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学 位 論 文 要 旨
Dissertation Abstract

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Title of Dissertation: An Analysis of Climate Change Adaptation through Sago Palm Development in South Sulawesi, Indonesia: Policies, Strategies and Challenges
(気候変動が社会経済にもたらす影響および対応策の分析～インドネシア南スラウェシのサゴヤシ開発を事例として～)

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Over the long-term, global climate change is projected to have negative impacts on agricultural productivity. Therefore, assuring food security in Indonesia is a fundamental challenge that the government and community face especially when the population growth is projected to grow by 24.5% over the next four decades, from 250 million in 2015 to 311 million in 2050. On the other hand, Indonesia has a great potential food supply from a local resource namely sago palm. It can be developed as the basis for food security in the long-term period because the production is not significantly influenced by climate. This study takes a comprehensive analysis of sago palm development as an alternative to adapt to climate change in South Sulawesi, Indonesia. It explores the status, challenges and motivating factors to promote sago palm for climate change adaptation at the national and local level in Indonesia through the action research approach. Furthermore, a farmers' willingness to plant sago palm and the determinant factors influencing a farmers' adoption behavior to promote sago palm cultivation are also examined to give a comprehensive view on sago palm development in Indonesia.

An appreciation of local tradition and cultural practices associated with sago cultivation as a part of climate change adaptation is still an unfamiliar approach for Indonesia. This study showed that sago palm has a great potential for development, but it has not yet been chosen as a priority crop at the national level. The sago palm national program makes up only 0.05% of the total state budget during 2012-2014, a relatively small amount compared with expenditures promoting and developing other annual crops. The national government already made several policies, those lack clarity and are sometimes hindered by a lack of political will and face difficulty in coordinating institutions and interested stakeholders. Indeed, although sago palm has been recognized since the 1970s, its development has stalled and a long-term comprehensive strategy that includes developing or promoting sago palm in relation to climate change adaptation is still lacking.

For further investigation, 3 Regencies; Luwu Utara, Palopo, and Luwu of South Sulawesi Province were examined to provide a better understanding of the current state of the sago palm as a local resource, as well as demonstrating the value of it in the context of local climate change adaptation. The Analytic Hierarchy Process (AHP) was used to investigate the level of priority of local government to support sustainable development and adaptation to climate change at the local level. Based on the weights of the criteria at this level, Knowledge Management and Capacity Building (KMCB) was ranked as the highest criteria followed by Economic Resilience (ER) and Ecosystem Resilience (ECR). These three criteria accounted for 70.4% of the overall weights being compared.

In those regencies, sago palm still plays an important role in providing income and food for the local community. However, a drastic change has happened due to the expansion of other profitable crops during late 1990s-2000s. Sago production has also decreased significantly by 87% from 2006 to 2013. Several local actions have been attempted to revive sago palm, however, these actions were not sustainable due to heavily independent action without support from local government. Now, a small initiative is being implemented through a triple helix (University-Industry-Government) collaboration. So far, gaining the support of local government for sago palm can be seen as one of the positive outcomes. The local government included sago palm into the Regional Medium-Term Development Plan (RPJMD) 2016-2020 as an alternative crop to help adapt to climate change. They are also drafting a local regulation (PERDA) regarding the protection of existing sago palm stands. Furthermore, considering a lot of resources are allocated for emergency and reconstruction activities, conserving sago as part of climate change adaptation can be a cheaper option because it is part of community life.

One critical aspect of developing sago palm cultivation is the smallholder, hence, the determinant factors influencing farmers' adoption behavior to promote sago palm cultivation need to be explored. Our results showed that (1) knowledge of an integrated cultivation system of sago, (2) access to information and training, and (3) internal motivation, followed by (4) work experience and (5) size of the sago area are the most important factors influencing farmers' willingness to plant sago palm. Furthermore, this study also found that technology, information, and market access issues limit the development of sago palm cultivation by smallholders, in addition to the application limit set by the government. Indeed, the cultivation of sago palm cannot be accomplished by one person alone. Success requires active participation by the government, industry, academia, and farmers.