contribute to over-fishing.

Production-related training courses may be combined with the provision of boats to facilitate transport to larger communities, such as Malakal, more quickly. One of the major constraints identified is the limited ability to get fish from remote areas to market areas while still fresh; this results in greater post-harvest loss (PHL) and an increased level of Dermsetes sp beetle infestation. River boats will allow the communities to play a greater role in the marketing chain and lessen their dependence on fish collectors. The project will also examine options for facilitating the supply of spare parts for outboard engines.

The project will also closely study PHL and what technologies and practices are required to reduce the current number of 30-40 percent PHL. Addressing PHL is crucial as it has a double impact of reducing the fisher’s income and reducing the amount of fish available in the market. This can be
accomplished through: (1) better preservation methods; and (2) time reduction between harvest and delivery to the consumer.

The project will conduct an assessment of current fishing practices (including post-harvest). This will be followed-up by the introduction of new fishing technologies in consultation with fisher folk. The new technologies will be trialed in each community to assess performance before large-scale procurement is undertaken. Harvest technologies would include nets, such as cast nets and float nets – all of which are being currently used; improved versions will be provided. All technologies provided by the project will be subject to approval of the SMARF for compliance with national regulations.

All assets distributed by the project will be done through the fishing groups. The project will establish these groups (Output 1.2.1) and the mechanisms within the groups for the distribution of project assets. For example, small-scale assets such as boats and engines will be provided to the organization. The organization, in turn, decides who gets access to the inputs and on what terms. The project will remain involved in designing such a mechanism, to ensure a fair distribution of project assets. The leadership of the group will manage the assets, with the close collaboration of the CDA. For large-scale assets, the project will include the local and/or state government in a PPP together with the fishing groups. While it is good to have assets in the hands of the private sector, experience in other UNIDO projects has shown that the private sector – in this case fishing communities – sometimes lacks the capacity or long-term vision to maintain large-scale infrastructure.

Output 1.2.3: Technical support provided to associations for best management capacity.

The leadership of each group, as selected by the group itself, will be provided with training courses on group leadership, bookkeeping and small-business development. Such training may be combined, when possible, with training courses and activities on the management of collection centres. It is important that the leadership holds the trust of the members. A good knowledge of the local traditional social system is crucial to ensure strong groups that are representative of all members. CDAs will play an important role in making certain that the appropriate foundations are established for each group.
Output 1.2.4: Fish product marketing options are diversified and strengthened.

Fish marketing channels in the Upper Nile State are underdeveloped. However, a full understanding of fish marketing practices and channels is required before effective and sustainable interventions can be made. There are multiple options for expanding the marketing channels, in terms of the products offered and the end-market locations. A first step to better understanding the marketing situation in the Upper Nile State is a comprehensive market analysis. The project will recruit a fish marketing specialist to undertake an analysis of fish products produced in the Upper Nile State, outlining the current situation and recommending actions for expanding sales in the sector. One of the large constraints already identified is the lack of ability to transport goods. Given the size of the Upper Nile State, with its limited transport infrastructure, moving fish products to market quickly is a challenging undertaking. This also has important consequences for reducing PHL. Any introduction of transport equipment will be addressed under Output 1.2.2.

In the Upper Nile State, fish is consumed either fresh, wet-salted (fashiekh) or sun-dried. Sun-drying fish is the most common method of preservation and holds considerable potential for increased distribution and sale throughout South Sudan and even into bordering countries. Sun-dried fish can be easily stored, transported and provides a good source of protein and flavor to local cooking, making the product a potential important component to addressing food insecurity in the Upper Nile State.

Malakal and Juba area the two market centres where increased demand for fish products holds the greatest potential. At present, there is very little fish – dried or fresh – from the Upper Nile State in the markets in Juba. The project will examine the reasons for this and endeavour to increase the amount of the Upper Nile State fish throughout South Sudan.

The closure of the border between Sudan and South Sudan was a significant setback to the fishery sector in the Upper Nile State. Barges from Kosti (northern Sudan) brought consumer goods to Malakal and returned with large quantities of fish to (northern) Sudan. While some small-scale trade reportedly occurs, it is not on the scale once observed. With the signing and ratification of the Addis Ababa Agreement between the Governments of Sudan and the Republic of South Sudan, there is an increased chance of opening the Nile River border crossing and opening a vast market for the Upper Nile State fish.
Output 1.2.5: Material and technical support are provided for the establishment of aquaculture capacity in selected fishing communities.

The development of Oreochromis niloticus (Nile Tilapia) farming in the Upper Nile State presents an opportunity for greater food security and income generation. The Nile Tilapia is native to the waterways of the Upper Nile State. Tilapia are also good for semi-intensive fish farming, with a low level of husbandry required. Tilapia farming is already being undertaken in other states of South Sudan, the Equatoria states especially.

Technical expertise for the development of Tilapia farms is available in South Sudan. The project will establish at least six community-owned fish farms in the Upper Nile State. The women’s associations are one option for the ownership and management of fish farms. The locations of fish farms require further study as multiple factors must be taken into account: proximity to markets, land usage, soil type and interest of community members. Fish farms have the added benefit of producing high nutrient soil from sediment that can be used at nearby farms to enhance productivity.

Intermediate Outcome 2: Increased fish processing and small-scale business development by women in selected the Upper Nile State fishing communities.

The project will achieve Intermediate Outcome 2 through two Immediate Outcomes:

Immediate Outcome 2.1: Strengthened capacity of women’s business associations to support fish processing and small-scale business development.

Output 2.1.1: Women’s business associations are established or strengthened.

The inclusion of women in the economic and social development of the fishing communities is essential. The project will work with women in fishing communities to establish women’s business associations, through which project interventions may be developed and implemented. Registration of each association with the relevant authority will be facilitated by the project.

A full-time gender consultant will be recruited to work with women in the selected communities. The associations will group women together to achieve objectives defined by the women as important to their economic and social development. As women are involved in fish processing in fishing communities along the Sobat and Nile rivers, the project will link them to the marketing chain.
It is imperative that the associations are financially sustainable, so they can continue to provide services to their members far past the conclusion of the project. Therefore, in addition to a focus on the fishery sector, the project will provide technical assistance for the diversification of skills and knowledge in order for women to better develop a range of micro-enterprises within the associations (cash crop production, for example). Such an approach will help capitalize on different skill sets within the group, diversify income streams and help ensure a greater range of goods and services to the community and beyond.

As access to finance is especially difficult for women in the Upper Nile State, the project will establish a revolving fund within each association to provide small loans to members to start home-based micro-enterprises.

*Output 2.1.2: Technical support provided to associations for best management capacity.*

Once established, leadership positions within the associations will be selected by the association members. As with the fishing groups, it is important that the leadership holds the trust of the members. A good knowledge of the local traditional social system is crucial to ensure strong groups that are representative of all members. The Gender Specialist and the CDAs will play an important role in ensuring that the appropriate foundations are established for each group.

Selected women from the associations will receive basic training on leadership, planning and group management. The Gender Specialist and the CDAs will provide training in conjunction with state counterparts, such as the Ministry of Social Development and Gender.

*Output 2.2: Women are provided with business development training and technical support for fish processing and other small-scale business development.*

Women from the associations will receive training to develop their technical skills in relation to their chosen enterprise and a training course on operating a small-business. The training will be continuous, targeting all women in the associations, until all members wanting training have received a course. Additional experts for specific skills identified as important by the associations will be recruited upon their request and the approval of the project management team.
Immediate Outcome 2.2: Increased capacity of women in fishing communities to participate in SMEs and other development priorities.

*Output 2.2.1: Materials provided to women’s groups in order to initiate small-scale businesses and other development priorities.*

In addition to training, the project will provide materials to kick-start small businesses that the associations have identified as profitable. The provision of materials will be dependent on the business plan of the association members. It is envisaged that members will present business plans to the leadership board or project approval board within the association. The board will decide whether the plan meets a minimum criteria for support. The board would then make a request to the project’s Gender Specialist for materials to establish a selected enterprise.

*Output 2.2.2: Stakeholder consultations held to determine community requirements and priorities.*

This Output will be the same as *Output 1.1.2*, but will have a focus mainly on women in fishing communities and those impacted by the fishery market chain.

*Output 2.2.3: Basic services and materials/small-scale infrastructure provided to women to allow participation in income-generating activities.*

In order to facilitate income generation, the associations will also examine social services demanded by their members. Daycare provision is one example of an activity that will provide women with the additional time required to focus more on income generation. Literacy and numeracy levels for women are very low in rural communities in the Upper Nile State. This is another issue that the associations have the potential to address through the provision of classes funded through the sale of goods and services of the association. In close collaboration with the associations, the project will help establish these services.

Another constraint is the lack of clean water available in villages. This is particularly cumbersome for women who are forced to walk long distances to fetch clean water. In consultation with the communities and the women’s associations, the project will examine the option of drilling wells to lessen the time required to fetch clean water, allowing women more time for economic and social development-related activities.
As part of developing associations, the project will examine the role of women in relation to income expenditure at the household level, particularly the income that is generated through their micro-enterprises. Based on the advice of the gender consultant and the CDAs, the project will propose, where required, measures to enhance the role of women with regard to financial decision-making at the household level. The project will approach this on the community level, sensitizing both men and women to the importance of shared decision-making.

**Intermediate Outcome 3: Improved resource management and delivery of services to the fishery sector by targeted institutions.**

The project will achieve Intermediate Outcome 3 through two Immediate Outcomes:

**Immediate Outcome 3.1: Increased capacity of targeted institutions to support the development of the fishery sector in the Upper Nile State.**

*Output 3.1.1: Relevant support institutions provided with skills and knowledge to support the development of the fishery sector in the Upper Nile State.*

The main implementation partner for the project is the Upper Nile State Ministry of Animal Resources and Fisheries (SMARF) and its Directorate of Fisheries. The national MARF is also a partner, though its focus is maintaining a conducive policy environment for fisheries development. The SMARF presently has very limited capacity in terms of human resources and logistics. Very little extension work is currently undertaken, although SMARF staff are present at some landing sites to record fish landings.

In a first step, the project will undertake a preliminary capacity assessment process. Part of the process will include a workshop with the SMARF and other relevant stakeholders, including fishers, to assess the limitations of the SMARF and propose an appropriate response plan. Based on the results of the preliminary capacity assessment, the project will examine avenues for addressing limitations, such as recruiting national consultants, exchange visits (national and international), study tours, recruiting international consultants and facilitating placement of SMARF extension workers in key fishing collection points throughout the Upper Nile State.

Although potential areas of capacity building have yet to be assessed, the project will focus on SMARF’s responsibilities for: the sustainable management of the sector (as follow-up to the stock
assessment); aquaculture development; marketing; post-harvest handling; fish inspection and strengthening ties between the communities and the SMARF. Other areas for capacity building within MARF and SMARF will almost certainly arise and the project will take these into account at that time.

The project will also examine options for strengthening the Upper Nile State Ministry of Social Development, Religion and Gender. A preliminary capacity assessment will be carried out to determine the most appropriate interventions for capacity building.

**Output 3.1.2: Relevant support institutions provided with materials to support the development of the fishery sector.**

Material support to institutions relevant to the fishery sector is also important. The project will undertake an assessment of equipment required by the relevant institutions. For example, the SMARF currently lacks the ability to visit fishing communities and collect and store basic data. River boats to access remote villages for extension work and data collection are one option that will be closely examined. In this case, boats may be procured by the project and used by the project in collaboration with the SMARF to carry out project activities and the tasks of the SMARF simultaneously. The introduction of computers (and accompanying training courses) for data storage and dissemination is also an important part of developing the capacity of the relevant institutions.

As with all procurement of material goods for building the capacity of counterpart institutions, the project will ensure that the materials are provided with required training courses for their correct usage. The project will also endeavour to make certain that materials are used for their intended purpose. The project will seek to accomplish this through joint activities – data collection for example – where both the project and counterpart institutions access equipment together.

**Output 3.1.3: Study tours provided to extension works, government officials, and community leaders to exchange good fishery sector practices.**

Study tours have proved to be an important tool in other UNIDO projects, particularly the Red Sea State fishery sector project. Study tours to the appropriate locations allow participants to observe first-hand a familiar, yet more advanced fishery sector. This has several advantages: (1) it motivates participants by providing a clear example of where the fishery sector could be in the near to mid-term future; (2) it allows participants to visualize concepts and practices that may only have been previously discussed in a classroom setting; (3) it allows participants the opportunity to experience
hands-on training with experienced trainers; and (4) it allows participants and institutions the opportunity to meet with counterparts working in a more advanced fishery sector and allows for linkages – training courses, best practices, management modalities, for example – between the fishery sectors in neighboring countries.

Accordingly, the project will evaluate the requirements of the Upper Nile State fishery sector workers against the fishery sectors in neighboring countries. It is best that such countries are selected for study tours in order to facilitate communication and provide a setting that is more advanced, though still very familiar to study tour participants. In the case of South Sudan, the fishery sector in Uganda is potentially a very good partner for a study tour. This option will be more closely assessed during the Inception Mission.

Immediate Outcome 3.2: Increased capacity of government staff to sustainably manage the fishery resource in the Upper Nile State.

Output 3.2.1: Fish stocks in the Upper Nile State are assessed and production limits are established.

One of the biggest constraints currently facing the fishery sector in South Sudan and the Upper Nile State is the lack of reliable fishery sector data. Without data, policy development cannot be at its most effective and project interventions may lose effectiveness. As a result, one of the first undertakings of the project will be the organization and implementation of a fish stock assessment in the Upper Nile State, including the collection of economic and social information about fishing communities.

One option for implementing the fish stock assessment is a partnership that would bring together a university in Canada; the University of Juba; and the SMARF with overall coordination by the project. This approach has the advantage of utilizing the experience of Canadian institutions, while building the capacity of academic institutions and ministries in South Sudan. It is envisaged that a Canadian university team would lead the stock assessment over the initial 36 months of the project before a gradual hand-over of data collection, analysis and policy prescription leadership to SMARF and the University of Juba.

A Terms of Reference (ToR) for the stock assessment will be drafted in consultation with an international fishery expert and further developed with potential partners.
The stock assessment will provide some of the necessary data required to ensure that the project interventions do not have negative environmental impacts with regard to the sustainability of the fishery in the Upper Nile State.

The resulting fish stock assessment, with a community livelihood component, will help guide not only project interventions, but all fishery-related policy development and interventions in the Upper Nile State.
XIII. Management Strategy

The project will be executed under the technical and administrative supervision of UNIDO, following UNIDO’s rules and procedures.

A Project Manager (PM) will oversee the overall implementation of the project. A Project Coordination Unit (PCU) will also be established. This unit will include an International Project Coordinator (full-time, L-2), a Technical Fishery Expert (2/3 time), and a National Project Officer (full-time) who will be responsible to the PM. The PCU will be responsible for overall day-to-day coordination and supervision of field activities, including effective linkages between the project and the beneficiaries and other on-going project and programmes to ensure effective monitoring and evaluation of all activities.

The project will establish a liaison office in Juba for logistics, finance, administration and coordination with national government counterparts and development partners. It is possible that the project will share office space with the existing UNIDO projects, in order to share costs. The project will also establish an implementation office in Malakal for technical staff and will focus on implementation and maintaining daily contact with local counterparts and beneficiaries.

In an effort to form direct links with the target communities and take project management decision based on the best information, the project will recruit Community Development Agents (CDAs). The CDAs will provide a close link between the project office and management team, feeding back information about the effectiveness of interventions and recommending modifications to continuously improve input interventions effectiveness. CDAs will also be expected to mobilize and lead the communities toward their development objectives as defined by the communities and the project. CDAs will be selected from the target communities or region and will be placed in each community. The CDA will be provided with 5-7 weeks of training from the project by international experts and training courses abroad where other UNIDO CDAs have been operating successfully. Given the importance of the CDA posts, their recruitment will be a rigorous process combining criteria that will be established by the project in conjunction with all stakeholders at the outset of the project.
CDAs will play an important role in monitoring interventions on the ground level, feeding back information about the effectiveness of interventions and recommending modifications to continuously improve input interventions effectiveness.

A Project Steering Committee (PSC) will be established. It will include representatives of all stakeholders. The main functions and responsibilities of the PSC will be to: (i) advise the project on strategic directions of support activities to be provided; (ii) ensure the effective cooperation between all involved stakeholders; and (iii) advise the effectiveness of the ongoing activities, including the progress towards achieving the planned outputs, review and approve an annual work plan. The PSC will help achieve greater co-ordination and cooperation among stakeholders and will ensure national ownership and sustainability of the project planned activities. The PSC will hold annual meetings. Ad-hoc meetings may be requested. The Project Coordinating Unit (PCU) will act as the secretariat.

The International Project Coordinator will prepare bi-annual progress reports on project activities detailing progress achieved towards meeting the stated outputs, as well as constraints and recommendations for correcting them, in addition to a detailed workplan for each reporting period. The report will be distributed to the PSC members prior to each PSC meeting. PSC members will have a chance to comment on the report and suggest corrective actions when required.

UNIDO HQ technical staff and project consultants will also prepare technical reports detailing specific issues being addressed by the project. These will also be shared with CIDA and the Government of the Republic of South Sudan (GRSS) through the state and national Ministries of Animal Resources and Fisheries.

The project will commence with an Inception Mission comprising of fishery sector and development experts. The Inception Mission will produce a report that will detail project interventions. During the last three months of the project, the project coordinator shall prepare and submit to the counterpart and to the donor a terminal report for approval. This terminal report will assess, in a concise manner, the extent to which the project’s scheduled activities have been carried-out, the outputs produced, and the progress towards achieving its objectives. It will also present recommendations for any future follow-up action arising out of the project.

Monitoring of the project activities will include data collection and analysis arrangements, baseline information, programme of work and budget expenditures. Special attention will be given to the participation of the beneficiaries in the monitoring process. Monitoring modalities will be agreed
upon by the PCU and the experts during the first months of the project and the on-going results will serve as a management tool to ensure effective and efficient project operation.

The project will undertake a mid-term evaluation after 30 months of implementation and a final evaluation at 60 months of implementation.

XIV. Project Promotion and Visibility of Project Partners

The project will take measures to ensure that project partners receive adequate visibility and that results are available through promotional materials. UNIDO has an in-house Advocacy and Communications Unit that uses multiple tools for project information and promotion. For example:

- One-page brochures introduce a project or programme.
- Project brochures outline the project and its achievements for information and promotional purposes.
- Short video productions create awareness of a project and promote its achievements for a variety of audiences.
- The UNIDO website promotes particularly successful projects.

Each of these tools are regularly used by UNIDO to enhance the visibility of the organization and its development partners.

At the project site, measures will be taken to ensure that development partners have an adequate amount of visibility, through site signboards and project partner logos on selected project-provided equipment.

The project will also enhance the visibility of its project partner through the use of Canadian expertise. The possibility of collaborating with a university in Canada to undertake to the fish stock assessment is one example where Canadian expertise will be sought. The project will also prioritize Canadian expertise in terms of technical inputs wherever possible.
XV. Sustainability Measures

The project will take a sustainability-first approach to all its interventions. This is a continuous process starting with the design of the intervention through to monitoring and evaluation. The sustainability of the project will have multiple components, outlined below.

1) Capacity building of community leaders, including group leaders

The project will focus on developing the capacity of selected community members, such as traditional community leaders. In doing so, the project will help ensure that interventions are understood and accepted by the community. The approach will also ensure that the technical capacity is present to support implementation and follow-up on project interventions.

The introduction of Community Development Agents (CDAs) in selected communities is part of the strategy of ensuring that the community itself plays a larger role in developing and implementing project interventions and is able to ensure the long-term success of the project.

2) Building the capacity of women in fishing communities

Building the capacity of women is essential to community development. The project recognizes the central role women play in the development of their communities. Through the development of business organizations, the project will provide training courses to women on a range of topics ranging from organizational management, financial management, as well as the technical skills needed to participate in the fishery (or other) value chains. The project will also endeavour to facilitate access to small loan funds for the proposed organizations. Our experience has shown that revolving funds mechanisms are well-managed by women and provides the organization members with access to funds for continued development past the end of the project.

Businesses that are established under the umbrella of the organization will also pay a portion of the profits back into the organization, ensuring that the organization has the financial ability to achieve its goals past the conclusion of the project.
3) Capacity building of government institutions in terms in human resources (knowledge and skills) and physical capacity

The project will work closely with government counterparts in an effort to build their human resource and physical capacity to undertake their mandate. In terms of human resource capacity, the project will provide in-country training whenever possible, allowing extension workers and government staff to directly apply their new knowledge and skills. When not possible, the project will bring counterparts staff to locations outside the country to learn new skills needed to fulfill their mandate. Study tours are one option that will be used to introduce government staff to new practices first-hand.

Whenever possible, project interventions will be developed and implemented in close collaboration with the relevant counterpart, to ensure buy-in and build the skill of the counterpart through hands-on implementation.

With regard to physical capacity, counterparts often lack funds to purchase much needed materials, such as computers and modes of transport. In Upper Nile State, for example, the SMARF is underfunded, leaving its staff with minimal materials. As a result, staff do not regularly visit outlying communities and do not have an effective system for storing and sharing information on the fishery sector.

The proposed fish stock assessment is another opportunity for capacity building. A fish stock assessment is a time consuming process that requires a significant number of participants. It will also result in a tool that will help the SMARF manage the fishery sector in the future. As such, it is ideal to involve the SMARF in the fish stock assessment from the beginning. This learning-from-doing approach will best ensure that the SMARF has the capacity to continue to collect information regularly and maintain a database on the fishery sector, as well as propose regulation and policy that will lead to a better managed fishery sector.
4) **Appropriate infrastructure**

Introducing appropriate infrastructure is critical to ensuring that it is used over the long-term and contributes to the development of communities and the sector. To this end, the project will make certain that equipment and infrastructure that is introduced is appropriate to the level required. The design of infrastructure will favour ease of use. It will also focus on introducing goods that are easily repaired and where expertise for maintenance/repair is available locally. When not available locally, the project will train people to repair and maintain the material. Access to spare parts is another aspect that must always be taken into account. The project will also favour the introduction of low energy consumption infrastructure when possible to reduce operating costs (shouldered by the beneficiaries after the project ends). The project will also introduce renewable energy sources where technically and financially feasible.

5) **Appropriate business model**

All project interventions will be assessed for their financial appropriateness prior to implementation. This necessitates the elaboration of a careful business plan for each piece of infrastructure and accompanying business, as well as the small-businesses, if they are to operate without project or government subsidy and continue to grow and develop the fishery sector in the long-term. Small-scale businesses – operated by women, for example – must be run on a financially sustainable basis, without project interventions if the beneficiaries want to continue generating revenue after the conclusion of the project. This approach applies also for the fish landing sites.

6) **Other measures**

In addition to the measures outlined above, the project will also use other tools to best ensure sustainability. Continuous monitoring is one measure that the project will undertake. With staff in project sites and working closely with communities, monitoring can be done on a regular basis and results communicated to the management team, for implementation and reporting purposes.
Regular monitoring missions by project management will complement the work of the field staff and will help ensure that interventions are developed and implemented for sustainability.

The annual Project Steering Committee meeting is another tool that will be used to help ensure the sustainability of the project. The PSC will review the work of the project and will approve the upcoming annual workplan each year.

A mid-term evaluation by an independent consultant will also take place. An aspect of the evaluation terms of reference will be the sustainability of project interventions.

**XVI. Lessons Learned**

- PSC membership should include all stakeholders. As challenges may differ in each selected community, a community representative should be present at PSC meetings.

- An in-depth understanding of the local situation in each selected community is important for ensuring that interventions have the maximal effect. Past UNIDO experience, including the Red Sea State fishery project, has demonstrated that dynamics within the intervention communities, whether they are social, cultural, traditional or economic, impact heavily upon the result of the interventions. A good knowledge of such dynamics will significantly help the sustainability of interventions.

- Careful attention must be paid to the selection of target communities and beneficiaries. It is advisable that a criteria for both is established and agree to be stakeholders.

- Beneficiaries will sometimes form producer-type groups as a means to receiving material goods and other benefits from a project, but their interest in the group does not extend past this short-term goal. The long-term economic benefit of group formation must be made clear and demonstrated from the outset of the project in order to achieve groups that work for the benefit of their members over the long-term.

- Women’s groups present an ideal entry point through which to channel community-based interventions, based on their ability to organize and prioritize community development. Well organized and active associations can continue to implement community-based activities past the conclusion of the project.

- Providing large amounts of materials/goods to beneficiaries is not always beneficial. In some instances, such goods may be treated without care, may not be used as intended or even sold. Moreover, such an approach does not encourage long-term sustainability of input utilization. The project suggests an approach of input provision combined with developing the capacity – financial and technical – for beneficiaries to invest in their own material
inputs. Such capacity will ensure that the groups are able to continue to develop past the conclusion of the project.

- The Management of the infrastructure such as the landing site, market and receiving centres should be well defined at the beginning of the project.

- Project interventions must be developed in an inclusive manner that gives all stakeholders a voice, or at least the opportunity to voice, concerns or new ideas. Interventions that are “owned” by the beneficiaries are often more effective and are better received by beneficiaries and stakeholders. Moreover, the process itself is important for building the capacity of stakeholders to identify problems as well as development and implement solutions.
### Annex 1: Annual Work Plan

<table>
<thead>
<tr>
<th>Inception Period Output 0.1</th>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>A multidisciplinary consultancy Inception Mission team is fielded and Inception Report is submitted, including baseline study, and detailed work plan.</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Intermediate Outcome 1**

**Increased sale of quality fish by Artisanal men and women fisher folk in the Upper Nile State.**

<table>
<thead>
<tr>
<th>Output 1.1</th>
<th>Fish receiving centres/collection points/landing sites/markets are constructed and operational.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

<p>| Activity 1.1.1 | Community consultations to determine community requirements and priorities | | | | | |
| Activity 1.1.2 | Selection of priority fishing communities for project interventions | | | | | |
| Activity 1.1.3 | Consultation with stakeholders, authorities and fisherfolk to determine location for basic landing site and market infrastructure at Malakal. | | | | | |
| Activity 1.1.4 | Establish ownership/operational modality for basic fish landing site | | | | | |
| Activity 1.1.5 | Procurement of construction services for rural collection points and Malakal. | | | | | |
| Activity 1.1.6 | Provision of SOP, SSOP and GHP at fish landing sites and market facilities. | | | | | |</p>
<table>
<thead>
<tr>
<th>Output 1.2</th>
<th>Community/fishery development associations are established.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 1.2.1</td>
<td>Identify Upper Nile State/local persons with potential to work in communities for the project (CDAs)</td>
</tr>
<tr>
<td>Activity 1.2.2</td>
<td>Consultations with community members - ongoing with CDA and confirmed by a workshop format - to determine type of community/fisherfolk organization</td>
</tr>
<tr>
<td>Activity 1.2.3</td>
<td>Group leadership/finance training course for those identified as change agents in communities.</td>
</tr>
<tr>
<td>Activity 1.2.4</td>
<td>Newly organized groups are registered.</td>
</tr>
<tr>
<td>Output 1.3</td>
<td>At least 7 community-based fishing associations are provided with improved technologies and relevant training to decrease PHL and increase overall fish production.</td>
</tr>
<tr>
<td>Activity 1.3.1</td>
<td>Assessment of current fishing technologies and practices</td>
</tr>
<tr>
<td>Activity 1.3.2</td>
<td>Procurement of fishing inputs and technologies</td>
</tr>
<tr>
<td>Activity 1.3.3</td>
<td>Experimental fishing activities to assess applicability of new technologies to local contexts.</td>
</tr>
<tr>
<td>Activity 1.3.4</td>
<td>Post-harvest fish handling training is provided to fisherfolk</td>
</tr>
<tr>
<td>Activity 1.3.5</td>
<td>Procurement of fish preservation/processing technologies</td>
</tr>
<tr>
<td>Output 1.4</td>
<td>Fish market channels developed / modernized</td>
</tr>
<tr>
<td>Activity 1.4.1</td>
<td>Fish market assessment for the Upper Nile state is undertaken.</td>
</tr>
<tr>
<td>Output 1.5</td>
<td>Aquaculture is established in Upper Nile State</td>
</tr>
<tr>
<td>Activity 1.5.1</td>
<td>Assessment of aquaculture potential and section of locations.</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------</td>
</tr>
<tr>
<td>Activity 1.5.2</td>
<td>Construction and equipment provided for the operation of aquaculture farms.</td>
</tr>
<tr>
<td>Activity 1.5.3</td>
<td>Training is provided to pond operators on fish husbandry and pond maintenance.</td>
</tr>
<tr>
<td>Activity 1.5.4</td>
<td>Training is provided to ensure the business management of aquaculture ponds.</td>
</tr>
<tr>
<td><strong>Intermediate Outcome 2:</strong></td>
<td><strong>Outcome 2: Increased fish processing and small-scale business development by women in selected Upper Nile State fishing communities.</strong></td>
</tr>
<tr>
<td>Output 2.1:</td>
<td>Women’s business associations are established or strengthened.</td>
</tr>
<tr>
<td>Activity 2.1.1:</td>
<td>Consultation with community and women to discuss development priorities, group formation and income generation opportunities with women.</td>
</tr>
<tr>
<td>Activity 2.1.2</td>
<td>Establishment/registration of formal women’s associations</td>
</tr>
<tr>
<td>Output 2.2:</td>
<td>Women are provided with business development training and technical support for fish processing and small-scale business development.</td>
</tr>
<tr>
<td>Activity 2.2.1:</td>
<td>Provision of training on: group leadership, basic accounting small business development.</td>
</tr>
<tr>
<td>Activity 2.2.2</td>
<td>Provision of material goods to initiate small-scale businesses and other development priorities.</td>
</tr>
<tr>
<td>Activity 2.2.3</td>
<td>Establishment of a revolving fund for personal micro-enterprise development.</td>
</tr>
<tr>
<td>Intermediate Outcome 3</td>
<td>Improved resource management and delivery of services to the fishery sector by targeted institutions.</td>
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<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Output 3.1</td>
<td>Relevant support institutions provided with skills and strategy to directly support the development of the fishery sector in Upper Nile State.</td>
</tr>
<tr>
<td>Activity 3.1.1</td>
<td>Workshop with relevant national and state-level institutions to examine policy and implementation capacity. Limitations of relevant institutions are identified and appropriate responses are agreed to by stakeholders.</td>
</tr>
<tr>
<td>Activity 3.1.2</td>
<td>Establish (list) training requirements and training schedule, including national and international experts and training courses abroad.</td>
</tr>
<tr>
<td>Output 3.2</td>
<td>Fish stocks in the Upper Nile State are assessed and production limits are established.</td>
</tr>
<tr>
<td>Activity 3.2.1</td>
<td>Draft of data collection implementation plan, including information to gather, geographic locations and logistics.</td>
</tr>
<tr>
<td>Activity 3.2.2</td>
<td>Basic data collection and reporting training for relevant state staff.</td>
</tr>
</tbody>
</table>
Annex 2. Proposed Project Organizational Structure
Annex 3: Food Security Categories (Defined)

Source: The categories are based on those developed by the Annual Needs and Livelihoods Analysis Technical Group (2011).

Severely Food Insecure:
- Households cultivate less than 2 feddans
- Average household production of 1.8 90-kg bags
- Low dietary frequency and diversity
- Mean protein consumption of 1 serving per week
- Spends more than 65 percent of income on food
- Unreliable sources of income
- Some dependence on food aid

Moderately Food Insecure
- Households cultivate slightly above 2 feddans
- Average household production of 2.5 90-kg bags
- Low dietary frequency and diversity
- Average protein consumption of 4 servings per week
- Spends more than 65 percent of income on food
- Mix of reliable and unreliable sources of income
- Generally able to meet food requirements in the absence of shocks

Food secure
- Households cultivate slightly above 2 feddans
- Average household production of 2.5 90-kg bags
- Good dietary frequency and diversity
- Average protein consumption of 5 servings per week
- Spends less than 50 percent of income on food
- Reliable sources of income
- Able to meet food requirements