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Government Intervention Through Collaborative Approach in Promoting the Adoption of Green Procurement for Construction Projects

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Abstract: The green procurement (GP) for construction industry and its implementation requires government intervention particularly through policies, initiatives, and incentives. GP is relatively a new concept especially in Malaysian construction industry and its implementation is still ambiguous even though GP is globally recognised. Hesitation in implementing GP among construction stakeholder is due to lacking of familiarity, lack of available standard guidelines and awareness among stakeholders. These are the challenges that hindered the adoption of GP among construction stakeholders in Malaysia. In construction industry, collaboration among construction stakeholder is fundamental towards construction projects' success and also depending on the support from various stakeholders to meet the project objectives. Thus, this conceptual paper is intended to highlight the importance of collaborative approach and way forward with GP as a strategy to solve environmental problems. Specifically, it looks into government's intervention to promote, empower the understanding, creating awareness, and willingness of construction stakeholders to implement GP in construction projects. The preliminary framework is developed through literature review and questionnaire survey were used as the method to collect and analyze the findings. The paper concludes that collaborative approach provides a better platform for all the parties, particularly the construction stakeholders to be better engaged, in terms of communication, well informed, more aware and willing to implement the GP throughout the construction process.

Keywords: Green Procurement, construction, construction projects, government, procurement, Malaysia

1. Introduction

Implementing sustainable construction practices in the construction industry is vital for reducing environmental problems as this sector is one of the main contributors towards environmental pollution (Chan et al., 2014). Furthermore, the construction industry by no exception, urgently requires sustainable development to minimize its impact on the environment. This is related to social, economic, and environmental sustainability and has become one of the top agendas of government policy (Alqadami et al., 2020). Sustainability is no longer a choice in construction sector, but rather a need (Alqadami et al., 2020). Moreover, according to Musa et al. (2013), sustainability is one of the most important concerns that is now being debated around the world. The green trend of conserving the Earth's resources and protecting the environment is overwhelming as global awareness on environmental conservation grows. Currently,

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most developing countries strive to achieve sustainable goals that focus on the environment, social, health and economy within the construction industry. Moreover, construction sustainable practices are controlled by the environmental awareness of the individual (Pradhananga et al., 2021).

Malaysian developers are more focused on market demand and economic factors rather than environmental problems (Chan et al., 2014). However, the physical development expansion should urgently consider shifting to more environmentally friendly methods to avoid escalated adverse impacts on the environment (Bohari et al, 2017). According to Twelfth Malaysia Plan (2021-2025), Malaysia has recorded a 29.4% reduction in greenhouse gas (GHG) emissions intensity to GDP in enhancing environmental sustainability by the end of 2016.

There have been several strategies introduced by the Malaysian government and one of it is to promote the awareness of green growth and the concept of green procurement (GP) to maintain and minimize environmental impacts (Razali et al., 2021). For a construction project, procurement delivery is crucial to ensure projects are delivered according to the contract. Thus, greening procurement delivery for construction projects is very important. The concept of GP has been introduced to the construction industry and well established in developed countries such as Germany, the United Kingdom and Australia, and has started to penetrate the developing countries such as Malaysia (Bohari et al., 2017). Thus, building awareness and understanding on the importance of greening the procurement for construction is very important as a driver to create willingness in GP adoption among construction stakeholders.

Therefore, this paper aims to deliberate on the government intervention and the prospect of a collaborative approach for enhancing the knowledge and awareness among the construction stakeholders in promoting and implementing GP in construction projects. Those interventions and collaborative approaches are then reviewed and established through a theoretical framework.

2. Literature Review

2.1 Construction Industry

Assad et al. (2020a) and Ratajczak et al. (2018) highlighted that the construction industry has unique characteristics. The scale of projects involves a large investment, multi-faceted project procurement processes, interrelated project execution processes and advancement of the innovative approaches in terms of project delivery (Deep et al., 2019). Throughout the construction stages, it requires a collaborative effort from different parties including various construction project stakeholders (Assaad et al., 2020b).

The governments and corporations have introduced environmental friendly practices and products due to global warming effect that has reached critical levels. Therefore, conserving scarce resources and maintaining a sustainable environment is important (Abanda et al., 2010; Salam 2008). The construction industry has consequential effects on the environment because of its vast consumption of non-renewable resources and materials specifically in new construction (Wong et al., 2013). Construction activities involve various processes which include manufacturing and transporting building materials that ingest large quantities of energy which produces large amount of greenhouse gases (GHG) emission (Yan et al., 2010). Hence, the construction industry plays important role in instilling the awareness of a low-carbon society (Wong et al., 2016). In the Sustainable Development Goals 2030, it has provided a significant opportunity for the construction industry to shift towards the environmental aspect of sustainability (Goubran, 2019). Integrating social, economic, and environmental considerations into the project delivery processes, standards and practices will make the construction project delivery and its management being recognized as sustainable (Silvius, 2017). Moreover, Fei (2021) explained that through the delivery of sustainable projects, the construction industry plays a significant role in the global effort to achieve sustainable development by 2030.

In Malaysia, the tremendous socio-economic development has both direct and indirect impacts on the environment. Construction industry activities lead to greenhouse gas (GHG) and high carbon dioxide emissions, water pollution, and cause large amounts of materials to be wasted to landfills. Realizing the adverse effects to the environment is of great importance to avoid the destructions or damages to natural resources (Adham et al., 2012).

Therefore, the Malaysian government has encouraged construction stakeholders to implement GP as one of the strategies in greening the project execution (Bohari et al., 2015).

2.2 Introducing the Green Procurement of a Construction Project

Construction projects are highly prone to cause environmental problems, and this scenario really affects the natural environment in total. From management aspect, the theory suggested that proper environmental management is important to reduce the environmental problems during construction stages, thus the integration of environmental consideration in construction stages especially during the early-stage planning before project execution is very important (Bohari et. al, 2017). Moreover, through the procurement process, the sustainability outcomes can be achieved in practice (Alqadami et al., 2020). In a construction project, the procurement strategy provides a pathway for project delivery and thus, it is regarded as one of the effective tools to integrate green practices into project delivery.

As defined by Love et al. (1998), procurement is a key process in a construction project that creates and manages contacts. Procurement activities span from identification of requirements to project closeout, making it a perfect mode

for integrating organizational strategic directions. Yap et al. (2019) suggested that it is important to select a suitable procurement method due to intricate decision-making by clients during the early stage of project lifecycles. The known fact is that construction procurement is a complex process with a large number of available options and directions (Ruparathna & Hewage, 2015). Moreover, the construction procurement also involves identification, selection and commissioning process of the inputs needed to construct a project (Department of Business Innovation and Skills, 2012). Thus, the client's choice on the best procurement method for a project has a great impact on the project performance hence it is crucial to decide and select the suitable procurement method for a construction project (Yap et al., 2019).

To decide which procurement method to be used for the project, it is important to consider the project specific situations. Currently, there are various procurement methods available for the project owners to obtain a built asset, however, each procurement method is tailored to a certain situation (Ruparathna & Hewage, 2015). Ojo and Gbadebo (2012) explained that different construction projects will require different procurement methods and the suitable choice of methods will avoid any unfavourable circumstances to achieve specific goals. In Malaysian construction industry, the selection of procurement method is dependent on time, complexity of the project, controllable variation, quality, price certainty, competition, responsibility division, risk avoidance, price competition, government policy and familiarity of the client on the procurement methods (Hashim et al., 2006). While different authors, El Sawalhi and El Agha (2017) highlighted that the factors related to the selection of appropriate procurement method are client, cost, time, project characteristic, external environment, and risk.

Procurement that focuses on minimizing environmental impacts is known as green procurement (Bohari et al., 2017). According to Bohari et al. (2020), GP is introduced to expedite the practitioners to procure green buildings. Green Procurement concept has been established under MyHijau Programs which was launched in 2012 by the Ministry of Green Technology and Water (KeTTHA) and the Malaysia Green Tech Corporation (MGTC) (Bohari et al., 2017).

To manage environmental issues, GP is one of the approaches proposed for the construction industry (Zhu et al., 2013). Green government procurement (GGP) is defined as "the procurement of supplies, services and works by the government that takes into account environmental criteria to conserve and minimize the impact on the environment, accelerate the national economy and promote sustainable development" (Adham & Siwar, 2012).

However, in Malaysia GGP is still a fresh concept being introduced to construction industry while all green procurement practices have readily initiated by foreign firms; local industries such as small and medium enterprises (SMEs) are still delaying and have not adopted these practices (Wooi & Zailani, 2010). The GGP is used because the term of government procurement is widely being used in the instructions and regulations of the Malaysian Ministry of Finance (MOF) and is consistent with the Ministerial Function Act of 1969. In Malaysian context, the government procurement refers to the procurement of supplies, services, and work in accordance with MOF's instructions and regulations (Adham & Siwar, 2011).

Green procurement is the purchase of "products or services which minimize or provide positive environmental impacts" through the factoring of "environmental concerns into major purchasing strategies, policies and directives" (Green Council, 2010). Green procurement is also defined as "the act of obtaining or disposal and recognition of goods, services, engineering, and construction work". It also encompasses the integration and implementation of environmentally friendly practices throughout the process involved in producing a construction output such as a building or infrastructure (Bidin et al., 2020).

To successfully implement the green practices, it is crucial to integrate green procurement at the very beginning of the construction process and this is one of the substantial processes to ensure that green practices can be implemented in construction projects (Bratt et al., 2013). Green procurement is acknowledged as an approach that prospectively reduces the environmental impact produced by products and services, compared to others that provide the same function (Mosgaard, 2015). Even though several studies highlighted the benefits and opportunities of GP, there are several highlighted challenges that will deter the acceptance of the green concept among construction stakeholders, for example, as highlighted by Alqadami et al. (2020), the implementation of GP in Malaysia is yet to be emphasized and the adoption has not reached the required level. However, the willingness of construction stakeholders towards using greener approach has increased.

There are some challenges pertaining to the implementation of GP in the construction process being identified namely, green procurement guidelines are fragmented (Bohari et al., 2017), lacking in terms of legislation to introduce mandatory influence (Alqadami et al., 2018), lacking in terms of understanding the current scenario and procurement practices (Alqadami et al., 2020), lack of internal expertise, low awareness level on green procurement, lack of established best practices, standardized procedures and guidelines (Razali et al, 2021), higher cost (AlNuaimi & Khan, 2019; Sourani & Sohail, 2011), the establishment of GP is still lacking in terms of legal, policy, framework, and standard guidelines (Adham et al., 2012; Bohari & Xia, 2015; Musa et al., 2013), lack of training and knowledge capability (Bouwer et al., 2005).

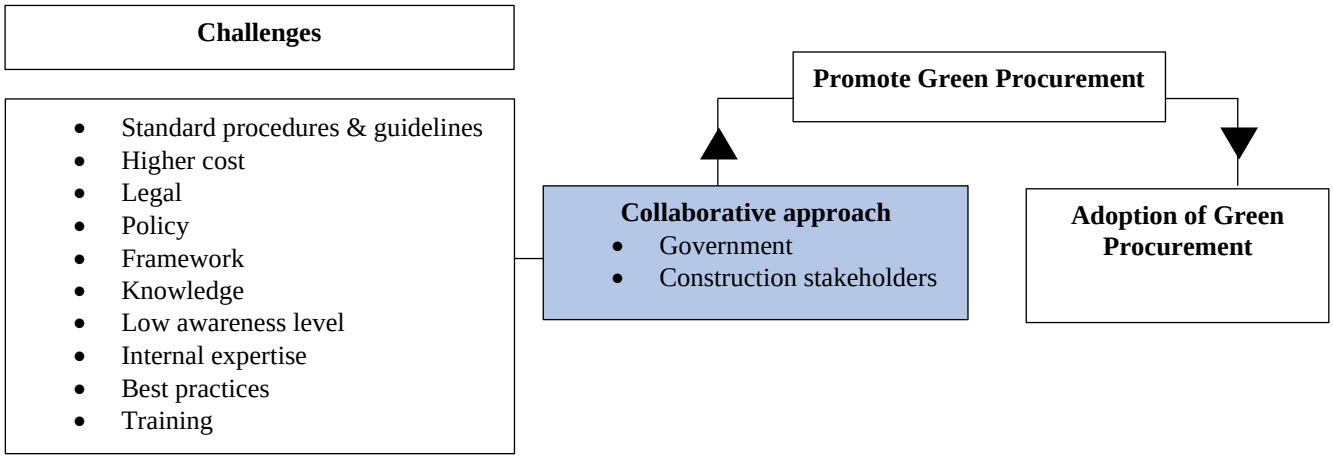

Fig. 1 – Collaborative approach relationship to promote green procurement.

Figure 1 shows that each of these factors are interrelated. Therefore, this paper suggests that a collaborative approach is necessary to ensure these constraints can be reduced.

2.3 Promoting green procurement in a construction project through collaborative approach; the government intervention

A paradigm shift from collaborative approach to whole-of-nation approach that has been highlighted in Twelfth Malaysia Plan as the way forward for green growth as it is socially inclusive and sustainable. The whole-of-nation approach is more holistic where all stakeholders will be responsible in implementing clean, green and resilient development. This approach will strengthen the collaborative efforts and ensure all actions are taken by stakeholders. Focusing on a collaborative approach, this is an approach to address the need to enhance the knowledge and willingness to participate in common goals, effectively. Moreover, collaborative approach is needed for a better engagement.

The notion of a collaborative approach is based on continuous discussion and engagement between various parties to promote greater trust and consensus; at the same time improving the participants' capacity to produce collective decisions (Ghomashchi, 2012). Colbry et al. (2014) highlighted that collaboration can be explored from interpersonal, intra-organizational or inter-organizational levels. Davis (2021) mentioned that the principle of collaboration is applying trust, respect, willingness, empowerment, and effective communication to human relationships.

The nature of construction industry where it is known with fragmented approach. It can be seen from the structure of the stakeholder's involvement in a project and multi facet of activities. There are various parties involved and Costa et al. (2019) highlighted that lack of collaboration and inadequate client involvement between project parties in construction projects. Moreover, the characteristics of construction projects involved financial, technical, social and political perspective resulting in struggling in managing the supply chain relationships in construction. Adequate and proper information and communication must be available among the project stakeholders for them to decide on mutually well-suited decisions (Elsayegh & El-adaway, 2021).

In relation to the context of this study, the concept of a collaborative approach is being explored to encourage progressive communication and engagement between government and construction stakeholders involved in the construction sector (refer to Figure 2), in particular during the decision-making stage. As highlighted in Eleventh Malaysia Plan, to achieve a successful green growth trajectory, it is not only the government's responsibility but also it is a shared responsibility between government, private sectors, and individual citizen. Among the key success in the collaborative approach are all stakeholders will be more informed and provided with access to relevant information, a well-defined implementation plan comprises of clear responsibilities, monitoring process together with mitigation measures and all interested stakeholders are well-represented (Gunton & Day, 2003). One way is the intervention by the government through the introduction of policy and guidelines. Green policy and guidelines serve as a tool for every stakeholder in construction projects ensuring the compliance and providing step by step pathway for the implementation.

During the Eleventh Malaysia Plan period, the issues and challenges were highlighted related to green growth but there was lack of a supportive enabling environment. For example, government-related issues among those were limited enforcement capacity, inadequate monitoring reporting and evaluation and insufficient R&D&C&I. Moreover, limited financing has hindered the sustainability of environment protection and biodiversity conservation efforts. Lack of ownership and stakeholders' shared responsibility in effectively managing the environment and biodiversity are also one of the issues highlighted.

In studies conducted by researchers such as Adham and Siwar (2012), Bohari et al. (2017) and Musa et al. (2013) related to green initiatives highlighted the importance of awareness and readiness to avoid the misconception about green concepts. According to Bohari et al. (2017), educating the industry requires urgent attention from various parties

to accelerate the acceptance among the stakeholders in the construction industry especially in ensuring the green concepts are implemented, through incentives, regulatory frameworks, and environmental standards provision.

According to Fisher (2011), Kahlenbom et al. (2014) and Buniamin et al. (2016), it is crucial to acknowledge the environmental factors in construction phases such as during pre-construction, construction, and post construction. The researchers highlighted that GP is yet being chosen by many and still depending on the traditional procurement method. Thus, creating more awareness and mandatory GP enforcement will provide recognition and strengthen knowledge related to issues and opportunities that GP implementation will offer (Bohari et al., 2017). Furthermore, creating a sense of responsibility within the construction project team to work on the greening mission is indeed important. Commitment from those who hold the decisive power in the project such as the client, funder, design team and end-users help to move towards a greener approach (AlNuaimi & Khan, 2019; Cameron & Green, 2004). This is where the government intervention plays a role in promoting GP in construction project.

Adopting green growth is essential for Malaysia because of the intensity and frequency of extreme weather events. Comparing the government intervention in their initiatives to promote, embark and strengthen on the green growth between Eleventh Malaysia Plan and Twelfth Malaysia Plan reveals significant differences in their strategies as follows;

Table 1 - Government Intervention to promote green growth in Malaysia Plan

Eleventh Malaysia Plan (2016-2020)	Twelfth Malaysia Plan (2021-2025)
Focus Area A **Strengthening the enabling environment for green growth**	**Priority Area C** **Strengthening the Enabling Environment for Effective Governance**
Strategy A1: Strengthening governance to drive transformation by enhancing regulatory and institutional framework, coordination, capacity as well as monitoring and evaluation mechanisms;	**Strategy C1** Strengthening Environmental Governance
Strategy A2: Enhancing awareness to create shared responsibility through comprehensive communication, education, and awareness programmes and platforms for knowledge sharing	**Strategy C2** Scaling-up Green Financing and Investments
Strategy A3: Establishing sustainable financing mechanisms by expanding existing and identifying new economic instruments.	**Strategy C2** Instilling Sense of Ownership and Shared Responsibility

From these Malaysia Plan in Table 1, we can conclude that government intervention to promote, embark and strengthen the green growth is the top priority. From these strategies, the important factors to be considered are to strengthen the environment governance, enhance awareness through communication, education, and knowledge sharing, establish and scale-up green financing and instill sense of ownership and shared responsibility among various stakeholders.

To support green growth, a sustainable green market is fundamental. In Twelfth Malaysia Plan, demand for local green products, services and technologies will increase. This will also encourage the private sector to adopt GP in their projects.

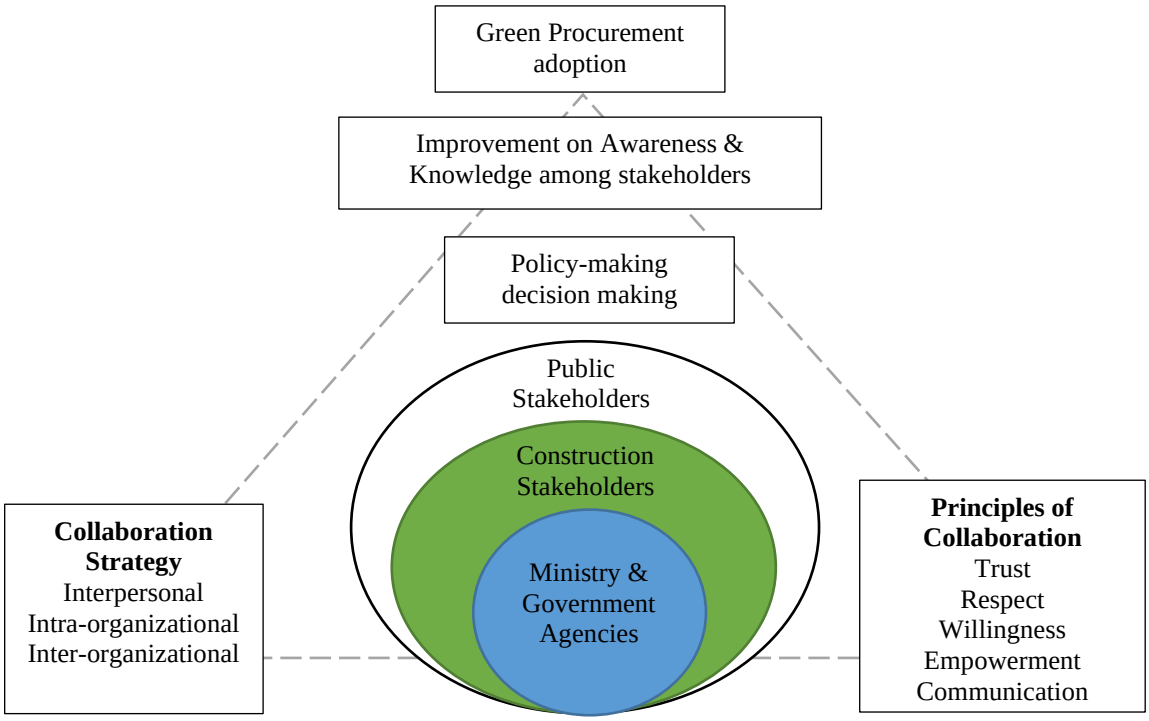

Fig. 2 – Collaborative approach among stakeholders to promote green procurement

Figure 2 shows how the collaborative approach among stakeholders to promote and embark on the implementation of GP in construction projects. It will involve collaborative strategy, principles of collaboration to achieve improved awareness and knowledge among stakeholders which can lead to GP adoption.

2.4 The government intervention through green policy and guidelines in Malaysia

The government of Malaysia has given their support by providing a pathway to spearhead the information about green practices through the formulation of policy and guidelines. According to King and Mori (2007), the major concern among the policymakers in Asian Pacific is on the sustainable approach fitting to the local culture and adoption capacities. Malaysian government is serious in the adoption of GP whereby several initiatives have been provided to support its implementation such as financial schemes through Green Technology Financing Scheme (GTFS), Malaysian Green Procurement Program (MGPP), Malaysia Green Labeling Program (MGLP) and MyHIJAU Directory (Adham et., 2012).

Malaysian government has highlighted several strategies and the most recent is the emphasis on green practices as highlighted in the Twelfth Malaysia Plan (2021-2025).

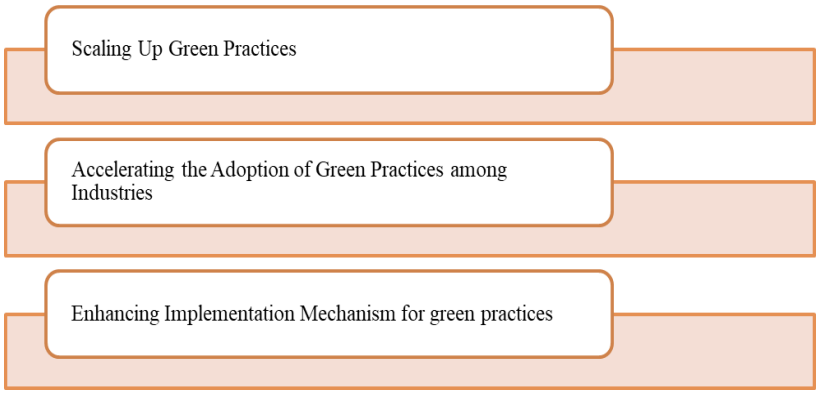

Fig. 3 – Twelfth Malaysia Plan 2021-2025, Chapter 2, Strategy A5

Figure 3 shows the concept of sustainable consumption and production, as highlighted in the Twelfth Malaysia Plan (2021-2025). The Game Changer VIII in Twelfth Malaysia Plan has highlighted the importance of embracing the circular

economy and how it can be utilized in order to achieve green growth for sustainability and resilience. There are also some initiatives introduced by the government to scale up the green practices in construction industry as explained in Strategy A5 of Twelfth Malaysia Plan (2021-2025). It is highlighted that the green practices will intensify efficiency in resource utilization while protecting environment, contributing to higher productivity, and sustaining natural resources. Accelerating green practices adoption among industries and enhancing implementation instruments are the main focus of the government. Green practices implementation in all sectors of the economy is planned to build long-term resilience, sustainable businesses generation, new economics opportunities and social and environmental advantages. The green practices will focus particularly on sustainable consumption and production (SCP) practices. The introduction of the SCP practices concept is intended to encourage sustainability in managing the resources and minimize the impact on the environment. One of the mechanisms introduced is government green procurement (GGP) that specifically focus on construction industry, called GGP on works. The GGP on works will be the backbone for all the green practices in construction projects as it will be the most effective communication tool to the project teams in all stages of construction project. To accelerate the green initiative, GGP will be implemented in Sabah and Sarawak as a catalyst in developing the green market which include the green construction sector. This is explained in Chapter 7 of the Twelfth Malaysia Plan, Strategy B6. Green procurement practices expansion will expand the demand for green products and services, and this will lead the industry to procure and utilize local green products and services. To enhance the implementation of green practices mechanisms, a short-term action plan and guideline for GGP on works will be introduced to support green practices in construction sector.

During the Eleventh Malaysia Plan, green growth was introduced as a game changer, incorporating the economic, social and environmental pillars of sustainable development to prepare the country for future challenges, pursue green growth by strengthening governance, protecting natural endowments, responding to climate change, and reducing disaster risks. Nonetheless, there are still some challenges to be taken into consideration, including unsustainable consumption and production practices, loss of biodiversity, and lack of a supportive enabling environment.

In the Twelfth Malaysia Plan, green growth will be further emphasized to ensure sustainability and resilience. This will be achieved through a whole-of-nation approach to implement a clean, green and resilient development agenda. Twelfth Malaysia Plan (2021-2025) emphasizes on achieving inclusivity and sustainability. Moreover, low-carbon, clean and resilient development are targeted to achieve 25% on government green procurement. Theme 3 of the plan focuses on advancing green growth and enhancing energy sustainability.

It is also highlighted that by the increment of high-added activities in the construction sector, the focus will be on adopting and implementing green construction practices which will lead to greening the sector. This will improve resource efficiency and cost effectiveness hence will lower the environmental impact. More industry players in construction are encouraged to utilize green building design which besides promoting resources, energy and water efficiency will also integrate measures to resist extreme weather patterns and natural disasters. To ensure environmental sustainability features are integrated from the earlier design stage towards constructions phases to operation phase, the developers are urged to implement sustainable certification and performance tools which include Sustainable Infrastructure Rating Tool (Sustainable INFRASTAR), Green Building Index (GBI) and GreenRE. Moreover, in Chapter 8: Advancing Green Growth for Sustainability of Resilience of Twelfth Malaysia Plan mentioned that the GGP initiative will largely be implemented within state governments and local authorities. The availability of local green products and services will support the initiative. Razali et al. (2021) highlighted that Malaysia's GGP guideline was established as the first government green procurement to cover the products and facilities for government buildings but not covering the construction sector broadly. The GGP guidelines exclude the construction activities and phases, however in Twelfth Malaysia Plan it is highlighted that the GGP implementation will incorporate procurement of works for construction and renovation. To promote green construction, a short-term action and the GGP works guidelines plan will be developed.

2.5 The policy and guidelines during the construction project planning stage

The policy and guidelines enable all stakeholders in construction sector to be knowledgeable and well-informed on the GP practices and its implementation in the construction process. The facilitation of the process includes the commitment by the government towards the green initiatives that can contribute to effective construction stakeholders' participation in implementing GP, thus indirectly acknowledge the importance for the process to be adopted to the complicated relationship in the public domain, including construction industry. As a result, it has changed the perception of construction stakeholders towards the importance of GP's incorporation into the construction process, hence resulted in sustainability of development.

Table 2 – Policy and guidelines during construction project planning stage

Policy and guidelines	Document	Explanation	Relation to green procurement for construction industry	Enablers
Energy Efficiency Rating (EER)	Guideline for Energy Efficiency Label	Energy rating label shows the estimated energy consumption of each electrical equipment based on energy efficiency rating system.	Aimed to improve energy efficiency through sustainable procurement.	**Energy Commission**
Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST)	A Reference Guide for MyCREST Design & Construction Stage	Tools to construct a scoring plan, which is used to assess a building for certification.	Acts as a guide to all stakeholders of the construction industry in adopting sustainable development practices.	**Construction Industry Development Board (CIDB)**
Treasury Instruction on the usage of Green Government Procurement Works for project delivery	Malaysia's Government Procurement Regime	Prudent practices in government procurement are emphasised in various treasury circulars and directives.	These instructions support GGP principles by giving circulars and directives for the stakeholders to obtain the best value for money.	**Ministry of Finance (MoF) Malaysia**
Penarafan Hijau JKR (pHJKR)	Manual Penarafan Hijau JKR Sektor Bangunan	A tool that takes into consideration the element of sustainable site planning, energy efficiency, material and resources, water consumption efficiency, innovation, and sustainable facilities.	A criteria assessment that the stakeholder must fulfil in order to get a rating.	**Ministry of Works Malaysia**
Arahan Ketua Pengarah Kerja Raya (KPKR)' s Instruction	Polisi Pembangunan Lestari JKR Malaysia 2016-2020	Instruction to implement the green building rating scheme in all JKR projects.	To save energy and resources, recycle materials and minimize the emission of toxic substances throughout its life cycle.	**Ministry of Works Malaysia**
The IBS Content Scoring System (lBS Score) application	Construction Industry Standard Manual for IBS Content Scoring System (IBS Score)	A systematic and structured assessment system that can be used to measure the usage of Industrialised Building Systems (IBS) in a consistent way. The objective of	In a way to promote sustainability deliverables.	**Construction Industry Development Board (CIDB)**

		the manual is to provide a well-structured assessment system for calculating the IBS Score.		
JKR Material Approved List	JKR Green Product Directory	JMa is a portal directory which listed all approved green products.	A list that can be valued as source of information and can persuade stakeholders to get the product certified.	**Public Works Department Malaysia**
List of approved green materials as decided by the project team	JKR Green Product Directory		The importance of green material in construction is to help reducing the environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these building industry source materials.	**Public Works Department Malaysia**
Building Integrated Modelling (BIM) application	MyBIM – BIM Guide 5. BIM project guide. A guide to enabling BIM in Projects.	A process supported by various tools, technologies and contracts involving the generation and management of digital representations of physical and functional characteristics of places.	BIM has potential to support and contribute to the sustainability of green aspect, including energy consumption, carbon emissions, natural ventilation, solar radiation, lighting, acoustics, and water usage.	**Construction Industry Development Board (CIDB)**

Table 2 shows the government's currently available policies and guidelines for early planning stage of construction process. These policy and guidelines are crucial at the beginning of the construction stage as this is where the decision making is involved to achieve sustainable construction in the first place. There are several government's policies and guidelines which emphasize on the sustainable practices and these documents are accessible for the users as references and guidelines.

3. Methodology

This study used a quantitative approach, and the questionnaire was developed based on the desktop research and a five-point Likert scale is used. The respondents were required to rate their agreement levels which are coded and described as 1 (Strongly Disagree), 2 (Disagree), 3 (Neither Disagree/Agree), 4 (Agree) and 5 (Strongly Agree). The sample was drawn based on the purposive sampling method where the respondents are chosen based on the survey's purpose. Creswell and Plano (2011) stated that purposive sampling does not produce a sample representing a larger population. Still, it can be exactly representing what is needed for certain cases, a study of an organization, community, or some other clearly defined, experienced, and known with a phenomenon of interest and relatively limited group. The questionnaire was distributed to 50 respondents identified earlier based on their credentials in green construction and government procurement as they are the key players in the government procurement in Malaysia's construction industry and the study area took place in Peninsular Malaysia. The 50 respondents chosen were based on their experience and background in green government procurement and green government procurement works. Among respondents are heads, managers, engineers, project coordinators, quantity surveyors in government agencies and green experts who are the implementing

agencies and project owners. The key players are the enablers and the users of the procurement. The enablers refer to the organization that facilitates, regulates, and promotes the successful implementation of green practices. This category includes policymakers and regulators, and the users are the organizations that procure the construction product and materials that will be implemented and involved in the procurement.

This study is intended to demonstrate the importance of the collaborative approach between the enablers and users as well as the suitability of the current policies in promoting GP adoption among Malaysian construction stakeholders. This study focuses on government intervention in promoting GP at the construction project planning stage because this is where the decision making is mainly involved hence it is crucial to undertake sustainable construction implementation.

The questionnaires were distributed via email and the questionnaire is also accessible online. Overall, the study has received 32 questionnaires at about 64 percent response rate. To check for reliability, Cronbach alpha test was performed to ensure the instrument consistently measures the variables. Based on the test, the alpha values are at 0.864. The scale items have an acceptable level of reliability or internal consistency, and no serious problem of multicollinearity exists if the value exceeds 0.70. Thus, the data used are reliable.

4. Data Analysis

To simplify the results' interpretation, the analysis is presented in descriptive statistics using frequency, percentage, mean score, and standard deviation. Mean scores are used to summarize data and precisely convey information about distributions. The standard deviation (SD) value shows dispersion on the distribution of data shown in Table 3.

Table 3 – Interpretation of mean score based on Likert Scale

Score	Mean score	Interpretation
1-2	1.00-2.99	Low
3	3.00-3.99	Neutral
4-5	4.00-5.00	Accept

The purpose of analyzing the respondents' demographic profiles in Fig. 4 is to understand and describe the respondents' background such as their characteristics, experience, and organizational type. The result showed that a higher number of respondents are government officers (N=21) followed by government linked companies (N=4), private (N=1), and others (N=6) representing a ratio of 52.5% and 10%, 2.5% and 15%, respectively.

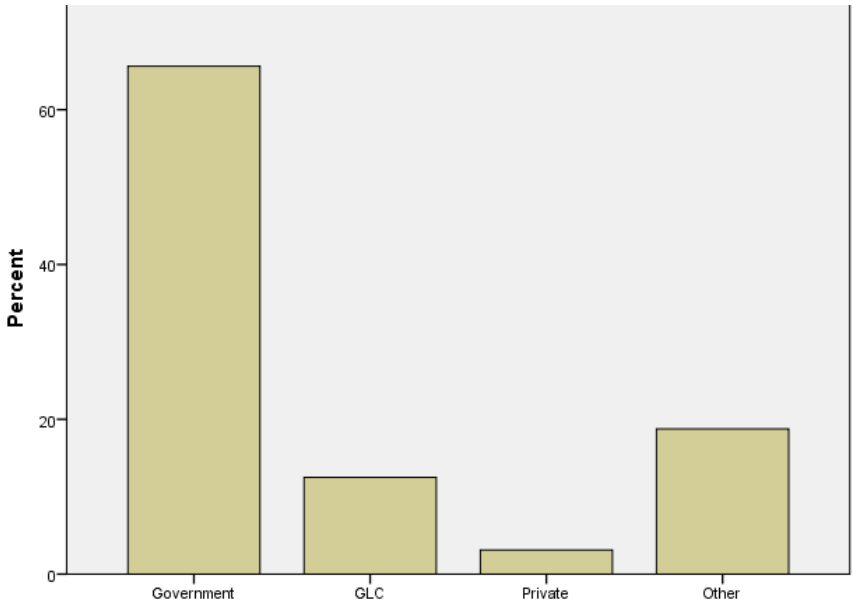

Fig. 4 – Demographic Background of the Respondents

This part of the analysis looks at the usefulness of the government policy and guidelines for the procurement officer in construction project during the planning stage. Most respondents agreed that the available policies and guidelines in Table 4 provided a better guide for the project team to make decisions during the planning stage. The Energy Efficiency Rating (EER), Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST) and Treasury Instruction on the usage of green products and services for project delivery has ranked the highest three as the most used green guidelines to determine the adoption of green materials for the projects with 4.59, 4.56 and 4.53 mean score, respectively. The respondents also have suggested MyHIJAU Directory and the Pekeliling Perbendaharaan (PP) (Skala 5) as important guidelines for the team in making decisions.

Table 4 – Usefulness of government policy and guidelines during pre-tender stage

	Mean score	Standard deviation
Energy Efficiency Rating (EER)	4.59	0.620
Malaysian Carbon Reduction and Environmental Sustainability Tool (MyCREST)	4.56	0.675
Treasury Instruction on the usage of Green Government Procurement Works for project delivery	4.53	0.677
Penarafan Hijau JKR	4.53	0.626
Arahan Ketua Pengarah Kerja Raya (KPKR)' s Instruction	4.31	0.938
The IBS Content Scoring System (lBS Score) application	4.31	0.783
JKR Material Approved List	4.28	0.779
List of approved green materials as decided by the project team	4.22	0.677
Building Integrated Modelling (BIM) application	4.19	0.938
Other (please specify)	• *MyHIJAU Directory (R 13 & 16)* • *Pekeliling Perbendaharaan (PP) (skala 5) (R28)*	

5. Discussion

This preliminary study was conducted to understand the best way to move forward with the GP for the construction industry in Malaysia by looking at the collaborative approach and focus on the introduction of government policies and guidelines. The objectives of the analysis mainly focus on the usefulness of the green policies and guidelines related to construction projects as a guide for construction stakeholders to determine the green direction of their project. Firstly, the results prove that the policies and guidelines formulated by the government help the respondents in providing a better view of the direction of green project delivery. It is very much related to what was suggested in the literature where policies and guidelines play an important role (Adham & Siwar, 2017). Secondly, the nine green practices listed in Table 3 have indicated a mean score of more than 3.00, which is the outcome representing the relevant items to determine the green practices of the project. Thus, this indicated that government intervention through bottom-up is relevant as push factors and building capability for the stakeholder. Supported by Berman (1978), the bottom-up approach can contribute to the successful implementation coming from active participation of the stakeholders involved in various stages of policymaking.

Collaboration among the relevant key players is important because each construction phase involved critical activities leading towards greening the procurement for construction works. The implementation of these processes throughout construction stages will certainly make the outcome of green procurement in construction industry achievable. There are several government policies and guidelines stated in Table 3 which highlighted its usefulness during the pre-tender stage where those will provide better guide for the project team. Bratt el al. (2013) highlighted that the integration of procurement at the early stage of construction process is one of important factors in ensuring green practices' successful implementation in construction projects. For example, for green procurement, both manufacturers and suppliers need to collaborate in their green development which can strengthen the green purchasing capabilities of the manufacturers (Dou et al., 2014; Yu & Huo, 2019) as well as building long-term relationships with the suppliers (Chan & Kingsman, 2007).

Moreover, Wang et al. (2020) emphasized that the collaboration among all stakeholders such as policymakers, the users, buyers, and vendors are crucial to implement green procurement. As depicted in Figure 2, to successfully implement green procurement, the most important factor to be considered is the collaboration among stakeholders which are the enablers and users. In Malaysia, public and private agencies have collaborated through several initiatives and developed strategies to resolve environmental problems. One of the strategies introduced by the Malaysian government is green procurement. To facilitate, regulate, and promote the implementation of green practices, it is important for the ministry and government agencies to enforce on policy and decision making for the users and the construction stakeholders to implement and be involved in the green procurement. To improve the awareness and knowledge among stakeholders on green procurement, it is important to ensure that these principles of collaboration such as trust, respect, willingness to adopt and learn new knowledge, empowerment and communication are being taken into consideration.

6. Conclusion

The direction of using green procurement in construction projects is still at the beginning phase for the construction industry in Malaysia. However, the existing policy, guidelines and initiatives indicate that Malaysian government is committed towards the adoption of green procurement. The construction industry, which involves many stakeholders from various backgrounds, requires an appropriate approach when introducing something new. A collaborative approach is a reasonable approach for the government, public and private sectors to collaborate in adopting the green procurement. The intervention in terms of role, commitment, and support from the government through the introduction of policy, clear guidelines, and frameworks, as well as initiatives for using green procurement are vital for successful implementation by the agencies. Policies and procedures will help the construction stakeholders to build green-based construction projects, especially at the planning stage. In parallel with the government initiatives in looking ahead to a prosperous, inclusive, and sustainable Malaysia, collaborative approach will surely help in strengthening the collaborative efforts between government and construction stakeholders towards implementing green procurement. Moreover, this collaborative approach will enhance the knowledge among construction stakeholders, foster better communication and engagement as well as boost the willingness to participate in green procurement adoption. To shift towards sustainable construction, collaborative approach is needed through the implementation of green procurement in construction industry. This study was conducted with a limitation that includes limited respondents as a preliminary study. However, the findings of this study provide an overview of two significant results, namely, the importance of a collaborative approach to introduce innovative approaches in the industry and the need for a bottom-up approach as a push for compliance in green procurement adoption.

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