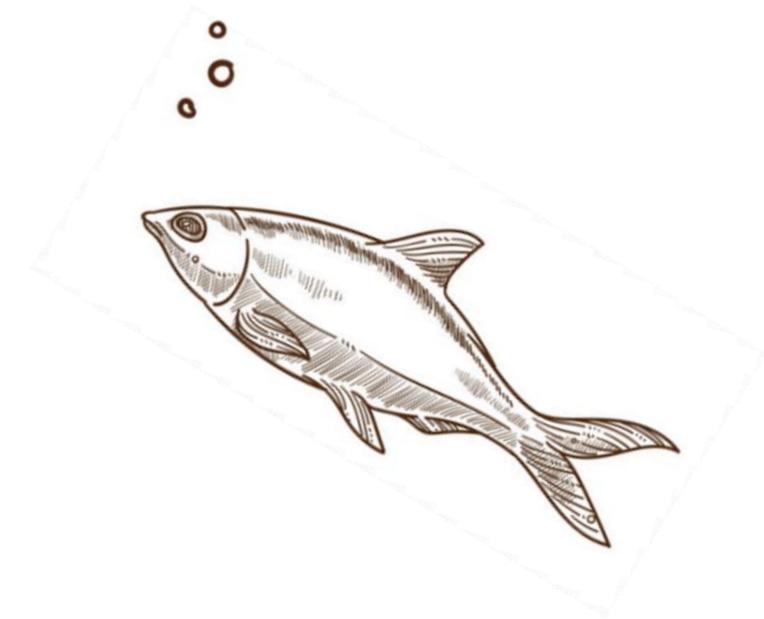


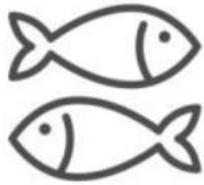
# Addressing Challenges to Aquaculture Development



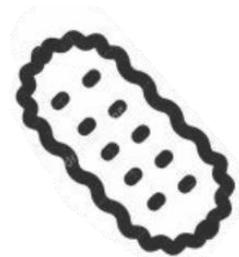
# Aquaculture in the Pacific

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## Food security



## Low capital economic development

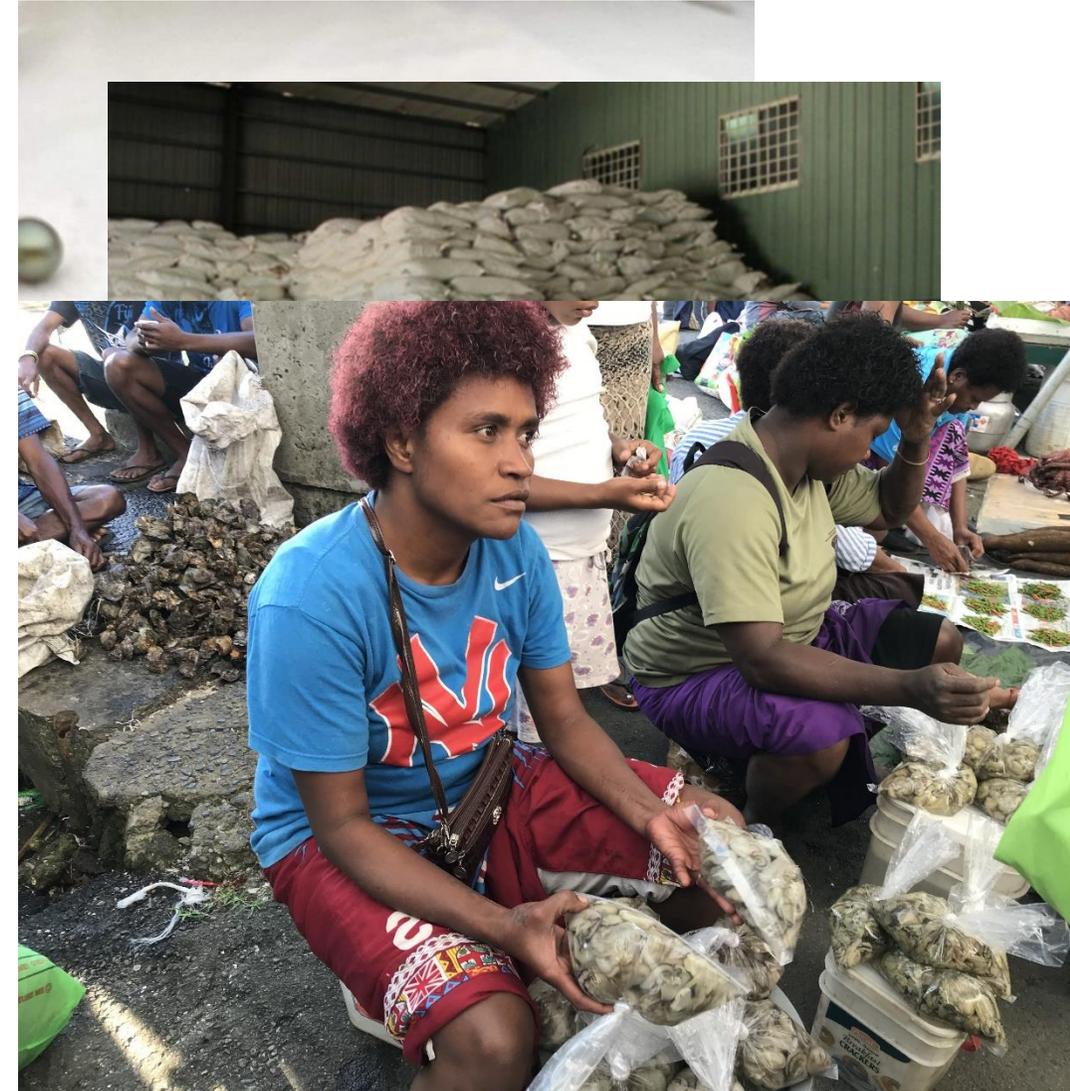


## High capital economic development



# Market Access

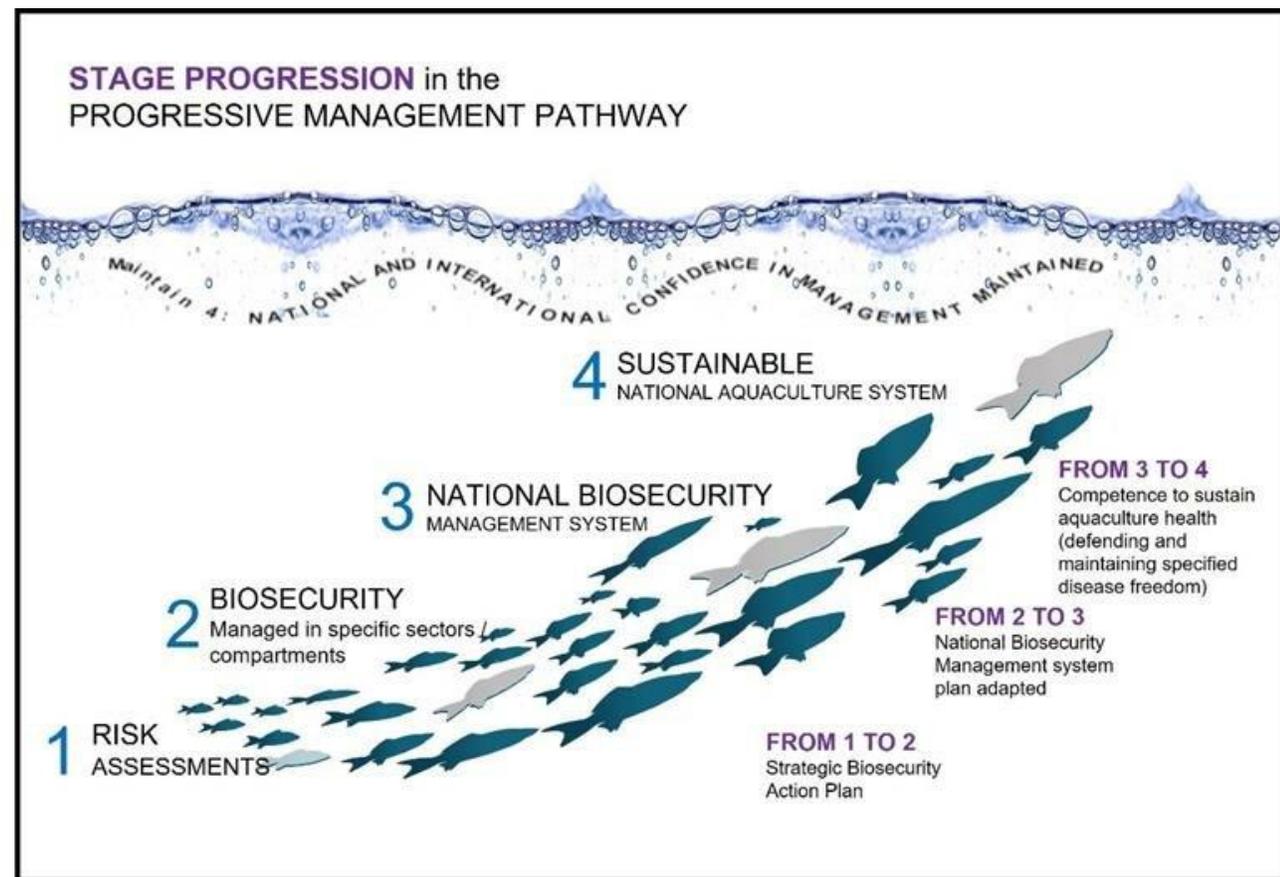
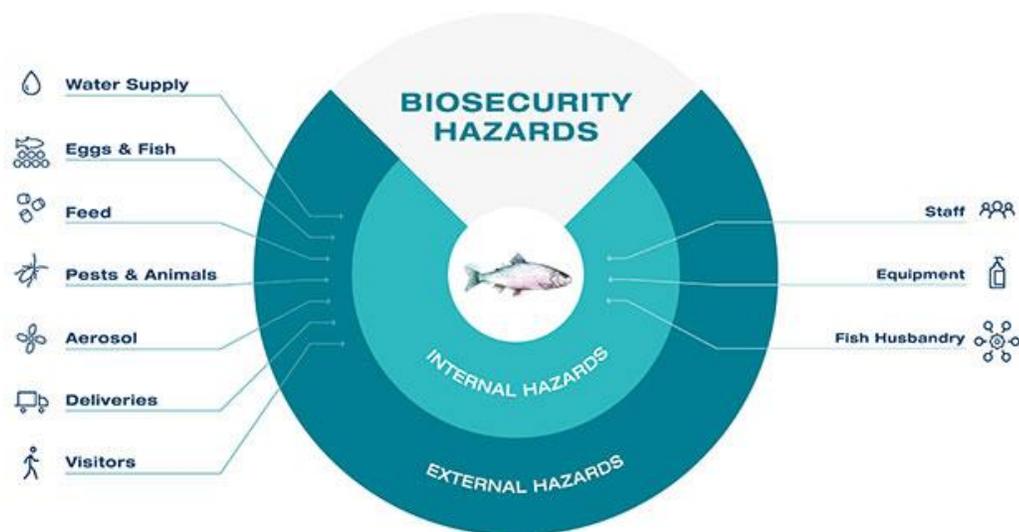
- Low volume with high value (pearls)
- Global commodity market (seaweed)
- Domestic market
- Regional and Diaspora market



# Feed Sustainability



# Disease Management



# Regulatory, Legal Issues and Tenure

- Marine Tenure
- Environmental Impacts
- Biosecurity
- Food Safety



# Access to Capital

## Capital Investment Model 1000m longline 3000m spat collector 160,000 juveniles produced

	1	2	3	4	5	6	7	8	9	10
Revenues	\$0	\$96,000	\$97,440	\$98,902	\$100,385	\$101,891	\$103,419	\$104,971	\$106,545	\$108,143
Spat	\$49,000	\$30,000	\$30,900	\$31,827	\$32,782	\$33,765	\$34,778	\$35,822	\$36,896	\$38,003
Labour	\$19,264	\$19,842	\$20,437	\$21,050	\$21,682	\$22,332	\$23,002	\$23,692	\$24,403	\$25,135
Equipment, Consumables	\$2,700	\$2,781	\$2,864	\$2,950	\$3,039	\$3,130	\$3,224	\$3,321	\$3,420	\$3,523
Risk	\$3,000	\$3,000	\$3,090	\$3,183	\$3,278	\$3,377	\$3,478	\$3,582	\$3,690	\$3,800
Profit	(\$70,964)	\$40,377	\$40,148	\$39,891	\$39,604	\$39,287	\$38,937	\$38,554	\$38,136	\$37,682
CAPEX (Marine Farm)	\$27,800	\$0	\$0	\$0	\$0	\$0	\$20,800	\$0	\$0	\$0
Cash Flow (Annual)	(\$98,764)	\$40,377	\$40,148	\$39,891	\$39,604	\$39,287	\$18,137	\$38,554	\$38,136	\$37,682
Cash Flow (Cumulative)	(\$98,764)	(\$58,387)	(\$18,239)	\$21,653	\$61,257	\$100,544	\$118,681	\$157,235	\$195,371	\$233,053

### NPV

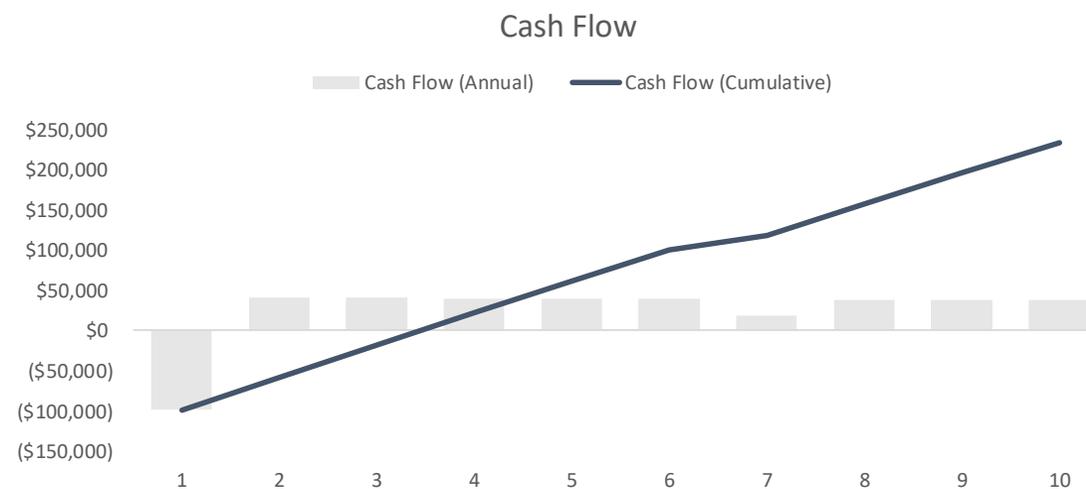
10%	105756.19
15%	70107.20
20%	44786.17

### IRR

37%
-----

### Payback

4 Years
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# Environmental Impact

- Uneconomic management needs regulation
- Fed aquaculture has greater environmental impacts
- Integrated Multi Trophic Aquaculture (IMTA)



# Labour Issues

- Competition
- Opportunity
- Extensive methods
- Training

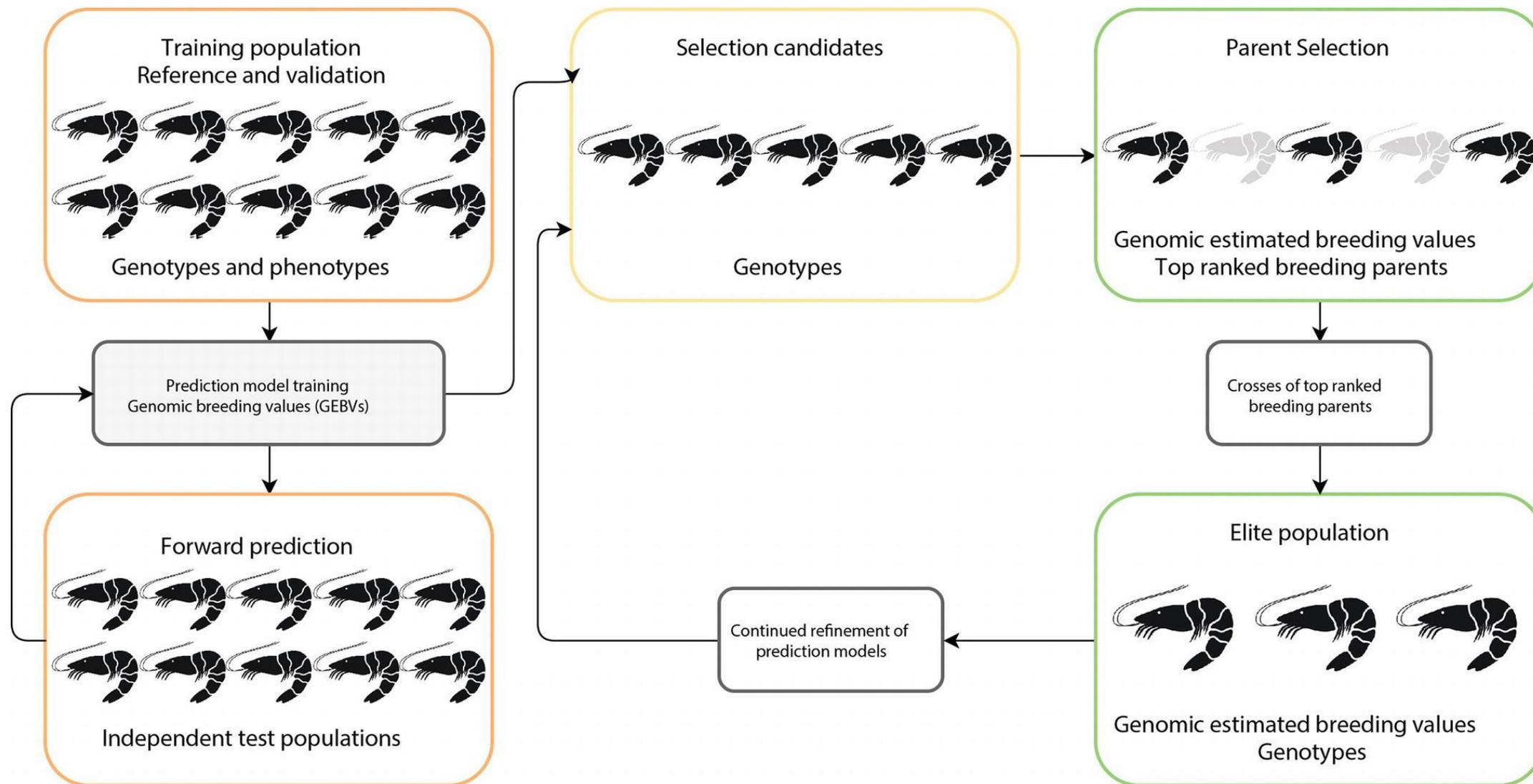


# Water Quality Management

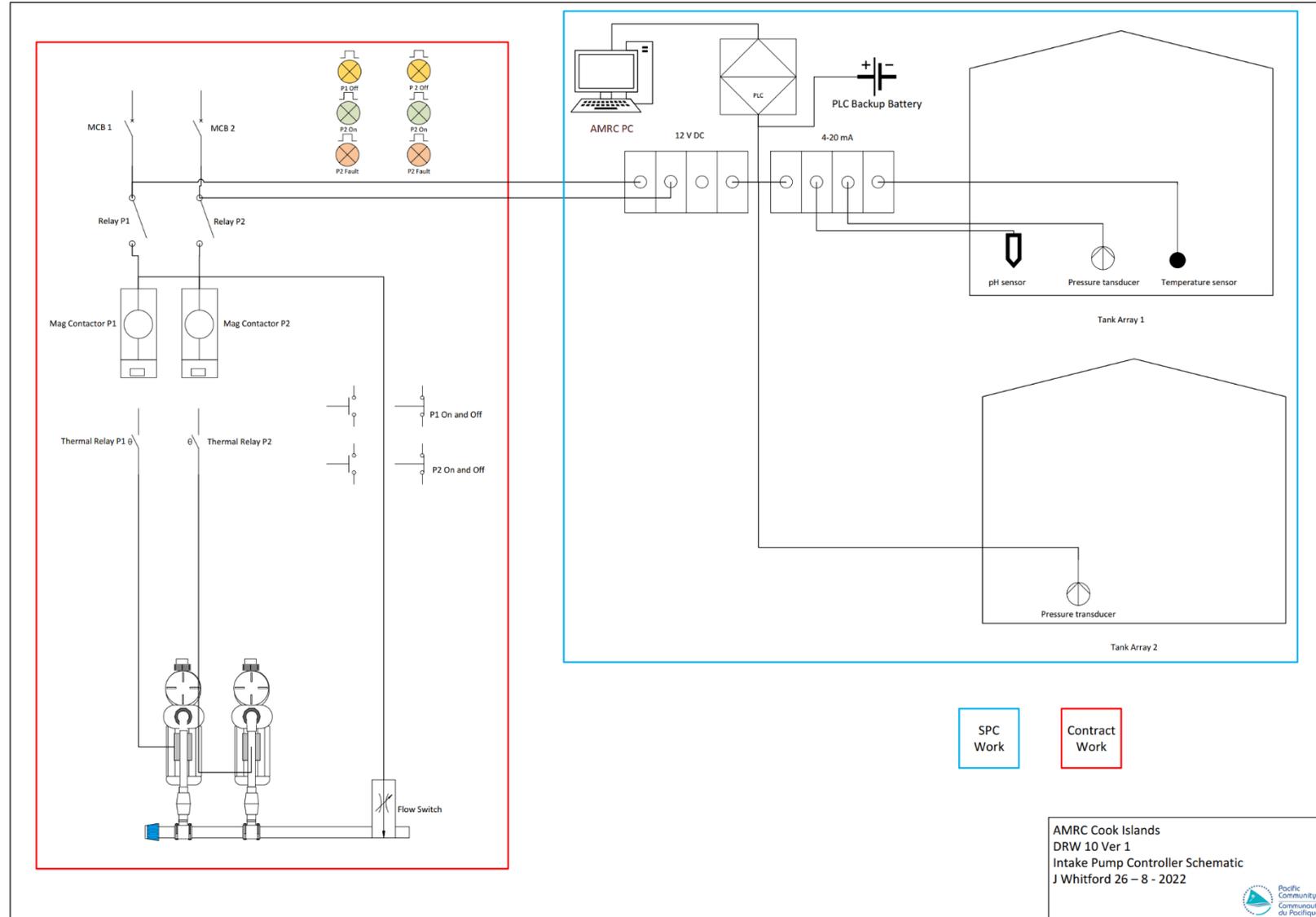
- Poor water quality
- Affects growth and increases susceptibility to disease
- Can lead to eutrophication (oxygen depletion)
- Relies on mechanical and electrical systems (land based)



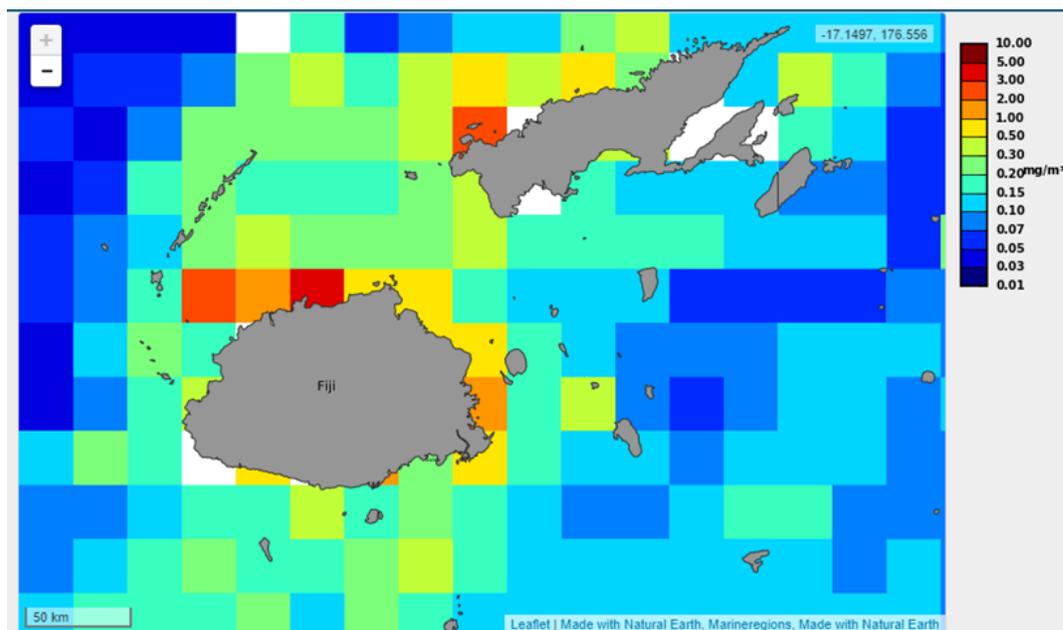
# Genetic Improvement



# Technology Adoption



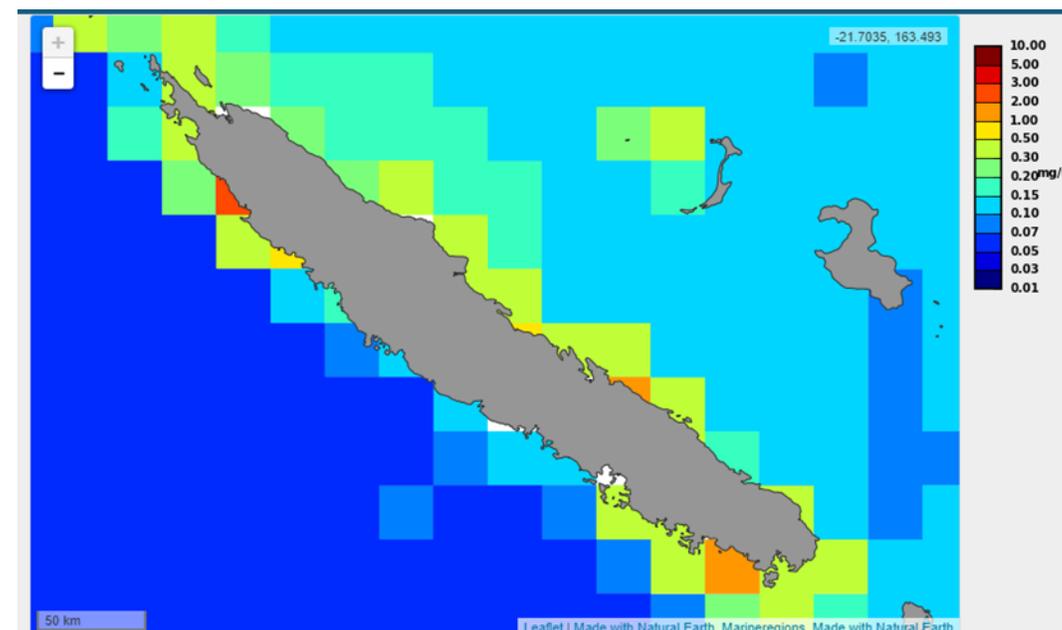
# Resource Competition



Country/Region	Pacific Ocean
Variable	Monthly
Plot Type	Surface Map
Period	Monthly
Year	2019
Month	January
Dataset	Chlorophyll Mass Concentration

Submit

[About Chlorophyll Mass Concentration](#)



Country/Region	Pacific Ocean
Variable	Monthly
Plot Type	Surface Map
Period	Monthly
Year	2019
Month	January
Dataset	Chlorophyll Mass Concentration

Submit

[About Chlorophyll Mass Concentration](#)



# Communication

- Communities
- Industry
- Governments
- Researchers
- Financial institutions
- Environmental organisations.





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- Milkfish
- Tilapia
- Fresh water Eels
- Fresh water Perches
- Fresh water Prawns
- Marine Prawns
- Other Marine Finfish
- Groupers
- Mulletts
- Giant Clams
- Pearl Oysters
- Cupped Oysters (mangrove / rock oysters)
- Cockles and other shellfish.
- Lobsters
- Seaweeds
- Sandfish (Sea Cucumbers)
- Other Sea Cucumbers