MINISTRY OF MINING, BLUE ECONOMY AND MARITIME AFFAIRS

STATE DEPARTMENT FOR FISHERIES, AQUACULTURE AND THE BLUE ECONOMY

AQUACULTURE BUSINESS DEVELOPMENT PROGRAMME

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BACKGROUND INFORMATION

The Aquaculture Business Development Programme (ABDP) is a joint initiative funded by the Government of Kenya and the International Fund for Agricultural Development (IFAD). Its geographical scope covers 15 counties in Kenya: Homabay, Migori, Kakamega, Kirinyaga, Nyeri, Meru, Kiambu, Machakos, Kajiado, Tharaka Nithi, Siaya, Kisumu, Embu, Busia, and Kisii.

Overall Goal of ABDP:

Reduced poverty and increased food security and nutrition in rural communities.

Achieved through improved dietary diversity and various initiatives within the aquaculture sector.

Ponds Constructed/ Rehabilitated

In the dynamic landscape of aquaculture development, 3rd quarter marked a significant milestone across the 15 counties implementing the Aquaculture Business Development Programme (ABDP). With concerted efforts and diligent planning, the achievements were truly remarkable.

kariru primary pupils participating during pond renovation for pond liner installation.

Throughout the month of January, a total of 62 ponds were expertly constructed: Homabay-2, Migori-1, Kakamega-16, Kirinyaga-5, Nyeri-9, Meru-5, Kiambu-4, Kajiado-3, Siaya-11, Kisumu-5 and Kisii-1 laying the groundwork for sustainable aquaculture practices.

Simultaneously, in line with the programme's objectives, efforts were dedicated to the rehabilitation of existing ponds. A total of 61 ponds underwent successful rehabilitation during the month in five counties; kakemega-20, Nyeri-6, Meru-3, Kajiado-2siaya-25, Embu-1 and Kisii-4 strengthening these water bodies and enhancing their capacity for fish production.

In collaboration with ABDP extension officers, on boarded aquaculture farmers made significant strides in expanding and

Mrs. Pamela Achieng pond from West in Nyakach Sub-county Kisumu

improving aquaculture infrastructure during February. A total of 51 new ponds were constructed in 9 counties; Migori-8, Kakamega-17, Kirinyaga-3, Nyeri-6, Meru-2, Kiambu-2, Kajiado-3, Siaya-8, and Kisii-2 increasing production capacity and creating opportunities for additional income generation. Additionally, 71 existing ponds underwent rehabilitation efforts in 5 counties; Kakamega-18, Meru-2 Siaya-41, Embu-2 and Kisii-8 enhancing their productivity and sustainability. These combined initiatives underscore ABDP's commitment to fostering infrastructure development and technology adoption within the aquaculture value chain, ultimately driving positive socioeconomic outcomes for participating farmers and communities.

Throughout the month of March, a total of 52 ponds were expertly constructed in 10 counties Homabay-1, Migori-1, Kakamega-23, Nyeri-4, Meru-4, Kiambu-2, Kajiado-4, Siaya-10, Kisumu-1 and Kisii-2, laying the groundwork for sustainable aquaculture practices. A total of 136 ponds were rehabilitated in 7 counties; Kakamega-1, Nyeri-1, Meru-3, Kajiado-1, Siaya-15, Embu-1 and Kisii-100.

#	COUNTIES	Ponds Constructed			
		January	February	March	TOTAL
2	Homabay	2	0	1	3
3	Migori	1	8	1	10
4	Kakamega	16	17	23	56
5	Kirinyaga	5	3	0	8
6	Nyeri	9	6	4	19
7	Meru	5	2	4	11
8	Kiambu	4	2	2	8
9	Machakos	0	0	0	0
10	Kajiado	3	3	4	10
11	Tharaka Nithi	0	0	0	0
12	Siaya	11	8	10	29
13	Kisumu	5	0	1	6
14	Embu	0	0	0	0
15	Busia	0	0	0	0
16	Kisii	1	2	2	5
TOTALS		62	51	52	165

Table 1: Ponds constructed

#	COUNTIES	Ponds Rehabilitated			
		January	February	March	TOTAL
2	Homabay	0	0	0	0
3	Migori	0	0	0	0
4	Kakamega	20	18	15	53
5	Kirinyaga	0	0	0	0
6	Nyeri	6	0	1	7
7	Meru	3	2	3	8
8	Kiambu	0	0	0	0
9	Machakos	0	0	0	0
10	Kajiado	2	0	1	3
11	Tharaka Nithi	0	0	0	0
12	Siaya	25	41	15	81
13	Kisumu	0	0	0	0
14	Embu	1	2	1	4
15	Busia	0	0	0	0
16	Kisii	4	8	100	112
TOTALS		61	71	136	268

Table 2: Ponds rehabilitated

Stocking Done

To further support and strengthen fish production, a stocking of 148,350 fingerlings, both tilapia and catfish breeds was done in January. This proactive measure aimed to enrich the aquatic ecosystem and support the long-term sustainability of aquaculture practices.

Re-stocking of pond in Ruguru ward, Mr. Ngatia farm, Nyeri County

In February and March 2024, ABDP embarked on a significant effort to bolster aquaculture activities by distributing a total of 194,250 and 149,560 fingerlings respectively to the beneficiaries. These fingerlings, encompassing both tilapia and catfish species, were strategically provided to support the stocking endeavors of ABDP farmers. Serving as the fundamental building blocks of future fish production, this distribution initiative aimed to enhance the productivity and sustainability of aquaculture operations among smallholder farmers. By equipping beneficiaries with essential resources, such as high-quality fingerlings, ABDP facilitated the expansion and diversification of aquaculture enterprises across the 15 counties Kenya.

Fishpond restocking at Bassi Boitang'are ward Bobasi Sub County, Kisii

#	COUNTIES	Stocking			
		January	February	March	TOTAL
2	Homabay	1,000	11,500	19,980	**32,480**
3	Migori	0	6,000	1,400	**7,400**
4	Kakamega	17,700	27,000	52,500	**97,200**
5	Kirinyaga	3,000	10,200	10,000	**23,200**
6	Nyeri	5,400	8,000	5,720	**19,120**
7	Meru	6,500	5,000	6,000	**17,500**
8	Kiambu	22,500	31,100	0	**53,600**
9	Machakos	1,000	0	0	**1,000**
10	Kajiado	3,000	0	3,000	**6,000**
11	Tharaka Nithi	12,800	11,950	12,660	**37,410**
12	Siaya	41,000	44,000	21,000	**106,000**
13	Kisumu	4,500	2,500	6,500	**13,500**
14	Embu	4,350	7,000	800	**12,150**
15	Busia	23,000	25,000	8,000	**56,000**
16	Kisii	2,600	5,000	2,000	**9,600**
TOTALS		**148,350**	**194,250**	**149,560**	**492,160**

Table 3: Stocking levels across the counties

Sampling

Fish sampling in Mbeti north ward, Embu

For monitoring fish growth, careful attention was given to the sampled fish throughout the month, revealing encouraging insights into their development. Analysis of the data unveiled an average weight of 286 grams among the sampled fish, showcasing significant progress in their growth. This careful monitoring process provided valuable information regarding the effectiveness of feeding, water quality management, and overall care practices within the aquaculture system. The consistency and strength of the average weight underscored the effectiveness of the implemented strategies in promoting optimal conditions for fish growth and well-being. Such detailed insights not only facilitate informed decision-making but also lay the groundwork for continuous improvement and innovation in aquaculture practices, ultimately contributing to the sustainable development of the sector.

Fish harvesting at Cyrus Kanyotu's farm in Mathira east sub-county, Nyeri

Harvesting

As the month progressed, the culmination of these efforts yielded a bountiful harvest of 46,926 kilograms of fish from the rejuvenated waters. This substantial output underscored the efficacy of the implemented strategies in promoting robust fish growth and productivity.

ABDP beneficiaries achieved commendable success in fish harvesting endeavors during February and March 2024, garnering a total yield of 60,903 and 36,094 kilograms respectively. This impressive harvest volume not only signifies enhanced production practices but also underscores the effectiveness of ABDP's support mechanisms in optimizing fish production among participating farmers. Through training, technical assistance, and access

to critical resources, the programme has empowered beneficiaries to maximize their productivity and capitalize on market opportunities within the aquaculture sector.

#	COUNTIES	Harvesting			
		January	February	March	TOTAL
2	Homabay	15,080	15,072	8,065	**38,217**
3	Migori	1,075	2,703	1,306	**5,084**
4	Kakamega	6,998	4,393	6,405	**17,796**
5	Kirinyaga	859	3,242	854	**4,955**
6	Nyeri	1,120	1,467	2,037	**4,624**
7	Meru	1,900	2,500	2,600	**7,000**
8	Kiambu	810	715	414	**1,939**
9	Machakos	1,440	618	604	**2,662**
10	Kajiado	727	1,976	986	**3,690**
11	Tharaka Nithi	1,865	2,201	2,319	**6,385**
12	Siaya	7,776	19,418	4,400	**31,594**
13	Kisumu	915	988	1,593	**3,496**
14	Embu	238	677	1,170	**2,085**
15	Busia	3,036	3,960	2,100	**9,096**
16	Kisii	3,087	973	1,241	**5,301**
TOTALS		**46,926**	**60,903**	**36,094**	**143,924**

Table 4: Fish harvested in Kgs

Marketed Kilograms

Of the total harvest, 140,345 kilograms were successfully marketed, contributing significantly to economic growth and livelihoods within the communities. This influx of fresh produce into the market stimulated local economies and underscored the potential of aquaculture as a lucrative venture.

#	COUNTIES	Marketing (kgs)			
		January	February	March	TOTAL
2	Homabay	15,085	15,072	8,065	**38,222**
3	Migori	1,075	2,703	1,306	**5,084**
4	Kakamega	6,998	4,393	6,405	**17,796**
5	Kirinyaga	859	3,241	854	**4,954**
6	Nyeri	1,120	1,467	2,037	**4,624**
7	Meru	1,500	2,000	2,200	**5,700**
8	Kiambu	810	715	414	**1,939**
9	Machakos	851	470	595	**1,916**
10	Kajiado	727	1,976	1,002	**3,705**
11	Tharaka Nithi	1,865	2,201	2,319	**6,385**
12	Siaya	7,776	19,418	4,400	**31,594**
13	Kisumu	915	988	1,593	**3,496**
14	Embu	190	565	960	**1,715**
15	Busia	3,036	3,960	2,100	**9,096**
16	Kisii	2,529	578	1,012	**4,119**
TOTALS		**45,336**	**59,747**	**35,262**	**140,345**

Table 5: Fish Marketed in Kgs

Total Amount Generated

This remarkable success in fish sales resulted in an impressive sum of 15,041,223 Kenyan Shillings generated solely from fish sales in the month of January, highlighting the economic viability of aquaculture initiatives.

The marketing efforts of ABDP beneficiaries in February and March yielded substantial economic returns, with a total income of 17,198,265 and 11,166,713 Kenyan shillings respectively generated from fish sales. This significant financial boost directly contributes to the livelihoods of participating farmers and their families, fostering economic resilience and prosperity within rural communities. The success of fish marketing activities highlights the potential of aquaculture as a

lucrative business venture, further incentivizing farmers to actively engage in fish production and marketing endeavors.

#	COUNTIES	Marketing (Kshs)			
		January	February	March	TOTAL
2	Homabay	4,678,138	2,156,500	1,503,600	**8,338,238**
3	Migori	547,025	925,010	332,800	**1,804,835**
4	Kakamega	2,414,310	1,515,805	2,085,927	**6,016,042**
5	Kirinyaga	346,400	1,295,400	341,600	**1,983,400**
6	Nyeri	448,000	346,800	814,800	**1,609,600**
7	Meru	600,000	800,000	880,000	**2,280,000**
8	Kiambu	420,000	286,000	140,000	**846,000**
9	Machakos	340,500	188,000	385,936	**914,436**
10	Kajiado	290,000	430,000	395,000	**1,115,000**
11	Tharaka Nithi	933,000	1,100,500	1,159,500	**3,193,000**
12	Siaya	2,332,800	5,825,400	1,320,000	**9,478,200**
13	Kisumu	320,250	296,250	469,350	**1,085,850**
14	Embu	83,500	318,500	517,700	**919,700**
15	Busia	748,300	976,100	517,600	**2,242,000**
16	Kisii	539,000	738,000	302,900	**1,579,900**
TOTALS		**15,041,223**	**17,198,265**	**11,166,713**	**43,406,201**

Table 6: Value of fish marketed in Ksh

Farmers Marketed

A farmer weighing his fish for sale in mukure ward Kirinyaga

Notably, the success of the marketing endeavors was facilitated by the active participation of 360 farmers in the month of January. Their dedication and collaboration exemplified the inclusive goal of the programme, highlighting its capacity to empower local stakeholders and drive collective prosperity and sustainability.

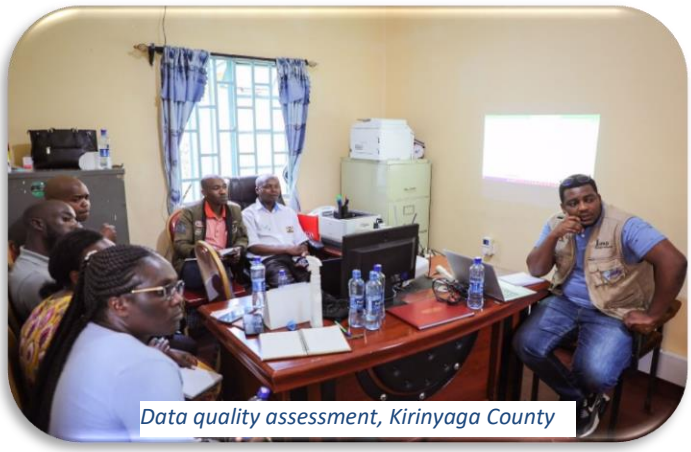
The active participation of 298 and 255 farmers in February and March respectively in both fish harvesting and marketing activities underscores the strong engagement and commitment of ABDP beneficiaries towards achieving programme objectives. Their involvement not only drives the success of aquaculture initiatives but also fosters a sense of ownership and empowerment among rural farming communities. Through collective action and collaboration, ABDP beneficiaries contribute to the sustainable development of the aquaculture sector, paving the way for inclusive growth and prosperity.

Nutrition and Household Consumption

Beyond economic benefits, ABDP's interventions have also contributed to improving household nutrition, with beneficiaries consuming a total of 3,579 kilograms of fish within their households during February. This consumption not only provides essential nutrients but also underscores the programme's impact on

addressing food security challenges at the household level. By promoting the consumption of locally produced fish, ABDP reinforces the importance of dietary diversity and nutrition-sensitive agriculture in enhancing the well-being of rural communities.

Data Quality Assessment



Data quality assessment, Kirinyaga County

During the data quality assessment exercise conducted in Kirinyaga County, significant achievements were noted. Firstly, there was a marked improvement in data entry compliance, particularly evident in increased entries in production and stocking tools. Moreover, the county successfully met the 10-meter accuracy standard for GPS data, ensuring reliability for monitoring and evaluation purposes. Identified errors, such as missing GPS data and farmer ID issues, were promptly addressed, highlighting a commitment to enhanced data quality. Agreed corrective actions, including recollecting GPS data and updating tools, were implemented effectively. Overall, Kirinyaga County demonstrated a commitment to continuous improvement through active engagement in corrective measures and improvement initiatives.

Data quality assessment, Embu County

Similarly, in Embu County, notable progress was made during the data quality assessment exercise. The county conducted data cleanup exercises and mobilized extension officers to enhance data collection compliance, resulting in improved accuracy. Corrective actions were implemented to address discrepancies and errors in data collection, fostering transparency and accountability. Additionally, farmer visits were conducted to validate data and provide support, further enhancing programme effectiveness. The county's

acknowledgment of identified issues and commitment to continuous improvement were evident throughout the assessment process.

Tharaka Nithi County also had significant achievements during the data quality assessment exercise. The county successfully addressed discrepancies between KOBO and MEMIS data, ensuring uniformity and accuracy. Implementing corrective actions to improve data collection consistency and accuracy further demonstrated the county's commitment to data quality. Field visits were conducted to validate data and engage with beneficiaries, enhancing transparency in programme implementation. Overall, Tharaka Nithi County's proactive approach to addressing challenges and commitment to ongoing monitoring and support were notable during the assessment.

Notable achievements were observed in Kiambu County during the data quality assessment exercise. The county identified and addressed key issues affecting data quality, including in-kind form usage and data collection inconsistencies. Implementing corrective actions and customizing data collection tools reflected the county's commitment to improving data quality. Field visits were conducted to validate data and provide support to beneficiaries, enhancing transparency and accountability.

Programme Steering Committee induction

Trout farm Kiganjo, Nyeri County

The Programme Steering Committee undertook a visit to the Aquaculture Business Development Programme (ABDP) head office for a comprehensive orientation on post Mid-Term Review (MTR) preparations. They extended a courtesy call to His Excellency Mutahi Kahiga, Governor Nyeri County. During their visit, the PSC committee had the opportunity to visit Bidii Fish Farmers Self-Help Group at Chinga Dam and Wamagana fish processing plant in Nyeri.


Wamagana fish factory, Nyeri County

They witnessed the impact of aquaculture interventions implemented and observed positive outcomes for beneficiaries. The committee advanced to National Trout Hatchery in Kiganjo, Nyeri County. They received a comprehensive briefing on advancements made in the field of trout fish farming. The session enhanced the committee's understanding of the strides made in promoting sustainable trout farming. To broaden PSC understanding of fish production, the committee concluded their visit with a stop at the National Aquaculture Research Development and Training Centre (NARDTC) in Sagana. They gained insights into the pivotal role played by NARDTC in advancing aquaculture.

Fish Market Media Coverage

Operational Status of Kanyikini Factory

While the fish factory boasts functional equipment, Gitonga Angelo, the Managing Director of Meru Investment Development Corporation (MCIDC), noted the need for a test run and highlighted challenges related to member involvement and linkage. Efforts are underway, including leasing arrangements, to address these issues and optimize the factory's operational efficiency.


Kanyikini fish factory, Meru County

Collaboration with ABDP

Angelo emphasized MCIDC's collaboration with Aquaculture Business Development Programme (ABDP) to enhance fish production and market linkages. Resources provided through ABDP, such as a refrigerated truck and the available ice-

making machines at Kanyikini fish factory, would facilitate transportation and storage of fish products, thereby benefiting local fish farmers.

Engagement with Farmers

The discussion highlighted the importance of organizing farmers into groups to effectively utilize the factory's capacity. Angelo expressed openness to partnerships with processors or companies willing to collaborate with local farmers, thereby maximizing the factory's potential and promoting economic growth in Meru County.

Future Prospects

Looking ahead to mid-2024, Angelo expressed optimism about significant progress in supporting fish farmers and ensuring a steady supply of fish products to the market. Efforts to integrate the white meat market with fish processing activities are underway, further enhancing market access and value addition opportunities for farmers.

Ann's Fish Business in Makutano, Meru

Business Overview

Ann has been operating her fish business since 2014, specializing in tilapia and Nile perch sourced from local farmers in Meru and Lake Victoria, respectively. She focuses on meeting customer preferences and emphasizes the nutritional benefits of fish.

Ann's Eatery, Makutano, Meru County

Challenges Faced

Ann highlighted challenges such as sourcing fish that may not be fresh, leading to spoilage and losses. Additionally, high business expenses, including rent, transport, and electricity bills for fish value addition processes, pose significant challenges to profitability.

Comparison of Sourcing

While sourcing from local Meru farmers offers proximity and fair pricing, sourcing from Lake Victoria incurs higher transportation costs. Ann prefers sourcing locally due to these logistical advantages.

Business Motivation

Ann ventured into the fish business in Meru due to the lack of stable fish eateries in the area, aiming to raise awareness about the nutritional benefits of fish consumption.

Value Addition and Sales

Through the Aquaculture Business Development Program (ABDP), Ann learned fish value addition techniques such as filleting, obtaining fish oil, and making fish soup. She sells various value-added products, including fish samosas and fish balls, to her customers.

Fish Farming and Group Membership

ABDP facilitated Ann's entry into fish farming in Embu County, reducing her dependency on external fish sources. She is an active member of the ASE group and leads a subgroup called New Dawn. ABDP provided valuable resources, including a recipe book, to aid in value addition and business management.

NORAD Grant Awarded to ABDP for Enhanced Project Financing

NORAD Grant Implementation

NORAD implementation. Vihiga County

The Advancing Resilient and Nutrition-Sensitive Smallholder Aquaculture (ARNASA) initiative, made possible through funding from a NORAD grant, is set to be implemented across three counties: Vihiga, Nyeri, and Migori.

The ARNASA program represents a comprehensive effort to enhance aquaculture practices in Kenya while promoting resilience, inclusivity, and sustainable development within the sector. Through targeted interventions and strategic partnerships, it aims to drive positive change and unlock the full potential of aquaculture as a key driver of economic growth and food security.

Key outcomes and actions

- **Smallholder Aquaculture Productivity Resilience**

Implement targeted interventions to enhance productivity and resilience for small-scale aquaculture operations.

Strengthen technical support and capacity building for smallholder farmers.

- **Increased Opportunities for Youth and Women**

Innovate market approaches, including the establishment of smart kiosks, to empower youth and women.


NORAD implementation. Vihiga County

NORAD implementation. Vihiga County

Foster collaboration with Aquaculture Service Enterprises (ASEs) as focal points for these initiatives.

- **Knowledge and Policy Development**

Contribute to informed policies and practices in the aquaculture sector.

Review and enhance existing nutritional booklets to address emerging issues.

- **Baseline Survey**

Conduct a baseline survey, with a specific focus on Vihiga County, to guide program interventions.

- **Internship Program**

Onboard students along the aquaculture value chain as interns for 6 months to support kiosk sustainability.

- **Clear Indicators and Outcomes**

Develop a logical framework for monitoring and evaluation, ensuring specific targets and measurable outcomes.

Aquaculture Technologies Innovations and Management Practices (TIMPS) Training

TIMS training at NARDTC

The TIMPS Training, which took place at the National Aquaculture Research and Development Training Center (NARDTC) in Sagana, equipped extension officers with essential knowledge and practical skills in various facets of aquaculture. This intensive program covered a comprehensive range of topics critical for effective aquaculture management. Let's delve into the key components of this training:

Culture Systems:

Participants gained insights into different aquaculture systems, including pond-based, cage-based, and recirculating aquaculture systems. Understanding these systems was crucial for optimizing fish production.

Culture Species:

The training explored various fish species suitable for aquaculture, emphasizing their growth requirements, behavior, and market demand. Participants learned to make informed decisions regarding species selection.

Tilapia and Catfish Seed Production:

Extension officers delved into the intricacies of seed production for two prominent aquaculture species: tilapia and catfish. Techniques for hatchery management and fry production were covered.

Technologies for Live Feed Production:

Participants learned about live feed organisms (such as zooplankton and rotifers) and their role in supporting fish larvae and fingerlings. Practical methods for live feed production were demonstrated.

Fish Feed Formulation:

Participants learning about feeds formulation

Understanding the nutritional requirements of fish was essential. The training covered feed formulation, ingredient selection, and feeding strategies to optimize growth and health.

Water Quality Management:

Participants learning about water quality management

Extension officers explored water quality parameters, monitoring techniques, and strategies for maintaining optimal conditions in aquaculture systems. Proper water management directly impacted fish health and productivity.

Cold Water Aquaculture:

Cold-water species have unique requirements. Participants learned about their culture, including temperature control, disease prevention, and growth optimization.

Fish Diseases and Treatment:

Recognizing common fish diseases and implementing preventive measures was crucial. The training covered disease identification, biosecurity practices, and treatment options.

Biosecurity in Aquaculture:

Extension officers understood the importance of biosecurity protocols to prevent disease outbreaks. Measures such as quarantine, disinfection, and controlled access were emphasized.

Fish Handling and Hygiene:

Proper handling techniques during harvesting, transportation, and processing were essential. Participants learned hygiene practices to maintain fish quality.

Post-Harvest Reduction and Value Addition:

The training addressed post-harvest losses and value addition techniques. Extension officers explored ways to enhance product quality and marketability.

PICTORIAL

Partial harvesting – Ruguru Ngandori war, Embu

Fish marketing at the Programme supported fish out let in Chuka town, Tharaka Nithi

Harvest from school pond in Muhoroni Primary school, Kisumu

Beth Mumbua watering her fruits from the fish pond water, Yatta Sub-County, Machakos

Pupils displaying part of fish harvested in muhoroni primary school, Kisumu

Fish value added products traded during Community Mobilization event in Tigania West sub-county, Meru