

Financing Green Growth in Malaysia: Enabling Conditions and Challenges

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Green economy is an important pathway to achieving sustainable development goals (SDGs) while simultaneously helps drive economic growth as well as fosters innovation for new low-carbon production technologies and products. It has been widely recognized that one of the non-technical barriers to the wider participation of businesses, project developers, and innovators in the green growth is lack of financial supports and investments. As green economy is still a contested and relatively new concept in Malaysia, the government has played a major role in the policy agenda-setting process of green growth in Malaysia. Despite these policy initiatives, the uptake of green growth remains low due to a number of barriers. This paper highlights several enabling conditions for the development and growth of green economy in Malaysia, with a focus on the current financing policies and initiatives such as Green Technology Financing Scheme (GTFS). An overview of issues and challenges in financing the green industry are also highlighted in the study. The overview of enablers and barriers of green growth should provide a perspective from which green industry's viability can be evaluated but also will help industry participants such as project developers, technology and product innovators, financiers, and policy makers to better understand enabling factors and challenges affecting the green growth and promote collaborative efforts among these participants as well as improve existing policies or structure new policy frameworks to support the green growth in Malaysia.

1. Introduction

Southeast Asian countries, including Malaysia, are currently facing several environmental challenges such as air and water pollution, deforestation and increased urbanization (Sodhi et al., 2010). As Malaysia strives towards becoming a developed nation by the year 2020, there has been rapid increase in energy consumption which has resulted in depletion of primary non-renewable energy resources and increase of greenhouse gases (GHGs). In response to the depletion of natural resources and environmental degradation problems, Malaysia has instituted several policies associated with renewable energy and climate change policies. These policies include National Renewable Energy Policy and Action Plan (2009), National Policy on Climate Change (2009), National Green Technology Policy (2009) and Renewable Energy Act (2011). Malaysia is also a signatory to several multilateral environmental agreements (MEAs) such as the Paris Agreement and Convention on Biological Diversity.

Malaysia launched in the year 2015 11th Malaysia Plan 2016-2020, an economic development blueprint for the next five years and defined six strategic thrusts to help Malaysia achieve the target of becoming an advanced economy by year 2020 in a resilient, low carbon emissions, resource efficient, and socially inclusive manner. Green growth is one of the strategic thrusts that will enable Malaysia to stay ahead of environmental challenges and opportunities in a fast-changing global and political landscape. Green growth and green economy, often used interchangeably, refers to a range of sustainable development concepts including low-carbon economic development (Barbier, 2011) and development and deployment of clean energy technologies (Janicke, 2012). The government has set out three strategies to promote the green growth agenda including strengthening governance to drive green growth, enhancing awareness to create share responsibility, and establishing sustainable financing mechanisms to promote and support green growth. Since green growth has become one

of the policy agenda in Malaysia's sustainable economic development for the next five years, it is imperative that we look at key factors enabling green growth and challenges that may hinder green growth efforts. Although there are several enabling conditions necessary to increase the uptake of green growth in Malaysia, our primary focus is on financing aspect of green growth.

2. Enabling conditions

Enabling conditions are interrelated conditions or factors that make green industries, in general, attractive and able to create a context for various economic activities in a sustained and effective manner (Klemeš, 2015). These enabling conditions include financial, institutional, economic, infrastructure and information technology. Each of these enabling conditions is briefly explained as follows in Table 1:

Table 1: Enabling conditions for green growth

Enabling Conditions	Explanation
Financial	Availability, easy access, and cheaper costs of financing facilities from sources such as fiscal, banking, and market instruments for businesses and product developers in green industries.
Institutional	Regulatory policies and institutional framework required to promote long-term development and viability of industries, to accelerate innovation and adoption of green technologies, and to enhance administrative, technical, and competency capacity and capability of government agencies, workforce, and R & D programs.
Economic	Economic policy support mechanisms required to accelerate green growth include green and carbon taxes, green markets and financing systems through green procurement and certification and low-carbon mobility.
Infrastructure	Existence of efficient key infrastructure systems such as clean energy, transport, and technological infrastructure to support and sustain the green growth investment by both public and private finances.
Information technology-based (IT-based)	Deployment of "smart systems" that increases the efficiency of production and consumption in the clean energy and technologies and the integration of ICT-enabled green innovation into green growth policies and workforce training programs.

3. Why Financing Green Growth Matters?

The policy makers around the world have recognized that green growth can underpin industrial policy and macroeconomic goals as growing demand for green technologies, products and services provides opportunities for countries to develop new industries and markets. However, the policy commitments from the government alone is not sufficient as enabling environment for green growth must also involve a long-term commitment from all stakeholders in the green growth nexus. In addition to clear green policy directions, easy access to financing facilities for green industries through fiscal and financial support systems are also equally important. Typically, government-led financing facilities are critical at the initial stage of green growth process. However, as the private sector participation in green growth increases, large external financing from financial institutions and capital markets become increasingly important for green industries seeking to commercially exploit new ideas and clean technologies (Croce et al., 2011).

Renewable energy and other capital-intensive cleantech projects are not only highly leveraged and require large initial investments but they are also exposed to numerous risks such as market risk, credit risk, liquidity risk, operational and regulatory risks (Lee and Zhong, 2015). From financial institutions' and investors' perspectives, when considering a project, a financier or an investor typically would assess the revenue projections and major risks that can potentially impact the project. If this risk-return analysis is not adequately performed, risks associated with cleantech projects will directly impact the amount, timing, cost and availability of financing (Dinica, 2006). Moreover, to achieve bankability, clean technologies not only need to be proven and reliable, they have to be also be scalable. As a result, the type of financing available to cleantech projects is largely dependent on risk management approaches employed by the project developers and the risk management tools available to mitigate real and perceived risks.

4. Current State of the Green Technology Financing and Incentives in Malaysia

In keeping with the green growth efforts, Malaysia has participated in clean development mechanism (CDM) projects and has raised funds from public and private sector sources through various concessional and non-concessional loans, grants, and carbon finance (Begum et al., 2011). The Renewable Energy Act (2011), the

feed-in-tariff mechanism, and the Green Technology Financing Scheme (GTFS) have also contributed to the development of the local renewable energy industry (Ibrahim et al., 2016). Under the GTFS, all green products, equipment and systems that satisfy stipulated criteria such as minimization degradation of environment, promotion the use of renewable sources, zero or low emission of greenhouse gases (GHGs) are eligible to apply for the financing scheme (Green Tech Malaysia, 2017). Producers of the green technology may receive maximum financing of up to RM 100 M (Ringgit Malaysia) while users of the green technology are eligible to apply for a maximum of RM 10 M. The Credit Guarantee Corporation (CGC) provides a guarantee of 60 % of the approved financing amount and a 2 % rebate on the interest rate charged by the participating financial institutions (Green Tech Malaysia, 2017). The scheme started with RM 1.5 10⁹ in 2010, and later extended the implementation period to until December 2017 with a fund of RM1.2 10⁹. Details of eligibility criteria for producers and users are shown in Table 2 below.

Table 2: Eligibility criteria for GTFS producers and users (Source: Green Tech Malaysia, 2017)

	Green Technology Users	Green Technology Producers
Eligibility Criteria	Legally registered Malaysian-owned companies ($\geq 70\%$) in all economic sectors	Legally registered Malaysian-owned companies ($\geq 51\%$) in all economic sectors
Financing size	\leq RM10 M/company	\leq RM 100 M/company
Financing tenure	≤ 10 y	≤ 15 y
Participating Financial Institutions	All commercial and Islamic banks & GFIs (Bank Pembangunan, SME Bank, Agrobank, Bank Rakyat, EXIM Bank and Bank Simpanan Nasional)	

There are four main sectors namely Energy, Building and Township, Transport, and Water and Waste Management that are eligible to be funded by the Green Technology Financing Scheme (GTFS). Figure 1 shows total amount of financing approved by the participating financial institutions (PFIs) for various projects in these four sectors from 2010 to 2015. Although there are many projects certified and eligible to apply for the financing scheme, many of them are turned down for financing by the PFIs due to uncertain economic viability of these projects. The distribution of the financing amount approved in 2015 by the participating financial institutions is shown in Figure 2. Energy sector accounts for 84 % of total financing amount, followed by waste and water management, building and transportation sectors which represent 1. %, 0.8 %, and 0.6 % of the total financing approved. By the end of 2016, about 84.7 % (RM 2.962 10⁹) of total amount allocated for the GTFS (RM 3.5 10⁹) has been approved for green technology projects while the remaining 15.3 % (RM 536.6 10⁹) is still available for applications.

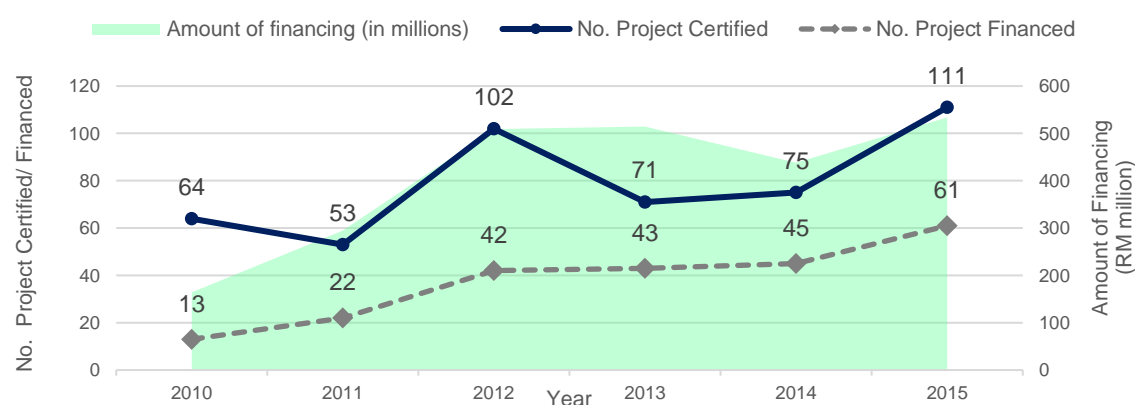


Figure 1: Annual loans approved from PFI's for green technology projects from 2010 - 2015 (Green Tech Malaysia 2016)

In addition to the GTFS, the government also offers several tax incentives. For instance, renewable energy generators are offered a 100 % statutory income tax exemption with pioneer status for 10 y with investment tax allowance for 100 % of the capital expenditure within the first five years (MIDA, 2015). Other fiscal means of promoting green growth include import duty and sales tax exemptions for all imported and locally procured green technologies.

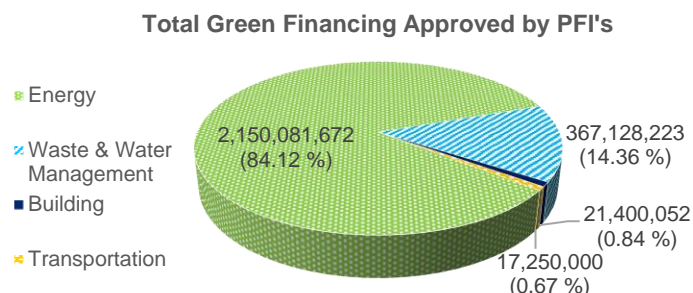


Figure 2: Distribution of Total Green Financing approved by PFI's (Source: Green Tech Malaysia, 2015 Annual Report)

Following the Renewable Energy Act 2011, Malaysia has also taken steps to increase clean energy deployment by mandating the adoption of feed-in-tariffs (FiT) which allows power producers (i.e., individuals and non-individuals) to sell renewable energy electricity to power utility companies at a pre-determined tariff for a given period of time. The FiT rate differs for different renewable resources and installed capacity. Currently, power generated from solar photovoltaic, biogas, biomass, small hydro-power plants, and geothermal are eligible for FiT incentive mechanism (SEDA, 2017). In December 2014, a total of 2,371 renewable projects have achieved commercial operations with 249 MW of renewable capacity successfully connected to the power grid, with resources from solar contributing about 160 MW capacity, followed by biomass 65 MW, biogas 12 MW and mini hydro-plants 12 MW (Shamsuddin, 2015).

As a region, Southeast Asia has enjoyed strong economic growth in recent decades. However, the economic growth model adopted by countries in the region relies on unsustainable natural sources exploitation and has caused several instances of environmental damages. Recognising the irreversible environmental degradation and its impacts on their long-term sustainability of economic growth, many of these countries have started mainstreaming various climate change and green growth priorities into their economic development plans. There has also been concerted effort by the ASEAN Capital Market Forum in collaboration with the International Capital Market Association to introduce ASEAN Green Bond Standards (Securities Commission Malaysia, 2017). As the only ASEAN country that involved in Green Bank Network (GBN), Malaysia plays a leading role in promoting and supporting green growth through green financing and investment in the ASEAN region. Green Technology Malaysia, charged with catalyzing green technology deployment in Malaysia, and together with other well-recognized green funds such as Green Fund of Japan, Australian Clean Energy Finance Corporation, New York Green Bank, Connecticut Green Bank, and UK Green Investment Bank are the founding members of the world's first GBN (GreenTech Malaysia, 2016). GBN is a platform for green banks and institutions to collaborate, share knowledge, information and experiences to promote green financing and investment.

5. Financing Gap and Challenges

While the government-led financing is necessary to stimulate the uptake of green growth, the government financing schemes are not able to match the investment costs required for scale-up clean technology projects. As shown in Figure 1, there is an upward trend in the number of projects approved and certified, however, these projects are not able to obtain large amount of financing from financial institutions and capital markets partly because of their real and perceived risks. Lenders and investors alike will impose more stringent lending and investment criteria, making the cost of financing higher than that of government financing schemes. Cleantech projects that are highly leveraged and complex, such as biorefineries, are more likely to pose high financing risks and the risk of delayed completion and discontinuation (Sarkar and Singh, 2010).

Also local banks are not familiar with green and cleantech projects and have insufficient capacity to evaluate them. As a result, they offer few, if any, financial products designed specifically to finance renewable energy projects and require substantial technical assistance to develop such products from technology experts. Financial institutions not only prefer cleantech projects with high certainty of expected profits but also require greater collaboration between borrowers and technology experts to ensure the feasibility of a project. Moreover, lack of "near cash" collateral and poor credit standing also contribute to the difficulty of obtaining credits by many green technology companies (Painuly et al., 2003). Banks consider much of the equipment and technology for renewable energy projects inadequate collateral due to the fact that the technology and equipment are new and unproven with limited life span. Financial resources and dedicated lending facilities are also scarce and banks

have not expanded their lending activities beyond traditional sectors such as consumer and infrastructure projects.

These financing gaps and challenges can be addressed in several ways. First, alternative sources of financing other than those from the government and financial institutions are becoming increasingly important to promote green growth. For instance, in developed economies, green private equity has emerged as a funding mechanism that helps green entrepreneurs secure financing. Green private equity firms supply venture capital to companies focusing on sustainable development and green projects. Capital for private equity is raised from retail and institutional investors, particularly from those whose investment objectives focus on ethical and green investments (Crifo and Forget, 2013). The capital raised can be used to fund new technologies, expand working capital within an owned company, or to strengthen a balance sheet (Ming et al., 2014). Second, syndicated project finance which has been traditionally used to finance large infrastructure projects such as transportation tunnels and airports can also be another financing option to finance large clean energy projects. This financing method can be useful particularly for project development in developing countries with parties to a project often rely on guarantees, long-term off-take or purchase agreements, and other contractual relationships to ensure long-term viability of the project (Wustenhagen and Menichetti, 2012). The financing structure can consist of debt, equity, guarantees, credit enhancement for the construction, operation, and maintenance.

Third, in recent years, green bond has emerged as one of the debt market instruments to fund projects that have positive environmental and/or climate benefits (Bredenkamp and Pattillo, 2010). However, the green bond market in developing markets including Malaysia is non-existent and it will take time for the market to grow as investors typically view green bonds as a new asset class and riskier than traditional bonds (DuPont et al., 2015). Finally, green government procurement in Malaysia can play a vital role as a catalyst for green growth. Public procurement in Malaysia represents about 12 % to 15 % of gross domestic product (GDP) and public expenditures are projected to grow in future (Kahlenborn et al., 2013). Green public procurement does not only benefit greening government but also provides a financing source for the production and deployment of green goods and services that markets may not offer, especially at the early stages of new green technology. In its 11th Malaysia Plan 2016 - 2020, the government green procurement will be made mandatory for all government ministries and agencies and this will create the demand for green products and services as well as encourages industries to raise the standard and quality of their products to meet both domestic and international green certifications. Government green procurement can also contribute to the development of financial instruments such as credit lines and revolving funds specifically tailored for cleaner production investments. In sum, the formulation of sustainable development policies and regulatory measures need to consider a comprehensive finance, technology and capacity building support to ensure successful implementation of green growth in Malaysia.

6. Conclusion and Recommendations for Green Finance

Green growth does not only help a country meet the challenge of sustaining its economic and social development, it also safeguards the country's long-term economic performance by diversifying its economic activities. When implementing green growth efforts, it is essential that the policy makers consider not only the potentially high cost of not going green, but also design green growth financing strategies and mechanisms that support the efforts to promote growth of green industries in general and foster green technological innovations. Further, policy makers need to be clear about policy signals they send to capital providers about their green growth policy agenda so that financial institutions and capital markets can respond accordingly by offering a wide range of financial products and services specially targeted for green industries. Although policy directions and financing options are important for green growth, workforce with "green" skill is also equally important. An effective education and training system focusing on sustainable development goals helps build new skills required for a thriving green growth. The transition to green economy requires both policy shifts towards sustainable development goals and major investments in infrastructure, technology, and green workforce. Some of these enablers require close collaboration between government agencies and green industries through effective partnerships and network linkages with both domestic and international partners. Understanding enablers and constraints of green growth in an integrated manner is critical for the policy makers to undertake policy reviews and for the private sector to register their interest in green growth investments and innovations as well as for consumers and producers to internalize costs and benefits of green growth. Future works can continue to focus on other enabling conditions such as infrastructure and education and training systems required for green growth and address challenges associated with these enablers. A benchmark study can also be insightful and the findings can be used for identifying opportunities for improvement and/or setting performance targets for green growth best practices and standards. Finally, green growth performance indicators should be also developed to provide useful insights into strategy/policy implementation for green technology and improvement of enabling conditions as well as reduce barriers of green growth.

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