



Vismar Aqua

# Comprehensive Feasibility Study

## Shrimp Farming and Hatchery Design in Pakistan

December 2024

**CONFIDENTIAL**

# Executive Summary

This feasibility study examines the establishment of a state-of-the-art shrimp farming facility in Pakistan, combining modern aquaculture technology with sustainable practices.

## Project Highlights:

Metric	Value
Target Annual Production	80 tonnes
Hatchery Capacity	1 million post-larvae/month
Total Investment Required	\$1.45 million
Facility Size	5 hectares (20 ponds)
Water Recovery Rate	90%
Technology	Biofloc + RAS

The project leverages cutting-edge biofloc technology and recirculating aquaculture systems (RAS) to maximize productivity while minimizing environmental impact. With an integrated hatchery producing disease-free post-larvae and sustainable water management systems recovering 90% of water, this facility represents the future of aquaculture in Pakistan.

# Project Overview

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## Facility Specifications

- **Species:** Pacific White Shrimp (*Litopenaeus vannamei*)
- **Production Capacity:** 80 tonnes annually from 20 grow-out ponds
- **Total Area:** 5 hectares dedicated to shrimp production
- **Hatchery Output:** 1 million post-larvae per month
- **Technology Platform:** Biofloc systems with recirculating aquaculture integration

## Advanced Technology Integration

- **Biofloc Technology:** Converts waste into protein-rich feed, reducing costs and environmental impact
- **Recirculating Systems:** 90% water recovery through mechanical and biological filtration
- **Integrated Aquaculture:** Tilapia farming for natural water treatment and additional revenue
- **Disease Management:** Biosecure hatchery with SPF (Specific Pathogen Free) broodstock protocols
- **Automation:** IoT sensors for real-time monitoring of water quality parameters

## Sustainability Commitment

- Water conservation through 90% recovery and reuse
- Zero-discharge system minimizing environmental footprint
- Natural waste processing via integrated tilapia production
- Reduced dependency on wild-caught feed inputs
- Energy-efficient aeration and circulation systems

# Infrastructure & Investment

## Capital Investment Breakdown

Component	Investment (USD)
Hatchery Construction & Setup	\$500,000
Grow-out Pond Systems	\$600,000
Equipment & Machinery	\$250,000
Water Treatment Systems	\$75,000
Contingency & Working Capital	\$25,000
Total Capital Required	\$1,450,000

## Monthly Operating Expenses

Expense Category	Monthly Cost (USD)
Feed & Nutrition	\$12,000
Labor & Salaries	\$6,500
Utilities (Power, Water)	\$3,200
Maintenance & Supplies	\$1,500
Quality Control & Testing	\$800
Miscellaneous	\$200
<div>info@vismar-aqua.com   +380 (67) 447-6069</div> <b>Total Monthly Operating</b>	<div>www.vismar-aqua.com</div> <div>Page 6</div> <b>\$24,200</b>

# Revenue Model & Projections

## Primary Revenue Streams

Revenue Source	Annual Revenue (USD)
Shrimp Sales (80 tonnes @ \$8/kg)	\$640,000
Post-Larvae Sales (12M @ \$6.40-8/1000)	\$76,800 - \$96,000
Integrated Tilapia Production	\$45,000
<b>Total Annual Revenue</b>	<b>\$761,800 - \$781,000</b>

## Return on Investment Projections

Metric	Year 1	Year 2	Year 3
Gross Revenue	\$640,000	\$761,800	\$781,000
Operating Expenses	\$290,400	\$290,400	\$290,400
Net Operating Income	\$349,600	\$471,400	\$490,600
<b>ROI (%)</b>	<b>24.1%</b>	<b>32.5%</b>	<b>33.8%</b>

*Note: Projections assume 90% production efficiency in Year 1, improving to full capacity by Year 3.*

# Sustainability & Technology

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## Environmental Stewardship

**Water Conservation:** The facility achieves 90% water recovery through advanced mechanical and biological filtration, dramatically reducing freshwater consumption compared to traditional farming methods.

**Zero-Discharge System:** Integrated tilapia production naturally treats and purifies water from shrimp ponds, creating a closed-loop system that eliminates environmental discharge.

**Biosecurity Excellence:** Disease-free SPF broodstock protocols and strict quarantine procedures ensure healthy production while eliminating the need for antibiotics and chemicals.

**Energy Efficiency:** Modern aeration systems and optimized circulation reduce energy consumption by 40% compared to conventional setups.

## Technology Innovation

- Real-time water quality monitoring with IoT sensors
- Automated feeding systems optimized for growth rates
- Data analytics for predictive health management
- Mobile app integration for remote facility monitoring
- Traceability systems ensuring food safety compliance

# Implementation Timeline

Phase	Activities	Duration
<b>Phase 1: Planning &amp; Permits</b>	<ul style="list-style-type: none"><li>• Site surveys and soil testing</li><li>• Environmental impact assessment</li><li>• Regulatory permits and approvals</li><li>• Final engineering designs</li></ul>	2-3 months
<b>Phase 2: Construction</b>	<ul style="list-style-type: none"><li>• Site preparation and earthworks</li><li>• Pond construction</li><li>• Hatchery building construction</li><li>• Utility installation</li></ul>	4-5 months
<b>Phase 3: Equipment Installation</b>	<ul style="list-style-type: none"><li>• Filtration and water treatment systems</li><li>• Aeration equipment</li><li>• Hatchery equipment setup</li><li>• Automation and monitoring systems</li></ul>	2-3 months
<b>Phase 4: Staff Training &amp; Testing</b>	<ul style="list-style-type: none"><li>• Hire and train technical staff</li><li>• System commissioning</li><li>• Water quality testing</li><li>• Trial runs</li></ul>	1-2 months
<b>Phase 5: Pilot Production</b>	<ul style="list-style-type: none"><li>• Initial stocking</li><li>• Process optimization</li><li>• Market development</li><li>• Full commercial ramp-up</li></ul>	3-4 months

**Total Project Timeline: 12-17 months from planning to full commercial production**

