

# Aquaculture in Malaysia: A Short Review on Current Policy and Legislation

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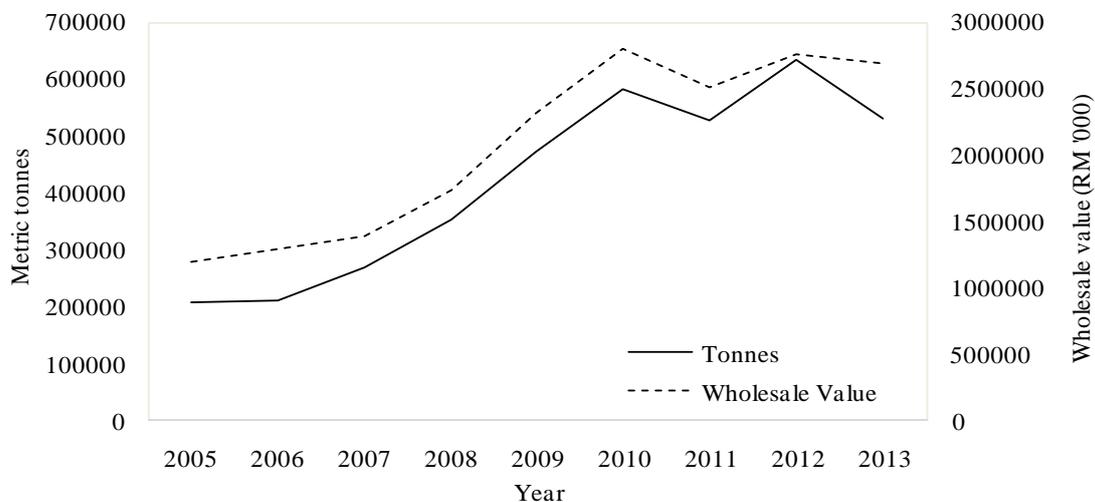
## Abstract

Aquaculture sector has shown an increasing trend in production outputs and values in the past few decades in Malaysia. Thus, environmental protection and preservation should be made priority in aquaculture development to ensure a more sustainable future. This paper attempts to provide a brief review on the major policies and legislations governing the aquaculture sector and the environment in Malaysia. Unlike its predecessors, the current agricultural policy, the National Agro-Food Policy 2011-2020, has made sustainable agricultural developments as one of its key thrusts. For the aquaculture sector, good practices in aquaculture activities are compulsory under the Aquaculture Industry Zone. However, the path towards sustainability as envisioned by the policy requires cooperation from all stakeholders in the aquaculture sector. The laws governing the aquaculture sector do include provisions for environmental protection, however, they are very limited in that environmental concerns are primarily addressed through the formulation of aquaculture plans without any specifics on environmental protection.

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## Introduction

The aquaculture sector in Malaysia is primarily associated with its economic gains as benefits of supplying domestic and foreign demands for the produce. Apart from the crude oil, palm oil and rubber industries, the aquaculture sector shows an increasing trend in values since the past decades (Figure 1).



**Figure 1.** Yearly aquaculture production in Malaysia (Department of Fisheries, 2016)

Due to the importance of this industry for the economic growth of the nation, it is envisioned to continue to grow in the foreseeable future. This will cause an expansion of the industry in Malaysia in order to maximize gains obtainable from the utilization of the nation's natural resources. Despite economic benefits that can be accrued in the expansion of this industry, it should not consider the negative environmental impacts that follow lightly. Proliferation of this sector must not compromise the state of the environment of this country to the extent of having unwanted irreversible impacts of the developments affecting present livelihood as well as future generations.

The aquaculture sector poses threat of adverse impacts to the environment. There are three categories in which the impact can be classified namely competition for land use, loss of amenity value, and pollution. According to Soley *et al.* (1994), there are two basic requirements for the aspect of pollution to exist and should be recognized. The first requirement involves a physical impact of the activity on the environment while the second requirement involves an inducement of negative human reaction caused by the physical impact of the activity. The impacts of aquaculture have been reported in a number of studies. In the farming of shrimps, specifically in cases requiring the construction of ponds, the destruction of mangroves and marshes is of great concern, more so when there is insufficient knowledge on the complex interaction between coastal fisheries with mangroves and marshes (Páez-Osuna, 2001). Environmental problems in the aquaculture sector also arose through the use of pelleted feed instead of the safer and traditional ways of using by-products and wastes (Edwards, 2015). In another study, it was found that effluent discharge from fish farms affects the ecosystem metabolism of tropical headwater streams (Rosa *et al.*, 2013). Therefore, it is clear that unsustainable practices in the aquaculture sector may cause unwanted irreversible environmental degradation which can affect the natural balance of ecosystems especially those that exist directly within the proximity of aquaculture development.

The harmful effects of the aquaculture sector are also related with natural sites destruction such as wetlands and mangroves, decreased biodiversity of fish populations by the escape of foreign fish species, and groundwater and surface water pollution through the discharge of effluents (Rijin, 2013.) Due to the potential impacts posed by the aquaculture industry on the environment, it is very important that a sustainable aquaculture practice is implemented in Malaysia as a precautionary measure against any irreversible environmental impacts. This is also required to enable a more prolonged supply of aquaculture products by maximizing potential outputs, but at the same time ensuring environmental preservation and protection as the top priority.

This paper attempts discuss the regulations and policies governing the environmental protection and the development of the aquaculture sector in Malaysia. The discussion provides a brief understanding on some specific provisions on the protection of the environment and natural resources that are applicable through the legislations and policies.

## Policy

The aquaculture sector in Malaysia is not guided by a specific major aquaculture policy but instead it is covered together under the agricultural policy at both the national and state levels. The current governing policy for the development of aquaculture (and agriculture as a whole) in Malaysia is the National Agro-Food Policy 2011-2020 (NAFP). The NAFP is the succeeding policy replacing its predecessor the Third National Agricultural Policy 1998-2010 (NAP3). The precursors to the NAP3 are, in its order of formulation, the First National Agricultural Policy 1984-1992 (NAP1) and the Second National Agricultural Policy 1991-1997 (NAP2). The NAP1 mainly emphasized on the enhancement of the agricultural sector for a more sustained growth of the sector in order to enhance national economic growth, and the subsequent NAP2 prioritized the expansion of the agriculture sector by increasing productivity and efficiency through technological advancements (Selamat & Nasir, 2013). The NAP3 had the objective of optimizing the utilization of natural resources in the agricultural sector to maximize income by ensuring profits through imports and exports.

Due to the contribution of the strategies of the three former policies to the growth of the economy, the NAFP has advanced its mission in the development of the agriculture sector not only in continuing a sustainable sector, but to prioritize food supplies in light of an increasing demand. Apart from the concern on food supplies, the NAFP also highlights the importance of high-value agricultural developments for the economic growth of the nation as well as for the local agricultural players. In areas of environmental and natural resources protection, the NAFP includes sustainable agricultural development as one of its eight key thrusts. In progressing towards a more sustainable agricultural development, it is acknowledged that the management and utilization of water and land space are crucial in ensuring sustained and optimized supplies of outputs. As for the aquaculture sector, good practices on conducting aquaculture activities will be compulsory under the Aquaculture Industry Zone programme. By prioritizing aquaculture development towards a more sustainable path, the NAFP shows a commitment by the government to take a step towards a more sustainable aquaculture development. However, this positive step towards the protection and preservation of the environment is subjected to subsequent top-down adaptation or translation of the policy along the hierarchical chain of governing structure. The adaptation towards a more sustainable aquaculture development will eventually and partially rests on the hands of aquaculture developers.

## Legislation

Among the legislations that are relevant to environmental protection and preservation in aquaculture development and will be discussed include the Fisheries Act 1985, Environmental Quality Act 1974, Environment Protection Enactment 2002, Sabah Inland Fisheries and Aquaculture Enactment 2003, and the Natural Resources and Environment (Amendment) Ordinance 2005. The Fisheries Act 1985 (FA85) focuses on relevant fisheries matters pertaining developments and management. There are provisions in the FA85 that are indirectly relevant to the preservation of the environment. The Director General of Fisheries appointed under the FA85 has the power to prepare fisheries plans in

which industry players in fisheries must abide to. Any matters of developments in the fisheries industry must follow the management and policies included in the plans. It should also be noted that the formulation of a fisheries plan should be prepared based on sound scientific knowledge while ensuring optimum natural resources usage. Although this does not specifically target the protection of the environment against degradation, through the formulation of fisheries plans that incorporate better environmental policies especially on the usage of natural resources, any future aquaculture developments will have to abide by such fisheries plans. In doing so, the utilization of natural resources can be managed at a rate acceptable for environmental preservation while optimizing economic necessities.

Under the Environmental Quality Act 1974 (EQA74), the Department of Environment has the power in matters related to the control and mitigation of waste discharges into the environment, protecting and enhancing the quality of the environment, issuance of license for waste emissions and other such matters when it comes to environmental protection and preservation. Under the EQA74, the Minister in charge of environmental protection has the power to control emissions of discharge into the environment by imposing conditions deemed acceptable by the Minister with the advice from the Environmental Quality Council, which is an advisory body for the Minister in matters related to the EQA74. With this provision, emissions of discharge in the aquaculture sector can be specified at amounts acceptable by the immediate environment affected by the aquaculture development. This enables a better safeguard of the environment against any form of irresponsible and degrading emissions or discharge from the aquaculture industry. In the state of Sabah, specific provisions in matters pertaining to the aquaculture and the environment are provided in its Sabah Inland Fisheries and Aquaculture Enactment 2003 (SFA03). The SFA03 entitles the state Director of Fisheries to prepare aquaculture development plans that prioritize sustainable development of aquaculture through the best knowledge of science that is consistent with high level of environmental protection and sound management principles. This enables the state fishery department to set out the foundation in the state aquaculture sector that regards environmental protection as a priority while maintaining growth of the sector. The specificity in the SFA03 in emphasizing sustainable aquaculture development is a positive step towards a better handling of the aquaculture sector favoring the protection of the environment. The state Director also has the power to propose a Community Fisheries Management Zone (CFMZ) to the Minister in charge of fisheries when it is deemed required. The CFMZ enables the participation of local members of a community in the administration of the management and conservation of fisheries resources of the CFMZ.

Another major legislative power in the protection of the environment against the impacts of aquaculture exist in the requirement for an environmental impact assessment (EIA) to be submitted for the application of specified aquaculture developments. The requirement for an EIA is stipulated in the following regulations: Environmental Quality Act 1974 (EQA74), Environment Protection Enactment 2002 (EPE02) and the Natural Resources and Environment (Amendment) Ordinance 2005 (NRE05). An EIA is basically a tool for the assessment of the likely environmental impacts of

prescribed activities in, where possible, quantitative and qualitative terms, while providing for the measures of mitigation and monitoring for the activities. Environmental Impact Assessment is a great tool in ensuring developers list out the potential impacts of their proposed developments and provide the measures that the development would proceed with to minimize potential environmental impacts. Unfortunately, EIA report is only required on selected activities (prescribed activities) and such activities have, on their own, a specified minimum requirement. For aquaculture development, the minimum requirement for an EIA to be made compulsory based on the EQA74, EPE02 and NRE05 is for development of or over 50 hectares or more (NRE05 requires development exceeding 50 hectares). Due to such provisions, it is possible to circumvent an aquaculture development from requiring and EIA report prior to approval.

### Conclusion

The current policy governing the aquaculture sector provides a path for a more sustainable approach in the aquaculture sector primarily by the establishment of the Aquaculture Industry Zone. However, aquaculture developers need to play their part in adapting towards a more sustainable aquaculture practices for the preservation of the environment, and with proper policy and implementation, this can be made easier. The regulations concerning the aquaculture sector and the environment can be made to protect the environment better. The provisions in the laws make it possible for specific circumstances of environmental degradation to be prevented or addressed when it involves the aquaculture sector. There are also differences in the laws pertaining to aquaculture and environmental matters at the state (Sabah) and federal levels. The differences are mainly on the specificity of the powers of the directors in charge, in which the SFA03 has more provisions concerning environmental protection. A sustainable framework is necessary to create awareness, understand the gap, provide creative solutions, streamline governance, prepare for environmental changes, join partnerships and shape a desirable and better future.

### References

- [1] Department of Fisheries in <http://www.dof.gov.my/en/fishery-statistics>. Accessed on 13 February, 2016.
- [2] Edwards, P. (2015). Aquaculture environment interactions: Past, present and likely future trends. *Aquaculture*, **447**: 2-14.
- [3] Environmental Protection Enactment (2002).
- [4] Environmental Quality Act (1974).
- [5] Fisheries Act 1985 (Act 317) (1985).
- [6] Natural Resources and Environment (Amendment) Ordinance (2005).
- [7] Páez-Osuna, F. (2001). The environmental impact of shrimp aquaculture: a global perspective. *Environmental Pollution*, **112**, 229-231.
- [8] Rijin, J. V. (2013). Waste treatment in recirculating aquaculture systems. *Aquaculture Engineering*, **53**, 49-56.
- [9] Rosa, R. D. S., Aguiar, A. C. F., Boëchat, I. G. & Gücker, B. (2013). Impacts of fish farm pollution on ecosystem structure and function of tropical headwater streams. *Environmental Pollution*, **174**, 204-213.
- [10] Selamat, Z. & Nasir, A. (2013). Efficiency measurement of Malaysian agriculture firms. *International Journal of Trade, Economics and Finance*, **4**, 79-85.
- [11] Soley, N., Neiland, A. & Nowell, D. 1994. An economic approach to pollution control in aquaculture. *Marine Pollution Bulletin*, **28**, 170-177.