



The role of migrants in the Malaysian seaweed value-chain

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ABSTRACT

With increasing global demand for seaweed and derivative products including carrageenan, Malaysia has identified seaweed cultivation as a key sector in its Tenth Malaysian Plan, with the aim of increasing seaweed production and bringing economic benefits to coastal communities. After several years of growth however, since 2013 seaweed production has declined. Malaysia's research and development has developed a strong understanding of the biological and macroeconomic aspects of seaweed cultivation, but research has focused less on socio-economic aspects of the carrageenan value chain, including its labour force. Previous studies have provided insights into the contribution of migrants to seaweed production in Malaysia. To further understand the constraints faced by seaweed farmers' and examine why seaweed production is currently declining, this study uses an intersectional lens to document farmers' experiences based on their citizenship status and the impacts their status has on seaweed production. It relies on a mixed-methods analysis of key informant interviews, questionnaire surveys and document analysis, as well as on the conceptual framework of VCA-New Institutional Environment-Structure (NIES). Findings suggest that migrants have a significant role in upstream activities, contributing substantially to seaweed cultivation, yet, they face a number of legal, financial and institutional constraints that restrict their productivity and participation in marketing activities. To recognise and support migrant seaweed farmers would not only improve the accuracy of official statistics, it would also support policymakers to strengthen the seaweed industry through adequate regulations and tailored incentives.

1. Introduction

Seaweed cultivation is a major source of livelihood for coastal communities in Southeast Asia, particularly in Indonesia, the Philippines and Malaysia. The technology is simple, it requires low capital investment and the rapid growth cycle of seaweed (approximately six weeks) provides a rapid return on investment [46]. In 2010, seaweed cultivation was recognised as a high-value aquaculture product in the Tenth Malaysian Plan and identified amongst the third Entry Point Projects, EPP#3 [11]. Seaweed production significantly increased from 2005 to 2012 following government interventions to support seaweed cultivation; it contributed RM73 million (USD 17.5 m) to Malaysia's GDP in 2012 [8]. However, after 2013, the Department of Fisheries Malaysia (DOFM) recorded that seaweed production steadily decreased

from 33,147 tonnes dry weight (dw) in 2012–17,408 tonnes dw in 2018.

Different factors can explain why seaweed production is decreasing: adverse impacts of diseases on seaweed crops [15,48], traditional farming techniques [15], price fluctuations, predation by herbivores such as fish and turtles, infrastructure damage following storms, or the unsuitable scale of operations [47]. Several studies in Malaysia have addressed biological [33,36,50] and macro-economic aspects [5,44] of seaweed cultivation, but fewer have focused on socio-economic issues [16–18] and fewer still have highlighted the role played by migrant farmers [16,47]. Hussin & Khoso [16,47] claimed that migrant farmers accounted for 90–95% of the seaweed industry workforce: this study builds on their work to provide further insights into the contribution of migrants to seaweed production in Malaysia. In doing so it demonstrates the importance of documenting the socio-economic aspects of the

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