

A Practical Tool: One Health Considerations for Land-Based Aquaculture

Introduction:

The One Health concept attempts to provide infrastructure upon which promotion of secure and equitable food systems can be built. Amongst the agricultural methodologies, aquaculture is proving to be a field with exponential growth and potential. In order to capitalize on the benefits of increased seafood production, while reducing the likelihood of potential harm caused by the industry, support during planning stages is prudent. Currently, there is a lack of available tools to support methodical ways of assessing impacts during the planning stage. Hence, a rubric that can be used as an aid in planning is presented in this paper. The rubric is intended to guide the assiduous land-based aquaculture planner(s) in using a collaborative, One Health centered process by posing questions and providing prompts regarding impacts to consider.

The Aquaculture Rubric: A Simple Tool

The rubric is arranged in three key One Health categories: 1) Cultural Competency, 2) Current or Projected Impacts, and 3) Mitigation or Development Strategies. Each category is aligned with human, animal and environmental concerns and prompts related to each are appended. The development of the rubric was based on an extensive review of literature on successful land-based aquaculture systems as well as literature on ones that have failed or had negative impacts on the people or land in a region. Focused questions are attached to the rubric to encourage consideration of pertinent topics that may fall outside of the rubric criteria that may facilitate initiatives. The rubric user(s) may envisage the start-up or facility of interest in all stages from design to seafood production to marketing and complete as much information in the rubric prompts as possible. Some rubric segments may be more or less fitting based on the setting and location, size, type (methodology and farmed species), etc., and can be modified according to the specific needs.

The rubric is designed to aid in the communication of expectations and fundamentals of a project, raise awareness of potential setbacks, improve the initiation phases of land based designs, support working through complications in a timely and detailed fashion and as a mechanism to clarify intentions through organized communication. The essence of the rubric is intended to elucidate obstacles and can be modified by the user(s). It is intended to serve as a baseline and initiator of progress in planning using a One Health approach.

A Practical Tool: One Health Considerations for Land-Based Aquaculture Facilities

Facility Name: _____.

Location: _____.

Planned/current fish species: _____.

One Health Point Person(s): _____.

One Health Areas	Current or Projected	Mitigation or Development Strategy
Cultural Competency		
Impact on Various Demographics (Role of Women)		
Impact on Religions and Traditions (Local Fishing Practices and Protected Areas)		
Continuing Education and Training (Professional Advancement Training)		
Geographic Region (Product Disbursement)		
Current Role/Dependency		

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One Health Areas	Current or Projected	Mitigation or Development Strategy
Labor Availability		
Employment Creation (Diversity, Equity, Inclusion)		
Health & Wellness		
Potential for Zoonotic Disease (Collaboration with Local Physicians)		
Potential for Acute and Chronic Illness (Promotion and Prevention, including Physical and Mental Health)		
Impact on Occupational Health (Aquaculture-specific Safety Training, Handling/Exposure Zoonosis)		
Impact on Animals and Environment		
Impact on Land (Spatial Footprint)		
Impact on Air (Carbon		

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One Health Areas	Current or Projected	Mitigation or Development Strategy
Footprint/Greenhouse Gas Emissions/Energy Consumption)		
Impact on Sea/Water (Disease and Farmed Stock Exposure)		
Waste Management Systems (Contained vs. Uncontained System)		
Potential for Antimicrobial Resistance (Litigious Use and Strict Containment/Prevention of Spillover)		
Potential for Vector Borne Disease (Flying Animal/Insect/Rodent/Pet Protection)		
Impact on Food Safety and Security (Contaminant and Pollutant Screening e.g. Bacteria and Heavy Metals)		
Impact on Animal		

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One Health Areas	Current or Projected	Mitigation or Development Strategy
Welfare (Timely Disease Prevention and Treatment)		
Supplemental Food (Source/Supply)		
Integrative Farming (Additional Crops, Mono or Polyculture, Salt or Freshwater)		
Financial Sourcing and Management Practices		
Before (Planning/Construction Stages)		
During (Operational)		
After (Exit Strategy)		

Additional One Health Considerations:

- Who are the stakeholders (are they represented in facility plans)?

- Which experts (locals, naturalists, scientists, financial advisors, policy makers, etc.) should be contacted? Who will contact them and when?

- What is the local political structure and how will this impact the facility?

- Are any government restrictions or promotions in place for growth of specific species?

- Will a feasibility study be performed, if no-why not, if yes-how?

- How can a community input forum be fashioned? Who will initiate this, and when?

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- How will this facility be regularly monitored from within the country/locally?

- What role can the media/news (local, regional, global) play?

- What will be an effective evaluation strategy (frequency, rigor, validity, sustainability)? How will it be determined if the venture has become a sustainable community-led social enterprise?

- What programs are in place to encourage empowerment, capacity building, democratic organizing, human rights education?

- What is the exit strategy for this production facility?

- What are the projected market trends?

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- What facility security measures will be in place?

- What natural disaster or seasonal planning is advisable (flood, droughts, over-wintering, etc.)? Who can be consulted for an emergency contingency plan?

- What type of aquaculture system is utilized (extensive, improved extensive, semi-intensive, intensive)?

Please contact Drs. Liegey (fawnvuevet@gmail.com) and Camargo (CCamargo@rossvet.edu.kn) with feedback on this rubric. The above document is part of the MSc in One Health thesis work by Dr. Catherine Liegey, advised by Dr. Jennifer Ketzi of Ross University School of Veterinary Medicine.