

Bankability, CAPEX/OPEX & Biosecurity Checklist

A vendor-neutral pre-investment checklist used by our procurement concierge to pressure-test RAS, sea-cage and hybrid aquaculture projects before equipment is committed. Every box represents a decision, document or quantified metric that a senior lender, insurer or EPC contractor will ask about. Missing boxes are the cheapest problems you will ever fix.

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1 · Bankability & Capital Structure

Confirm the project can survive first contact with a senior lender's credit committee, an ECA, or a strategic co-investor.

Sponsor & governance

- ☐ Sponsor equity commitment quantified (target 35–50% for RAS, 25–35% for sea cage) with source of funds evidence.
- ☐ SPV structure, shareholders agreement and reserved matters list drafted.
- ☐ Board and management CVs cover aquaculture operations, not just capital.
- ☐ Independent chair or observer seat offered to lenders / anchor investor.

Debt & instruments

- ☐ Term sheets or indicative offers from 2+ senior lenders (bank, ECA, DFI, green-bond arranger).
- ☐ Debt Service Coverage Ratio (DSCR) modelled under base, downside and stress cases ($\geq 1.35\times$ base).
- ☐ Loan Life Coverage Ratio (LLCR) and Project Life Coverage Ratio (PLCR) computed.
- ☐ Currency of debt matched to currency of revenue OR hedging strategy documented.
- ☐ Interest rate sensitivity tested at +200 bps and +400 bps.
- ☐ Grace period aligned to biological ramp-up (first harvest, not first fingerling).

Security package

- ☐ Completion guarantee or EPC wrap secured (RAS especially).
- ☐ Technology performance guarantee from equipment OEM covering biofilter, oxygen and thermal systems.
- ☐ Assignment of insurance proceeds, offtake contracts and material permits to lender.
- ☐ Escrow / DSRA (Debt Service Reserve Account) sized to 6–12 months debt service.
- ☐ Political risk insurance (MIGA / private) for emerging-market jurisdictions.

Offtake & revenue

- ☐ Signed LOIs or offtake agreements for $\geq 60\%$ of Year-3 output.
- ☐ Pricing formula stress-tested vs 5-year historical low for the species.
- ☐ Route-to-market (processor, retailer, foodservice, export) mapped with logistics cost per kg.
- ☐ Certification pathway (ASC, BAP, GlobalG.A.P., organic) budgeted and scheduled.

2 · CAPEX Evaluation

Force the project to reveal every dollar before an OEM quote hides it inside a lump-sum turnkey line.

Scope & sizing

- ☐ Target annual biomass (tons live-weight) and species mix locked.
- ☐ System type (RAS / flow-through / sea cage / hybrid) justified against water, energy and market economics.
- ☐ CAPEX per ton benchmarked (sea cage: USD 8–12k/t · RAS: USD 18–35k/t) with variance explained.
- ☐ Design basis document (DBD) issued and signed by process engineer.

Direct CAPEX line items

- ☐ Land acquisition or long-term lease ($\geq$ debt tenor + 5 years).
- ☐ Site preparation, earthworks, drainage, roads.
- ☐ Civil works: tanks, raceways, sumps, hatchery, quarantine, processing.
- ☐ Process equipment: pumps, drum filters, biofilters, degassers, oxygen cones, UV/ozone, heat exchangers.
- ☐ For sea cage: HDPE rings, nets, moorings, feed barge, service vessels, shore base.
- ☐ Instrumentation & control (SCADA, DO/pH/temp/ORP sensors, alarms, redundant PLCs).
- ☐ Backup power (generators sized for full load, dual fuel supply, 72h autonomy).
- ☐ Cold chain: chillers, ice plant, RSW, refrigerated logistics.
- ☐ IT, ERP, traceability, biosecurity fencing and vehicle wash-down.

Indirect & soft CAPEX

- ☐ EPCM / owner's engineer fees (typically 6–12% of hard CAPEX).
- ☐ Permitting, EIA, hydro-geological studies, public consultation.
- ☐ First stocking (eggs, fingerlings, broodstock) treated as CAPEX not OPEX.
- ☐ Pre-operational feed, chemicals and staff training budget.
- ☐ Working capital ramp (12–24 months for salmon, 6–12 for shrimp/tilapia).
- ☐ Contingency: $\geq 10\%$ hard CAPEX (sea cage) or $\geq 15\%$ (RAS / first-of-kind).
- ☐ Interest during construction (IDC) capitalised into project cost.

CAPEX quality controls

- ☐ Minimum 3 competitive OEM quotes for every major package (biofilters, pumps, cages, feed barges, RAS skids).
- ☐ OEM quotes normalised (currency, Incoterms, scope, spares, commissioning, training).
- ☐ Local content / import duty modelled per component.
- ☐ Payment milestones tied to delivery + commissioning, not calendar dates.
- ☐ Liquidated damages defined for delay and underperformance.

3 · OPEX Evaluation

OPEX per kg is the single number that determines whether the project survives a price downturn. Model it before you sign a term sheet.

Feed & biology

- ☐ FCR (economic and biological) modelled by species and life-stage.
- ☐ Feed pricing indexed to fish-meal / soy / wheat with 5-year sensitivity.
- ☐ Fingerling / smolt / post-larvae unit cost and mortality assumption locked.
- ☐ Mortality by stage benchmarked vs industry (RAS grow-out $\leq 10\%$, sea cage salmon $\leq 15\%$).
- ☐ Growth curve model (SGR / TGC) validated against reference farms.

Energy & utilities

- ☐ Electricity kWh/kg computed for pumping, oxygenation, thermal load, lighting.
- ☐ Power purchase agreement (PPA) or grid tariff with escalator defined.
- ☐ Renewables / heat recovery / CO₂ recovery evaluated for OPEX and ESG.
- ☐ Water source (freshwater, brackish, marine, reclaimed) and cost per m³ documented.
- ☐ Effluent treatment OPEX and discharge fees (RAS especially) modelled.

Labour & overheads

- ☐ Headcount plan by function (operations, biology, engineering, QA, admin).
- ☐ Local skilled-labour availability assessed; expat / training budget provisioned.
- ☐ Insurance: property, business interruption, stock mortality (specify perils and deductibles).
- ☐ Health, safety, environment (HSE) compliance and audit budget.
- ☐ Certification maintenance and third-party audit fees.

Logistics & commercial OPEX

- ☐ Harvest, processing, packaging, cold storage cost per kg.
- ☐ Inland & export logistics (reefer trucks, airfreight, sea container) modelled per market.
- ☐ Sales commission, marketing, brand and category management budget.
- ☐ Financing OPEX: interest, agent fees, hedging cost, LC / bank guarantee fees.

OPEX quality controls

- ☐ All-in cash cost per kg live-weight computed (target: sea cage salmon USD 3.5–4.5, RAS USD 4.5–6.5).
- ☐ OPEX benchmarked against ≥ 2 comparable operating projects.
- ☐ Break-even farmgate price computed under base and downside.
- ☐ Sensitivity: $\pm 10\%$ feed price, $\pm 20\%$ energy, $\pm 15\%$ mortality.

4 · Biosecurity & Operational Risk

A single biofilter crash, oxygen failure or disease breakthrough can wipe out an entire cohort in hours. Biosecurity is not a policy — it is redundant hardware, documented procedures and enforced discipline.

Site & zoning

- ☐ Site risk assessment: prevailing currents, neighbouring farms, wildlife vectors, HABs.
- ☐ Zoning (clean / dirty / quarantine) with physical barriers, colour-coded PPE and tools.
- ☐ Vehicle and personnel biosecurity: wash-down, footbaths, sign-in log, visitor policy.
- ☐ Water intake screening, filtration, UV / ozone disinfection sized to peak flow.
- ☐ Effluent disinfection before discharge (RAS & hatchery).

Redundancy & failure modes

- ☐ N+1 redundancy on: main pumps, blowers, oxygen supply, chillers, biofilter cells.
- ☐ Independent oxygen backup (LOX tank + vaporiser) sized to 72h autonomy.
- ☐ Dual power feeds OR generator + fuel contract with SLA.
- ☐ Alarm escalation matrix (SMS, call-out, on-call roster) tested monthly.
- ☐ SCADA data logging retained ≥ 2 years for insurer and lender review.

Disease management

- ☐ Fish health management plan signed by qualified veterinarian.
- ☐ SPF / SPR broodstock source documented with health certificates.
- ☐ Incoming stock quarantine protocol (duration, testing, release criteria).
- ☐ Sea-lice management (sea cage) with mechanical, biological, thermal or chemical tools.
- ☐ Vaccination schedule budgeted and scheduled.
- ☐ Mortality removal, cold storage, and rendering / disposal contract.
- ☐ Notifiable disease response plan aligned to OIE / national authority.

Insurance & audit

- ☐ Stock mortality insurance quoted with named perils, deductibles, and sublimits.
- ☐ Business interruption cover linked to biological event and equipment failure.
- ☐ Annual third-party biosecurity audit (ASC / BAP / GlobalG.A.P. equivalent).
- ☐ Escape prevention plan with net-integrity checks and reporting protocol.

5 • Investment Committee Gate

Before the IC meeting, every box below must be closed. Any open box is a condition precedent, not a condition subsequent.

- ☐ Base-case IRR, equity IRR and payback documented under 3 scenarios.
- ☐ Sensitivity tornado chart identifies top 5 value drivers.
- ☐ Independent technical review (ITR) commissioned and signed.
- ☐ Independent market study commissioned and signed.
- ☐ Legal DD covering land title, permits, offtake, employment, tax.
- ☐ ESG DD covering IFC Performance Standards or Equator Principles as applicable.
- ☐ Detailed 24-month construction schedule with critical path.
- ☐ Post-COD operating readiness plan (staffing, SOPs, training) drafted.

Next step. Book a 30-minute concierge session with FishMatch Group to walk this checklist against your specific project — RAS, sea cage or hybrid — and receive a written gap analysis with prioritised remediation. Visit fishmatchgroup.com/planning-center or reply to the email that delivered this PDF.

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