eFishery

Impact Report 2023

- GROW TOGETHER -

www.efishery.com

Disclaimer

At eFishery, we believe the future lies in aquaculture. By supporting farmers, we aim to improve their livelihoods and leverage the potential of aquaculture to eliminate hunger and foster professionalism within the industry.

This impact report is prepared by the Sustainability and Development Unit of eFishery Group including its Indonesian operating company PT Multidaya Teknologi Nusantara (“**eFishery**” or “**Company**”). The information provided in this report is provided for general informational purposes only and reflects the ongoing impacts of the eFishery Group’s products and services. The report focuses on the impact analysis for Indonesian farmers.

In the event of any discrepancy between this report and the underlying sources (including project or investment documentation, or other materials) that is confirmed after the report’s publication, the underlying source shall prevail.

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Impact at eFishery

About Impact Report

Welcome to eFishery's third Impact Report. This report demonstrates our continued commitment to expanding our products and services within our ecosystem and supply chain. It highlights eFishery's efforts in driving positive social and environmental outcomes and outlines the impact we've made in creating an inclusive ecosystem. You can find previous versions of our Impact Report for 2021 and 2022 on our website.

As we move forward, this report serves as a platform to share insights into our impact performance. We believe the aquaculture sector is crucial for providing safe and sustainable food, and we invite all stakeholders to engage with us in holding eFishery accountable as we pursue our vision and mission.

This report is available exclusively in digital format in English, promoting both accessibility and environmental stewardship. For the latest updates on our impact initiatives, progress, and achievements, please visit the eFishery website. Any revisions or updates to historical information will be clearly communicated.

Report Process Development & Quality

This impact report highlights the effects of our innovations and business models on our primary stakeholders—farmers. It provides an in-depth examination of eFishery's overall impact and demonstrates how we can enhance the fragmented aquaculture industry.

Our research incorporates insights from external studies that explore the broader impacts of our initiatives. To ensure a comprehensive analysis, we collaborated with external researchers and surveyors. This report builds on the commitments and targets outlined in our Sustainability Report. For a broader narrative about eFishery's efforts, please refer to our 2023 Sustainability Report.

The report draws on two key data sources: internal data from the eFishery database and external data gathered from field-level surveys. Both sets of data are thoroughly analyzed and presented to provide a clear picture of our contributions and the potential for future growth in aquaculture

Continuous Improvement & Accountability

This report is a critical communication tool for our investors and private partners, who have played a key role in our shared journey of scaling our impacts. We believe this document effectively highlights our achievements and demonstrates our alignment with the expectations of external stakeholders. The content has been thoroughly reviewed and approved by eFishery's Executive Committee, Impact Committee, and relevant business unit leaders.

eFishery

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A Key Message from our Chief Executive Officer & Co-Founder

When founded in 2013, our main goal was to be impactful.

Our long term purpose is to solve world hunger problems through aquaculture, provide radically affordable technology to tackle fundamental issues and build a truly inclusive digital economy that reduces inequalities. Our main objective at global level is to accelerate the transition for aquaculture to be the largest protein provider in the world.

eFishery has the scalable model to be the largest and the most impactful operation. The tech enables us to develop an inclusive and integrated value chain. We drive industry-leading change that's creating value for our farmers, communities and customers. And aquaculture is how we are getting it done.

We are driving transformative change in the aquaculture industry, creating meaningful value for our farmers, communities, and customers. Through our innovative approach, we are leveraging the power of technology to elevate farmers' professionalism and enhance their livelihoods.

We are committed to one anchor strategy to extend impacts.

1. Impact for farmers, through improved productivity and reduce disk in disease and market
2. Impact for customers, through providing best product quality and lower supply chain cost
3. Impact through technology, through analyzing more farmers data and utilizing it to deliver impacts

We provide affordable technology through a scale up tech ecosystem to improve productivity.

369,000+ ponds
connected to technology

We build an inclusive digital economy through improving farmers income with new value-chain services.

USD 42 million
financing[1] disbursed

We contribute to eliminating hunger issues through expanding distribution of affordable protein.

242,000 MT
yearly production

Building on these main impacts, we remain focused on farmers productivity, integrated supply chain to develop off-take connectivity directly from farmers and closed loop connected technology. Our products and services are designed to create the strongest approach in providing good quality of seeds, best performing feed, technical assistance, financing, disease management and most importantly market access. For market access, we focus on selling farmers' harvests rather than just commodity fish and shrimp. Our approach emphasizes market-driven farming practices and ensures the delivery of high-quality products directly from the farm.

Our core principle is to unlock the potential of tech-based aquaculture as a vital solution for eliminating hunger and nourishing communities. By connecting farmers to technology, financial resources, and market access, we are fostering sustainable growth and resilience, particularly in a world increasingly challenged by food insecurity, conflict, and climate change.

As we invest in innovation and forge strong partnerships, we continuously refine our products and services to ensure we meet the evolving needs of our stakeholders. Guided by our values, we are dedicated to advancing sustainable production, protecting natural resources, and supporting the livelihoods of farmers and communities.

Since our founding in 2013, eFishery has transformed from a smart-feeding company using sensors to monitor fish and shrimp appetite into a leader in aquaculture technology. Our innovations have cut feed costs, reduced pollution, lowered our carbon footprint, and improved fish health. Today, we offer a complete range of solutions—including feeder units, financial access, disease monitoring, and enhanced market access—ensuring better prices and fairer conditions for farmers.

In this impact report, you will see how our products and services have evolved to create real value for farmers. From advanced feeding technology to comprehensive support systems, we are committed to equipping farmers with the tools they need to thrive in an increasingly competitive aquaculture landscape.

With economic performance exceeding IDR 6.3 trillion from fresh products, eFishery contributes for 2.19% of Indonesia's aquaculture and fisheries sector GDP. The impact is clear from our products and services. Our key products of eFisheryku including Beli Pakan, Lapak Ikan and Kabayan and eFeeder increase 91% farmers income, followed by Kabayan increases 60% farmers income and eFeeder combined with better practices could improve efficient Feed Conversion Ratio (FCR) within 1.3, increase on Average Daily Gain (ADG), Average Body Weight (ABW), and improve Survival Rate (SR) of 84%.

Looking ahead, we know there is still much to accomplish. We are dedicated to scaling our efforts, expanding our reach, and enhancing our impact in the aquaculture sector. Together, we can continue to transform the industry and promote sustainable growth for smallholder farmers.

Gibran Huzaifah Amsi El-Farizy
CEO and Co-Founder, eFishery

“ Investor Messages

Chris Teoh
responsAbility

As an impact investor, our role is not just to identify promising companies, but to support those that are committed to the environments and communities in which they operate. These extend beyond customers, employees, and immediate stakeholders to include the physical environment and broader societal impacts. This is particularly crucial for a company like eFishery, which operates in a traditional industry with a complex supply chain, while simultaneously transforming the very environment in which it works.

Over the past year, eFishery has not only grown in size but also undergone a level of “institutionalization,” supported by a highly effective board. Yet, this growth has not diminished the entrepreneurial spirit that drives the company forward.

For example, before responsAbility’s investment, we had discussions about environmental degradation and deforestation. Within months, eFishery established a foundation focused on mangrove reforestation, demonstrating the company’s commitment and ability to act swiftly on its values. This reflects the strong leadership and vision of the management team. eFishery is on the cusp of achieving remarkable milestones.

Despite navigating challenges such as climate change, supply chain disruptions, and export market fluctuations, eFishery has remained deeply committed to supporting smallholder farmers. By maintaining ongoing dialogues with these farmers, the company fosters trust and facilitates the introduction of best practices. This is vital, as farmers are the backbone of the entire industry. Through engagement with farmers, eFishery continues to elevate the standards of aquaculture in Indonesia.

The company has created a strong framework for land-based aquaculture in Indonesia, focusing on three core pillars: farmers, fish (including shrimp) supply chain, and feed. Their commitment to sustainability is evident in their efforts to improve stakeholder livelihoods, without compromising their own business goals. eFishery has introduced new technologies that reduce waste, protect the environment, increase yields, enhance supply chain efficiency, and improve traceability and food safety.

eFishery is uniquely positioned to modernize a traditional industry, benefiting all stakeholders while advancing Sustainable Development Goals (SDGs) without sacrificing financial performance. We believe the company will continue to lead the way in improving the livelihoods of farmers in Indonesia and beyond, paving the path to a more sustainable and prosperous future.

Amy Novogratz
Aqua Spark

On a high level, both eFishery and Aqua-Spark share an industry transformation mission, and in a more detailed way eFishery has been a critical portfolio company, helping is to reach our impact goals including, less resource waste, decreased use of wild caught fishmeal, amount of sustainable fish produced, number of farms digitalised, number of farmers financed.

Sunata Tjiterosampurno
Northstar

Partnering with eFishery for the past 5+ years, and, in particular, supporting the company’s efforts to deliver positive impact to the aquaculture industry has been very rewarding for Northstar. eFishery’s technology and end-to-end product offering empowers fish and shrimp farmers to improve productivity across the aquaculture supply chain while reducing water pollution and biological risk. It is a win-win business with multiple bottom lines.

Wei Xiang Lim
SoftBank

At SoftBank, our core belief is that AI and technology will reinvent existing industries, create new ones, and propel humanity forward. eFishery shares this same vision by using technology to make a positive impact in local communities. We are proud to be part of eFishery’s journey and are excited to see what the future holds.

“ Farmers Messages

Susi & Piyul
Fish Farmers
Indramayu

I began farming in 2004 and joined eFishery in 2019. What started with two rented ponds has now expanded to collaborating with 34 farmers. The eFeeder and Kabayan have been instrumental in enhancing our farming practices. Since joining eFishery, I have experienced remarkable growth alongside the company as they developed Kabayan and improved the eFeeder. Over the past two years, I have transitioned from renting to actively using eFeeders in 60-70 ponds.

When eFishery first expanded in Indramayu, I helped guide fellow farmers in accessing feeds, financing, and the eFeeder. By acting as a connector, I listened to farmers’ experiences and highlighted the benefits of these products. During the initial and ongoing development of Kabayan, I learned alongside eFishery, exploring how these innovations could strengthen our farming practices.

For us fish farmers, the primary challenges are feed quality and management, which directly impact our revenue and ability to start the next cycle. We need high-quality feed at competitive prices, especially for smallholder farmers. We place our trust in eFishery, working together to connect farmers with essential products and services.

Nurhidayah
Fish Farmer
Amuntai, Kalimantan Selatan

I work as a lecturer at a university in South Kalimantan, and I also manage my own catfish farm. Despite my busy schedule, I'm passionate about growing my business, especially farming white catfish, which is preferred in my area.

I’m highly satisfied with the Kabayan program, which has been essential for managing my business capital. The initial funds have helped me efficiently cover operational costs. I source my feed from eFishery and really appreciate the quick delivery—often within a day—and the more affordable prices compared to local feed agents.

Since starting with six eFeeder units in December 2022, I have found that this technology saves me valuable time and energy during the feeding process. It has truly transformed my fish farming operations, allowing me to balance my academic responsibilities while successfully managing my farm.

Rahmat Sujarwo
Fish Farmer
Garut, West Java

Since joining eFishery, I have seen remarkable improvements in my farming operations. Before eFishery, I used 450 kg of feed and harvested around 300 kg of fish. Now, I’m using 750 kg of feed and achieving yields of 500 kg.

Additionally, I have increased my stocking density from 20 to 43 kg, maximizing the potential of my farming space. The transition from organic feed to full pellet feed has also enhanced my fish's growth and health.

Thanks to eFishery, I am not only increasing my production but also improving the efficiency and sustainability of my farming practices.

Moh. Mastur
Shrimp Farmer
Riau

After joining the contract farming program with eFishery, I received hands-on guidance to optimize my farming practices. Just five months later, the impacts have been remarkable. I have increased the number of ponds, enhanced my financial capacity, and boosted my inputs of feed and seed.

As a result, my harvest has more than doubled, rising from 3,000 kg to 7,000 kg in 2024. My plafond limit has expanded from 70,000,000 to 140,000,000, total feed usage increased from 4,300 kg to 10,000 kg, and I have grown the number of seeds from 150,000 to 350,000 individuals.

Ahmad Muntibi
Shrimp Farmer
Banten

In 2022, I joined a contract farming program that offers invaluable technical and financial support, including weekly water condition checks and feed management assistance from the technical support team. Since then, my operations have expanded to five ponds, and my production has significantly improved—from 9-10 tons per hectare to 20-25 tons per hectare—thanks to enhanced pond construction and better farming practices. As a result, my total harvest has increased from 3,000 kg in 2023 to an impressive 12,000 kg in 2024. This support has truly transformed my farming journey.

Banyu Alirahman
Fish Farmer
Tasikmalaya, West Java

Since joining eFishery, the impact on my farming operations has been transformative. I have expanded my ponds from 4 to 12, significantly increasing my farming capacity. My financing limit has grown from IDR 50,000,000 to IDR 151,000,000, allowing for greater investment in my business. I have also improved my stocking density from 672 kg to 720 kg, resulting in a yield increase from 7,200 kg to 11,000 kg. The productivity program has been instrumental, focusing on increasing stocking density, utilizing full pellet feed, and implementing aeration to enhance oxygen levels in the ponds. This comprehensive support has truly elevated my farming success

Impact Highlights

Economic Performance

IDR 10,814,062,104,605
USD 701,632,092.93
revenue

IDR 653,831,708,088
USD 42,412,539
financing to farmers

47.7 % YoY Growth
financing to farmers

GDP Indonesian Aquaculture & Fisheries Contribution Sector
2.19% in 2023

Environment Performance

242,245,164 kg
of fish and shrimp were sold and traded with improved traceability systems in place

369,292 ponds
connected with technology

~80% survival rate (SR)
in production efficiency, with a feed conversion ratio (FCR) of 1.1-1.3

222,546,289 kg
of feed saved through the use of eFeeder technology.

Social Performance

44,000+
farmers and farmers groups, with 191% YoY growth in farmers membership.

15,191 farmers
received Kabayan financing.

Carbon footprint calculation
188,348 tCO_2e

Total employees: 2008
with 1,970 based in Indonesia and 38 in India.

eFishery leverages the power of its key products, including **eFisheryku (Beli Pakan, Lapak Ikan), Kabayan** and **eFeeder**, to drive positive impacts

A 91% increase in farmers' income

An additional
IDR 19.2 million net profit
with
28.6% increase in profit probability

eFisheryku combines essential features from **Beli Pakan, Lapak Ikan** and **Kabayan** to deliver comprehensive solutions for farmers

A 78% increase in farmers' income

An additional
IDR 11.2 million net profit
with
11% increase in profit probability

Beli Pakan

A 44% increase in farmers' income

Beli Pakan increases net profit and profit probability, with both active and non-active farmers have similar trends.

Analysis indicate an average of
IDR 6.5 million net profit
and
5.9% profit probability

Lapak Ikan

A 106% increase in farmers' income

Lapak Ikan increases net profit and profit probability, with both active and non-active farmers have similar trends.

Analysis indicate an average of
IDR 12.6 million net profit
and
8.5% profit probability

Kabayan

A 60% increase in farmers' income

Kabayan increases net profit and profit probability, with both active and non-active farmers have similar trends.

Analysis indicate an average of
IDR 8.1 million net profit
and
9.6% profit probability

eFarm

eFarm increases income, net profit and profit probability, with both active and non-active farmers have similar trends.

Analysis indicates an average **22% income, 9.1 million net profit** and **31.3% increase in profit probability.**

eFeeder

eFeeder increases net profit and profit probability, with both active and non-active farmers have similar trends.

Analysis indicates an average **13% income, IDR 8 million net profit** and **17.6% profit probability.**

eFeeder to FCR

eFeeder increases FCR with average for both active and non active users around 1.3

Our Aquaculture Farmers

Essential insights about Aquaculture Fish and Shrimp Farmers in Indonesia

01

Technology's Transformative Power

Technology has the potential to transform farmers' mindsets. Many Indonesian farmers still rely on traditional knowledge passed down through generations, with limited access to modern tools. As farming becomes increasingly challenging due to fluctuating weather, and declining quality of seeds, soil, and water, farmers depend heavily on their experience. However, technical training or capacity-building opportunities remain scarce.

02

Access to High-Quality Inputs

Not all farmers have access to high-quality inputs. The aquaculture sector in Indonesia is fragmented, creating unequal distribution of farming inputs, particularly in remote areas. Access to quality seeds and feed is essential for survival and productivity, yet many farmers are deprived of these resources. While some have access to flexible financing options, others face significant barriers in securing essential inputs, resulting in uneven opportunities for success.

03

Dependence on Middlemen

Historically, middlemen have acted as the link between farmers and buyers. As a result, many farmers are heavily dependent on intermediaries, especially those with financial debts, which traps them in a vicious cycle. For rural farmers whose primary income comes from farming, this dependence on middlemen undermines their ability to sustain a livelihood.

04

The Importance of Financing

Financing plays a crucial role in transforming farmers' lives. Unfortunately, many smallholder farmers are considered unbankable due to limited resources and a lack of credit scoring, making it difficult to secure loans for farm improvements or to start new farming cycles. Access to financing is vital for bridging this gap, empowering farmers, and improving their livelihoods. When traditional financial institutions fall short, companies like eFishery can step in to offer support.

05

Fair Offtake as a Path to Better Income

Farmers often receive unfair prices for their products due to their reliance on middlemen, who deduct costs for borrowed feed and seeds. Combined with unpredictable weather and limited access to quality inputs, many farmers struggle to secure fair offtake prices, preventing them from earning a sustainable income. Instead of thriving, farmers often find themselves merely surviving.

06

Understand the Farmers and Living Income

Defining who our farmers are and what constitutes a living income is complex. Farmers can be landowners, farm managers, or farm workers, each with different income levels. Typically, landowners earn the most, while farm workers earn the least. A holistic approach is essential to support these different roles and help them achieve a sustainable living income.

07

Underrepresented Women in Aquaculture

Women are often underrepresented and undervalued in aquaculture and fisheries. Their contributions frequently go unrecognized, and they face limited access to land ownership, benefits, and capacity-building opportunities. Women also often lack decision-making power within their families, as well as control over resources and income, making it harder for them to access essential inputs like seeds and feeds. This disparity limits their potential to contribute to the aquaculture sector.

08

Allies in the Fight Eliminating Hunger

Fish and shrimp products are an affordable source of protein, packed with essential macro and micronutrients. Unlike other agricultural sectors, aquaculture benefits from shorter cultivation cycles, allowing for faster recovery and seed-to-harvest periods. This efficiency enhances our ability to combat hunger, particularly as we diversify species to ensure sustained production.

09

Malnutrition and Poverty in Rural Communities

Despite having direct access to protein sources, rural and coastal communities are often closely linked to malnutrition and poverty. Unsustainable production systems force families to sell off the highest-quality products, leaving them with insufficient resources to meet their own nutritional needs.

10

Challenges in Generational Regeneration

A large percentage of our farmers are over 50 years old, according to our 2022 and 2023 impact research. Despite the introduction of technology, younger generations are often disinterested in pursuing farming as a career, seeing it as unviable. This trend presents significant challenges for the future of aquaculture and agriculture.

Growing Together with Farmers

Who We Are

eFishery started as a small startup and has since grown into a billion-dollar pioneering technology company, leading Indonesia's aquaculture ecosystem and supporting farmer communities. We are at the forefront of technological innovation in fish and shrimp farming, dedicated to modernizing traditional practices and empowering farmers.

Our core philosophy, **"Tumbuh Bersama" (Grow Together)**, drives us to innovate and collaborate closely with farmers to optimize operations. Our mission is to make aquaculture the primary global source of animal protein by addressing key challenges with affordable technology and promoting an inclusive digital economy. We prioritize collaboration with farmers, ensuring access to essential resources, education, and fair market opportunities.

We have developed an integrated ecosystem that harnesses the power of AI and IoT to create more productive and regenerative aquaculture practices. Our innovative AI-driven automatic feeding devices are specifically designed to optimize feeding practices, enhancing efficiency while promoting sustainable fish and shrimp farming at every stage.

Our product development strategy embodies a holistic and innovative commitment to advancing Indonesia's aquaculture sector. By leveraging cutting-edge technology, we aim to create a sustainable and efficient value chain from upstream to downstream.

Our impact in Indonesia is evident through a range of programs and services designed to improve food security. We focus on enhancing the efficiency of fish and shrimp farming, providing inclusive financial access, accelerating harvest cycles, and boosting production capacity and farmer income. By leveraging advancements in information technology, we deliver integrated solutions for affordable feed purchases, fair harvest sales, and comprehensive aquaculture capacity building.

Sustainability Framework

eFishery is dedicated to generating a sustainable positive impact through a strategic focus on three key areas: Tech-Enabled Sustainable Aquaculture, Biodiversity and Climate Action, and Thriving Communities. By implementing a strategy that emphasizes these areas, eFishery aims not only to achieve resilient business growth but also to actively contribute to a better future for both the environment and society.

eFishery Sustainability Framework

Utilizing technology to enhance sustainability, performance and profitability in aquaculture, aiming to drive a farmer-led industry transformation that reduces social inequality and eliminates hunger.

Main Strategy

eFishery leads in technology-based aquaculture to increase farm productivity, profitability, and professionalism. The company uses aquaculture as a catalyst for eliminating hunger and improving farmers' livelihoods, producing high-value, nutritious products while maintaining balance within the farming ecosystem.

Focus Area

From its inception, eFishery has been dedicated to sustainability, focusing on using aquaculture to alleviate hunger and transform rural livelihoods. The company has advanced aquaculture efficiency and productivity through innovations like the eFeeder, AIoT solutions, and a comprehensive ecosystem that offers farmers enhanced financial access, farming inputs, and market channels. As the largest aquaculture feed aggregator in Indonesia, eFishery has positioned itself as a global leader in transforming the aquaculture industry with its tech-enabled solutions.

Theory of Transformation

In our operations, we are committed to contributing to these three key SDGs. The Theory of Transformation illustrates how eFishery creates meaningful impact in these areas.

Direct SDGs

2. Zero Hunger

- 2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round.
- 2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons.
- 2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.
- 2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.

12. Responsible consumption and production

- 12.2 By 2030, achieve the sustainable management and efficient use of natural resources.
- 12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production;

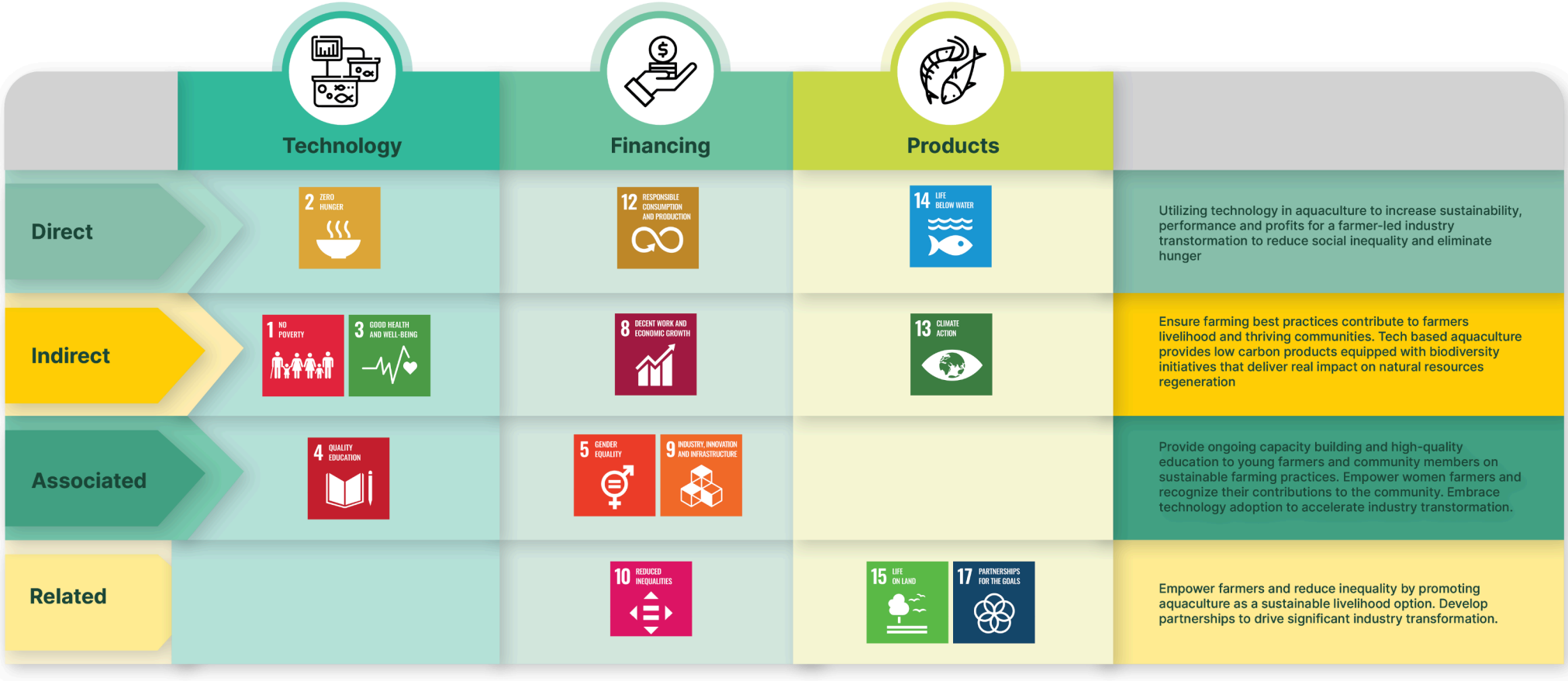
14. Life below water

- 14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.
- 14.7 By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism.

Indirect SDGs

SUSTAINABLE DEVELOPMENT GOALS

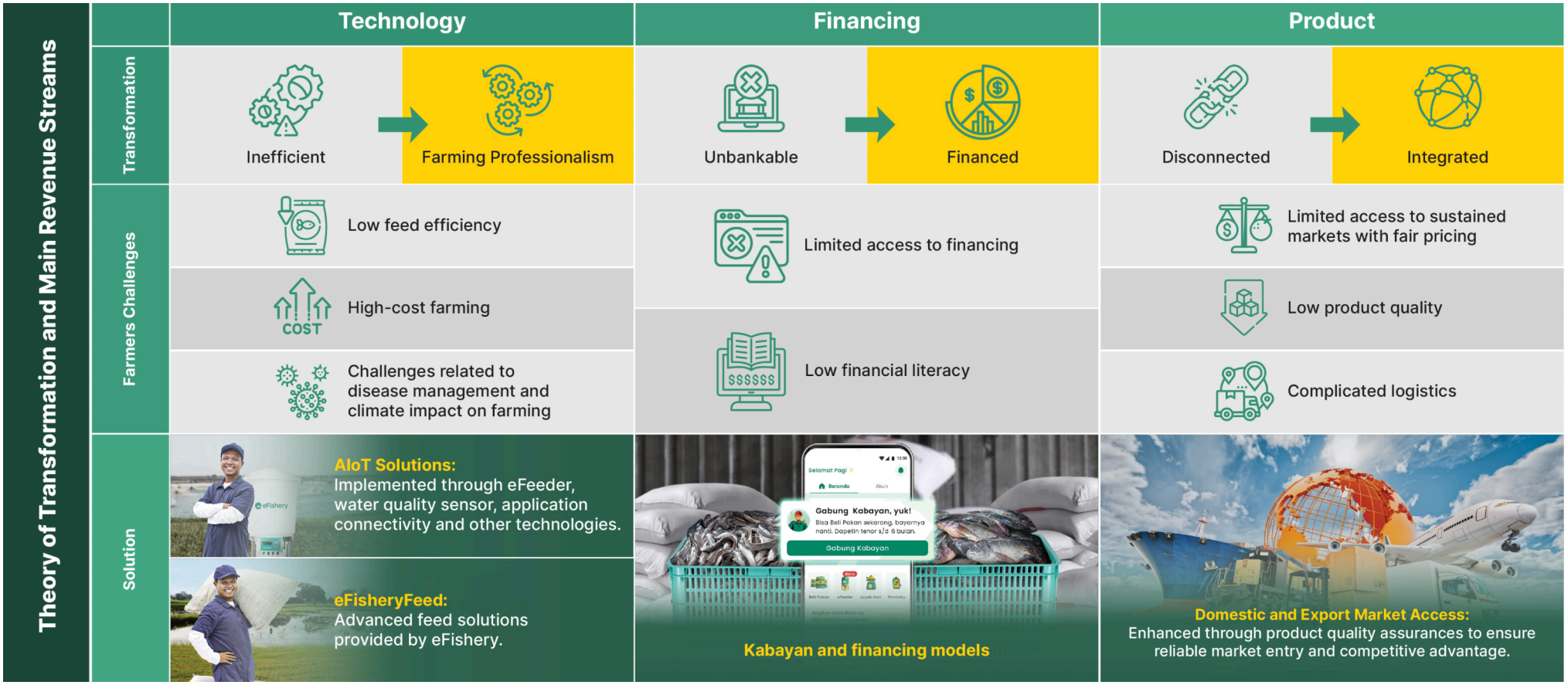
Our Impact



We create value through an integrated ecosystem that supports farmers from the initial input stage all the way to harvest. eFishery is a leader in implementing AI across the aquaculture operational chain, enhancing effectiveness and efficiency while addressing the risks associated with declining water quality. This innovation not only reduces operational costs but also minimizes the environmental impact of aquaculture. Our commitment to advancing technology in aquaculture also includes modernizing the product distribution chain.

We provide comprehensive support for the growth of farming businesses by offering safe and accessible financial solutions. Farmers can conveniently purchase feed with deferred payment options that allow them to pay after the harvest.

Our Offer for Better Technology, Financing and Farming Ecosystem



We have created an integrated ecosystem that leverages AI and IoT technology to foster a more productive and eco-friendly aquaculture environment. Our cutting-edge AI-driven automatic feeding devices are designed to optimize feeding practices, improving efficiency and supporting sustainable fish and shrimp farming at every stage.

Empowering Our Farmers

Empowering Our Farmers

Farmers groups are defined by farmers members under eFishery ecosystem and technology inclusion that actively farming and transacting over the multiple years membership within the ecosystem. Farmers groups refer to the group membership that is represented by the head of the group, ranging from diverse total members from 5 to 10 people and beyond. In this report, the term ‘farmers’ refers to farmers' groups.

Within eFishery ecosystem, we support farmers as both individuals and farming groups to connect with our technology, financing and ecosystem services. In total 2023 we have 44,000+ farmers groups actively supported. In this impact report, we have conducted analysis as per 31 July 2024 to highlight the exact number of farmers group growth over 2023 for 48,507 farmers groups. This analysis is based on data from the eFishery internal database, which has undergone a thorough verification and validation process.

Farmers Profile

Fish and Shrimp Farmers Numbers

We have more fish farmers than shrimp farmers in our ecosystem, since the beginning of establishment, we have started wide and length programs in fish farmers started in the West Java area, closer to our Bandung Headquarters, then we expanded to shrimp farming at the end of 2021. During the 2 years of operation, we have supported more than 9,000 shrimp farmer groups, demonstrating eFishery's agility and dedication to meeting farmers' needs.

The total number of brackish water and freshwater fish and shrimp farmers in Indonesia is approximately 1,733,811[2]. Within this total, farmer groups associated with eFishery represent about 2.79%. This highlights the significant impact and potential for eFishery to further support more farmers within its ecosystem.

Farmers Age Profile

More than half of our farmers are in the productive age range of 31 to 46 years, indicating that addressing technology barriers can be more manageable within this demographic compared to those aged 47 to 62. Farmers in this prime age group are generally more adaptable to technology, suggesting greater potential for integration into the system for both fish and shrimp farming.

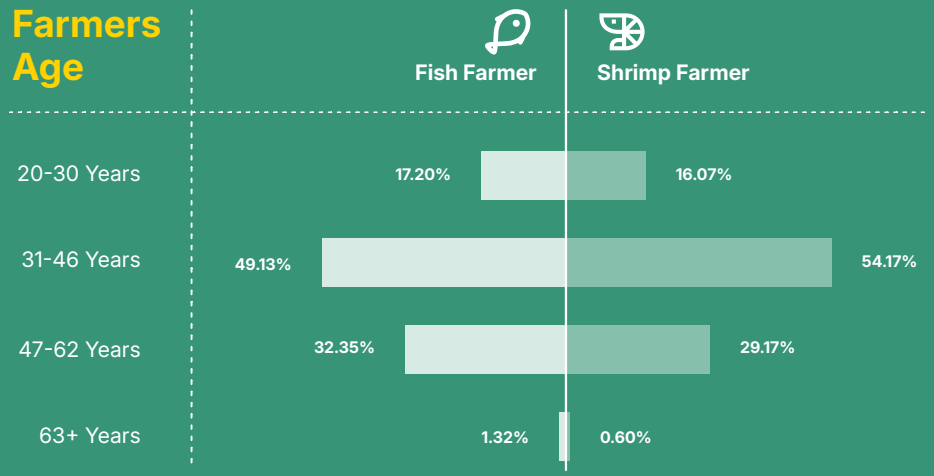
Farmers Gender

The majority of our farmers are male, making up 87% of the total; however, we have observed a growing percentage of female farmers within our ecosystem. This indicates that women are taking ownership, control, and leadership roles in farm management. In Indonesia the total women farmers in aquaculture and also across diverse sectors in fisheries and agriculture are very rare, due to the underlying risks of women being undervalued, underrepresented and unacknowledged in their contribution within farming households even when farm operations are managed by family members of both genders.

Farmers Number

38,423	Fish	79%
9,724	Shrimp	20%
360	Fish and Shrimp	1%
TOTAL		48,507

Farmers Age



Farmers Gender

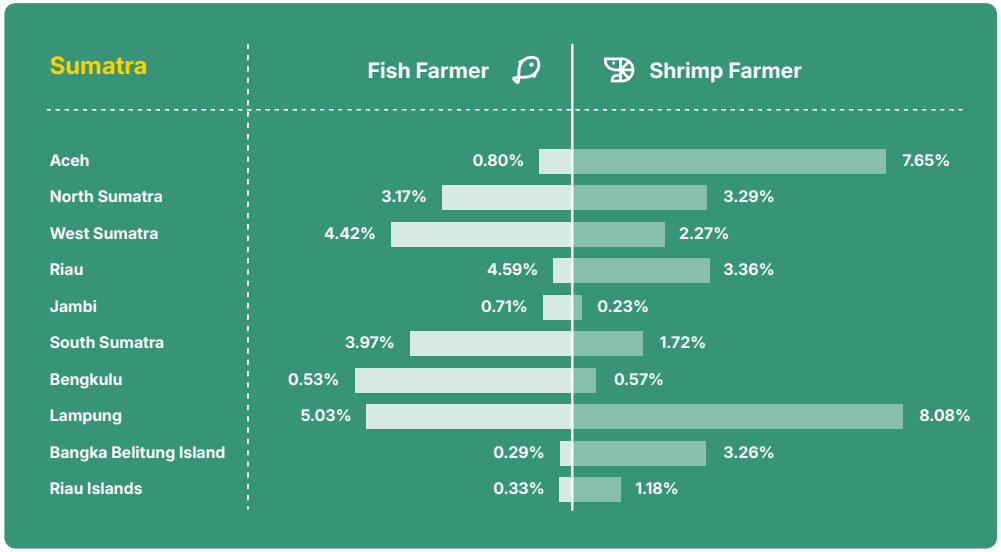
87.32% Male

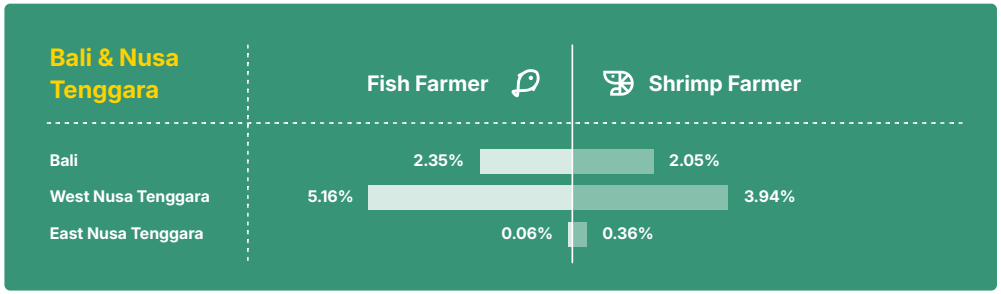
12.68% Female

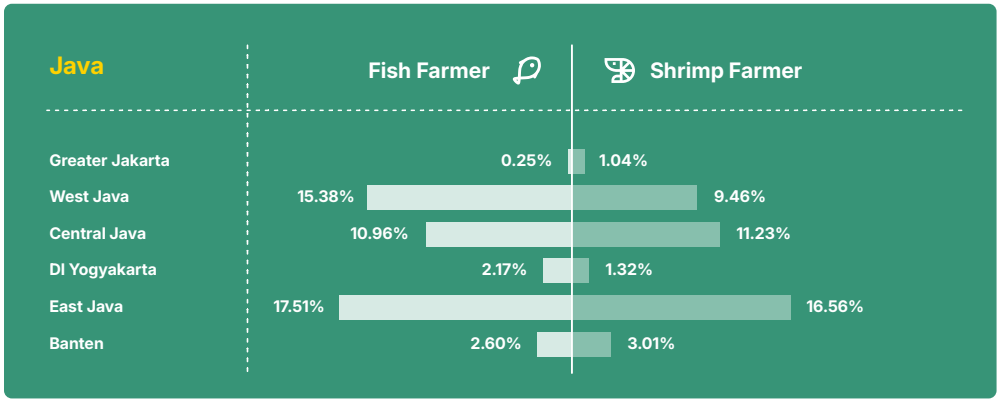
Farmers Distribution

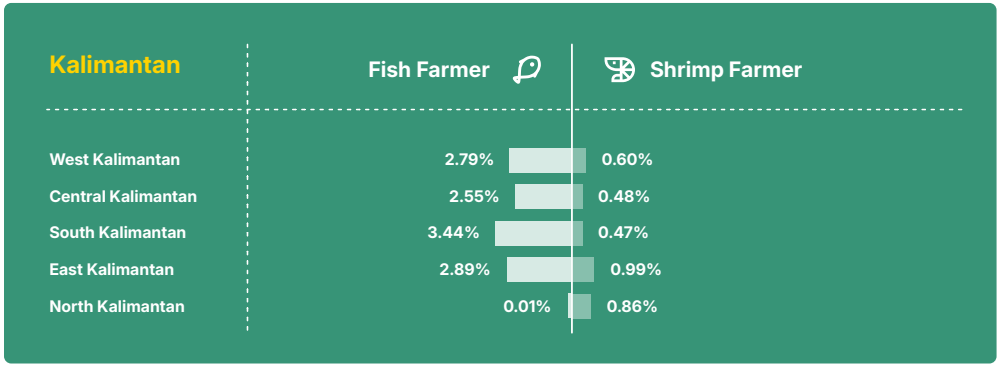
Our community of over 48,507 farmers spans 30 out of the 38 provinces in Indonesia. The majority are located on Java Island, accounting for over 15% of our total, followed by farmers in Sumatra, Bali-Nusa Tenggara, Kalimantan, and Sulawesi. We operate 192 eFishery points, branch offices that provide services and farming assistance throughout Indonesia, ensuring we are close to our farmers and effectively supporting their needs.

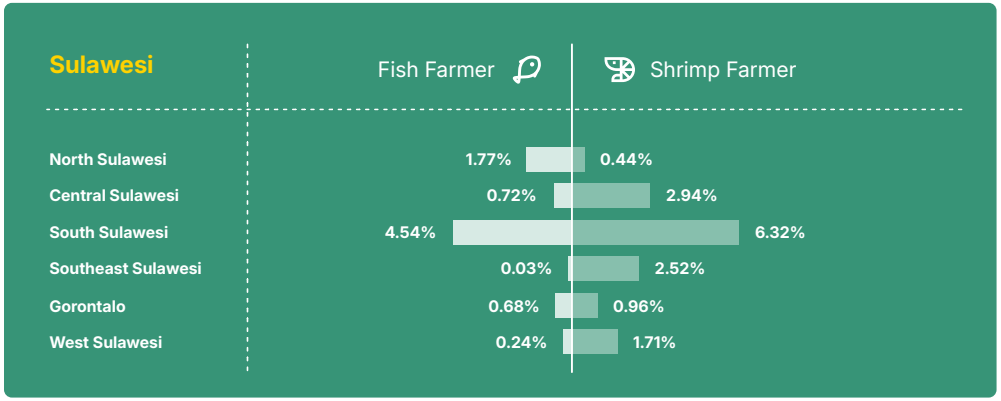
Farming is not an easy process, especially with declining water and soil quality and unpredictable weather conditions. Being close to farmers allows us to provide the support they need, helping to mitigate these challenges and enhance productivity. Our commitment to assisting farmers fosters positive impacts on their operations and overall farming success.











Farmers Distribution on Farming Type

There are various types of farming diversification commonly practiced in aquaculture and agriculture, which are based on a combination of intensification methods, stocking density, technology use, and overall production levels.

We utilize these factors to categorize farmers into three main types, specifically tailored for fish and shrimp farming, as outlined below.

Fish farms are categorized into intensive, semi-intensive, and traditional types based on stocking density, facilities and technology used, and pond construction. Traditional farms are more dependent on water quality, soil conditions, and weather, making them more vulnerable to climate change risks.

In contrast, the disparity in stocking density among the three fish farming types is relatively small compared to that in shrimp farming.

FISH FARM CATEGORY

Intensive		Semi Intensive		Traditional	
Stocking Density **50-100 ind/m²**	Pond Infrastructure **Concrete, plastic lining**	Stocking Density **30-50 ind/m²**	Pond Infrastructure **Plastic lining, earthen pond**	Stocking Density **15-30 ind/m²**	Pond Infrastructure **Earthen pond**
Facility **Aeration, concrete ponds or plastic lining ponds**	Feeding Type **Full use of commercial pelleted feed**	Facility **Aeration, plastic lining ponds or earthen pond**	Feeding Type **Use of commercial pelleted feed, combination of commercial feed and organic feed**	Facility **Minimum to none aeration, earthen pond**	Feeding Type **Organic feed, minimum to none commercial feed**
Feeding Intensity and Frequency	✦✦✦ **HIGH**	Feeding Intensity and Frequency	✦✦ **MEDIUM**	Feeding Intensity and Frequency	✦ **LOW**
Yield Production	✦✦✦ **HIGH**	Yield Production	✦✦ **MEDIUM**	Yield Production	✦ **LOW**
Ease of Technology Appliances	✦✦✦ **HIGH**	Ease of Technology Appliances	✦✦ **MEDIUM**	Ease of Technology Appliances	✦ **LOW**
Farming Difficulty	✦✦ **MEDIUM**	Farming Difficulty	✦✦ **MEDIUM**	Farming Difficulty	✦ **LOW**
Climate Change Risk	✦✦ **MEDIUM**	Climate Change Risk	✦✦ **MEDIUM**	Climate Change Risk	✦✦✦ **HIGH**

In shrimp farming, there is a significant disparity in stocking density between intensive, semi-intensive, and traditional farms. Unlike fish farming, shrimp farming demands greater attention and expertise to ensure successful production. Traditional farms are typically located near coastal areas, relying heavily on tidal systems and water quality from the open sea.

This dependence on external factors such as water quality and weather make traditional farms less capable of maintaining a controlled environment compared to intensive farms, leaving them more vulnerable to the risks posed by climate change.

SHRIMP FARM CATEGORY

Intensive

Stocking Density
100-200 ind/m²

Pond Infrastructure
Concrete/plastic lining

Facility
Intensive and spread out paddle wheel, concrete or plastic lining well designed ponds

Feeding Type
Full use of commercial pelleted feed with high protein profile

Feeding Intensity and Frequency	✦✦✦ **HIGH**
Yield Production	✦✦✦ **HIGH**
Ease of Technology Appliances	✦✦✦ **HIGH**
Farming Difficulty	✦✦✦ **HIGH**
Climate Change Risk	✦ **LOW**

Semi Intensive

Stocking Density
60-100 ind/m²

Pond Infrastructure
Concrete/plastic lining

Facility
Paddle wheel, concrete or plastic lining ponds

Feeding Type
Commercial pelleted feed

Feeding Intensity and Frequency	✦✦ **MEDIUM**
Yield Production	✦✦ **MEDIUM**
Ease of Technology Appliances	✦✦ **MEDIUM**
Farming Difficulty	✦✦ **MEDIUM**
Climate Change Risk	✦✦ **MEDIUM**

Traditional

Stocking Density
Maximum of 20m²

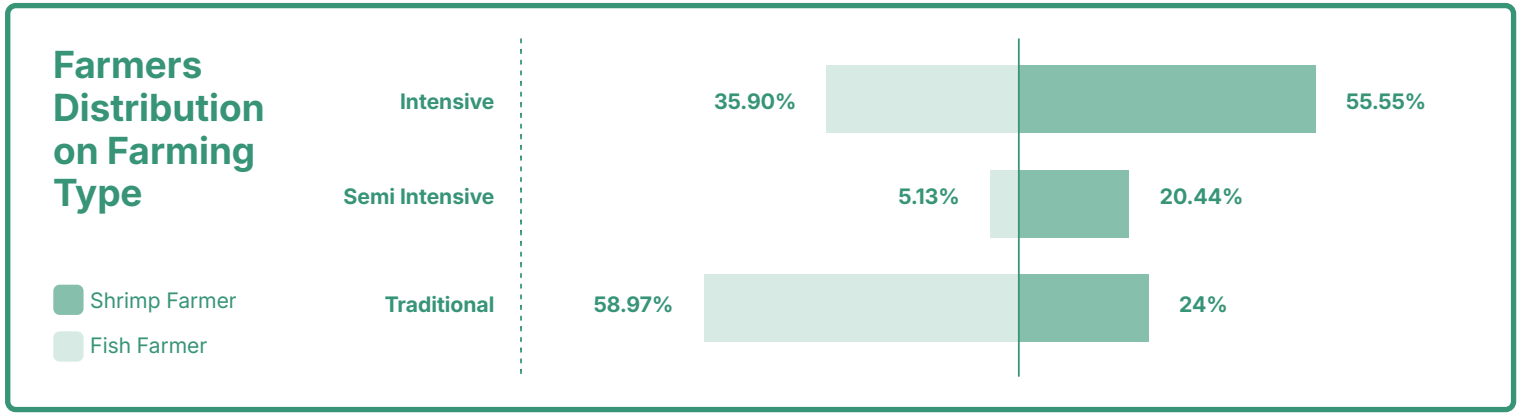
Pond Infrastructure
Earthen pond

Facility
Earthen pond with minimum to none paddle wheel

Feeding Type
Minimum pelleted feed. In monodon farming, farms typically do not offer pelleted feed

Feeding Intensity and Frequency	✦ **LOW**
Yield Production	✦ **LOW**
Ease of Technology Appliances	✦ **LOW**
Farming Difficulty	✦ **LOW**
Climate Change Risk	✦✦✦ **HIGH**

	INTENSIVE	SEMI INTENSIVE	TRADITIONAL
FISH			
SHRIMP			



Farmers Distribution on Financing Model

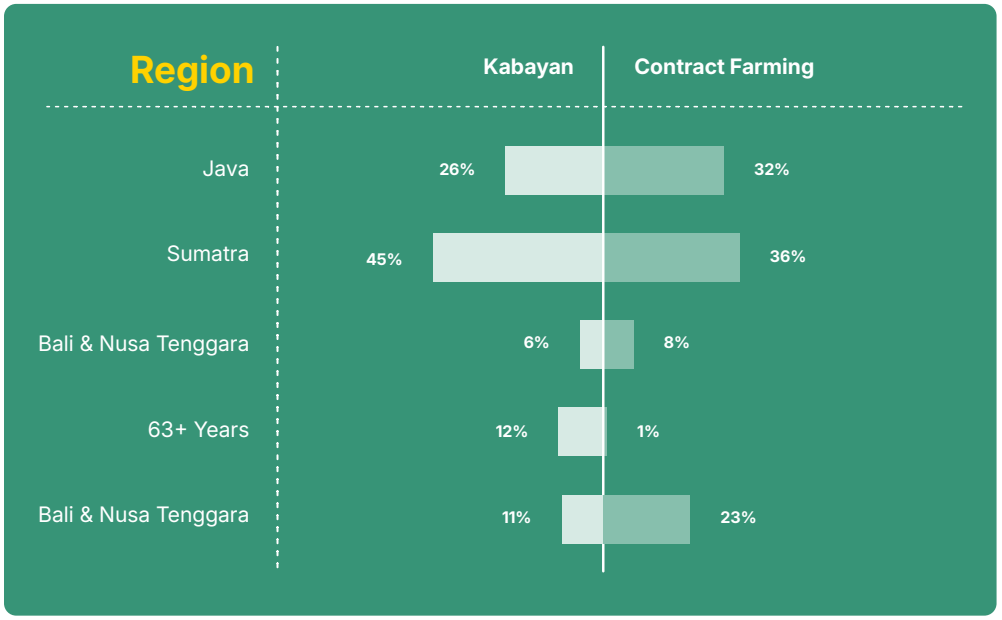
Farmers encounter significant capital challenges that hinder their growth. Many struggle to access financial institutions and face difficulties in securing funds for farming. Crop failures further exacerbate these issues, leaving farmers without operational capital needed to restart their cycle. Limited access to quality feed and high interest rates from informal funding sources create further barriers.

Conventional banks often impose inflexible loan limits, making it difficult for farmers to secure adequate funding. The requirement for asset collateral poses an additional challenge, especially for those who lack sufficient assets. Many farmers also find it challenging to repay loans if they have not yet sold their harvests, leading to a cycle of financial instability that hampers their ability to thrive.

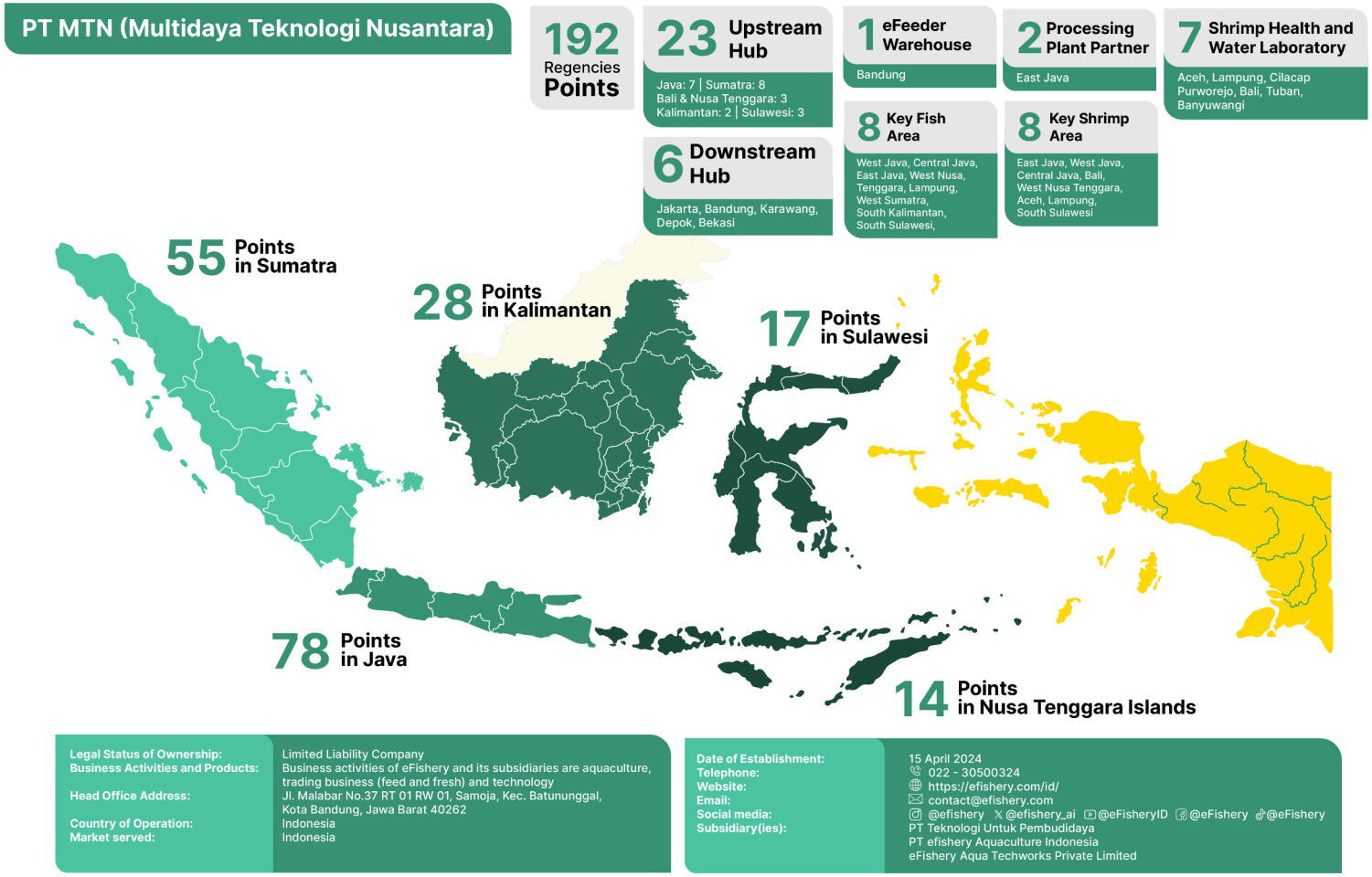
The Kabayan, Kasih, Bayar Nanti offers easy and secure access to financial institutions registered and supervised by Indonesian Financial Service Authority (Otoritas Jasa Keuangan) for purchase of feed, allowing farmers to make payments after harvest.

Kabayan is a financing product designed specifically for fish farmers, offering them access to funds for key inputs such as feed and seeds. This enables farmers to sustain their crops through a convenient online application process. Most Kabayan farmers are located in West Java (17%), Central Java (14%), and East Java (8%). For a more detailed explanation, please refer to the "Extending Impact" section.

Contract farming is a partnership program where farmers receive feed and farming production facilities and support, with the joint collaboration in harvest offtake. This is a financing and partnership model that is developed specific for shrimp farmers where similar to Kabayan, it allows input support, farm assistance and market access. Most contract farming farmers reside in Central Java (18%), Aceh (17%) and East Java (11%).



Our Strategy for Building Closer Connections with Farmers



eFishery Points

We have a total of 192 eFishery points across Indonesia acting as our official physical office branch representation closer to farmers. Farmers can register to eFishery membership, consult and receive further guidance on products and services that are suitable for specific farming characteristics.

eFishery Upstream and Downstream Hub - supply chain cost

Efficient logistics are key for us to deliver support as maximum as possible to farmers. We ensure that farmers receive the best available inputs for farming especially for feed and seeds. We collaborate with feed principal companies that ensure qualified nutrient profiles to connect to our farmers, the upstream hub is utilized for this purpose to channel our feed and technology such as feeder and others to reach farmers and closer, thus we create a shorter and more cost efficient supply chain. Our downstream hub provides connectivity from farmers to our end customers with specific product requests.

First Level Business (FLB)

The first level of business serves as a vital extension of connectivity, bridging the gap between farmers and customers. This layer acts as an offtaker for eFishery, facilitating the collection of harvests and establishing direct connections with buyers. By streamlining supply chain, this model not only ensures farmers receive fair compensation but also enhances market access for their products. It helps create a more efficient and transparent marketplace, benefiting both farmers and consumers.

Transforming Aquaculture Industry

Economic GDP Aquaculture Contribution

eFishery contributes 2.19% to Indonesia's fisheries and aquaculture GDP, highlighting our vital role in enhancing food security, supporting local economies, and promoting sustainable practices.

Total revenues of fish and shrimp sales grew significantly from 2022 to 2023, boosting GDP contribution from 1.55% to 2.19%.

This calculation is based on the internal eFishery calculation of total output revenue for fresh products divided by the gross regional domestic product of the aquaculture and fisheries sector based on constant prices *(ADHK, Atas Dasar Harga Konstan)* as stated in the 2023 accountability performance report[3] and one data[4] of the Ministry of Maritime Affairs and Fisheries.

2022

1.55%

IDR 3.4 trillion to IDR 219 trillion
aquaculture and fisheries sector GDP

2023

2.19% ↗

IDR 6.3 trillion to IDR 290 trillion
aquaculture and fisheries sector GDP

Fish and Shrimp Production

eFishery has experienced impressive revenue growth over recent years, showcasing its expanding scale and influence in the aquaculture sector. In 2021, eFishery's total revenue was approximately 1.6 trillion IDR, which surged to nearly 5.8 trillion IDR in 2022, and further escalated to over 10.8 trillion IDR in 2023. This significant increase highlights the company's robust market presence and successful scaling across its business divisions.

Despite the considerable operating costs, including costs of goods sold and operating expenses, eFishery remains committed to innovation and development. The company's investment in research and development has risen sharply, from 1.3 billion IDR in 2021 to over 135.7 trillion IDR in 2023, with a 100-fold increase reflecting its dedication to advancing aquaculture technology. With a strategic focus on maintaining operational efficiency while significantly investing in growth and technological improvements, eFishery continues to strengthen its position as a leader in the industry.

Sustainable Production

Goal

1 billion kg production of fish and shrimp contributing to 5% of the national GDP in the aquaculture sector by 2035

Measurement Metrics

Total kg production volume of fish and shrimp in kg, % contribution to national aquaculture GDP and economic impact of the fish and shrimp production

2021	35,485,147
2022	114,955,514
2023	242,245,164

Economic Inclusion

Goal

100 million USD funds delivered by 2030

Measurement Metrics

Funds received by farmers

	IDR	USD
2021	214,237,407,720	15,018,390
2022	442,486,742,866	28,129,223
2023	653,831,708,088	42,412,53

Extending Impacts

How do we evaluate impact

We conducted a field research survey in 2022 with more than 535 eFishery farmers in key 5 provinces West Java, Central Java, Lampung, West Nusa Tenggara and South Kalimantan and a total of 14 regencies demonstrating key provinces with farmers numbers. This research was conducted in collaboration with the Demography Institute, Faculty of Economics and Business, University of Indonesia[5]. The field survey was conducted in the 3rd week of December 2022 to 1st week of January using systematic random sampling. The result is available in Impact Report 2022 on our website.

To further evaluate a significant impact of farmers joining eFishery and products and services, we continue to use the data and conduct further field survey research to the sample of same farmers. We conducted a field survey target of a total 300 fish and shrimp farmers combining 88 farmers that participated in the 2022 field survey research and 212 new farmers who have not participated in 2022 surveys before. The field survey was conducted on 8-26 July 2024 in key 5 provinces and a total of 16 regencies to capture a comprehensive presentation of eFishery farmers.

Both field surveys use Computer-Assisted Personal Interview (CAPI), a face to face data collection method in which interviews use a tablet, mobile phone or computer to record answers given during the interview. This method makes survey more efficient and helps acquiring higher quality data, higher validations and time efficiency on data cleaning and data entry. Survey was conducted by third party N2TRUSTN2TRUST[6] enumerators assigned by eFishery.

WEST JAVA	• Bogor • Subang • Tasikmalaya
CENTRAL JAVA	• Banyumas • Purbalingga • Purworejo Additional 2 regencies in 2023 survey: • Cllacap • Kebumen
LAMPUNG	• South Lampung • East Lampung • Pringsewu
WEST NUSA TENGGARA	• West Lombok • Central Lombok • East Lombok
SOUTH KALIMANTAN	• Barito Kuala • Hulu Sungai

We use a causal inference approach to assess whether eFishery's products and services create a real cause-and-effect relationship, independent of external variables. This approach allows us to isolate the impact of our interventions, providing clear its impact.

We use Difference-in-Differences (DiD)[7], a method combining before-after, with-without, and treatment-control group comparisons, created and used in epidemiological and widely used in health research, economics, public policy, management and other fields. The key significant values of this method are before-after, treatment-control, causal effects and over time impact evaluation. DiD segregates differences specifically for an intervention – eFishery products and services as an outcome, out of any other factor. There are other impact evaluation methods that can be used such as Randomized Control Trial, Pre-Post, Simple Difference, Multivariate Regression, Instrumental Variables and others and DiD was chosen to fit our context best, utilizing the previously existing survey data and extending it into longitudinal data structure.

Combination of using farmers surveyed in 2022 and 2023 research by University of Indonesia and Gadjah Mada University methods could control stable heterogeneity across time up to farmers levels. This means the method evaluates across a diverse variety of geographical areas, farming operations and other factors. This study does not conduct research comparison to non-eFishery farmers.

Treatment

eFishery membership, eFishery products and services

Control Group

eFishery Farmers who are not utilizing products and services

Treatment Group

eFishery Farmers utilizing products and services

- eFisheryku includes Beli Pakan, Lapak Ikan, Kabayan
- eFarm
- eFeeder

Outcome

Impact of joining eFishery and using eFishery products and services including eFisheryku, Kabayan, eFarm and eFeeder. Specifically we categorized outcome as below:

- Income
- Net Profit
- Profit probability
- FCR (Feed Conversion Ratio)
- ADG (Average Daily Gain)
- ABW (Average Body Weight)
- SR (Survival Rate)
- DOC (Day of Culture)

Monthly Income (IDR)

total earnings generated from fish and shrimp farming, as well as additional revenue from non-aquaculture sources, providing a comprehensive view of farmers financial stability

Monthly Net Profit (IDR)

Total revenue generated from farming activities in one production cycle, minus all associated costs and expenses, reflecting the actual financial gain from farming operations

Profit Probability (%)

Percentage likelihood that their farming activities will yield a profit based on monthly income and net profit per cycle. Higher probability means greater chance of earning more than expenses. Lower probability means a break-even point, where neither profit nor loss is realized, or leads to risk of losses

FCR (Feed Conversion Ratio)

Total kilograms of feed required to produce one kilogram of fish or shrimp

ADG (Average Daily Gain) (gr/day)

Average amount of daily growth measured by grams per day. The larger the value, the faster and more efficient feed, farming input or equipment escalates biomass adding day by day

ABW (Average Body Weight) (kg/individual)

Average amount of weight per individual at harvest, measured by kg per individual

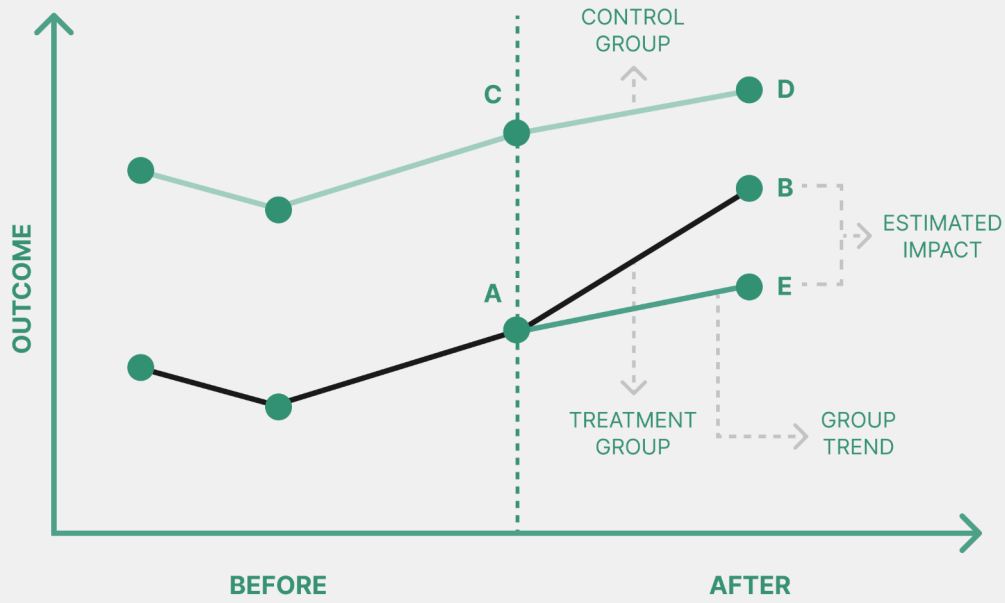
SR (Survival Rate)

Survival rate of fish and shrimp in farming period, measured as total percentage and 100% being the maximum. Higher percentage means better and efficient farming

DOC (Day of Culture)

Total of days required to farm fish and shrimp to reach harvest size. The lower total days means lower cost

The Difference-in-Differences (DiD) method uses the outcomes of a control group to estimate what would have happened in the treatment group without the intervention. The treatment effect is then measured by comparing the average post-treatment outcomes between the treatment and control groups.



Group	After	Before	Differences
Treatment Group eFishery Farmers utilizing products and services	B	A	B-A
Control Group Utilizing products and services	D	C	D-C
Difference	B-D	A-C	DiD Impact = (B-A)-(D-C)

Farmers Profile

From a total of 300 farmers surveyed, the majority of eFishery farmers are fish farming, which reflects the overall distribution of our farmers groups.

279 (93%)

Fish Farmer

Majority of tilapia and catfish, others farming pangasius, carp, gourami and others

21 (7%)

Shrimp Farmer

Whiteleg vannamei

Farmers participating in the field survey represent the characteristics of eFishery farmers, highlighting the following profile:

eFisheryku

An application designed to support farmers and improve their practices, featuring tools to enhance their operations.

78% farmers using eFisheryku including active usage of features of Lapak Ikan, Beli Pakan and Kabayan

Lapak Ikan

A fish buying and selling feature that connects farmers with market demand, helping them market their harvests.

11% farmers active using

Kabayan

A financing program connects farmers to financial institutions, helping them access funds for feed and other essential supplies.

63% farmers active using

Beli Pakan

A feature that allows farmers to order, track, and receive high-quality feed.

60% farmers active using

eFarm

A full-featured shrimp pond management application, specifically engineered to help shrimp farmers enhance productivity and improve harvest quality.

66% of shrimp farmers active using

eFeeder

An advanced automated feeding device, ensuring fish and shrimp get optimal nutrition at the optimum times.

11% farmers active using in **average of 1.7 unit per farmer**

Farmers participating in the field survey have characteristics in business operation stated in profiles below.

Characteristic	Average	Median
eFishery membership (months)	23.55	24
Farming business operation (years)	8.08	6
Total ponds (unit)	12	6
Total farming area (m2)	2195.69	500
Total workers (people)	2	2
Recent yield (kg)	5,688.87	1,775
Monthly Income (IDR)	IDR 67,370,968.76	IDR 17,150,000.00
Monthly Operational farming cost (IDR)	IDR 54,168,605.67	IDR 16,537,500.00
Monthly Net profit (IDR)	IDR 13,202,363.09	IDR 2,900,000.00

Impact of eFisheryku (Beli Pakan, Lapak Ikan), Kabayan and eFeeder

Our DiD analysis quantifies farmers recommended to use a minimum of two of these products and services to receive maximum impact to the income and net profit. Combining use of eFisheryku and eFeeder shows significant increase 91% of farmers monthly income and increase net profit of IDR 19.2 million per cycle, compared to IDR 7.2 million reduction if these applications are not used. The combined use of eFisheryku and eFeeder significantly enhances profit potential, with an impressive 28.6% increase. Farmers who utilize these products have a substantial opportunity to improve their profitability and reduce risk of farming loss.

The primary outcome of integrating key products on eFisheryku and eFeeder reveals that upon onboarding and accessing financing programs, once registered as member in our ecosystem, farmers then not only able to utilize all the different components of technology and products existing, but also our technical farm assistance is assigned and actively supporting farmers to reach successful harvest. This shows powerful synergy of technology connectivity, financial support, and a robust supply chain, enhanced by efficient feeding automation devices.

eFisheryku & eFeeder

A 91% increase in farmers' income

An additional
IDR 19.2 million net profit
with
28.6% increase in profit probability

Impact of eFisheryku

eFisheryku is an application designed to advance farmers' businesses and enhance farming practices, equipped with comprehensive features to strengthen farming operations. The application streamlines the process of ordering feed and managing farm profiles, ensuring accurate transaction records and simplified bookkeeping. This tool provides comprehensive transparency and traceability throughout the farming process, allowing for better oversight and easier management of farm operations.

eFisheryku increases farmer income by 78%. This application not only offers better feed prices but also benefits farmers, as feed constitutes 60-70% of their total production costs. Farmers using the eFishery application see an increase in their business income compared to those who do not.

Total impact 78% comes from combining impact from farmers not using the application that experience reduced income up to 27%, while farmers using the application experience increased income up to 51%. The total significantly reduced income of 27% is a high outcome showing that eFishery farmers who do not use the application experience reduction of income. Total impact is calculated based on comparing the impact of not using the application and adding the impact of farmers that are using the application.

On net profit, farmers have significantly increased net profit of IDR 11.2 million change, comparing this to the net profit reduction of IDR 7.2 million if farmers are not using the application, the impact of net profit is 110%. In overall, eFisheryku combining three features of Beli Pakan, Lapak Ikan and Kabayan shows profit probability of 11%.

eFisheryku

A 78% increase in farmers' income

An additional
IDR 11.2 million net profit
with
11% increase in profit probability

There are two features inside eFisheryku: Beli Pakan and Lapak Ikan. The Beli Pakan feature contributes to solving farmers' challenges when it comes to purchasing feed. Farmers often encounter limitations on having the best available feed and selecting the best out of a variety of feed types, making it crucial to have clear and accessible information about the products. This feature is vital for helping farmers have best feed and make informed decisions that align with their specific needs and farming practices.

Beli Pakan is a feature to order feed with more than 10+ brands that are already assessed by eFishery to ensure farmers have best available feeds to support farming growth. eFishery utilizes production data from over a million ponds to accurately forecast feed requirements and negotiate bulk purchases at competitive prices, typically reserved for largest operations. Farmers can order and pay through direct payment or payment through Kabayan financing, where feed can be delivered from the closest warehouse without minimum order limitation. Beli Pakan increases farmers' income by 44%, demonstrating a significant potential for enhancing earnings.

Lapak Ikan is a feature to sell harvest to eFishery that allows fair prices, feature ensuring market access where eFishery guarantees the offtake. Lapak Ikan feature contributes to solving farmers' challenges in market access. Internal eFishery uses this data to match supply and demand of fish and shrimps to connect farmers' products to the end customers, for both domestic and export markets. Timing is critical during the harvest, and the sorting process can be cumbersome, impacting overall efficiency. Lapak Ikan has a significant positive impact, increasing farmers income by 106%. Lapak Ikan increases net profit and profit probability among farmers. Farmers who actively use and those who are not have reported similar trends. On average, net profit has increased by IDR 12.6 million, with a 8.5% profit probability.

There is high dependency on middlemen, this feature connects farmers produce, offtake and market it to consumers, moving farmers' dependency away from middlemen. The prices offered for their harvests can vary, leading to uncertainty and dissatisfaction. Another concern is the disbursement of payments for their harvest results, as delays can affect farmers' financial stability and ability to reinvest in their operations. Addressing these challenges is essential for improving farmers' overall experience and success in the aquaculture sector.

On net profit, farmers have a positive impact on the eFisheryku features on Beli Pakan, Lapak Ikan and Kabayan, the largest impact yielded on farmers that use all three of these features. When considered individually, the impact is slightly lower than three applications combined. Hence, it is recommended for farmers to use a minimum of two combinations of the features. Beli Pakan increases net profit and profit probability among farmers. Farmers who actively use and those who are not have reported similar trends. On average, net profit has increased by IDR 6.5 million, with a 5.9% profit probability.

Based on eFishery internal Customer Satisfaction every six months regular research[8] farmers show 80% satisfaction level on Beli Pakan feature in eFisheryku and shower higher 87% satisfaction level on Kabayan.

Beli Pakan

A 44% increase in farmers' income

Beli Pakan increases net profit and profit probability, with both active and non-active farmers have similar trends. Analysis indicate an average of IDR 6.5 million net profit and 5.9% profit probability

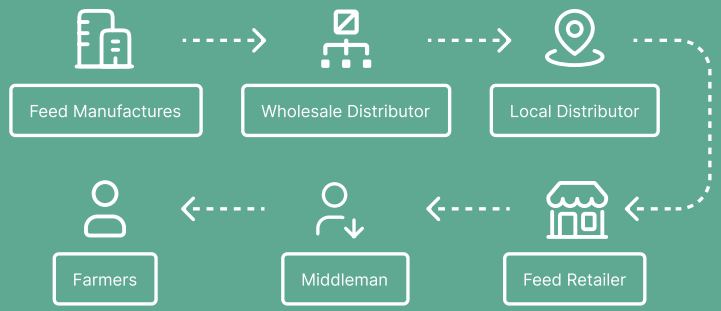
Lapak Ikan

A 106% increase in farmers income

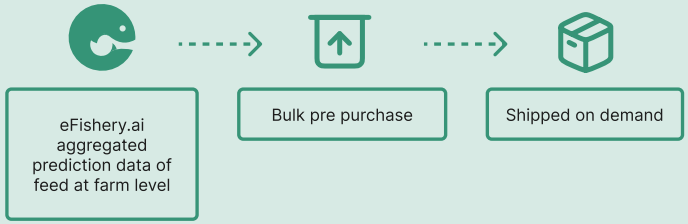
Lapak Ikan increases net profit and profit probability, with both active and non-active farmers have similar trends. Analysis indicate an average of IDR 12.6 million net profit and 8.5% in profit probability

Beli Pakan Transformation

How it's commonly done



How eFishery solves



We can distribute feed with almost zero inventory. Reducing overmargin price with low operating capital

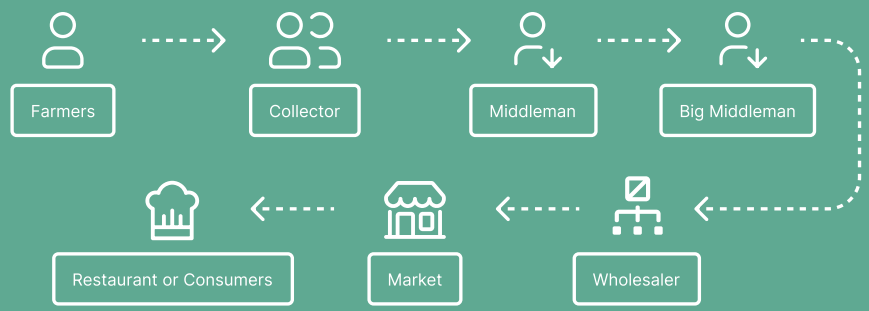
Impact

A 44% increase
in farmers' income

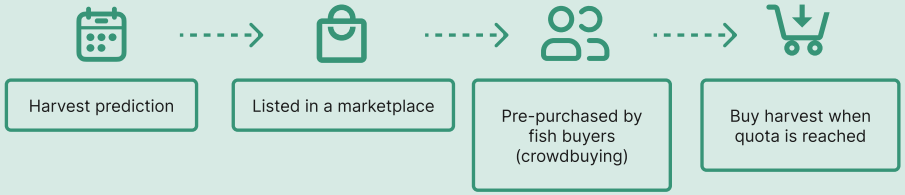
An additional
IDR 6.5 million
net profit with 11% increase in profit probability

Lapak Ikan Transformation

How it's commonly done



How eFishery solves



We solve over marginalization and deliver fresh high quality product

Impact

A 106% increase
in farmers' income

An additional
IDR 12.6 million
net profit with 8.5% increase in profit probability

Fair Pricing For Farmers

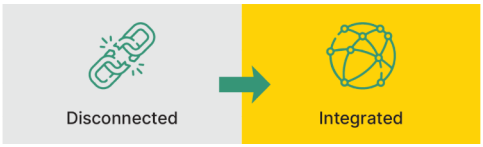
We implement fair pricing principles and standard operating procedures that operate in specific per location based on regular internal analysis. Especially working with smallholders and anchoring our values in providing a digital inclusive economy, we are committed to ensure farmers have a positive impact from eFishery supports.

eFishery team analyzes buying price and market price. Buying price is analyzed by sourcing team based on specific product characteristics including commodity, size, length and weight, color, taste profiles and others. The buying price profile is conducted through research on diverse local buying price profiles and its relation to product value. Market price is analyzed by business development team based on customer prices locally and regionally in which then categorized into low, median and high prices to analyze the fair and competitive price for farmers.

Determining pricing calculation on cost structure required to analyze the margin profiles based on total production cost from farmers, logistic cost and other related cost. The cost structure then compared to buying and market price. Once the final cost structure is approved, eFishery designs the price list and offers it to farmers. This whole process is conducted every month to reflect the fluctuating price and to ensure farmers that are connected and not connected to some of eFishery products and services could receive a fair market access. It reduces risk of increasing prices of feed and seeds that we observe occurring every three months or so. Hence, providing opportunities for farmers in receiving fair prices.

Transformation

eFisheryku



Revolutionizing Supply Chains for Greater Efficiency and Inclusivity

Harnessing Optimal Inputs, Market Access, and Financial Resources to Enhance Farmer Productivity and Livelihoods

FEATURES

Beli Pakan
A feature that allows farmers to order, track, and receive high-quality feed

Lapak Ikan
A fish buying and selling feature that connects farmers with market demand, helping them market their harvests

Kabayan
A financing program connects farmers to financial institutions, helping them access funds for feed and other essential supplies.

IMPACT

A 78% increase in farmers' income

An additional IDR 11.2 million net profit with 11% increase in profit probability

REGENERATIVE AQUA CULTURE

- Sustainable Feed
- Resource Efficiency
- Ecosystem Health
- Community Engagement

SDG

Impact of Kabayan

Kabayan offers easy and secure access to financial institutions registered and supervised by OJK for the purchase of feed, allowing farmers to make payments after harvest.

Developed by eFishery, Kabayan is an innovative mobile application designed to provide farmers with easy, friendly, and secure financial access. It helps farmers obtain the necessary financing to support their farming needs, such as purchasing feed, through a flexible and affordable approach. Kabayan is part of eFishery's commitment to easing the financial burden on farmers by offering a deferred payment scheme for feed purchases. With Kabayan, farmers can buy feed and pay after harvest, eliminating the need for upfront costs and improving cash flow, allowing them to focus on increasing production without excessive financial worries.

Kabayan offers a fast and simple application process, as well as efficient data verification through integration with eFisheryku. To cater to farmers' needs, eFishery provides several tailored loan products, including Kabayan Express, Kabayan Lite, Kabayan Regular, and Kabayan Jawara, with flexible payment limits and terms based on the capacity and requirements of the farmers.

Kabayan also includes features such as transaction history, promotional information and special offers, as well as useful updates on aquaculture sector developments. Farmers can also purchase feed online through eFisheryMall, integrated with a virtual payment system (VA) to ensure safe and timely transactions. Kabayan provides a comprehensive solution that supports the growth and sustainability of farmers' businesses in Indonesia by leveraging digital technology. It fosters a more efficient, transparent, and inclusive aquaculture ecosystem, delivering real benefits to farmers across the country. Starting in 2021, Kabayan has expanded into the shrimp farming sector with the launch of Kabayan Shrimp, covering input to output aspects of shrimp farming.

Kabayan aligns with principles of Green and Social Loan, under eFishery's mission to empower smallholder fish and shrimp farmers by providing the technology and resources necessary to enhance productivity and sustainability. Kabayan connects farmers with financial institutions, improving cash flow and capital access for business expansion. We use our comprehensive farm data to develop credit scoring for farmers, offering them fair loan options as a preferable alternative to the costly loans traditionally provided by feed distributors.

Kabayan advantages:

- Available at all eFishery Points across Indonesia
- Payments can be deferred for up to 12 months
- End-of-tenor payment scheme, not installment-based.
- Payments can be made with harvest proceeds

Kabayan Products

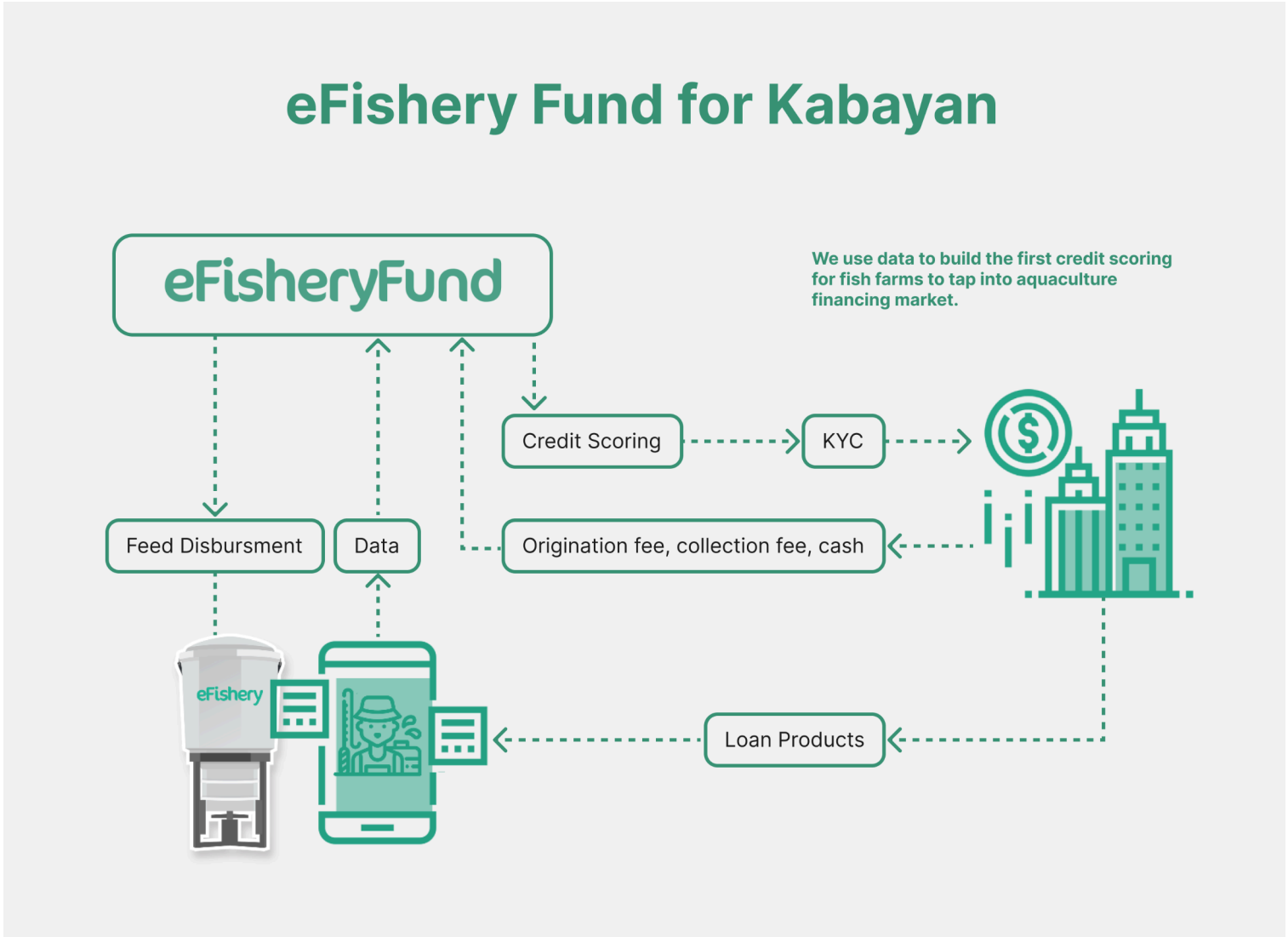
KABAYAN KILAT	• Feed purchase financing ranging from IDR 3 to 20 million • Designed for micro and seed farmers • Payment deadline of up to 4 months • Data validation conducted by a surveyor • Available at 120+ ePoints, with continuous expansion
KABAYAN LITE	• Feed purchase financing ranging from IDR 20 to 50 million • Designed for micro and seed farmers • Payment deadline of up to 6 months • Approval within one day • Data validation conducted by a surveyor
KABAYAN REGULER	• Feed purchase financing ranging from IDR 50 to 200 million • Designed for micro and middle-scale farmers • Payment deadline of up to 6 months • Available across Indonesia
KABAYAN JAWARA	• Feed purchase financing ranging from IDR 200 million to 2 billion • Payment deadline of up to 6 months • Designed for farmers requiring large quantities of feed
KABAYAN SEEDS	• Available for farmers who have joined the eFishery ecosystem • 100% financing for seed needs • Payment deadline of up to 6 months
KABAYAN INTI PLASMA	• Community-based model, managed by one farmer group leader • Payment deadline of up to 12 months

Kabayan, the Kasih Bayar Nanti, a financing access for farmers shows significant impact of 60% increase in farmers income. Similarly to eFisheryku that includes Kabayan feature, farmers who do not use this Kabayan feature experience reduced income of 27%. Kabayan increases net profit and profit probability among farmers. Farmers who actively use and those who are not have reported similar trends. On average, net profit has increased by IDR 8.1 million, with a 9.6% profit probability

Kabayan

A 60% increase in farmers' income

Kabayan increases net profit and profit probability, with both active and non-active farmers have similar trends. Analysis indicate an average 8,1 million net profit and 9.6% profit probability



*In total we have disbursed **USD 42 million** in 2023 and have been growing significantly since 2021.*

Economic Inclusion

Goal
100,000 farmers group connected by 2030

Measurement Metrics
Indonesian farmer groups connected to eFishery technology and ecosystem

2021	7,000+
2022	23,000+
2023	44,000+

Living Income and Living Wage

Goal
100,000 farmers receive financing by 2040

Measurement Metrics
Farmers receiving financing

2021	4,094
2022	9,025
2023	15,191

Economic Inclusion

Goal
100 million USD funds delivered by 2030

Measurement Metrics
Funds received by farmers

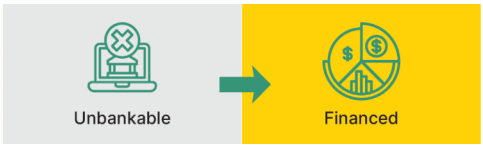
	IDR	USD
2021	214,237,407,720	15,018,390
2022	442,486,742,866	28,129,223
2023	653,831,708,088	42,412,53

Measurement Metrics
Average funds received by farmers

	IDR	USD
2021	52,329,606	3,668
2022	49,029,002	3,117
2023	43,040,729	2,792

Transformation

Kabayan



Enabling Inclusive Financial Access for Smallholder Farmers

Addressing the Unbankability Challenges of Smallholder Farmers to Facilitate Financing, Improve Productivity, Income, and Wellbeing

FEATURES

Kabayan:
A financing program connects farmers to financial institutions, helping them access funds for feed and other essential supplies.

IMPACT

A 60% increase in farmers' income

Increase IDR 8.1 million net profit and increase 9.6% profit probability

REGENERATIVE AQUA CULTURE

- Farmer Livelihood
- Sustainable Feed
- Community Engagement
- Adaptive Management

SDG

Impact of eFarm

eFarm is a full-featured shrimp pond management application, specifically engineered to help shrimp farmers enhance productivity and improve harvest quality. It allows streamlined Pond Management: all-in-one application designed to simplify pond management by integrating monitoring of feeding schedules, disease risks, and productivity metrics. It offers farm assistance and consultation services around farm management, harvest planning, farm calculators, disease prevention treatments, best available input orders for feed, vitamin, and other inputs. This app allows for quick and efficient data capture, enabling farmers to manage their operations more effectively and make informed decisions with ease.

The application serves as a daily resource for shrimp farmers, aimed at optimizing their productivity. Key features include personalized farm consultations and daily reports with tailored recommendations to enhance farming practices. Users benefit from a variety of tools, such as a calculator, a farm learning platform, and a marketplace for aquaculture supplies. The app also provides a comprehensive report for each farming cycle, detailing critical metrics such as survival rates (SR), total feed used, Feed Conversion Ratio (FCR), Average Daily Gain (ADG), Average Body Weight (ABW), mortality rates, and total harvest biomass. This all-in-one solution empowers farmers to make informed decisions and maximize their productivity.

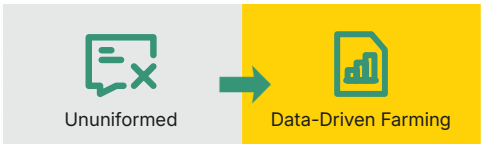
eFarm

eFarm increases income, net profit and profit probability, with both active and non-active farmers have similar trends and no distinct differences observed.

Analysis indicates **an average 22% income, 9.1 million net profit** and **31.3% increase in profit probability**

Transformation

eFarm



Elevating Shrimp Farming through Technological Innovation and Evidence-Driven Management

Empowering Farmers with Comprehensive Tools for Fostering Continuous Capacity Building for Improved Efficiency

FEATURES

A full-featured shrimp pond management application, specifically engineered to help shrimp farmers enhance productivity and improve harvest quality.

- **Farm assistance & consultation**
- **Harvest planning**
- **Production metrics and reports**
- **Input access**

IMPACT

A 60% increase in farmers' income

Increase IDR 8.1 million net profit and increase 9.6% profit probability

REGENERATIVE AQUA CULTURE

- **Resource Efficiency**
- **Ecosystem Health**
- **Climate Resilience**
- **Adaptive Management**

SDG

Impact of eFeeder

eFeeder is an advanced automated feeding device, ensuring fish and shrimp get optimal nutrition at optimum times. We currently have four main eFeeder types.

eFeeder 5

The **eFeeder 5** is an advanced intelligent feeding system designed to transform the aquaculture industry. This innovative device automates the feeding process, ensuring that fish and shrimp receive optimal nutrition at the right times. By integrating advanced technology, the eFeeder 5 precisely dispenses feed based on predefined schedules and water quality parameters, enhancing the overall efficiency of feeding practices.

The system is managed through a user-friendly mobile app, which allows farmers to monitor feed consumption, adjust feeding patterns, and receive real-time alerts. This connectivity empowers farmers to optimize feed utilization, reduce manual labor, and ultimately achieve higher yields with increased efficiency.

Development Journey:

- **End of 2021:** Initiation of the "final form" feeder design.
- **End of Q2 2022:** Phasing the final feeder design into multiple iterations.
- **Q3 2022:** Piloting of the new feeder control box.
- **Q4 2022:** Pre-commercial testing.
- 2023: Full commercial launch.

eFeeder 5 represents our unwavering commitment to delivering solutions that enhance efficiency and precision in aquaculture. As the latest version of our intelligent feeding system, eFeeder 5 is engineered to be stronger, smarter, and faster.

Key Features:

- **Automatic Feeding:** Automates feeding to ensure precise and consistent delivery based on specific schedules and environmental conditions.
- **Real-Time Monitoring:** With enhanced online connectivity, farmers can set and monitor feeding operations in real-time via a mobile app.
- **Efficiency and Productivity:** Optimizes feed usage and minimizes waste, leading to increased productivity and better yields.

Benefits:

- **Accelerate Growth:** A sustainable diet helps fish and shrimp grow faster.
- **Optimizing FCR:** Even distribution and maintained feed nutrition make the Feed Conversion Ratio (FCR) more optimal.
- **Increase Production:** Economical feeding, faster harvests, and efficient labor combine to double profits.
- **Improving Water Quality:** Less uneaten feed reduces waste, improving water quality and the health of aquatic organisms.

Improved Connectivity:

- **Faster Setup:** Up to 3x faster setting speed.
- **Automatic Logging:** Real-time feed log data without manual synchronization.
- **Remote Access:** Configure settings from anywhere.
- **Performance Monitoring:** Real-time monitoring of feeder conditions and performance.

Durability Enhancements:

- **Stronger Components:** Upgraded sockets and internal electrical components to withstand harsh pond environments.

eFeeder 5 embodies the future of aquaculture feeding systems, combining advanced technology with practical benefits to help farmers achieve greater success in their operations.

Industrial Design Intellectual Property: automatic fish feeding machine
No certificate:IDD000067833
Issuance date: 30 November 2023

Industrial Design Intellectual Property: automatic shrimp feeding machine
No certificate:IDD000068358
Issuance date: 28 December 2023

eFeeder 5s

The **eFeeder 5S** represents the next generation of intelligent feeding systems, merging the advanced capabilities of the eFeeder 5 with solar power for an eco-friendly solution. This innovative system automates the feeding process while minimizing environmental impact. Equipped with high-efficiency solar panels, the eFeeder 5S ensures reliable operation, even in remote areas with limited electricity access. Farmers benefit from precise feed distribution, reduced labor costs, and a smaller carbon footprint, all while maximizing aquaculture yields. This next-generation eFeeder, powered by a solar panel, is designed for sustainable productivity and scalability, with off-grid power source capability via battery and solar panel integration

Development Journey:

- **Q2 2023:** Piloted power source integration.
- **Q3 2023:** Full integration of the eFeeder 5S with its power source and comprehensive internal testing.

The **eFeeder 5S** is specifically designed to meet the needs of ponds and fish farms with limited access to traditional energy sources. While it shares the core principles and features of other eFeeder variants, the eFeeder 5S stands out by incorporating alternative energy sources, such as solar panels and batteries.

This innovative design offers a valuable opportunity for farmers who lack reliable electricity access, enabling them to significantly increase productivity and profitability that were previously constrained by energy limitations.

Key Features:

- **Renewable Energy Power:** Utilizes solar panels combined with a battery system to ensure continuous operation in remote locations without access to electricity. This reduces energy consumption
- **Enhanced Durability:** Equipped with more durable components, including an improved motor dosing system and thrower, to withstand challenging farm conditions.

eFeeder 5Pro

The **eFeeder 5Pro** represents the pinnacle of our feeder technology, offering enhanced reliability, accuracy, and durability. This advanced iteration builds upon the successes of the eFeeder 5, integrating improvements to meet the evolving needs of aquaculture operations.

Development Journey:

- **End of 2021:** Initiation of the development phase for the "final form" of the eFeeder 5Pro.
- **End of Q2 2022:** Progression of the "final form" into several iterations, refining the design and functionality.
- **2023:** Development and rigorous testing of the new feeder subsystem to ensure optimal performance and reliability.

eFeeder 5Pro is designed to deliver precise and consistent feeding while withstanding the demanding conditions of aquaculture environments, ensuring farmers can achieve higher efficiency and productivity.

Each region presents its own unique challenges and opportunities in aquaculture. The eFeeder 5Pro is specifically engineered to address these diverse conditions, offering robust solutions for extreme environments and varying pond shapes.

Key Features:

- **Enhanced Durability:** Built with more durable components to withstand harsh conditions.
- **Improved Sensors:** Equipped with advanced sensors for precise feed ejection and accuracy.
- **Versatile Compatibility:** Designed to handle various pond shapes and feed types.

Benefits:

- **Increased Component Durability:** Ensures long-lasting performance in demanding environments.
- **Enhanced Feeding Accuracy:** Sensors improve the precision of feed distribution.
- **Simplified Maintenance:** Easier to maintain and service.
- **Versatile Feed Compatibility:** Capable of handling wet or fermented feed (up to 40% RH).
- **Anti-Stall and Anti-Ratholing:** Prevents feed blockage and ensures smooth operation.

The eFeeder 5Pro is crafted to optimize farming practices across diverse and challenging conditions, delivering reliable performance and enhanced efficiency.

Industrial Design Intellectual Property: automatic fish feeding machine
No certificate:IDD000067833
Issuance date: 30 November 2023

Industrial Design Intellectual Property: automatic shrimp feeding machine
No certificate:IDD000068358
Issuance date: 28 December 2023

eFeeder Mini

The **eFeeder Mini** is a compact and cost-effective feeding solution designed specifically for small-scale aquaculture operations. It provides a streamlined, automated feeding experience, making it accessible and efficient for farmers with smaller pond segments.

Development Journey:

- **Q1 2023:** Introduced with a solar panel power source and a feature to weigh feed using a crane scale.
- **Q2 2023:** Updated to Version V1.3, addressing field findings and improvements.
- **Q3 2023:** Updated to Version V2, featuring a redesigned goal platform and a 360° thrower replaced by a platform on the edge of the pool with a 90° thrower.

The **eFeeder Mini** is designed to address the unique needs of small-scale aquaculture operations, particularly those with round biofloc ponds and other small pond environments. Unlike the original eFeeder, which is optimized for larger setups, the eFeeder Mini is tailored to meet the specific requirements of smaller, more intricate systems.

Challenges Addressed:

- **Size and Scale:** Small ponds require a compact and adaptable feeder due to their limited scale.
- **Feeding Precision:** Small ponds demand precise feed distribution to ensure even coverage and efficient feed usage.
- **Space Constraints:** The physical dimensions of small ponds limit the use of larger feeders, necessitating a streamlined solution.

Key Features:

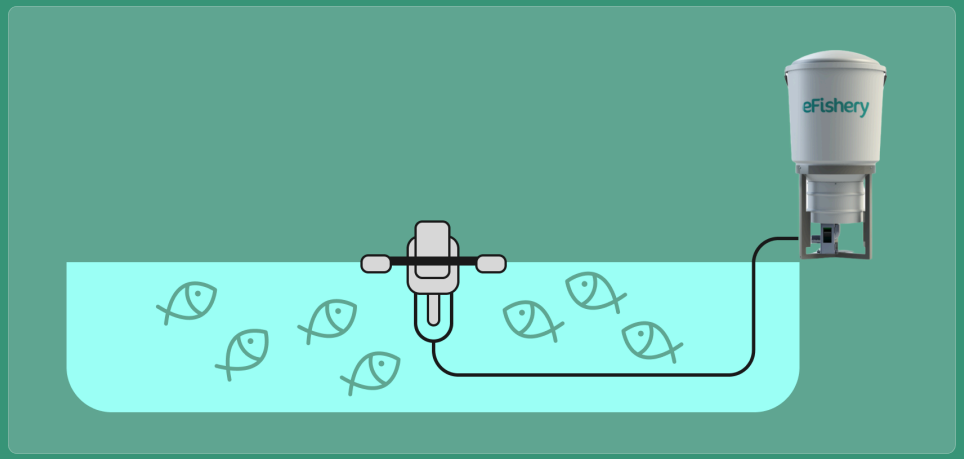
- Compact Design: Specifically designed for small-scale ponds, including round biofloc systems.
- Automated Feeding: Delivers precise and consistent feed distribution tailored to small pond environments.
- User-Friendly Interface: Facilitates easy setup and monitoring of feeding schedules and consumption.

Benefits:

- Precision Feeding: Integrated weighing feature ensures accurate feed measurement, preventing over or underfeeding and optimizing feed usage.
- Reduced Feed Waste: Accurate distribution minimizes feed wastage, enhancing overall efficiency.
- Upgraded Thrower Mechanism: The shift from a 360-degree thrower to a 90-degree thrower on the pool's edge allows for more targeted feed delivery, reducing feed loss and improving coverage.
- Biofloc Pond Compatibility: Specifically designed to meet the needs of biofloc systems and small pond segments, accommodating various aquaculture setups.

The eFeeder Mini offers an effective, tailored solution for small-scale aquaculture, providing precise, efficient feeding and enhancing productivity for farmers with specialized pond requirements.

eFeeder Impact



Farmers Pain Points

- Overfeeding
- Automation
- Accuracy feed schedule
- Accuracy feed quantify and thrower
- Farming assistance
- User guide and information
- Routine maintenance services

Main Features

- Smart feeding machine
- Sense fish appetite
- Mobile first, cloud dashboard
- Data: feed volume (weight), feed type, commodity, feed brand, feeding frequency, yield volume (weight), yield volume (count), units installed, farmers information, number of ponds, yield quality, pond quality
- Renting price: fish $13, shrimp $32
- Buying price: $569
- Total weight 15 kg
- Total minimum area coverage fish: 150 m2, shrimp: 5000 m2

Impact

Our commitment to best farming practices ensures that our eFeeder products have a low carbon footprint potential and contribute positively to natural resources regeneration, farmers' livelihood and thriving communities. We increase productivity by maximizing output with fewer inputs i.e. feed saved through use of feeder, efficient FCR, yielding significant benefits for farmers, the environment, and the protection of wild fish stocks.

Our technology and data-driven production methods reduce feed waste, pollution, and disease. These innovations help mitigate negative impacts on the planet, support global food security, and relieve pressure on ocean resources.

The eFeeder is an advanced automated device that tackles key challenges in water pollution caused by overfeeding. By delivering the right amount of feed at the right times, it reduces excess nutrients in the water, which can harm aquatic life and lead to issues like harmful algal blooms and lower oxygen levels. This, in turn, can negatively affect fish health. Furthermore, by preventing overfeeding, eFeeder helps limit the spread of diseases that thrive in nutrient-rich environments. With its precise feeding control, farmers can create a healthier aquatic ecosystem, boost productivity, and support sustainable farming practices

eFeeder increases farmers income, net profit and profit probability, highlighting its significant role in enhancing financial outcomes for farmers. This impact research reinforces the positive benefits of the eFeeder, as evidenced by the internal analysis[9] presented below.

eFeeder

eFeeder increases farmers income, net profit and profit probability, with both active and non-active farmers have similar trends.

Analysis indicates **an average 13% income, IDR 8 million net profit,** and **17.6% profit probability**

eFeeder in fish farm

All numbers in USD	Before	After
Revenue per Pond per cycle	1,480	1,480
Number of Cycles per Year	4	6
Gross Revenue per Year	5,920	8,880
Cost per Cycle	962	814
Gross Cost per Year	3,848	4,884
Profit per Year	2,072	3,996
% Growth	**93%**	

eFeeder in shrimp farm

All numbers in USD	Before	After
Revenue per Pond per cycle	30,833	30,833
Number of Cycles per Year	3	4
Gross Revenue per Year	92,500	123,333
Cost per Cycle	18,253	12,765
Gross Cost per Year	54,760	51,060
Profit per Year	37,740	72,273
% Growth	**92%**	

Impact of FCR

FCR (Feed Conversion Ratio) expresses feed efficiency by total amount of feed consumed to produce 1 kg of meat biomass. The lower the ratio, the more efficiently a feed produces meat biomass in fish and shrimp bodies.

Based on DiD analysis and comparison before and after farmers use these products and services, eFeeder yields an efficient FCR within the range of 1.2 to 1.3.

eFeeder

eFeeder increases FCR with average for both active and non active users around 1.3

Farmers Success Story

Pratikno
Shrimp Farmer
Pasuruan, East Java

Intensive farm, 17 round ponds, 30 efeeders installed

Farming in a round HDPE plastic lining pond with a diameter of 32 m² and a stocking density of 450 fish/m². Before using feeder, the Average Daily Gain (ADG) was 0.2 - 0.3 gr/day, but after using the feeder, it increased to 0.4 gr/day

Suhardi
Fish Farmer
South Kalimantan

Semi intensive farm, 20 feeders installed

eFeeder improves FCR from 1.9 to 1.6, saving up to IDR 36 million per cycle. The biggest benefit is a faster harvest time, total Day of Culture (DOC) reduced by up to 74 days (more than 2 months) with before and after DOC consecutively 240 days and 166 days.

Suhardi uses a feeding method up to 10 times per day from 12 a to 9 pm daily. The farmer highlights that the method is impossible without use of eFeeder.

PT USBG
Shrimp Farmer
Lampung

Intensive farm, 70 eFeeders installed

PT USBG produces 4 million shrimp seeds per cycle. After using eFishery, Nyoman, the owner of PT USBG, highlighted that the FCR became more efficient, improving from 1.3 to 1.2, and saving up to IDR 122 million per cycle. With eFishery, they can harvest faster than with other auto feeders, reducing day of culture from 126 days to 90 days

Ajat
Shrimp Farmer
Pangandaran, West Java

Semi intensive farm, 10 ponds, 3 feeders installed

The Feed Conversion Ratio (FCR) is improved to 1.26, farmer implement round of 24 hours feeding using efeeder for 200 ind/m2 stocking density

Ajat Sudrajat
Shrimp Farmer
Cikalong, West Java

Intensive farm, 8 eFeeder installed

Mr. Ajat Sudrajat highlights using eFishery technology during difficult times especially in pandemic has helped farmers save more where everything is more effective and efficient. With eFishery, the FCR improved from 1.33 to 1.19, profits increased from IDR 3,410,400,000 to IDR 4,704,000,000, and the DOC shortened from 126 days to 90 days.

Darwis
Fish Farmer
Subang, West Java

Traditional farm, 17 ponds, 12 eFeeder installed

Darwis is the only farmer using eFishery feeders for nursery stage, with 12 of his 17 ponds equipped. This has sped up his harvest from 60 to 40 days, improving cash flow. He reports the FCR dropped from 1.3 to 0.9, saving him IDR 13 million per month in feed costs. He believes eFishery has greatly improved his farming efficiency.

Impact of ADG and ABW

ADG (Average Daily Gain) is the average amount of daily growth measured by grams or kilograms a day. This reflects how fast and efficient feed and other farming input or support equipment to speed up fish and shrimp growth every day. The larger the value, the faster and more efficient feed, farming input or equipment escalates biomass adding day by day.

ABW (Average Body Weight) is the average amount of weight per individual over a certain culture period, measured by grams per individual. This reflects how big the fish and shrimp per individual in pond, hence farmers are able to predict how much longer day of culture needed, predict harvest time and quantify total profits acquired.

eFeeder shows high ADG impact with an increase potential of 68% and sustaining impact of increasing ADG in average of 0.37 gr/day. Similarly ABW shows a positive impact of sustaining total value in the range of 0.21-0.24 kg/fish at harvest.

eFeeder

eFeeder increases ADG and ABW, with both active and non-active farmers show similar trends.

Analysis indicates
ADG average around 0.47-0.79 gr/day
and
ABW average around 0.21 - 0.23 kg/individual

Impact of SR and Day of Culture

Based on DiD analysis and comparison before and after use these products and services, eFeeder increases SR and DOC. SR (Survival Rate) is the total growing compared to mortality of fish and shrimp in farming period, measured as total percentage and 100% being the maximum. The higher the percentage, the better efficient and successful farming.

DOC (Day of Culture) is the total of days required to farm fish and shrimp to reach harvest size. With eFeeder benefit, day of culture is seen reduced as feed appears to be more efficient.

Based on DiD analysis and comparison before and after use these products and services, eFeeder shows a positive impact of sustaining SR within range of 84-85%. DOC also shows a positive impact on shorter total days needed to reach harvest size by using products and services with the ability to reduce within 6-14 days, in average of total 109 days

eFeeder

eFeeder increases SR and DOC with both active and non active farmers show similar trends.

Analysis indicates
average of SR in 84%
and
119-121 DOC

Fish Farming

Farmers Success Story

The research results align with previous internal research[10] conducted in 2022 in eFishery shrimp farmer's site in Subang, West Java, comparing two control ponds and two installed eFeeder ponds, in total of DOC 79 days, the average ADG is 0.20gr/day with eFeeder, improve SR to 82% compared to 66% in control ponds, improve FCR to 1.29 compared to 1.57, reduce ammonia to 0.2ppm compared to 0.9ppm and reduce nitrite to 0.5 ppm compared to 1 ppm. Through Internal eFishery farmers research[11] data also shows significant impact of eFeeder on FCR, SR and total yield.

Farmer Profile	Before FCR	After FCR	Before SR	After SR	Before Yield (Ton/Ha)	After Yield (Ton/Ha)
Deadu	1.1	0.9	92	90	62.50	70
Suganda	1.2	1	90	100	90.00	100
Suyono	1.1	0.9	95	100	59.35	60
Subandi	1.1	1	98	100	54.44	55.6
Alif Albar	1.6	1.4	100	100	12.15	162.5
Hendra	1.05	1.05	60	60	100.95	100.95
Nailul fadli	1.4	1.1	90	90	166.67	180
Suhardi	1.8	1.6	80	80	240.00	240
Abduh	1.6	1.4	90	100	118.75	125
Nurjamilah	1.5	1.3	80	85	8.50	9.125
Average	**1.35**	**1.17**	**87.50**	**90.50**	**91.33**	**110.31**

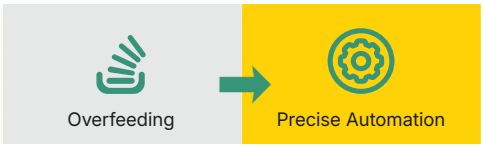
Shrimp Farming

Farmer Profile	Before FCR	After FCR	Before SR	After SR	Before Yield (Ton/Ha)	After Yield (Ton/Ha)
Achmad Mualim	1.2	1.15	100	100	34.00	38.92
CV Agro Permai	1.25	1.15	70	95	14.69	15.65
Rama Ramzani	1.4	1.3	90	90	35.71	40.57
Hadi	1.4	1.3	80	80	21.67	23.33
PPI Banten	1.47	1.42	40	60	7.51	8.36
Andre Maulana	1.3	1.2	100	100	13.28	13.91
eFishery Cipatujah	1.4	1.3	80	82	10.05	10.19
Paidi CV Metropolitan	1.5	1.4	70	80	20.00	20.67
Ajat Sudrajat	1.3	1.19	90	100	31.35	37.50
Anton	1.8	1.2	30	60	6.67	14.17
Average	**1.4**	**1.26**	**75**	**84.70**	**19.5**	**22.33**

Farmers show greater satisfaction to Kabayan and eFeeder. Based on Customer Satisfaction research[12], total of 80% farmers show Kabayan financing limits already aligned with farming needs. Farmers also indicated satisfactory on eFeeder benefit in overall farming operation, satisfactory on eFeeder quality, operation aligning with pond characteristics, ease of daily eFeeder operational and ease of maintenance.

Transformation

eFeeder



Harnessing Best-in-Class Technology for Enhanced Feeding Efficiency with an Intelligent Automated Feeding System

Maximizing Productivity and Resource Efficiency Through Precision Feeding Technology

FEATURES

- **Feed schedule accuracy**
- **Feed quantity accuracy**
- **Farming assistance**
- **Integrated Data** on feed volume (weight), feed type, commodity, feed brand, feeding frequency, yield volume (weight), yield volume (count), units installed, farmers information, number of ponds, yield quality, pond quality

IMPACT

eFeeder **increases FCR** with average for both active and non active users around **1.3**

eFeeder **increases ADG and ABW**, with both active and non-active farmers show similar trends with no distinct differences observed. **Analysis indicates ADG average around 0.47-0.79 gr/day** and **ABW average around 0.21 - 0.23 kg/individual**

eFeeder **increases SR and DOC** with both active and non active farmers show similar trends. Analysis indicates **average of SR in 84% and 119-121 DOC.**

REGENERATIVE AQUA CULTURE

- **Resource Efficiency**
- **Ecosystem Health**
- **Climate Resilience**
- **Biodiversity**

SDG

Looking forward, being a significant impactful business to farmers

Our core values are anchored in helping farmers to be more productive, resilient and prosper. In our 11th year journey, we are progressing towards more impactful business to accompany day to day farming with our smallholder farmers.

Aquaculture is the major growing sector in Indonesia and Asia. Through our improved quality of products and services, we aim to create a better food system that is regenerative, inclusive and resilient to tackle various challenges in farming and climate change risks.

Aquaculture is the key to produce lower carbon footprint food that is affordable and nutritious. We continue aiming to eliminate hunger, improve food security and improve nutritious protein for farming and wider communities, especially to improve health and wellbeing of children, youth, women and other marginalized groups.

Extending Gratitude

We are grateful for our farmers groups ecosystem to grow together with us since 2013 escalating power of tech-enabled aquaculture production. We believe that our ecosystem, products and services could escalate even larger farmers groups in Indonesia, India and beyond.

Farming has not become easier in recent years, quite the opposite, becoming harder. We aim to exist alongside our farmers to tackle challenges that affect aquaculture value chain and environment. The investment made to eFishery means a larger and continued support for smallholder farmers across the country with ability to scale up in other countries, shown in our positive growth in Indonesia and India operation. We hope the data shared inspires you to join us, collaborate and invest more to support our farmers.

Appendix

Research Partner Statement of Work

To: PT Multidaya Teknologi Nusantara, PT Teknologi Untuk Pembudidaya, PT eFishery Aquaculture Indonesia] [(a company incorporated in Jl. Malabar No.37 RT 01 RW 01, Samoja, Kec. Batununggal, Kota Bandung, Jawa Barat 40262

From: Economics and Business Research and Training Unit (P2EB), Gadjah Mada University
Date: 30 August 2024

This Statement of Work outlines the scope of tasks undertaken by the Economics and Business Research and Training Unit (P2EB) to assist eFishery in developing its Impact Report.

As consultant, the P2EB has assisted research in descriptive analysis and field survey impact analysis of various initiatives and programs implemented by eFishery. The development of the impact report was based on a causal inference analysis of eFishery's internal data and a field survey conducted with 300 fish and shrimp farmers. The objective was to assess the impact of farmers participation and to evaluate the value of each product and application in supporting best farming practices. The assessment was carried out using a survey, with the survey instrument developed by UGM and distributed by external third party enumerators to farmers. Farmers have been selected by eFishery internally with internal company considerations. The data is then submitted to P2EB to be processed and analyzed.

The research team conducts a focused analysis on the following sections of the report. Additional sections not included in this analysis encompass internal eFishery data and internal assessments.

- Extending Impacts with notes referring to research data.
- Farmers Profile

eFishery states itself as a company that has a strong commitment to innovation and sustainability in the aquaculture sector through the implementation of various programs and appropriate technologies, which aim to increase operational efficiency, reduce environmental impacts, and improve the welfare of fish and shrimp farmers. For this reason, we conducted an impact analysis of these various programs based on the data we can access to see the impact of these programs, as well as provide strategic recommendations for future development. Our analysis is of course limited by the availability of internal data provided by eFishery and the 2024 survey data, some of which were made by a panel with 2022 research data conducted by University of Indonesia.

This report presents the results of the analysis, including key achievements, challenges faced, and the impacts felt by farmers. We hope that this report will not only provide valuable insights internally for eFishery, but also serve as a source of inspiration and guidance for other technology based companies in the sector to continue to innovate and improve sustainability. We would like to express our deepest gratitude to the entire eFishery team for their extraordinary cooperation and openness throughout the process of compiling this analysis. We would also like to express our gratitude to all parties who have supported and contributed to the success of this report. We hope that this report can provide a positive contribution in eFishery's journey towards a more sustainable and prosperous future.

Dr. Evi Noor Afifah | Wisnu Setiadi Nugroho, PhD | Esa Asyahid, M.Sc, Jamilatuzzahro, M.Si
Economics and Business Research and Training Unit (P2EB), Gadjah Mada University

Feedback Form

This report is developed by the Sustainability and Development Unit at eFishery. Our dedicated team has conducted thorough research and analysis to ensure that the findings and recommendations reflect the highest standards of accuracy and relevance. We are committed to advancing sustainable practices in aquaculture and sharing insights that drive meaningful progress. For further information or inquiries about this report, please contact sustainability@efishery.com.

Profile

Name (if applicable)	:
Institution/Company	:
Email	:
Contact number	:

Stakeholder Type

Investors, Financial Institutions	: (YES/NO)
Customers	: (YES/NO)
Employees	: (YES/NO)
Government	: (YES/NO)
Media	: (YES/NO)
Business partners	: (YES/NO)
Society and communities	: (YES/NO)
Others, please specify	: (YES/NO)

Feedback

This report is easy to understand	: (YES/NO)
This report is useful to you	: (YES/NO)
This report clearly presents sustainability performance	: (YES/NO)
This report addresses topics relevant to the Company	: (YES/NO)

Reference

[1] In this Impact Report, the term “financing” refers to the Kasih, Bayar Nanti (Kabayan) product by eFishery, which provides farmers with easy and secure access to financial institutions registered and supervised by OJK. This financing option allows farmers to purchase feed and non-feed inputs at competitive prices with flexible payment terms that extend until harvest time.

[2] One Data Ministry of Marine Affairs and Fisheries

[3] 2023 Ministry of Marine Affairs and Fisheries Performance Report

[4] One Data MMAF

[5] eFishery Impact Report 2022

[6] N2TRUST, a field quantitative and qualitative research services company for market and impact studies

[7] Gertler, Paul J.; Martinez, Sebastian; Premand, Patrick; Rawlings, Laura B.; Vermeersch, Christel M. J.. 2016. Impact Evaluation in Practice, Second Edition. Washington, DC: Inter-American Development Bank and World Bank

[8] Customer Satisfaction, Internal eFishery research 2023 using 0-10 Net Promoter Score to measure satisfaction rate on total 318 farmers comprises of 76% fish farmers and 24% shrimp farmers [For eFishery Reference]

[9] Business impact overview, Internal eFishery research 2023 [For eFishery reference]

[10] RND Shrimp internal research February - June 2022, Subang, West Java shrimp farm [Ref eFishery Team]

[11] RNE AIoT, RND Shrimp, Internal eFishery research 2022 on eFeeder Impact in Serang, Pandeglang, Tasikmalaya, Indramayu, Cilacap, Batang, Lampung, Bali, South Kalimantan, South Sulawesi [For eFishery Reference]

[12] Customer Experience, Internal eFishery research 2023 on 69 farmers across 13 provinces analyzing eFeeder, Kabayan and Toko Budidaya product satisfaction [For eFishery Reference]