

# Shrimp Aquaculture's Development Perspectives Reviewing on Improving Strategies and Management Plans in Ecuadorian Shrimp Industry

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## ABSTRACT

The environment has always aroused significant concerns regarding urban development and population increase. Whereas the economy is based upon local resources, it implies to local pollution. The complex would illuminate the functions of ecological and eco-political modernization towards the shrimp farming in Ecuador. The review continues the controversy on flows, development and practices as a case simulation with locals to examine the social conflicts in this regards. The paper is in favour of an eco-labelling strategy and discusses the main obstacles and barriers in shrimp mariculture. The technical approaches have been specified in this case. Finally, the discussion will conclude the responsibility of stakeholders and decision-makers to achieve a sustainably developed aquaculture and improving seafood industry.

**Keywords:** Aquaculture; Modernization; Development; Practices; Globalization

## INTRODUCTION

'Development' has closely tied the dominant ideology amid public indifferences as a perspective of Western adventure [1]. Globalization is a crucial function which can transform many parts of our lives, and food provisioning is a ruffle which is too often organized for this phenomenon [2]. The food consumption would be the genuine satisfaction of a physical demand through the purchase and consumption of various food products; however, it has become included with choices, uncertainty and risk governance. In this regard, people use derivatives not only to confute material needs but also to demonstrate in social, cultural and political terms. Globalisation has led us to transform the industry and social activities, as it specialises human practices. Rist has conceptualised the transition to global modernity and global network society while individualism is becoming less and global flows are transforming to a vital function. The 'space of flows' can substitute the 'space of places' in Castells' perspective, that is why the economic activities and social practices are less arranged. The valence of material transactions and direct interactions can be substantiated without geographical contiguity [3]. Whenever the global networks are organised, some people spend their lives in the local 'space of places'. The conventional time discipline, individual interactions and socially determined sequencing can identify the social and environmental regulation at the same time. The considerable efforts and resources are to oppose international

shrimp farming which has been dedicated to international lobbies, NGOs and environmental activists. The consideration has had an external effect on legislation and procedures that regulate the industry. As an instance, the postulate about contretemps and variety of perceptible issues, in this case, claims that "the developing global shrimp industry is environmentally destructive, intrinsically unsustainable and inequitable in social terms" [4]. Aquaculture is a further implementation at progressively congested coast and/ river which includes a variant of users, land and water. The situation is expected to be improved with concerning on environment and overlooked issues, and most nations are working on environmentally friendly procedures and regulations. It is no exaggeration to say that the initiatives would have been imposed on the aquaculture industry. Still, also the final effect can be primarily positive on marketing and disease controls [5]. Lobbyists are frequently altering consumers to buy and support products whose production methods are based on environment and biodiversity, which are remarkably affecting the market prospects [6]. It is therefore clear that exploring alternative economic activities for regional fishers whose local resources have been overexploited or depleted, can be able to maintain a long term balanced planning for their jobs based on a sustainable plan. Thus, dealing with larger-scale enterprises are linked to granting financial support can be given the foremost consideration.

In all and according to the subsequent discussion, there is no point

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in denying that the facilitating access to land and common property resources is an essential function for governments which are increasingly conscious of the necessity to support the aquaculture activities, creating legislation and administrative procedures. Moreover, governments can assist in assigning fair property rights and processing to enhancing diligence all sorts of authorisations relating to the environment, biodiversity and market. With the advent of the modernisation and principals of sustainable development, dealing with larger-scale enterprise, governmental strategies would ordinarily link to financial support, facilitating direct investment and promotion of export to participate in an internationally recognised trade.

## FRAME OF RESEARCH: A SELECTIVE REVIEW

The following study has presented an analysis of the literature to review the social and economic aspects of shrimp farming. During field research to considering the aquaculture industry, an academic simulation has been designed to discuss the descriptive, normative and statistical data on the Ecuadorian shrimp industry. Although the confidentiality of sources is protected in line with the protocols of social science, the arguments would also discuss controversies between stakeholders. They are addressing the vital functions in compiling practices and certification processes to achieve a sustainable transition in the aquaculture industry. Moreover, the review continues the main executive improvements in technological aspects of shrimp farming; however, the responsibility would remain on the political side to manage the negative consequences of climate change and environmental protection.

### Proposing strategies on political modernization

It is important to reiterate that the discussions of environmental issues would not deny the existence of environmental degradation but also to illustrate the inadequacy of the strategies to define these problems as well as desertification, water erosion and in this particular occasion the mangrove deforestation [7]. A comprehensive political approach may undermine environmental management and social development to restrict local livelihoods by encouraging the imposition of land-use policies. Among the themes in political ecology which can provide a platform to develop frameworks for the recognition of shrimp mariculture dynamics, firstly, it has committed to interpret and simplify the crucial role that the physical environment can play which can also shape the social relations. Secondly, the contingent and variable characteristics of ecological modernity would be emphasised in the social processes and unexpected outcomes [8]. The unpredictable nature of both human and natural ecologies can contribute a challenging spot for either corporation or restriction of the shrimp farming sector. Third, international environmental groups and urban middle classes can value the different landscapes which have been politicized based on the importance of meanings and narratives correlated with the physical environment. Lastly, to explain how zoning has become the most crucial regulatory approach in shrimp farming, It is noteworthy to say that the recognition of the processes for state formation and internal territorialisation is also a phenomenon [9].

Meanwhile, the government and NGOs can cooperate with locals to formulate, enforce and monitor regulations for aquaculture in sensitive ecological areas; this has to be done by forcing them

to intensify the utilisation of scarce natural resources. As a consequence of this, many coastal communities would move to other regions because food insecurity, poverty and intra-group conflicts have risen among the mangrove regions [10]. Producers can be permitted to serve a source of income for government agents and being as an instrument of political power; therefore, they can constrain competing agencies. Furthermore, producers can be a motivation for government employees to solidify and acquire their business interests. In contrast to the main trends in the aquaculture industry, governmental agencies are subsidised based on public and private, micropolitical and national interests [11]. Hence, this institutional entity can be driven into economic practices. With this said, the priorities towards the calculation and possibilities of loan rates and investment opportunities can explicate government to expectations of how diligently they will fortify particular laws.

In sum, a proper eco-political strategy is expected to be improved that planning members would seek to enhance institutional and personal aims. What is essential to translate those plans into policy objectives and measure all these policies on how it reveals the priorities as one national policy. The dominance of government ministries and agencies is to promote decentralisation as a political safeguard. However, decentralisation can serve against the development of an integrated coastal zone policy.

## DISCUSSION ON THE FRAME OF PRACTICES

According to the certification processes, the development plans and associated flows, there are varieties of practices to enhance the standards for the most common aquaculture species [2]. The global Aquaculture Alliance (GAA) has developed practices to the Aquaculture Certification Council (ACC) and Aquaculture Stewardship Council (ASC) as the prominent organizations which are working on shrimp aquaculture. The debate has been centered on the development of flows to dignify the consumer rights and shrimp farming in Ecuador. The world life fund (WWF) as a critical participator in international flows and trades has undeniably impacts on environmental preservation and also has specific numerical criteria and record-keeping requirements. For instance, the necessity of assessment in water quality limitation as well as pH, dissolved oxygen, biochemical oxygen demand, etc., is inevitable. There have been efforts toward improving document for aquaculture, and particularly for shrimp farming [12], Individual farms and local fishers have become interested in participating and developing management practices.

There would be a proliferation of efforts to develop practices and certification programs on shrimp industry; however, agency-driven efforts as environmental protection or conservation are public processes that are depending upon national laws and direct stakeholder involvement by state agencies. Also, the practices can be organized through the creation of technical advisory members and committees, academic specialists and agency representatives plus environmental organizations. With this said, debating and refining a draft can be collaborated by considering a comprehensive risk analysis process to mitigate unprecedented issues and commonly culturing exotic species [13]. The suggested process for developing a management plan (BMP) has been summarized in a flowchart (Figure 1) and described in more detail below.

Supposedly, expanding vocal and practical opposition to industrial shrimp farming can stimulate standardized responses from

producers, processors and academics associated with the industry. What is more, the critical functions that the opposition can cope with adverse effects on this industry, at the first level, are to minimize the use of land and water supplies. Then, controlling diseases and dissemination are a vital response to avoid eventual degradation of lands which can also be used for agricultural plans. Subsequently, avoiding serve disruption of fragile habitats is a crucial step to consider barriers in the way of shrimp farming development.

Briefly, to demonstrate a win-win strategy towards the arrangement of practices, it is clear that farmers and/ representatives can avoid problems caused by a lack of communication, either oral or written contracts. What is apparent, the reasonable social sustainability practices should reply to daily life human concerns mostly on communities nearside the farms. In particular, a proper consultation can be undertaken with districts so that the main conflicts would be identified, lessened and/ mitigated. In the case of Ecuadorian Industry, It is also recognized that the essential areas of firms for a strategic action plan is to support the small and medium-size producers for a big size enterprise. Therefore, the industry will be driven in competitive and sustainable exports and consumption in markets. It is noteworthy that every kind of producers - small, medium and large-sized are considerable to their industry and particularity that need to be taken into account.

### Interpretations on implementing ecological modernisation characteristics

As for emphasising the importance of ecological modernisation on the correlation between modern society and environment, it is apparent that it has been directly focused on the dimension of industrialism. The main characteristics of modern society on technical and/ industrial systems, are mainly their technological developments. According to the dialogue in the simulation

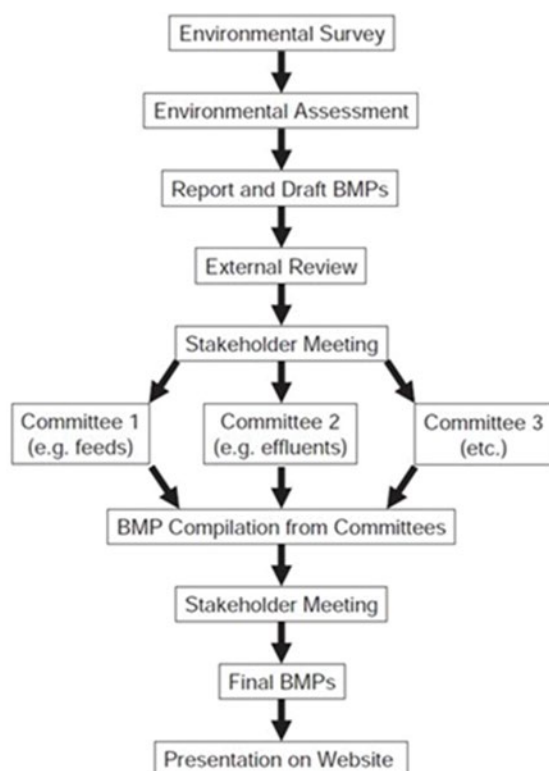


Figure 1: Suggestion flowchart for developing practices in shrimp industry.

platform between different stakeholders, the writer's frame of research, as a participant, had been defined based on technical approaches and proposing technical possibilities to improve shrimp farming in Ecuador on the principals of ecological modernisation. The responsible stakeholders, particularly with Oku Granite Company, have discussed practical solutions to mitigate the social and environmental negative consequences.

Considering the situation occurs in Ecuador, it is apparent that the management of disease challenges plays a vital role in the implementation of modernisation in shrimp farming. The core activities centred of disease challenges caused by different bacterial and viral pathogens. On this context, the suggested solution can include diagnostic kits to analysis the disease outbreaks as well as cPCR, which is adequately used in Thailand shrimp farms as a success in improving health management. Testing new products have now and then contributed to identifying diseases and chemical use which is not only hazardous for shrimp industry but global aquaculture. Hence, if we are equipped to promote preventative solutions to mitigate diseases and to reduce chemical and antibiotic utilisation, there would be a comprehensive step forward for the shrimp industry. The top three diseases in shrimp farming are white spot syndrome virus (WSSV), acute hepatopancreatic necrosis disease (AHPND) and Enterocytozoon Hepatopenaei (EHP) which have threatened the health and welfare of the shrimp stocks [14]. In a cultural context, there are significant factors that can contribute to growing rates of disease. First, while the farm budget is limited, the farm management implies the farm size is a crucial function to predict and control the interrelated issues. Besides, the scale of the implementation of biosecurity measures is physically tricky and expensive. Also, water management is an essential item to maintain the healthy balance either in intensive or extensive farming. What is further, In Ecuador, the overall rate of health surveillance in stocked populations is low; thus, the government can offer an open diagnostic service to control the probability of spreading caused by chemicals and pathogens [10].

Avowedly, there are significant factors regarding the shrimp production industry that indicate the necessity of considering the recent environmental occurs. Needless to say that one of the alternative explanations for stock fluctuations is about mangrove deforestation and habitat loss caused by climate change significantly with the El Nino phenomenon, which has influenced on Ecuadorian waters in recent years [15]. The approach can represent a shift from land-intensive shrimp technology to capital-intensive technology which can subsequently demonstrate a marginal change to prevent the future conversion of mangrove forests and agricultural lands. Stonich [16] has classified physical and technical characteristics and decision making arrangements which have pointed the sustainable management of fisheries in Brazil where the production routines are similar to Ecuadorian Industry. An expected model of the shrimp mariculture can focus on both wild and hatchery procedures but what is necessarily stimulate this proper implementation balances, a relatively stable land base is a step toward restoring and sustaining Ecuador's competitive position in the global shrimp industry.

### Evaluation the points on the globalization, trade and funding opportunities

The dominance of a comprehensive management plan can demonstrate the cost-effectiveness situation and be a help to

adopt better practices in shrimp farming. By way of illustration, Development, implementation and verification of a successful plan represent the cost of labours and physical resources [17]. Whether it can be measured as an economic benefit for farmers to improve the operations, efficiency and environmental quality, in this phenomenon, It can also be observed that it is hard to pass the increasing of production costs to processors and distributors. If this would happen at a time that the shrimp market adequately relies upon exports, adopting a tariff strategy from the destination would be a problem [18].

The industry, fair or not, has been complied with Oligarchy and costly procedures. The accusation can be a damaging and problematic function even if the plans have proven unfounded. In essence, the dispose of charges will try to maintain the possible structural incapacity of local fishers by enhancing the influx of a more affordable shrimp import. If the governments and import destinations face producers the extra tariffs, it may be the cause of disruptions in producing countries and financial collapses of traders and importer. Therefore, achieving a precious balance between interrelated costs and demands is essential.

The aim is to diminish costs, reinforcing internal markets which can be possible whatsoever and to devise producers that pave the way to attain worldwide market acceptance. Consequently, producers can provide safe and commercially attractive products. An action plan can be proposed where the shrimp industry has become a common commodity and particularly in Ecuadorian trade. Firstly, the finances are able to decrease prices in a sustainable manner where these funds can be partly obtained by taxing exports or production voluntarily by producer associations [19]. The money specified in this manner can be channelled to tackle issues on relevant farming perspectives, market, improving the environmental situation and promoting efficiency on distribution chains. With this said, these funds can be used to fortify compensation funds which accumulate portions of values.

What is further, the destructive farming is an essential item that can affect the fisheries executive procedure. To point out the biological characteristics as well as preserving habitat, they depend on the farming size. For this reason, a large farm size requires food and habitat to thrive. However, if the performance of eco-labels on products could enable incentives to grow faster, it can be assuming below the sustainable level. Besides the whole process is not a linear assessment to examine the net benefit function of labelled products. As can be seen in eq.1 proposed by wessls, there is a meaningful relation between stock size ( $x_t$ ), harvest cost per unit ( $c(x)$ ) and consumer demand  $P(h_L, x)$ . One can conclude, the relevance of these points centred on fisheries policy. In other words, following a moving eco-labelling process, the economic incentives are the cement which seals the biological, ecological and socio-economic aspects altogether.

$$NB = \int_0^{\infty} e^{-r.t} \left[ \int_0^{h_{L,t}} P(z_t, x_t) dz - c(x_t).h_{L,t} \right] dt \quad (\text{Equation 1})$$

A complex of Substantive and institutional uncertainties has been witnessed on shrimp farmers. Moreover, access to the fishery is also restricted to licenced marine fishers. Alternatively, set up a monitoring procedure for catch and trade ensures the proposed plan can administrate the shrimp consumption and stocking. With this said, the trade chain would be controlled, and illegal

fishing would be restricted. The most apparent characteristic of a transdisciplinarity on this case is to serving capacity building among all the stakeholders and mitigating conflicts. Hence, by promoting new links between the natural and social aspects, it would define the transparency in the communication, Willingness of fishers to participate in taking part in academic researches.

## CONCLUSION

As for the survey result of the research, shrimp maricultures has had a rapid development in the last couple of decades and has undergone much progress on environmental and social consequences. In this regard, urban development and population increase have also given adverse effects on mangroves and shrimp habitats [20]. Moreover, the necessity of providing comprehensive regulations and designing an efficient certification procedure is essential for government, farmers' locals and everyone who is involved in shrimp aquaculture to cope with the social conflicts. Also, stimulating the local economy by creating employment can be achieved throughout a proper management plan. Additionally, managers are responsible for implementing a monitoring cycle to determine the key functions which can affect the environment; thus, execution technological improvements to diminish the using of chemicals and wastes has seemed to be inevitable. Finally, the government can offer loans and funds to fortify and encourage shrimp farmers to move towards these ecological developments. No matter the hierarchy, policies, laws, or obligations to regulate processes, in the end, we are all responsible for making a change.

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