

# **Recirculating Aquaculture System Farming Operation Global Market Insights 2025, Analysis and Forecast to 2030, by Market Participants, Regions, Technology**

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## **Abstracts**

### **Recirculating Aquaculture System Farming Operation Market Summary**

#### **Introduction**

Recirculating Aquaculture System (RAS) Farming Operations represent a cutting-edge approach to fish farming, utilizing closed-loop systems that recycle water to cultivate aquatic species with minimal environmental impact. This industry is defined by its sustainability, precision, and ability to produce high-quality seafood in controlled environments, offering a solution to overfishing and land constraints. Since 2016, aquaculture has been the main source of fish for human consumption, reaching 56% in 2023, a trend set to grow. Asia dominates world aquaculture with an 88% share over the last two decades. RAS technology, revived in the 1980s, has advanced over 30 years and is now widespread in hatcheries, fry, and smolt systems globally. Often termed “land-based aquaculture,” RAS excels in freshwater production, with 90% of EU RAS output in freshwater and 10% in sea and brackish water. Advanced RAS boasts recycle ratios of 95-99%, contrasting with traditional flow-through systems’ 0%. Projects targeting marine species like Atlantic salmon are rising across continents. The market thrives on sustainability demands, urbanization, and innovations in water treatment, positioning RAS as a future-proof solution for protein supply.

#### **Market Size and Growth Forecast**

The global RAS Farming Operation market is projected to reach USD 5 billion to USD 6 billion in 2025, with a CAGR of 10% to 12% through 2030, potentially expanding to USD 8 billion to USD 10 billion, driven by sustainability and seafood demand.

#### **Regional Analysis**

North America: Expected at 9% to 11%, the U.S. and Canada lead with premium RAS

projects. Trends focus on salmon and urban markets.

Europe: Forecasted at 10% to 12%, Norway and Denmark dominate with advanced systems. Trends emphasize sustainability and marine species.

Asia Pacific: Projected at 11% to 13%, China and Japan drive growth with large-scale adoption. Trends favor freshwater efficiency.

Middle East and Africa (MEA): Anticipated at 8% to 10%, the UAE explores RAS for food security. Trends lean toward brackish water.

South America: Expected at 9% to 11%, Chile tests RAS potential. Trends focus on scalability.

### Product Type Analysis

Freshwater Farming: Projected at 9% to 11%, it dominates with established technology. Trends emphasize efficiency and scale.

Sea and Brackish Water Farming: Expected at 11% to 13%, it targets marine species like salmon. Growth shifts to technological advancements.

### Key Market Players

Aquabounty: A biotech leader, Aquabounty pioneers RAS for genetically enhanced fish.

Atlantic Sapphire: A frontrunner, Atlantic Sapphire focuses on land-based salmon.

Aquaco: A solutions provider, Aquaco excels in RAS technology.

Nordic Aquafarms: A Scandinavian firm, Nordic targets sustainable seafood.

Whole Oceans: A U.S. player, Whole Oceans emphasizes premium RAS production.

West Coast Salmon: A regional leader, West Coast focuses on salmon farming.

Pure Salmon: An innovator, Pure Salmon advances global RAS operations.

Blue Star Foods: A diversified firm, Blue Star explores RAS potential.

### Porter's Five Forces Analysis

Threat of New Entrants: Moderate, with high capital and technical expertise barriers, though declining tech costs enable niche entrants.

Threat of Substitutes: Moderate, with traditional aquaculture and wild fish competing. RAS stands out for sustainability.

Bargaining Power of Buyers: High, as retailers demand consistent, eco-friendly supply, pressuring cost and quality.

Bargaining Power of Suppliers: Moderate, with water treatment and feed suppliers holding sway, offset by integration.

Competitive Rivalry: High, driven by innovation, scale, and sustainability differentiation in a growing market.

### Market Opportunities and Challenges

### Opportunities

**Sustainability Demand:** Global eco-focus drives RAS adoption for low-impact farming.

**Urban Proximity:** Land-based systems serve cities, reducing transport costs.

**Seafood Growth:** Rising fish consumption boosts RAS scalability.

**Tech Advancements:** Water recycling innovations enhance efficiency.

**Emerging Markets:** Asia's aquaculture dominance offers expansion potential.

### Challenges

**High Costs:** Capital-intensive systems limit affordability.

**Technical Complexity:** System maintenance requires expertise.

**Regulatory Hurdles:** Diverse standards slow approvals.

**Competition:** Traditional methods challenge market share.

**Disease Risks:** Closed systems need robust biosecurity.

## Contents

### **CHAPTER 1 EXECUTIVE SUMMARY**

### **CHAPTER 2 ABBREVIATION AND ACRONYMS**

### **CHAPTER 3 PREFACE**

3.1 Research Scope

3.2 Research Sources

3.2.1 Data Sources

3.2.2 Assumptions

3.3 Research Method

Chapter Four Market Landscape

4.1 Market Overview

4.2 Classification/Types

4.3 Application/End Users

### **CHAPTER 5 MARKET TREND ANALYSIS**

5.1 Introduction

5.2 Drivers

5.3 Restraints

5.4 Opportunities

5.5 Threats

### **CHAPTER 6 INDUSTRY CHAIN ANALYSIS**

6.1 Upstream/Suppliers Analysis

6.2 Recirculating Aquaculture System Farming Operation Analysis

6.2.1 Technology Analysis

6.2.2 Cost Analysis

6.2.3 Market Channel Analysis

6.3 Downstream Buyers/End Users

### **CHAPTER 7 LATEST MARKET DYNAMICS**

7.1 Latest News

7.2 Merger and Acquisition

7.3 Planned/Future Project

7.4 Policy Dynamics

## **CHAPTER 8 HISTORICAL AND FORECAST RECIRCULATING AQUACULTURE SYSTEM FARMING OPERATION MARKET IN NORTH AMERICA (2020-2030)**

8.1 Recirculating Aquaculture System Farming Operation Market Size

8.2 Recirculating Aquaculture System Farming Operation Market by End Use

8.3 Competition by Players/Suppliers

8.4 Recirculating Aquaculture System Farming Operation Market Size by Type

8.5 Key Countries Analysis

8.5.1 United States

8.5.2 Canada

8.5.3 Mexico

## **CHAPTER 9 HISTORICAL AND FORECAST RECIRCULATING AQUACULTURE SYSTEM FARMING OPERATION MARKET IN SOUTH AMERICA (2020-2030)**

9.1 Recirculating Aquaculture System Farming Operation Market Size

9.2 Recirculating Aquaculture System Farming Operation Market by End Use

9.3 Competition by Players/Suppliers

9.4 Recirculating Aquaculture System Farming Operation Market Size by Type

9.5 Key Countries Analysis

9.5.1 Brazil

9.5.2 Argentina

9.5.3 Chile

9.5.4 Peru

## **CHAPTER 10 HISTORICAL AND FORECAST RECIRCULATING AQUACULTURE SYSTEM FARMING OPERATION MARKET IN ASIA & PACIFIC (2020-2030)**

10.1 Recirculating Aquaculture System Farming Operation Market Size

10.2 Recirculating Aquaculture System Farming Operation Market by End Use

10.3 Competition by Players/Suppliers

10.4 Recirculating Aquaculture System Farming Operation Market Size by Type

10.5 Key Countries Analysis

10.5.1 China

10.5.2 India

10.5.3 Japan

- 10.5.4 South Korea
- 10.5.5 Southeast Asia
- 10.5.6 Australia

## **CHAPTER 11 HISTORICAL AND FORECAST RECIRCULATING AQUACULTURE SYSTEM FARMING OPERATION MARKET IN EUROPE (2020-2030)**

- 11.1 Recirculating Aquaculture System Farming Operation Market Size
- 11.2 Recirculating Aquaculture System Farming Operation Market by End Use
- 11.3 Competition by Players/Suppliers
- 11.4 Recirculating Aquaculture System Farming Operation Market Size by Type
- 11.5 Key Countries Analysis
  - 11.5.1 Germany
  - 11.5.2 France
  - 11.5.3 United Kingdom
  - 11.5.4 Italy
  - 11.5.5 Spain
  - 11.5.6 Belgium
  - 11.5.7 Netherlands
  - 11.5.8 Austria
  - 11.5.9 Poland
  - 11.5.10 Russia

## **CHAPTER 12 HISTORICAL AND FORECAST RECIRCULATING AQUACULTURE SYSTEM FARMING OPERATION MARKET IN MEA (2020-2030)**

- 12.1 Recirculating Aquaculture System Farming Operation Market Size
- 12.2 Recirculating Aquaculture System Farming Operation Market by End Use
- 12.3 Competition by Players/Suppliers
- 12.4 Recirculating Aquaculture System Farming Operation Market Size by Type
- 12.5 Key Countries Analysis
  - 12.5.1 Egypt
  - 12.5.2 Israel
  - 12.5.3 South Africa
  - 12.5.4 Gulf Cooperation Council Countries
  - 12.5.5 Turkey

## **CHAPTER 13 SUMMARY FOR GLOBAL RECIRCULATING AQUACULTURE SYSTEM FARMING OPERATION MARKET (2020-2025)**

- 13.1 Recirculating Aquaculture System Farming Operation Market Size
- 13.2 Recirculating Aquaculture System Farming Operation Market by End Use
- 13.3 Competition by Players/Suppliers
- 13.4 Recirculating Aquaculture System Farming Operation Market Size by Type

## **CHAPTER 14 GLOBAL RECIRCULATING AQUACULTURE SYSTEM FARMING OPERATION MARKET FORECAST (2025-2030)**

- 14.1 Recirculating Aquaculture System Farming Operation Market Size Forecast
- 14.2 Recirculating Aquaculture System Farming Operation Application Forecast
- 14.3 Competition by Players/Suppliers
- 14.4 Recirculating Aquaculture System Farming Operation Type Forecast

## **CHAPTER 15 ANALYSIS OF GLOBAL KEY VENDORS**

- 15.1 Aquabounty
  - 15.1.1 Company Profile
  - 15.1.2 Main Business and Recirculating Aquaculture System Farming Operation Information
  - 15.1.3 SWOT Analysis of Aquabounty
  - 15.1.4 Aquabounty Recirculating Aquaculture System Farming Operation Revenue, Gross Margin and Market Share (2020-2025)
- 15.2 Atlantic Sapphire
  - 15.2.1 Company Profile
  - 15.2.2 Main Business and Recirculating Aquaculture System Farming Operation Information
  - 15.2.3 SWOT Analysis of Atlantic Sapphire
  - 15.2.4 Atlantic Sapphire Recirculating Aquaculture System Farming Operation Revenue, Gross Margin and Market Share (2020-2025)
- 15.3 Aquaco
  - 15.3.1 Company Profile
  - 15.3.2 Main Business and Recirculating Aquaculture System Farming Operation Information
  - 15.3.3 SWOT Analysis of Aquaco
  - 15.3.4 Aquaco Recirculating Aquaculture System Farming Operation Revenue, Gross Margin and Market Share (2020-2025)
- 15.4 Nordic Aquafarms
  - 15.4.1 Company Profile



15.4.2 Main Business and Recirculating Aquaculture System Farming Operation Information

15.4.3 SWOT Analysis of Nordic Aquafarms

15.4.4 Nordic Aquafarms Recirculating Aquaculture System Farming Operation Revenue, Gross Margin and Market Share (2020-2025)

15.5 Whole Oceans

15.5.1 Company Profile

15.5.2 Main Business and Recirculating Aquaculture System Farming Operation Information

15.5.3 SWOT Analysis of Whole Oceans

15.5.4 Whole Oceans Recirculating Aquaculture System Farming Operation Revenue, Gross Margin and Market Share (2020-2025)

15.6 West Coast Salmon

15.6.1 Company Profile

15.6.2 Main Business and Recirculating Aquaculture System Farming Operation Information

15.6.3 SWOT Analysis of West Coast Salmon

15.6.4 West Coast Salmon Recirculating Aquaculture System Farming Operation Revenue, Gross Margin and Market Share (2020-2025)

Please ask for sample pages for full companies list

Tables and Figures

Table Abbreviation and Acronyms

Table Research Scope of Recirculating Aquaculture System Farming Operation Report

Table Data Sources of Recirculating Aquaculture System Farming Operation Report

Table Major Assumptions of Recirculating Aquaculture System Farming Operation Report

Figure Market Size Estimated Method

Figure Major Forecasting Factors

Figure Recirculating Aquaculture System Farming Operation Picture

Table Recirculating Aquaculture System Farming Operation Classification

Table Recirculating Aquaculture System Farming Operation Applications

Table Drivers of Recirculating Aquaculture System Farming Operation Market

Table Restraints of Recirculating Aquaculture System Farming Operation Market

Table Opportunities of Recirculating Aquaculture System Farming Operation Market

Table Threats of Recirculating Aquaculture System Farming Operation Market

Table Covid-19 Impact For Recirculating Aquaculture System Farming Operation Market

Table Raw Materials Suppliers

Table Different Production Methods of Recirculating Aquaculture System Farming



## Operation

Table Cost Structure Analysis of Recirculating Aquaculture System Farming Operation

Table Key End Users

Table Latest News of Recirculating Aquaculture System Farming Operation Market

Table Merger and Acquisition

Table Planned/Future Project of Recirculating Aquaculture System Farming Operation Market

Table Policy of Recirculating Aquaculture System Farming Operation Market

Table 2020-2030 North America Recirculating Aquaculture System Farming Operation Market Size

Figure 2020-2030 North America Recirculating Aquaculture System Farming Operation Market Size and CAGR

Table 2020-2030 North America Recirculating Aquaculture System Farming Operation Market Size by Application

Table 2020-2025 North America Recirculating Aquaculture System Farming Operation Key Players Revenue

Table 2020-2025 North America Recirculating Aquaculture System Farming Operation Key Players Market Share

Table 2020-2030 North America Recirculating Aquaculture System Farming Operation Market Size by Type

Table 2020-2030 United States Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Canada Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Mexico Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 South America Recirculating Aquaculture System Farming Operation Market Size

Figure 2020-2030 South America Recirculating Aquaculture System Farming Operation Market Size and CAGR

Table 2020-2030 South America Recirculating Aquaculture System Farming Operation Market Size by Application

Table 2020-2025 South America Recirculating Aquaculture System Farming Operation Key Players Revenue

Table 2020-2025 South America Recirculating Aquaculture System Farming Operation Key Players Market Share

Table 2020-2030 South America Recirculating Aquaculture System Farming Operation Market Size by Type

Table 2020-2030 Brazil Recirculating Aquaculture System Farming Operation Market

Size

Table 2020-2030 Argentina Recirculating Aquaculture System Farming Operation  
Market Size

Table 2020-2030 Chile Recirculating Aquaculture System Farming Operation Market  
Size

Table 2020-2030 Peru Recirculating Aquaculture System Farming Operation Market  
Size

Table 2020-2030 Asia & Pacific Recirculating Aquaculture System Farming Operation  
Market Size

Figure 2020-2030 Asia & Pacific Recirculating Aquaculture System Farming Operation  
Market Size and CAGR

Table 2020-2030 Asia & Pacific Recirculating Aquaculture System Farming Operation  
Market Size by Application

Table 2020-2025 Asia & Pacific Recirculating Aquaculture System Farming Operation  
Key Players Revenue

Table 2020-2025 Asia & Pacific Recirculating Aquaculture System Farming Operation  
Key Players Market Share

Table 2020-2030 Asia & Pacific Recirculating Aquaculture System Farming Operation  
Market Size by Type

Table 2020-2030 China Recirculating Aquaculture System Farming Operation Market  
Size

Table 2020-2030 India Recirculating Aquaculture System Farming Operation Market  
Size

Table 2020-2030 Japan Recirculating Aquaculture System Farming Operation Market  
Size

Table 2020-2030 South Korea Recirculating Aquaculture System Farming Operation  
Market Size

Table 2020-2030 Southeast Asia Recirculating Aquaculture System Farming Operation  
Market Size

Table 2020-2030 Australia Recirculating Aquaculture System Farming Operation Market  
Size

Table 2020-2030 Europe Recirculating Aquaculture System Farming Operation Market  
Size

Figure 2020-2030 Europe Recirculating Aquaculture System Farming Operation Market  
Size and CAGR

Table 2020-2030 Europe Recirculating Aquaculture System Farming Operation Market  
Size by Application

Table 2020-2025 Europe Recirculating Aquaculture System Farming Operation Key  
Players Revenue

Table 2020-2025 Europe Recirculating Aquaculture System Farming Operation Key Players Market Share

Table 2020-2030 Europe Recirculating Aquaculture System Farming Operation Market Size by Type

Table 2020-2030 Germany Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 France Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 United Kingdom Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Italy Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Spain Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Belgium Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Netherlands Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Austria Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Poland Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Russia Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 MEA Recirculating Aquaculture System Farming Operation Market Size

Figure 2020-2030 MEA Recirculating Aquaculture System Farming Operation Market Size and CAGR

Table 2020-2030 MEA Recirculating Aquaculture System Farming Operation Market Size by Application

Table 2020-2025 MEA Recirculating Aquaculture System Farming Operation Key Players Revenue

Table 2020-2025 MEA Recirculating Aquaculture System Farming Operation Key Players Market Share

Table 2020-2030 MEA Recirculating Aquaculture System Farming Operation Market Size by Type

Table 2020-2030 Egypt Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Israel Recirculating Aquaculture System Farming Operation Market

Size

Table 2020-2030 South Africa Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Gulf Cooperation Council Countries Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2030 Turkey Recirculating Aquaculture System Farming Operation Market Size

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Market Size by Region

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Market Size Share by Region

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Market Size by Application

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Market Share by Application

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Key Vendors Revenue

Figure 2020-2025 Global Recirculating Aquaculture System Farming Operation Market Size and Growth Rate

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Key Vendors Market Share

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Market Size by Type

Table 2020-2025 Global Recirculating Aquaculture System Farming Operation Market Share by Type

Table 2025-2030 Global Recirculating Aquaculture System Farming Operation Market Size by Region

Table 2025-2030 Global Recirculating Aquaculture System Farming Operation Market Size Share by Region

Table 2025-2030 Global Recirculating Aquaculture System Farming Operation Market Size by Application

Table 2025-2030 Global Recirculating Aquaculture System Farming Operation Market Share by Application

Table 2025-2030 Global Recirculating Aquaculture System Farming Operation Key Vendors Revenue

Figure 2025-2030 Global Recirculating Aquaculture System Farming Operation Market Size and Growth Rate

Table 2025-2030 Global Recirculating Aquaculture System Farming Operation Key Vendors Market Share

Table 2025-2030 Global Recirculating Aquaculture System Farming Operation Market Size by Type

Table 2025-2030 Recirculating Aquaculture System Farming Operation Global Market Share by Type

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