MINUTES OF THE NaFIRRI ANNUAL REVIEW AND PLANNING WORKSHOP ON FISHERIES AND AQUACULTURE RESEARCH HELD AT KAJJANSI ARDC, 28TH JUNE 2011

THEME: "*CONSOLIDATING STAKEHOLDERS' VIEWS INTO FISHERIES RESEARCH FOR NATIONAL DEVELOPMENT*"

JUNE 2011

Annual Review and Planning Workshop on Fisheries and Aquaculture Research, Kajjansi ARDC, 28th June 2011

Theme: "*Consolidating Stakeholders' views into Fisheries Research for National Development*"

	SESSION 1: Opening **Chairperson: Mr. C. Dhatemwa**	
	Activity	**Responsibility**
	Prayer	Prof. Bugenyi
	Introductions	Mr. C. Dhatemwa/ALL
	Welcome and Opening Remarks The Chairman, NaFIRRI Management Committee (MC) welcomed all invited stakeholders to the workshop. He informed them that the workshop was a requirement of the National Agricultural Research Act of 2005 which necessitates NaFIRRI to convene a meeting between the researchers and various stakeholders for the purpose of discussing matters relevant to the institute program of research. He also congratulated the Minister of State for Fisheries on her appointment as Minister, and promised the dedicated service of NaFIRRI. The MC Chairman also referred to the steadily diminishing fish returns from the lakes and stressed that the most viable alternative to cater for food security of the ever growing population was to promote aquaculture using modern technologies where fish could be cultured in artificial cages placed in lakes. Concerning the theme of the workshop, the MC Chairman elaborated its relevance in light of the reduced commercial catches from the lakes and how fundamental stakeholders' views were in directing the next research programmes, and outlined the workshop objectives as: i) Updating stakeholders on the current status of lake fisheries and aquaculture ii) Seeking views from the stakeholders on research interventions for 2010 to 2011 iii) Identifying emerging issues in capture fisheries and aquaculture for the attention of NaFIRRI researchers The MC Chairman hailed the close cooperation between the Department of Fisheries Resources and NaFIRRI and the	Mr. C. Dhatemwa

	joint planning meetings held between the two institutions with the aim of developing and strengthening a Management Plan for the fisheries and aquaculture as well as creating strategies for countrywide identification of aquaculture commercial zones. He further encouraged the participants to fully participate in the workshop deliberations and hoped that the Minister would find time to interact with stakeholders on various fisheries issues.	
	Director remarks The Acting Director, Dr. D. Mbabazi, gave a historical background about NaFIRRI including reforms in agricultural research that resulted into the establishment of NaFIRRI as one of the 13 Public Agricultural Research Institutes (PARIs) of NARO. He outlined the mandate of NaFIRRI with regard to Capture Fisheries and Aquaculture and listed the different areas of research focused on by the institute. The participants were informed about the outstanding challenges (e.g. lack of sub-stations on the different aquatic systems and low staff numbers) for fisheries research and development in Uganda; the main objectives of the meeting were emphasized as: i) Providing a forum for stakeholders to discuss issues relevant to fisheries research in the past year ii) Setting priorities for fisheries research for the coming year and iii) Discussing how such research can be translated into action The Ag. Director requested all stakeholders to provide input into the best ways fisheries research could be done in order to satisfy their needs, as well as to guide management that will create impact and contribute to the national economic development. He emphasized the need to develop system specific action plans agreed upon by stakeholders and mentioned the Agricultural Technology Agri-business and Advisory Services (ATAAS) Project approved by the Government with the aim of strengthening technology generation and uptake through close linkage with NAADS. He thanked the participants for sparing their valuable time to attend the workshop so as to discuss issues for the development of the fisheries sub-sector.	Dr. D. Mbabazi
	Remarks made by Development Partners from China On behalf of the Development Partners from China, Mr.	Mr. Yironggan

	Yironggan expressed gratitude for the invitation to the Annual Review meeting and for the continued support from the Government of Uganda and MAAIF since the completion of the construction works of the Uganda-China Friendship Agricultural Technology Demonstration Centre. He promised to co-operate with NaFIRRI focusing on freshwater aquaculture and fish fry production technology, and hoped that with the introduction of new aquaculture skills, it would be possible to transform Kajjansi into a modern and model agricultural technology demonstration centre. Using the latest Chinese aquaculture technology, Mr. Yironggan hoped that they would solve issues related to insufficiency of fish fry, aqua-talents and improve the standard of aquaculture in Uganda once the Uganda farmers mastered the various technologies through their training. He further hoped that co-research with NaFIRRI on reproduction technologies of different fish species would prosper the Uganda aquaculture total output.	
	DG NARO's remarks The Acting Director General (DG) welcomed the participants to NaFIRRI and NARO, and thanked them for taking the effort to attend the important meeting. She conveyed greetings from the DG, NARO, who because of other commitments, had not able to attend the workshop in person. She further emphasized the importance of the Annual Review and Planning meetings in NARO's Agenda as critical in the review of achievements made by different projects with regard to NARO's mid-term plan and its strategic objectives, and the projects' contribution to the MAAIF's Development Strategy and Investment Plan (DSIP) and the National Development Plan (NDP). In addition to providing the opportunity to identify emerging issues, threats, and government interventions, Dr. Twinamatsiko perceived the meeting as the time for scientists to both show case their research findings and to account for funds received. She stressed that NARO's mid-term plans were sanctioned by stakeholders, right from the grassroots to national level. She highlighted the contribution of NaFIRRI's research to national food security and nutrition security and hoped that the meeting would review the strategies to be laid out and outputs developed so as to counter the various challenges (e.g. household income,	Dr. E. Twinamatsiko

	national economy and the sustainability of the aquatic resources) from experienced staff with guidance from the stakeholders, so as to ensure increased contribution of fish exports to the national GDP. She concluded by thanking the Minister for her love for NARO and looked forward to more productive work with her.	
	MP Kakuuto's remarks On behalf of the politicians of the country, the Hon. Member of Parliament thanked the workshop organisers for the interface for planning of the fisheries sector. He was grateful to the Government of Uganda for putting in place institutions such as NaFIRRI which champion cause for various sectors especially the fisheries sector. He thanked the researchers for the work done in their individual capacities and NaFIRRI for championing the mandate of the research institute. Hon. Kasamba informed the participants about one of the most alarming situations in the fisheries sector, the decline in fish stock levels, and he emphasized the need to curb the illegal fishing methods practiced on various water bodies in order to ensure sustainability of the fisheries sector. He suggested aquaculture as a viable alternative to boost fisheries production in Uganda and for this, he requested that the researchers ensure that the issues to do with fish fry production, pond fish farming, cage farming, fish breeding, were addressed. In order to ensure sector improvement, he called upon the Ministry of Defence to collaborate with the Fisheries sector to offer the necessary backup in curbing illegal fishing activities on the water bodies. He noted the existing opportunities in the budget for the FY 2011/2012 where the 4 billion shillings allocated to the youth could be tapped into by engaging majority of the youth on the water bodies into aquaculture activities. He also informed the meeting about the Parliamentary Forum on Fisheries that would be created to champion all members from the fishing communities as well as to advocate for resources required by the fisheries sector. He pledged continued support and collaboration and promised the researchers a vibrant parliamentary team that would put in place a mechanism to improve the fisheries sector.	Hon. Kasamba
	Minister of State for Fisheries 's remarks The Minister thanked the organisers of the workshop and appreciated her colleagues who had turned up to the	Hon. R. Nankabirwa

	important event. She informed the participants about her special interest in Kasese and her intentions of using it as the main area of her operations given that most immature fish went to the DRC via Kasese. She expressed excitement upon her new appointment since her assignments would enable her to interact with the people countrywide. She pledged support to NARO and other agencies, and informed the workshop about a Fisheries Forum that was to be started in Parliament as a way of providing support to partners of donor states. In addition to their research, the Minister thanked NARO for the initiative to consolidate the stakeholders' views into fisheries research in a bid to achieve national development. She stressed that this could only be possible with a science led agricultural sector that was driven by technologies, knowledge, and market. She pointed out that although the Government would inject more funds into Agricultural Research; such research had to be demand driven by the end users of the research. The Minister was pleased with the work done by the researchers, however, she highlighted the fact that most consumers of the research seemed not to be aware of the research results/products, and hence there was a need to intensify advocacy and sensitisation. She also particularly wanted to see to it that fisheries research would lead to a recovery in the capture of fish and the development of commercial aquaculture through increased Public, Private, Partnerships (PPPs). She encouraged a broader linkage between the research by NARO, the Fisheries Department, and the Private Sector including the fish farmers, fish processors and various teams that would facilitate increased earnings from the sector. The Minister also listed two major tasks that needed to be accomplished: i) Development of commercial aquaculture – Here she stressed the importance of developing fish farming to commercial levels that could contribute to household incomes, food and nutrition security, and export. As is clearly indicated in the DSIP for MAAIF, there was need to increase the 60,000 households engaged in fish farming through direct support and to develop cage culture in water bodies, working in collaboration with NEMA, and by establishing aquaculture parks in different	

	parts of the country. She further noted that although a policy for developing aquaculture parks and fish farming was underway, there was need for support by a strong and dedicated research input from NARO and NAADS with contribution from the private sector. ii) Capture of fish – The Minister outlined the major challenges responsible for the reduced production in lakes as: overfishing, catching of immature fish, using illegal gears, and disregard of fishing regulations. The Minister commended the scientific researchers for having done their work; however she noted that the regulators were disappointing the researchers and that a lot was still needed to be done so as to ensure that there is law and order on the beaches. She promised to deal with errant DFOs who do not give accountability reports. With regard to the declines in fish exports from 140 m USD to 80 m USD, the Minister hoped that fisheries would yet again become the key commodity in bringing in foreign exchange earnings to Uganda. She hoped to invite all stakeholders in the near future for further discussions on the way forward to save the lakes. She also strongly came out on the need to fight and eliminate the bad fishing practices and corruption existing on the lakes so to ensure national recovery of the fisheries sector, and for this she hinted that portions of some lakes would have to be closed off to fishing activities for specified periods of time. The Minister thanked all the Development Partners for the support extended to the sector, and she pledged to revive the National Task Force which will be meeting at least once a month. She also expressed the desire to have timely and accurate research information and hoped to hold regular meetings with the different agencies, NaFIRRI, and Development Partners, to plan and implement strategies that will make fisheries contribute to the national economy, poverty eradication and food security. With those remarks, the Minister declared the Annual Review and Planning meeting of the Fisheries Stakeholders open.	

	SESSION 2A: **Chairman: Mr. Phillip Borel**	
	A presentation "*National Fishery Sector Overview*" was given by the Commissioner, Department of Fisheries Resources. The highlights of the presentation are summarised below: *Fisheries Basic Production and Consumption Data* – Fish for direct human consumption produced is about 450,000 tonnes of which 200,000 tonnes target regional and international exports. Imports of exotic fish species comprise only 10 tonnes. The per capita consumption of fish is 8.3 kg/person/year. *Fisheries Basic Economic Data* – The sector provides direct employment for about 1.2 m people whilst indirectly supporting the livelihoods of approximately 3 m people. The gross value of fisheries output in 2008 was estimated at USD 700 m and the total value of fisheries exports was USD 211.3 m. *Fisheries Sector Strategy* – Uganda fisheries sector is based primarily on freshwater fisheries. Out of the five major lakes, lakes Victoria, Albert and Edward are transboundary in nature while lakes Kyoga and George are fully contained within Uganda. With the presence of LVFO on Lake Victoria, fishing effort and transboundary conflicts have been reduced unlike in lakes Albert and Edward. *Contribution by production system/water body* – The major fish supply is from Lake Victoria (250,000 t) with minor contributions from lakes Albert and Kyoga. Kyoga used to be the most productive lake at one time producing nearly 170,000 t, but currently it is struggling to produce 60,000 t. The number of districts, livelihoods and people on Lake Kyoga are more than those on Victoria, Albert and Edward combined. Lake Albert is leading in the supply of silver fish, though the current exploitation levels are worrying and this situation is exacerbated by the differences between Uganda and DRC. Food fish is mainly supplied by two species: Nile perch and Nile tilapia. Aquaculture (including stocked water bodies) accounted for 83,000 t in 2007. NaFIRRI has also been able to successfully breed three fish species (i.e. Ningu, Male and Kisinja) that were originally cherished at Kajjansi. Of increased importance to the rural communities is the stocking and restocking of communal dams which needs to be	Dr. W. Mwanja

	emphasized. *Landing sites distribution* – According to the statutory instruments, there are 703 legally gazetted landing sites. Of these, 25 public and 11 privately owned are gazetted to handle fish for onward processing and export to overseas markets. This number was bound to increase following the handover of 6 additional landing sites completed under ADB. Many of 703 landing sites were gazetted out of political interest but they do not meet the minimum requirements for handling fish for export, and handling fish for Ugandans to eat. *Fisheries exports* – Exports to premium international markets comprised 75% Nile perch and 25% Nile tilapia. The exports to regional markets largely consist of informal and illicit trade in undersized Nile perch and Nile tilapia. *Fisheries Production Means* – Production is mainly artisan. Both the monofilament nylon nets (which are illegal) and the multifilament thread nets are in use. Fishing is also done using long lines with hooks of various sizes. *Mukene* fishers use lift nets of 5-6 mm although the law recommends the use of 10 mm nets for fishing. There is need for scientific backing on the use of these nets especially with regard to the by-catch and the distance away from the lake shoreline. *Fisheries Management* – The principal law is the Fish Act (2000) and other numerous subsidiary legislations. The fisheries are managed based on the precautionary approach as recommended by FAO and driven by continuous scientific monitoring of the stocks and by information generated by NaFIRRI (the level of collaboration between DFR and NaFIRRI has increased). For Lake Victoria, the fisheries are managed among the riparian countries and there is harmonised co-operation on research, management and the community level. *Fisheries communities* – Fishermen in Uganda are largely artisan and migratory. Fisheries sector is still amongst the poorest due to remoteness of landing sites and due to lack of a saving culture. With co-management structures, fishermen choose to register with specific landing sites. *Aquaculture subsector* – Aquaculture in Uganda has been growing at an annual rate of 300% over the last 10 years. Production has risen from 285 tonnes in 1999 to nearly 90,000 tonnes in 2010. There has been an entry of commercial aquaculture producers and the adoption of new technologies (e.g. nearly 150 cages have been set up on the	

	River Nile and a request was made to support aquaculture parks so that other members of the community can join). More research was needed on reservoir aquaculture although restocking and stocking of communal dams was conducted. Nearly 2000 farmers were venturing into commercial aquaculture. *Post harvest and fish utilization* – up to 150,000 tonnes of fish (salted, dried or smoked) is sold to regional markets. Nile perch bladders are exported to Asia. Trimmings from Fish Processing Factories are processed into fish oils and fish additives. In addition to being used for human food, a significant quantity is used for animal feeds. *Fisheries sector performance* – The sector contributes 12.6% of the agriculture GDP (2.7% of the national GDP) and provides for 2.8 m livelihoods. The sector provides 1.1 m jobs and fish exports bring in foreign exchange equivalent to an estimated USD 200 m. The value of fish consumed locally is estimated as equivalent of USD 500 m. *Constraints and opportunities* – The main constraint facing the fisheries sector is the issue of dwindling stocks and the increased use of destructive fishing gears and methods. Other constraints include: Enforcement which is made difficult by the outdated laws that have not been revised since 1962. Limited support for alternative production means (e.g. aquaculture, and stocking and restocking activities). Post harvest losses remain high through the value chain. 30% of fish value is lost in wastage and research is needed to see how this can be reduced. Increasingly informal nature of the fish trade in the region. Limited infrastructure (physical and technological) for both capture and culture fisheries. *Government and private sector policies and development strategies* – A number of measures, policies and instruments are in place to ensure the sustainable use of the fisheries resources and improve efficiency and management of the sub-sector. The opening of the sector to industrial processing led to a drastic increase in foreign exchange earnings. The heightened pressure on the commercially exploited fish stocks has increased the need to control the fishing effort and to limit the catch, landing and marketing of immature and legally undersized fish. To this effect, the government has partnered with the fish processing industry to develop and self monitoring programme. The Government is also in the process of putting up stringent	

	measures to block the export of immature fish. The Government has also developed a co-management approach. *Government measures taken* – There has been concerted effort to plan and support aquaculture as well as to adopt stocking and restocking of communal water bodies. In management of the fisheries environment, Government has over the last 10 years been controlling aquatic weeds through direct mechanical removal, use of biological control, and community involvement and capacity building for management of aquatic weeds. There has been significant investment from the Government in management of the fisheries on Lake Victoria with support from the World Bank, European Union, African Development Bank.	
	SESSION 2B: **Chairman: Prof. Bugenyi**	
	A presentation on "Capture Fisheries" was made by Mr. S.B. Wandera and this comprised: 1. What was planned for the year 2010/11; 2. What was done (with major observations); and 3. What is planned for the year 2011/12. Capture Fisheries contributes 86% to the country's fish production. **1. What was planned for the year 2011/12:** 1. Undertake research as planned under the ATAAS Project. 2. Carry out research for projects from grants won by scientists. 3. Carry out specific studies requested for by stakeholders. 4. Package and disseminate technologies. The 11 projects planned under ATAAS include: 1. Monitoring pollution and water quality parameters 2. Assessing natural fish-foods and feeding interactions 3. Assessing and Managing invasive water weeds 4. Harvesting and processing of emerging fisheries 5. Identification and Mapping fish breeding and nursery grounds 6. Manipulation of small water bodies for fisheries productivity 7. Monitoring stocks of commercial fish species 8. Options for diversification of fisher community livelihoods	Mr. S.B. Wandera

9. Costs and Benefits of Fishing Enterprises
10. Adoption of technologies developed in the fisheries sector
11. Dissemination tools and systems for fisheries Research

Unfortunately, the ATAAS Projects did not take off. There was a major setback to implementation of planned activities. However, some bridging phase funds were received from both the Project Planning Facility (PPF) and Development Budgets although they could not adequately cater for all the activities planned. The activities supported were:

1. Assessment of implementation and effects of LVFO 2009 Policy Directives governing the Nile perch stocks of Lake Victoria
2. Monitoring changes in stocks of major commercial fish species in the five major water bodies in Uganda.
3. Investigation of the role of feeding interactions and energy returns in sustaining key fish species in five major water bodies in Uganda.
4. Assessment of the magnitudes, impacts and development of management options for invasive weeds on the Kyoga basin lakes and Lake Albert.
5. Characterisation and zoning of fish breeding/nursery grounds for protection in the five major water bodies in Uganda.

Studies conducted upon requests from specific stakeholders included:

1. BEL Aquatic Ecology Monitoring on the Nile (Bujagali Energy Limited)
2. Environmental Monitoring of Fish Cage waters (Source of the Nile (SoN) Fish Farm)
3. Rapid assessment of the state of Lake Nakivale (A request made by the Prime Minister's Office)

2. What was done (with major observations):

Lake Victoria

Effects of the 2009 Regional (LVFO Council of Ministers) directives on Nile perch and Mukene fisheries: This study, concluded that although the Regional Directives on Lake Victoria are known to a number of fishers, none of them appear to be implemented.

Frame survey: Vigilance has slowed down increase in fishing effort (e.g. Fishing crafts increased to 23,455 in 2011 from

	21,836 in 2008 – an increase of only 1,619 fishing crafts) *Catch Assessment Survey:* Stocks of Nile perch continued to decline (9,233.9 t in 2008 to 6,966.2 t in 2010) but overall fish stocks increased slightly from 14,315 t to 15,306t attributed to increases in stocks of Nile tilapia and *Mukene.* There has been improvement in biological parameters of Nile perch (e.g. now matures at 50-55 in males and 70-75 cm in females compared to 40-44 cm and 50-54 cm respectively in 2007). Monitored effect of SoN Fish cage culture on natural fish populations in the cage area; being suitably located for continuous water exchange, SoN Fish cages so far show no detectable changes in water quality resulting from cage culture activities. <u>Lake Edward</u> *The state of fish-food organisms (invertebrates) and environmental factors (physico- chemicals):* The lake showed a healthy environment for fish and fish-food organisms; however, there is potential for deterioration of water quality as a result of inflows of heavy metals from Kilembe and salt mining activities. *Infestation by water weeds:* The lake showed no major water weed problem *Frame survey:* Fishing effort has increased (e.g. fishing crafts from 302 to 330 and fishers from 355 to 440 in 2008 and 2011 respectively. *Catch Assessment Survey:* Catch rates have dropped (16.7 to 14.9 kg/boat/day with Semutundu dropping to 4.04 from 5.26 kg/boat/day between 2008 and 2011. *Characterization of fish breeding/nursery grounds:* The Indigenous Knowledge (IK) captured revealed that majority respondents associated fish breeding/nursery grounds with wetlands (55.9%) and sheltered bays (18.4%). *Emerging fisheries of Haplochromines* (*Nkejje*): It was observed that although the fish biomass on the lake is dominated by the *Nkejje*, they were not being exploited. It	

	may be possible to exploit *Nkejje* from Lake Edward without harming other table fish species by using small mesh gillnets (1" and 1.5") set in the open waters. Other water bodies surveyed included: *Lake Nabigaga:* The assessment of this small lake located in Kamuli for its suitability for fish cage farming revealed that it was too shallow for such an enterprise to be established. *Bujagali dam site on the Upper Victoria Nile:* Dam construction still shows no effect on the quality of Nile waters. Water quality parameters still conform to NEMA standards. Fish catches in waters above and below the construction site however showed a decline. *Lake Nakivale:* The lake is currently overfished (96 fishing crafts operating 6000 gillnets and long-lines). *Nkejje* form the largest catch and is sold in areas as far away as Jinja mainly for treatment of measles. The lake is threatened by siltation due to encroachment on the wetlands for agriculture. Achievements i) A 2nd Draft of the Lake Albert Monograph ii) A Draft NaFIRRI Information and Communication Strategy was completed. iii) 10,000 copies of Communicational support materials were produced. iv) 900 reprints have been digitized and are being loaded on the E-board for internal access v) Annual report for 2009/2010 was produced vi) 35 books purchased, over 1000 Journals subscribed to and 250 Information materials processed vii) 750 Bibliographic records of historical information were entered into the databases. viii) Information was disseminated to local and international visitors electronically and physically. Under ICT: i) Stores Management Information System developed ii) Website updated with 25 technical reports, 15,487 bibliographies, 29 annual reports and a fish museum |database linked to Fishbase, all	

	accessible at http://www.firi.go.ug iii) E-resource and End note training were conducted for scientists iv) Participated in source of the Nile Agricultural Show v) A Radio talk show was held where research information was disseminated to stakeholders. **3. What is planned for the year 2011/12?** ATAAS projects – These are expected to commence next Financial Year and will be undertaken as planned. The projects appear too many so they are being restructured to focus impact and fit available funds. Studies requested for by specific stakeholders: Monitoring for Bujagali and SoN Fish to continue. Any other emerging relevant study requested for during the year will be done. Technology packaging and dissemination – Studies are expected to package and disseminate technologies from their studies.	
	A presentation on "Aquaculture" was made by Dr. J. Rutaisire. Aquaculture is a viable alternative source of fish supply to address the widening fish supply gap and has been rising globally. **What was done (with major observations)** *Improvement of nutritional qualities and cost effectiveness fish feeds:* Worked with Ugachick Poultry breeders and others in the private sector to produce floating fish feeds. Worked with Makerere University to import a crumbler for hatchery feeds (on going work). *Fish feed development:* Entered into an agreement with Novus Inc. to test their products for increased performance of feed feeds (Mera met cat fish plus, Caputula, Acidomix). *On-farm made feeds* – For this, the farmers have imported small feed making machines from China and plans to help them with the formulation, testing and improving performance are underway.	Dr. J. Rutaisire

	Worked with the Chinese partners to operationalise fish feed mill and the feeds are going to be used as control (a Food Conversion Ratio of (FCR) of 1.8 – 2.0 was obtained). *Technologies for domestication of Nile perch:* Induced spawning trials for Nile perch (High value fish with well established markets) – The egg size was 475.5 ± 70.7 µm. Fertilization of the eggs was achieved but incubation failed after 6 days. October and November were the best months to capture brood fish. Nile perch Cloning of Follicle Stimulating Hormones (FSH) and sub units revealed that Nile perch was not related to the Baramundi but rather to the flounders and Yellow perch – This was confirmed by egg hatching. The major challenge was that there was a high mortality of eggs following several days of incubation. Feeding trials for feed acceptability - Feeding trials done on wild fish rejected artificial feeds *Technologies for domestication of new species*: Domestication of Kisinja, Ssemutundu and Ningu started with knowing the natural breeding trends in the wild. Based on the data, induced spawning trials of Ningu and Kisinja were done and the Ningu seed is now available for on farm growth trials. Work on Semutundu will start soon. *Value addition:* Promoted Chorkor Kiln smoking of the Mmale (African catfish) and passed on the technology to the private sector. *Aquaculture database and GIS map for planning developed:* The objective was to develop a tool to identify farmers and their locations all around the country and to develop mechanisms for a participatory system for continuous data/information update and sharing by all stakeholders. A data set and digital map for Wakiso, Mpigi, and Kampala was developed. This work is on-going. *Research extension interface – Outreach:* i) Collected information on environment and fish growth in fish farmers' cages in lakes: Bunyonyi and Victoria. ii) Assisted a commercial farmer to set up 20 cages on River Nile in Adjumani	

	iii) Hatchery modifications in Lira iv) Development of Aquaculture parks in collaboration with DFR and UIA v) Technical guidance to Ugachick, Kahora and farmers. vi) Gave advice to the private sector in fish farming in EAC i.e. Burundi, Rwanda and Tanzania **What is planned for the year 2011/12?** i) Studies to perfect hatching rates for Kisinja for mass seed production ii) Growth trials for Ningu and Kisinja on farm to guide commercial production iii) Nursing technologies including larval test diets for Kisinja fry iv) Complete GIS mapping data collection for central Region v) Dissemination of results from Central region to stakeholders vi) Continue improvement of fish feeds geared to ward attaining FCR of 1.5 to 1.8 vii) Continue work towards domestication of the Nile perch viii) Testing of growth performance of Uganda carps ix) Promoting farmer uptake of the Uganda carps x) Embark of developing culture technologies for Semutundu xi) Provide technical backstopping for cage culture parks on Lake Victoria, Edward and deep minor lakes) xii) Setting of a demonstration cage park unit in partnership with the Chinese aided project at Entebbe. xiii) Training of farmers and youth groups interested in commercial aquaculture in partnership with the Chinese in aspects of: Pond construction, feed making, general farm management and value addition. xiv) Developing fish health diagnostic tools and control measures xv) Developing technologies for ornamental fish farming xvi) Developing technologies for tank culture xvii) Market studies and data database	

	development	
	DISCUSSION OF THE PRESENTATIONS	
	Prof. Kabwegyere requested the researchers for a manual that gives basic information on what one needs to know about pond construction. He emphasized the relevance of such a manual for persons starting fish farming in the absence of assistance from extension workers. For this the participants were assured that this was being considered as one of the projects under ATAAS, and although the project had not yet taken off, there was ready information packaged in brochures, in addition to a book ("Fish farming as a business") that was on sale in bookshops. Efforts will be concentrated in packaging information about aquaculture technologies for fish species such as Ningu and Kisinja once the ATAAS Project takes off. *Prof. Kabwegyere also raised the issue of lack of intervention from knowledgeable persons such as the extension workers and DFOs which made pond tending extremely difficult.* Regarding extension services in aquaculture, the Commissioner informed the meeting that there were plans to have strong farmer institutions/associations which should be empowered to hire their own technical people to do this work. He also said that efforts were underway to build farmer capacity and suggested that one way of doing this could be by moving funds earmarked for aquaculture activities into such farmer associations. He also called upon the DFOs to assist stakeholders in areas of their jurisdiction as well as to take advantage of the Parliamentary Fish Forum to lobby and air out their grievances. *Hon. Badda was concerned about dissemination of information to fish farmers/local people, and he suggested that structures be put in place to disseminate relevant information to various stakeholders including the politicians.* The meeting was informed that from time to time, NaFIRRI compiles packages and delivers information to Parliament particularly to the Sectoral Committee on Agriculture and information was also given to the fish farmers. *Regarding the 2009 LVFO's Council of Ministers' Regional directives on Nile perch and Mukene fisheries, Hon. Badda wanted to know why the fishers were not complying and the*	All

	way forward. Research findings had revealed that the number of people who knew about these directives were <50% implying that many people were not aware and for this there was need to improve the information flow at the grass root level. The presence of a market for small fishes was highlighted indicating that the enforcement seemed to be relaxed. *Hon. Badda also wanted to know the procedures involved in forming aquaculture parks. He called for coordinated efforts in curbing illegal fishing activities in the different parts of the lakes.* The Commissioner outlined the standard procedure for the aquaculture parks as follows: Environmental clearance should be sought from NEMA or MWE before a permit can be issued. After the clearance, a registration fee of UGX 20,000 is paid. For the case of hatchery operators, a registration fee of UGX 50,000 is paid because of the emphasis of the hatchery as opposed to the cages which requires monitoring and also provides for the inclusion on the pre-qualified list. *Mr. Sekyewa wanted to know if there was any facilitation for activities at the districts for DFOs? He also emphasized the need to convert fishermen into fish farmers and suggested that a pilot study could be started with at least 10 fishermen from different landing sites and have the concept of cage fish farming introduced to them.* The DFOs were encouraged to assist the Fish Farmers in their area of operation and to ensure that fisheries related activities were captured at the district level during the budget planning process. The meeting was also informed about the initial efforts by NaFIRRI in site identification and dialogue with the fisher communities regarding fish farming. *Mr. Ferua suggested that farmers be categorised into subsistence, medium and commercial farmers in order to allow for appropriate resource allocation and to ease the guidance and assistance received from the ministry. He also emphasized the need to strengthen the monitoring and evaluation function of the department and to build strong interactions at all levels with the Private Sector.* *Mr. Kajura from Busongola South was concerned about the*	

	possibilities of introduction of cage farming in his constituency given the fact that land/soils were deemed salty. Regarding the potential for deterioration of water quality as a result of salt mining activities, Mr. Kajura also clarified to the meeting that Lake Katwe had no stream connecting it to Lake Edward. The meeting was informed that Lake George was not good for cage culture because it was shallow, on the other hand, Lake Edward would be suitable for cage farming. It had also been discovered that Lake Katwe was good for production of artemia which was food for baby fish. However since Lake Edward is connected to Lake George through the Kazinga Channel, and given that the latter receives a lot of pollutants from Kilembe mines, there was a potential of the deterioration of water quality of Lake Edward. *Dr. Latigo wanted to know the specifics involved in monitoring of fish cage farming at SoN Fish Farm? He pointed out the issue of eutrophication that could result from feed accumulation in the cages.* The monitoring aspects at SoN Fish Farm involve an analysis of the water environment within the cages where the fish are raised, and examination of the effects if any of the cage enterprise on the surrounding water environment and wild fish populations. *The MC Chairmain, NaFIRRI noted that there was no representation from NAADS at the review meeting and yet NAADS was a key player in the dissemination of NaFIRRI research outputs to the end users at the grass root level. He informed that this matter would be taken up administratively to have NAADS informed about the deliberations at the meeting. Regarding the deficiencies in fish handling at the landing sites, Mr. Dhatemwa suggested that the training of extension workers be improved and that such an area could be included into the curriculum of the Fisheries Training Institute (FTI) and other universities offering training in Fisheries e.g. Makerere University. He also appealed to the DFOs to take integrity as a fundamental weapon that can be used to fight corruption.* *Regarding the issue of fish cage farming in lakes, rivers and dams versus selling of the lakes, Mr. Ebong, PS, MWE, emphasized the need to have synergies between MAAIF and*	

	MWE on Integrated Water Resources Management. He informed the meeting about steps taken by the Directorate of Water Resources Management in the MWE to engage MAAIF on this subject. He observed that the various opportunities could arise from cage fish farming and thus the need for sensitisation of the local communities about the benefits of engaging in such an enterprise. He also emphasized the need to have synergies among government arms in the authorisation of resource utilisation and allocation especially during the budgetary process where sub-sectors such as fisheries with enormous potential maybe identified. He emphasized the importance of having numbers of people providing support to fish farmers and added that aquaculture services must be demand-driven and "guided" in the sense that technical teams should constantly be with the farmers to guide them until the well guided farmers are able to continue on their own. He concluded by saying that fish farming was the way to go for Uganda because of the availability of enormous water resources which are not fully utilised. The need to have technical backing at the Local Government level beefed up was also realised.	
	Group work for identifying Priority Research issues for 2011/2012	Dr. Ndawula
	For this session, the participants were divided into 3 different groups: Capture Fisheries, Aquaculture, and Socioeconomics.	
	General discussion and way forward	Dr. Ogutu-Ohwayo
	The "research" areas and "justification for research" captured under the different groups for NaFIRRI's intervention were presented as follows: **(1) Capture fisheries:**	

Research area	Justification
1. Control of water weeds on Lake Bisina	The lake is heavily infested with weeds which interfere with fishing activities.
2. Suitable gill-net size for harvesting haplochromines (Nkejje)	High densities of haplochromines.
3. Effects of pollution on fisheries resources (e.g. stocks) in Jinja area, sudds in Kyoga	Existing pollution which may result into floating of fish (fish kills)

	etc		
	4. Are the effluent limits within acceptable levels or not?	Effluent from Kilembe mines	
	5. Appropriate gears for fishing within the slot size (50-85 cm TL)	Fish is continuously harvested outside the slot size	
	6. What is the REAL cause of continuous reduction in fish stocks?	Continued dwindling of fish stocks despite the reduction in fishing effort.	
	7. Cause of depletion of fish in protected areas on Lake Edward	Fish was abundant before and now it is scarce despite the protection status	
	8. Viability of cage farming in all water bodies (Kyoga and Kwania inclusive)	Availability of investors who want to invest in cage farming.	
	9. How can the Nile perch and *Mukene* fishers co-exist in the fishing grounds? Is it possible to generate new fishing options?	Conflicts between Nile perch and *Mukene* fishers.	
	10. Determine the breeding periodicity of fish	Talk about closed seasons and closed areas	
	11. Control options for new emerging aquatic weeds	Presence of aquatic weeds	
	12. Impacts of oil exploration on fisheries and biodiversity	Oil exploration on Lake Albert	
	13. Impacts of oil exploration on economic loss in case of fishery collapse	Oil exploration on Lake Albert	
	14. Status of heavy metals in lakes and the source	Possible biomagnification effects stand to be realised in fish especially the Nile perch	
	15. Stock assessment surveys	Control of fishing effort	
	16. Fish handling and processing in collaboration with National Agricultural Research Laboratories	Post harvest losses	

	(NaRL) in Kawanda	
17.	Appropriate technologies for harvesting and processing small fishes e.g. *Mukene*, *Ragooge*, *Muziri*, and information on the efficiency of already existing technologies	Abundance of small fishes Species-specific management guidelines
18.	Effects of HIV on the economic setting in the fisheries industry	HIV prevalence in fishing communities
19.	What factors are driving the upsurge of the small fisheries?	Abundance of small fishes
20.	Biological parameters of the small fishes	Management guidelines
21.	Gear recommendations for exploitation of a multispecies fishery e.g. Lake Albert	
22.	Crocodile and hippo research (to link with Uganda Wildlife Authority (UWA) to investigate crocodile impact on fish catches	Presence of crocodiles everywhere
23.	Alternatives for building materials for fishing crafts	Harvest of timber for boat building

(2) Aquaculture:

Research area	**Justification**
1. Water quality maintenance and assessment for better aquaculture. How can research help farmers improve the water quality for their production systems? Effects of pollution/local methods of detecting pollution either in	There is a general feeling and an observation that poor water quality contributes to poor fish production. Farmers want to know how they can control water quality to maximize the fish production.

	ponds or lakes		
	2. Environmental issues that affect fish farming. What are the environmental requirements for fish farming? For example, what is the best site for fish farming, the soils? What are the requirements of EIAs for big fish projects	Lack of awareness of environmental requirements for establishing aquaculture	
	3. Lack of linkages between the Private Sector and the Government. What are the best practices of co-operation that can foster fish production in the country?	No clear information on how the collaboration should be done or improved	
	4. Provision/Formulation of at least cost yet effective fish feed	The feed is the most important component of the activity and is currently expensive. We need cheap but good quality fish feed.	
	5. Seed quality/ technologies for fish breeding	That can grow fast	
	6. Optimum feeding rates for different cultured species		
	7. Optimum stocking densities for various production systems	No guidelines	
	8. Enhancing productivity of Tilapia mainly in ponds	There is perceived low Tilapia production in ponds	
	9. Determine the carrying capacity of cages in different lakes	No guidelines	
	10. Growth of Tilapia in a salty environment	Some lakes in Uganda are salty and could be used for fish production	
	11. Identification of disease causing agent in aquaculture	No information available for disease causative agents and how to avoid them	
	12. Development of	To increase survival rates of	

	disease resistant strains	farmed fish	
	13. Post harvest handling and marketing of farmed fish	There are many losses experienced by farmers in harvesting farmed fish	
	14. Predator control technologies	Some farmers lose all of the fish through predation	
	15. Research on organic feeds		
	16. Genetic improvement of Tilapia	To have good brood stocks	
	17. How to control aquatic weeds in cages	To improve productivity	
	18. Cost effective methods for anchoring cages in the lake	Support cage system from drifting away	
	19. Growth rates and maturity in various water bodies	Lay a baseline information on performance of cages in different water bodies	
	20. Economic benefits of integrated farming of crocodiles, fish and poultry.	Improving productivity base for aquatic products	
	21. Value addition of fish and fish products	Diversifying and boosting fish marketing	
	22. FCR for different fish in cages for different water bodies/lakes	Improving cage productivity	

(3) Socio economics:

Research	Justification
1. Women involvement in fisheries	Marginalization of women in lucrative fisheries. Most women participate in artisanal fisheries.
2. Intervention for fishermen to develop a saving culture. Why do fishermen save during specific periods?	Most fishermen do not have a saving culture.
3. Government involvement with the community on illegal fishing. Reasons why the Government is hesitant to support	People are involved in illegal fishing because it is a cheap means of survival. DFOs have not been supported to intervene in this problem. Fishermen are not helped on

		fishermen. Revision of government policies that make them hesitant to support fishermen	this issue (materials). These fishermen can be helped through sensitisation. Support is given materialistically to farmers yet fishermen are not helped.	
	4.	Documentation of suitable fish breeding grounds by inquiring from fishermen	Fishermen have knowledge of fish breeding grounds. There are always new comers coming in.	
	5.	Documentation on the types of taxes incurred by the fishermen (Where fishermen are taxed, who and when are they taxed). Evaluation of the effects of taxes on the lives of fishermen	Fishermen are being taxed. Something must be issued to show that they have been taxed. Licensing boats is supposed to be a controlling measure	
	6.	If the land is Government land and it has been sold, why don't fishermen have access to the land. There is need to know how many metres of land belong to the government	Government has a few metres of land to the shores (100/200 m). Some of this land is being claimed by the land lords. These people claim land up to the lake which is bringing about conflicts in fishing communities.	
	7.	Investigate proper criteria for sand mining	Sand is being mined without order and yet these areas are breeding sites for fish e.g. Gerenge landing site	
	8.	Reasons why aquaculture is not picking up. What are the interventions needed for aquaculture to pick up? Cost effectiveness of aquaculture.	Costs incurred in fish farming are expensive. In Kitgum, water is seasonal. Fish has to be stocked in seasons and sometimes farmers lose fish.	
	9.	Involvement of key stakeholders in improvement of fisheries. Impact of PPPs to identify the roles of stakeholders in fortifying the fisheries. Articulation		

	of record keeping in fisheries. Linking of fisheries with emerging fishing groups e.g. SACCOS.		
	10. Impacts of the oil project on the fish industry	Chemicals are being released in the lake.	
	11. Socio-economic study on the ability of fishermen to take up cage fish farming		
	12. Crocodile impact on fish catch	Crocodiles are visibly seen in various water bodies	
	13. What is the optimum Food Conversion Ratio (FCR) for fish? What are the optimum factors for maintaining the optimum FCR in different aquaculture systems and under different environment conditions including the Aquaculture parks together with the enterprise budgets?	Feed is expensive	
	14. Interventions aimed at reducing table fish prices. Policies to promote consumption of high protein fish e.g. *Mukene* by the local consumers	Very high fish prices and yet fish is a very high protein source e.g. *Mukene*.	
	Vote of thanks		Dr. K. Odongkara

Rapporteurs: Ms. W. Nkalubo
Dr. W. Okello
Mr. C. Aruho

Welcome Remarks by the Chairman NaFIRRI Management Committee at the Annual Research Review and Planning Workshop held at Kajjansi ARDC 28th June 2011

The Hon Minister of State for Fisheries, Hon Ruth Nankabirwa

The Director General NARO

The Commissioner, Department of Fisheries Resources

RDCs Present

Hon LC V Chairpersons present

The CAO, Wakiso District

The Director Research Coordination, NARO

The Representative NEMA

Colleagues, Members of NaFIRRI Management Committee

Staff from PARIs & ZARDIs

The Staff of NaFIRRI

Members of BMUs, Fishers and Fish Farmers

All Participants from the Fisheries Industry

Ladies and Gentlemen,

It is my pleasure to welcome you to this Annual Research Review and Planning Workshop of National Fisheries Resources Research Institute (NaFIRRI). This workshop is being held as part of the National Agricultural Research Act 2005. By this Act, the Management Committee of NaFIRRI is mandated to convene twice a year a meeting between the institute researchers, the fishers, NAADS providers, local authorities and other relevant stakeholders for the purpose of discussing matters relevant to the conduct of the institute program of research.

I take this opportunity to congratulate our Minister of State for Fisheries on her appointment as Minister and on having successfully won the Parliamentary seat as to represent the people of Luwero in the August house. I want to promise the dedicated service of NaFIRRI right from the members of the Management Committee to all staff at the Research Centre.

Hon Minister, this workshop is being held here at Kajjansi which is our centre for aquaculture research. As you are aware the fish returns from our lakes are steadily diminishing owing to a number of factors which the Commissioner for Fisheries might have drawn to your attention. The most natural and viable alternative to cater for food security of the ever growing population is to promote aquaculture. Fortunately for us as a nation we have large expanses of fresh water in rivers, streams and minor lakes

and we can construct ponds and dams where fish can be cultured. With modern technology fish can be cultured in artificial cages which can be placed in a fresh water body including our lakes. This is the way to go and Kajjansi is the focal point where research is carried out in this area. Through bilateral arrangements with the Peoples' Republic of China, civil structures and technical support have been provided here at Kajjansi to serve us and our regional neighbours in this field.

Hon. Minister and dear participants, the theme of today's workshop is "*Consolidating stakeholders' views into Fisheries Research for National Development*". This theme is fitting considering the present reduced commercial catches from the lakes and the stakeholders are pivotal in directing the next research programmes. Their view will be extremely helpful and our researchers are eager to take them on board.

The objectives of the workshop are:

1. To update stakeholders on the current status of lake fisheries and aquaculture.
2. To seek views from the stakeholders on research interventions for 2010 to 2011.
3. To identify any emerging issues in capture fisheries and aquaculture for the attention of our NaFIRRI researchers.

Hon Minister, I wish to inform you of the close cooperation between the Department of Fisheries Resources and our Institute. This is manifested in the joint planning meetings aimed at developing and strengthening Management Plan for the fisheries and aquaculture. We closely cooperate on strategies for country wide identification of aquaculture commercial zones. The Commissioner for Fisheries is a very active member of the Management Committee of NaFIRRI

With those few introductory remarks I once again welcome you Hon Minister and dear participants to this Planning Workshop and pray that you will fully participate in its deliberations. I cannot forget to welcome the Chairman LC 5 and RDC Wakiso in whose territory we are privileged to deliberate from.

Hon Minister, as our political representative of the fisheries industry, I trust you will find time to interact with these stakeholders who may wish to request for your attention regarding some of their teething questions. I also once again welcome all of you participants and I request that you fully and openly participate in this workshop.

For God and My Country.



Christopher M. Dhatemwa
Chairman
NaFIRRI Management Committee
30th June 2011

Acting Director's brief at the Annual Review and Planning Workshop held at the National Fisheries Resources Research Institute (NaFIRRI), Aquaculture Research and Development Centre (ARDC), Kajjansi 28th June 2011

BACKGROUND AND OBJECTIVES OF THE ANNUAL REVIEW AND PLANNING MEETING

BACKGROUND

The National Fisheries Resources Research Institute (NaFIRRI), is one of the 13 research Institutes under NARO. The objective of having a national research institute is mainly to respond to issues of economic/national development in the relevant sector and in our case the fisheries sub-sector under the Ministry of Agriculture Animal Industry and Fisheries (MAAIF).

NaFIRRI was first established in 1947 as the East African Fisheries Research Organisation (EAFRO) with its headquarters in Jinja. EAFRO was turned into the East Africa Freshwater Fisheries Research Organisation (EAFFRO) to investigate all freshwater fisheries resources in British East Africa in 1960s. Scientists based in Jinja worked on diverse lakes (e.g. Turkana, Baringo, Rukwa). The commissioning of Research Vessel MV IBIS in 1968 was to carry out the first fish stock assessment of Lake Victoria with a view of commercial exploitation of haplochromines (Nkejje). This was followed by establishment of sub stations in Kenya (KMFRI) and Tanzania (TAFIRI). The breakdown of the first East African Community (EAC) in 1977 resulted into the Uganda Freshwater Fisheries Research Organisation (UFFRO) as a Department in the Ministry of Regional Cooperation, and subsequently the Ministry of Animal Resources. Reorganisation of agricultural research in 1992 led to the creation of NARO that absorbed UFFRO as the Fisheries Research Institute (FIRI) incorporating Aquaculture. Through various reforms and realignments in between 1999-2003 resulted into the Fisheries Resources Research Institute (FIRRI) to ensure that other resources in the water besides the fish are provided for.

The most recent agricultural reforms resulted into the National Agricultural Research Act, 2005 that directs the entire agricultural Research in the country and established 13 Public Agricultural Research Institutes. One of these is the National Fisheries Resources Research Institute (NaFIRRI).

The mandate of NaFIRRI is to manage, promote and undertake both applied and basic research of strategic and national importance in Aquaculture and Capture Fisheries.

In both areas, research focuses on fish biology and ecology, water environment, socio-economics and marketing, information communication and outreach, post harvest and value addition and any emerging research issues. NaFIRRI works in collaboration with the fish farmers/fishers, academic institutions, industry, NAADS and any private research group or individuals or service providers to improve its efficiency.

NaFIRRI headquarters and Capture Fisheries base is still located in Jinja, original home of 1947.

The Aquaculture Research and Development Centre, is located at Kajjansi, where we are today.

The **mandate area** is countrywide (National): includes five major water bodies (Victoria, Kyoga, Albert, Edward and George); + over 160 small lakes, a network of rivers and swamps, and several types of aquaculture production enterprises throughout the country.

Hon. Minister, the lack of substations in the different aquatic systems and low staff numbers remain an outstanding challenge for fisheries research and development in Uganda.

OBJECTIVES OF THE ANNUAL REVIEW AND PLANNING

The National Agricultural Research Act, 2005, Section 7; Clause 2 requires NARO to convene such a meeting

The purpose of the meeting is three fold:

(i) To provide a forum for stakeholders to discuss issues relevant to agricultural research (fisheries) in the ending year

(ii) To set priorities for agricultural research for the coming year and

(iii) To discuss how such research can be translated into action

I am requesting all stakeholders especially the political leadership headed by the Hon. Minister, LCs, RDCs, the farmers, fishers and others to keep around as much to provide input into best ways Fisheries Research can be done to guide management that will create impact and contribution to the national economic development. This being a discussion of researchers and users of the research, we expect a lot from you to tell and guide us on what we should research on and how best this can be done to satisfy your needs. NaFIRRI would like to develop system specific action plans agreed upon by stakeholders. Government has approved the Agricultural Technology Agri-business Advisory Services (ATAAS) aimed at strengthening technology generation and uptake through close linkage with NAADS. Hon. Minister, there has been a challenge to have fisheries considered for financial support through NAADS however relatively some support has been given to aquaculture with none to capture fisheries. I am appealing to the district leadership to ensure that capture and aquaculture enterprises are also supported by the NAADS programmes.

I would like to end here and thank all participants for sparing valuable time to come for the workshop to discuss issues for development of the fisheries subsector.

FOR GOD AND MY COUNTRY

Address of Mr. Yironggan at the Annual Review and Planning Workshop held at NaFIRRI, Aquaculture Research and Development Centre (ARDC), Kajjansi 28th June 2011

Dear Hon. Minister of State for Fisheries Ms. Ruth Nankabirwa, Director General of NARO Dr. Denis Kyetere, Dear Commissioner Dr. Wilson Mwanja and all the guests of honour, good morning.

Today, it's my great honour to be invited to attend the Annual Review and Planning Workshop on Fisheries and Aquaculture Research.

Since the construction works of Uganda-China Friendship Agricultural Technology Demonstration Centre had been accomplished successfully in terms of quality and quantity within expected period, I want to express my sincere thanks again for the continued care and enormous support from Ugandan Government and Ministry of Agriculture, Animal Industry and Fisheries as well as all walks of life. Now, the project has entered into the operation phase.

With the continued support and help from Ugandan government and all research institutions, Uganda-China Friendship Agricultural Technology Demonstration Centre would achieve its mandate in honour and dignity.

Through the 3-year long practice, we shall cooperate with National Fisheries Resources Research Institute(NaFIRRI), focusing on the freshwater aquaculture and fish fry reproduction technology. Also, with the introduction of new aquaculture skills; research, demonstration, promotion of new starin; feasible HR management and aquaculture equipment, we shall transfer the compound into a comprehensive, modern and model agricultural technology demonstration centre.

We may also solve the practical issue such as insufficiency of fish fry, aqua-talents and improve Ugandan aquaculture standard through the direct and vivid class elaboration on latest and feasible Chinese auqaculture technology. We hope Ugandan farmers can master the various technology as follows through our training, say, artificial propagation of freshwater fish fry; highly intensive and healthy aquaculture technology; water quality control; net-cage culture in lakes; prevention of diseases in fishpond; development and application of man-made fish feed; utilization and maintenance of aqua-equipment(aerator, automatic fish feed feeder, etc…). In addition, through the co-research with NaFIRRI on reproduction tech of Chinese grass carp, silver carp, bighead carp and Nile Perch on fish feed feeding technology and fry quality selection, we wish we can together prosper the Ugandan aquaculture total output.

I'm convinced that with the long-term aquaculture experience and research of Huaqiaofenghuang Group, with the support from Ugandan and Chinese governments and with the all-together effort from our aqua-talents, we would fulfil our goal without a fail.

Thank you.

PROGRAM

Time	Activity	Responsibility
7:00-8:30 am	Arrival and Registration	Mr. C. Ssengendo Mr. T. Kakuru Ms. J. Namara/Ms. F. Bazanya
Session 1	**Opening** Chairperson: Mr. C. Dhatemwa	
8:30-8:35	Prayer	Prof. Bugenyi
8:35-8:45	Introductions	Mr. C. Dhatemwa/ALL
8:45-8:55	Welcome and Opening Remarks	Mr. C. Dhatemwa
8:55-9:05	Background and objectives of the Annual Review and Planning Workshop	
9:05-9:10	Remarks	
9:10-9:15	Remarks	
9:15-9:20	Remarks	
Session 2A	**Presentations** Chairperson: Mr. P. Borel	
9:30-9:50	National Fishery Sector Overview	Commissioner, DFR
10:00-10:20	Health Break	
Session 2b	**Presentations** Chairperson: Prof. Bugenyi	
10:20-11:00	Capture Fisheries	Mr. S.B. Wandera
11:00-11:40	Aquaculture	Dr. Rutaisire
11:40-12:40	Discussion of the presentations	ALL
1:00-2:00	Lunch Break	
2:00-2:20	Group work for identifying Priority Research issues for 2011-12	Dr. Ndawula
2:20-3:40	General discussion and way forward	Dr. Ogutu-Ohwayo
3:40-3:50	Vote of thanks	Dr. K. Odongkara
3:50-4:30	Tour of the ARDC	Dr. Rutaisire/Dr. Mbabazi
4:30	Closure	Mr. C. Dhatemwa

PARTICIPANTS' LIST

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1	Hon Ruth Nankabirwa	Minister of State for Fisheries	Entebbe		
2	Kivumbi Tonny	Driver - Minister	Entebbe	0772484584	
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4	Nkwasibwe Kajura	Political Aide for MP	Kakuto	0772471753	
5	Lwanga Bwanika Matia	LC 5 Chairman	Wakiso		
6	Kaguta Dan	RDC	Wakiso		
7	Kabera Francis	DPC - Kajjansi	Entebbe	0752920896	
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	Fish Farmers - Northern Region	Fish Farmer- Manjora Fish Farm			
24	Kagoya Juliet	Fish Farmer /Technician	Kitgum	0776984409	
25	Ebong David	Fish Farmer	Lira	0772702416	
26	Dr Latigo Alfred	Fish Farmer	Adjumani	0772705744	
	Fish Farmers - Eastern Region				
27	Ochieng Mary	Fish Farmer	Tororo		
28	Machande Nicholas	Fish Farmer	Tororo		

	Name	Designation	District	Tel. No.	Email address
29	Bishop Bamwoze Cyprian	Fish Farmer	Kamuli	0754888291	
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30	Ssebinyansi Paul	Fish Farmer /Chairman UgaChick	Mpigi	0772484612	paulssebinyansi@yahoo.com
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	Fish Farmers - Western Region				
35	Tinkamanyire James	Chairman, Uganda Fish Farmers Coop. Union	Ntungamo	0772314476	
36	Eriyabu Muhoozi	Fish Farmer	Bushenyi		
37	Prof. Tarsis Kabwegyere	Fish Farmer	Bushenyi	0772507183	
	BMU - Eastern District:				
38	Okello Margret	BMU Chairperson, Ripon Landing site	Jinja	0713185934	
39	Opolot Sam	BMU, Kagwara landing site	Serere	0779965446	
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44	Okul Boniface	BMU, Gweng landing site	Apac	0773882626	
45	Kyamanywa John	BMU, Naluboyo landing site	Amolatar	0773896010	
	BMU - Central Region				
46	Namuli Grace	BMU Secretary	Kalangala	0752642490	
47	Ssenyonga Isaac	BMU Chairman, Gerenge landing site	Wakiso	0772460712	
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49	Prof Bugenyi Fredrick	MC member, NaFIRRI	Jinja	0752 659595	
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92	Kiggundu Vincent	SLT	Jinja		
93	Nsega Monica	SLT	Jinja		
94	Ocaya Henry	SLT	Jinja		
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98	Magezi Godfrey	LT	Jinja		

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105	Atukunda Gertrude	RO	Kajjansi		
106	Basiita Rose	RO	Kajjansi		
107	Aruho Cassius	RP	Kajjansi		
108	Kityo Godfrey	SRT	Kajjansi		
109	Ondhoro Constantine	LT	Kajjansi		
110	Bagaga Vincent	Driver	Jinja		
111	Mukasa Stephen	Driver	Jinja		
112	Karyowa Rogers	Driver	Jinja		
113	Ssengendo Charles	HR & Admin Officer	Jinja		chengendo@yahoo.com
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129	Kabaganda Margaret	Intern	Jinja	0701679357	
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