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**FOSTERING GREEN STRATEGY THROUGH "A-F-F-I-R-M" MODEL  
FOR SUSTAINABLE DEVELOPMENT WITHIN THE  
ENVIRONMENTAL – SOCIO – ECONOMIC SYSTEM IN MALAYSIA**

**KAMARUDIN BIN ABU BAKAR  
DR. ISMI RAJANI  
PROFESOR DR. MD RAZALI BIN AYOB  
NOOR SHAWAL NASRI**

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# FOSTERING GREEN STRATEGY THROUGH “A-F-F-I-R-M” MODEL FOR SUSTAINABLE DEVELOPMENT WITHIN THE ENVIRONMENTAL-SOCIO-ECONOMIC SYSTEM IN MALAYSIA

<sup>1</sup>Kamarudin Abu Bakar, <sup>2</sup>Ismi Rajiani, <sup>3</sup>Md Razali Ayob, <sup>4</sup>Noor Shawal Nasri

<sup>1,2</sup>Faculty of Technology Management & Technopreneurship,  
Universiti Teknikal Malaysia Melaka.

<sup>3</sup>Faculty of Mechanical Engineering,  
Universiti Teknikal Malaysia Melaka.

<sup>4</sup>Faculty of Chemical & Natural Resources Engineering,  
Universiti Teknologi Malaysia.

Corresponding author's <sup>1</sup>e-mail: [kamarudin@utem.edu.my](mailto:kamarudin@utem.edu.my)

## ABSTRACT

A-F-F-I-R-M is the holistic approach taken by the Malaysian government in completing an ecosystem for environmental sustainability. It expresses the commitment of all stakeholders toward sustainable development in Malaysia. Thus, it is necessary to complete the ecosystem into one that achieves satisfactory levels of environmental sustainability. Hence, this research intends to explore the suitability adoption of A-F-F-I-R-M within the Foresight Model of the environmental-socio-economic dimension of Malaysian, in which the outcome of the research is important as it can determine whether we (the “actors”) would all be able to work together to foster green technology as well as extending this call to the world largely and collectively, changing the landscape of the earth for the betterment of future generations. For this reason, the Author(s) has proposed a refine research framework for more effective study of the issue.

**Keywords:** *Ecosystem, Sustainable Development, Environmental-Socio-Economic, Green Technology, Actors*

## 1.0 INTRODUCTION

Energy is the catalyst for development. Globally, the per capita consumption of energy is often used as a barometer to measure the economic development level of a country. Realizing its importance as a vital component in economic and social development, the Malaysian government has continuously reviewed its energy policy to ensure long-term reliability and security of energy supply (Mohamed A.R., Lee K.T., 2006).

### *National Green Technology Policy (NGTP)*

*“It is my dream that one day we can live in a clean, healthy and high quality environment, where cities, townships and communities are built on the fundamentals of Green Technology”*

*(Datuk Seri Najib Tun Razak, 2009)*

As a rapidly developing nation, Malaysia is not excluded from the challenge of minimizing the negative environmental impacts in the energy supply chain. The effort to overcome the challenge was already initiated in 1979, with the formulation of the National Energy Policy, which was aimed at making the energy supply secure, cost-effective and utilized more efficiently. The implementation of the National Energy Policy is expected to achieve RM70 Billion renewable energy (RE) business revenue by 2020. The production of RE would lead to greater “green” collar job opportunities and achieve the objective of the new economic policy by stimulating local support industries (Malaysian Business, *Promoting Renewable Energy Awareness - The Malakoff Way*. Sept. 2010).

Commercial and industrial business entities in Malaysia may opt to implement renewable energy resources such as biomass, biogas, hydropower, wave, wind and solar power for the future. From the Rio Summit to Kyoto Protocol to Bali Road Map and recently the Copenhagen Accord, the progress however has been slow and rather unconvincing despite the many incentives being introduced by the government. If not properly planned, the rising of conventional energy prices worldwide due to its uncertain future will make it even critical for local industries to sustain their business competitiveness globally.

Malaysia is one of the earliest nations in the world to have adopted a serious concern towards environment by enacting the Environment Quality Act way back in 1974. Likewise the very concept of sustainability was an integral part of our Third Malaysia Plan, even before the idea of Sustainable Development was popularised in the late eighties by the Brundtland Report. A technical arm called The National Green Technology Center also emerged through a restructuring exercise of the then Malaysia Energy Centre (now known as Green Tech Malaysia). This was then followed by both monetary allocations and non-monetary provisions towards developing green technology made when presenting Budget 2010. It enhance the development of green technology and to embrace a more environmental friendly and sustainable approach to development (Malaysian Business, *The Wonders of Green Technology*. June 2010).

Recently, the New Economic Model has put sustainability as one of the three goals of the economic transformation programme and aspires to place Malaysia as a green hub all the way along the business development continuum – from research to design to manufacturing to commercialization. This further underscores the government’s seriousness in taking a holistic approach towards environmental management. When addressing the Malaysia Green Forum 2010 (MGF2010), the Prime Minister also hopes that the country would be able to come up with creative, innovative and pragmatic solutions to the green issues by taking full consideration of the country’s inherent strengths and weaknesses, opportunities and threats. He stresses out that in truth, moving forward towards environmental sustainability are not without its unique obstacles and Malaysia certainly faces a fair share of the challenges that lie ahead which include environmental awareness, cost effective green technology and the technology gap.

### ***Research Issues***

It is clear that energy demand is not only closely related to the growth of GDP, but also to the shift of industrial structure as well as the improvement in energy intensity (Keong C.Y., 2005). The multiple challenges need to be tackled to achieve energy sustainability. Through the National Green Technology Policy (NGTP) unveiled on 24 July 2009, the Ministry of Energy, Green Technology and Water has identified the short, medium, and long term goals of the National Green Technology Policy, which will be incorporated into the 10<sup>th</sup>, 11<sup>th</sup>, and 12<sup>th</sup> Malaysia Plan.

One of the immediate and urgent short-term goals will focus on creating and increasing awareness on green technology to the general public and all stakeholders. The Ministry of Energy, Green Technology and Water will

embark on a comprehensive education and outreach program to raise awareness on green technology and its benefits.

## 2.0 LITERATURE REVIEW

Malaysia is an emerging market within environmental awareness. Economic resources have been allocated politically to promote this awareness and higher environmental standards have been adopted. As a rapidly developing nation, Malaysia is not excluded from today's environmental challenges namely change and energy security.

The contribution of renewable energy to generate electricity is still insignificant and far below the target set under the 9th Malaysia Plan (2006–2010). In future, oil will no longer be a viable option for electricity generation, due to the diminishing national oil resources, and Malaysia is expected to become a net oil importer by the year 2030 (Oh T.H., 2009). In facing up to these challenges, the Prime Minister of Malaysia had decided to escalate Green Technology to the mainstream ministerial portfolio and on 9th April 2009 introduced the Ministry of Energy, Green Technology and Water. The ministry has created the National Green Technology Policy (NGTP) which can both be seen as a guideline for companies and as a clear signal to the Malaysians that the government wants to improve their quality of life.

Several “actors” contribute to the spreading of environmental awareness in a society. In the Western industrialized world, all these actors have contributed to growing opposition to the destructive tendencies of technological progress, backed up by government regulations. Although this opposition is not yet powerful enough to stop or reverse continuing degradation of the environment, it has had some success in curtailing many direct threats to human life and health (Bernd B., 1999).

In those countries where development and establishment of a market system are now on the daily agenda, awareness of environmental impacts is not sufficiently widespread to have had significant influence on industrial and political decisions (Bernd B., 1999). Other means to orchestrate a sustainable energy system in Malaysia include the implementation of demand and supply initiatives, the deployment of energy saving technology or influencing behavioural change towards a sustainable energy consumption pattern (Keong C.Y., 2005). As such, the NGTP is build around the statement that: *“Green Technology shall be a driver to accelerate the national economy and promote sustainable development.”*

From this statement a set of four pillars are created:

- Energy - Seek to attain energy independence and promote efficient utilization;
- Environment – Conserve and minimize the impact on the environment;
- Economy – Enhance the national economic development through the use of technology; and
- Social – Improve the quality of life for all.

It summarizes the sense of urgency to be energy efficient which will enable us to achieve energy independence; reduce or mitigate any negative impacts on the natural environment; and to ensure that the public are able to enjoy a good quality of life. The primary aim of the policy is to drive Malaysia's economy at a faster rate while maintaining that the future generations will not have a lesser quality of environment than what we have now.

### ***Strategic Thrusts***

In order to clarify what the strategy will be for the next 3-5 years a set of strategic thrusts have been developed under the NGTP.

- *Strategic Thrust 1:* Strengthen the institutional frameworks
- *Strategic Thrust 2:* Provide Conducive Environment for Green Technology Development.
- *Strategic Thrust 3:* Intensify Human Capital Development in Green Technology.
- *Strategic Thrust 4:* Intensify Green Technology Research and Innovations.
- *Strategic Thrust 5:* Promotion and Public Awareness.

### ***Environmental Sustainability Through Green Implementation***

Our Prime Minister has pledged at the United Nations Framework on Climate Change Conference in December 2009 that Malaysia will make an ambitious attempt to reduce our carbon dioxide emission by as much as 40% compared to 2005 levels, conditional upon transfer of technology and finance from developed nations. He informs that preparation and adoption of the Framework of the Road Map that initially focuses on the energy, waste and forestry sectors is swiftly under way.

To sum up, the three biggest challenges Malaysia face with regards to environmental sustainability are:

- 1) The lack of awareness about the impact of irresponsible activities to our environment is disheartening. This has led to environmental degradation and destruction by the very beneficiaries of the environment i.e ourselves. There is still a lot of work to be done in convincing people to own up for their actions and attune their behavior for the benefit of the environment.
- 2) Another equally daunting impediment is finding a cost-effective alternative to fossil fuels that are gradually depleting. As we know, this is a resource that will become increasingly scarce, escalate in price and will eventually run out. Whether we realize it or not, we are in a race with the world to wean ourselves from dependence on this resource. And the only way forward seems to be the currently costly migration to renewable energy.
- 3) The third hurdle is the technology gap. There is still a high level of dependency on developed countries for access to cutting edge green technology. In addition, most of these technology applications are too expensive and impedes wider usage. For instance, despite the abundance of sunlight in Malaysia, the use of solar power is still limited due to the colossal cost involved. Typically a rooftop photovoltaic system that powers a four room house costs more than RM150,000. Although improvements in technology and economies of scale are driving the price down, as it stands, it is still largely beyond the reach of the average household.

### ***The Green Strategy Ecosystem: A-F-F-I-R-M***

The Prime Minister has emphasized that environmental sustainability can only fully materialize if there is a complete and holistic ecosystem that allows for it. For this reason the government has identified six major components of the ecosystem and together they form the acronym A-F-F-I-R-M.

### ***1) Awareness***

It is the total public attitude and awareness on environmental sustainability at all levels of the society as the government can never achieve this on its own. This can only be a synergized efforts of the public sector, private sector and civil society, including non-government organisations can this be attained.

### ***2) Faculty***

It is referred to the ability and skill of human capital, developed through education and training by developing and introducing green topics in the school syllabus and curriculum of higher learning institutions; including certification mechanisms for competent personnel in green technology. The creation of “green collar” jobs will in turn spur the transformation of a “green economy” among the societies.

### ***3) Finance***

The government is providing effective financial incentives for businesses to explore green technology and adopt green practices with a fund amounting to RM1.5 billion. There is also consideration of tax incentives such as tax deduction for contribution towards environmental funds and tax breaks for buildings and designs that work harmoniously with nature that is included in the Budget 2011.

### ***4) Infrastructure***

The initiating of green township like Putrajaya and Cyberjaya is important to reduce environmental costs generated through home and industrial waste. The significance of green community can affects the consumers' behaviour and preferences which are the powerful pull factors in driving the private sector to go green.

### ***5) Research, Development & Commercialisation***

To encourage local research centres and industries alike to look for global solutions on environmental sustainability by partnering with strong foreign green institutions (universities or MNCs) that can benefit all walk of life in Malaysia.

### ***6) Marketing***

As a good product needs marketing, the government is embarking on developing eco-labeling for local products to be internationally recognized in term of the green procurement initiative and export to overseas. This will also be critical in securing buy-in from the public in supporting the “green economy.”

## **3.0 RESEARCH HYPOTHESIS**

The general public and stakeholder awareness of green strategy ecosystem is built within the environmental-socio-economic system and is effective for sustainable development in Malaysia.

## **4.0 RESEARCH OBJECTIVES**

In understanding the issues of green technology in Malaysia, the research will determine the various critical success factors pertaining to the environmental-socio-economic sustainability. How much do the actors accept their roles towards the green agenda implementation? How critical is the renewable energy adoption for sustainable development?

The research will also review the three challenges faced before studying thoroughly the issue of awareness for green environmental sustainable development in our country.

The two objectives to be achieved for this research are:

- 1) To analyze the effectiveness of the A-F-F-I-R-M green strategy ecosystem from the environmental-socio-economic perspective.
- 2) To determine the compliance level of the environmental sustainability (or green technology) among the environmental-socio-economic “actors” in Malaysia.

## **5.0 RESEARCH FRAMEWORK**

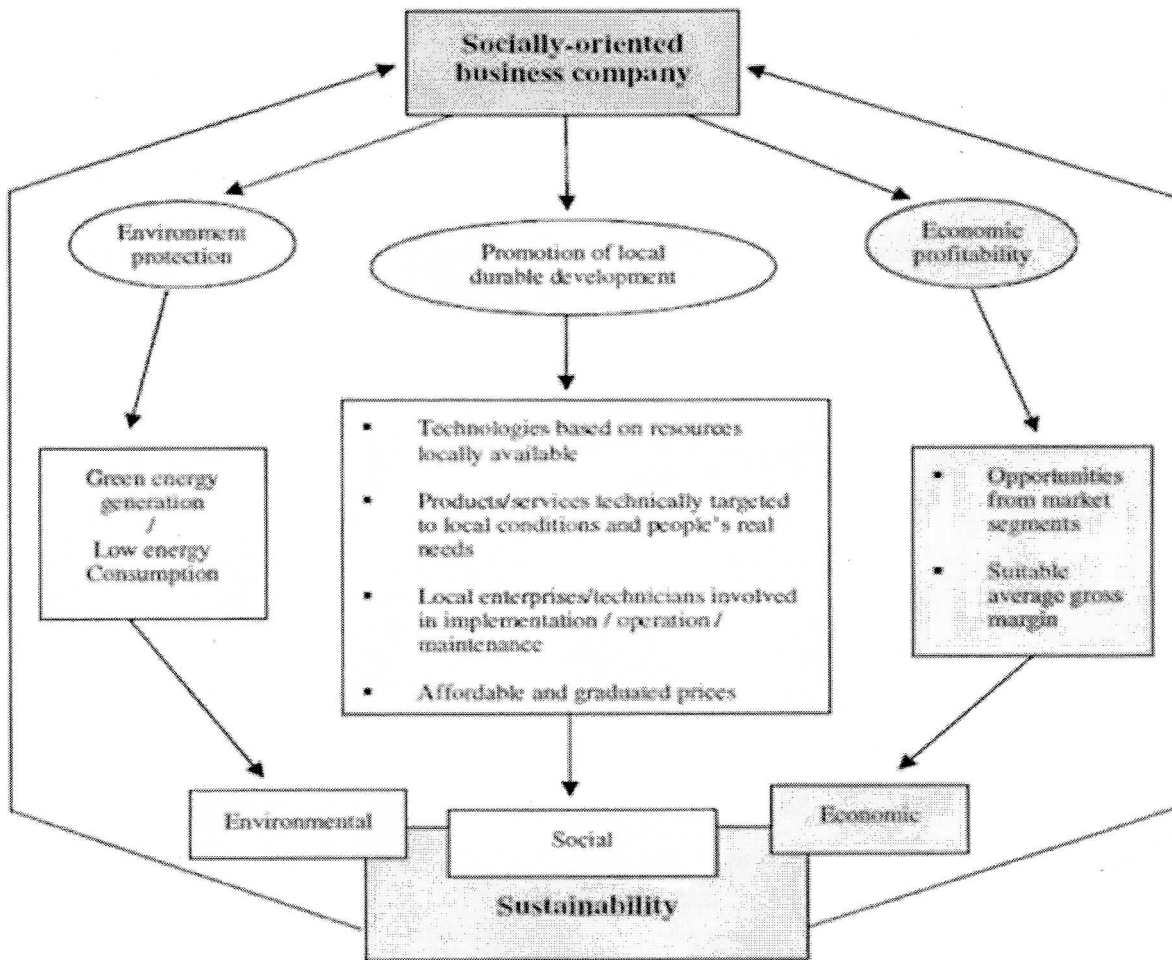
### ***Environmental-Socio-Economic Model***

Utility systems play a key role in a broader project of sustainably transforming industrial society. At the same time, these sectors are particularly resistant to change due to strong interlinkages between technological systems, natural resources, as well as to value orientations and consumption patterns, which make up a functioning configuration, a so-called socio-technical regime (Kemp 1994; Rip & Kemp 1998).

Mario Molteni and Antonio G. Masi, 2009, have suggested an ideal-type business model aiming at environmental-social-economic sustainability (Figure 1, on next page). This implies that they should be jointly managed and fairly balanced in order to have the achievement of all objectives - environment protection, promotion of a sustainable development in favour of local communities, and suitable profit generation - ensured.



Figure 1 - A business model aiming at environmental-social-economic sustainability

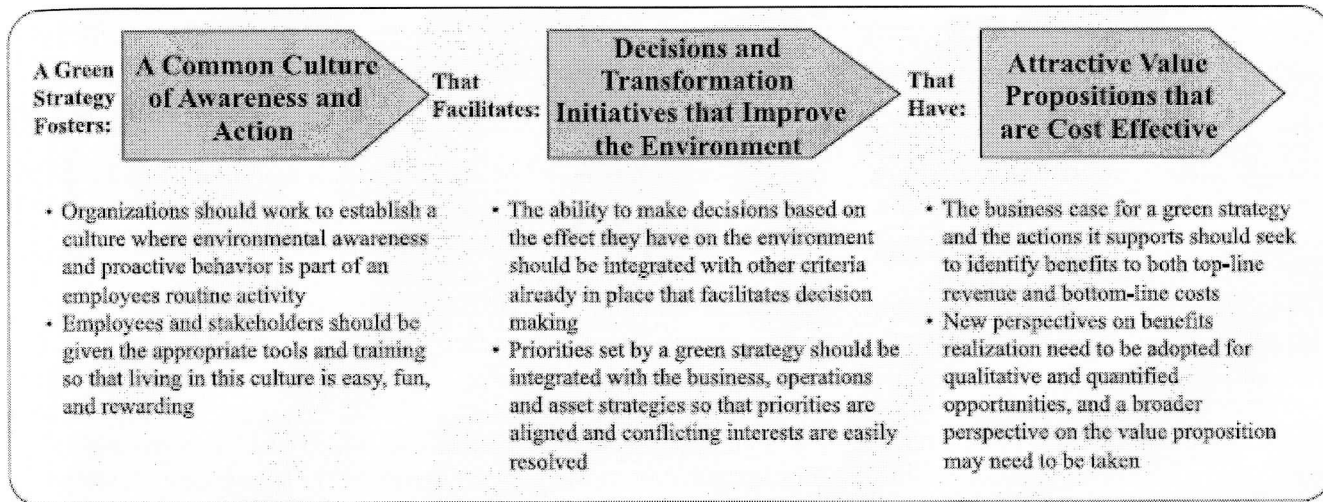


(source: Mario et al., 2009)

On the other hand, according to Eric.G.O, 2008, green strategy for an enterprise model – public or private, government or commercial – is one that complements the business, operations, and asset strategies that are already well understood and often well articulated by the enterprise. A green strategy fundamentally helps an enterprise make decisions that have a positive impact on the environment. The principles as shown in Figure 2 on the next page that form the basis of a green strategy should lead a business to make decisions based on solid business logic and make good business sense.



*Figure 2 - The tenets of any company's enterprise-level green strategy model*



(source: Eric.G.O, 2008)

### ***Sustainability Foresight Model***

A definition of foresight is a systematic analysis and discussion about possible futures. In its' understanding it lean on five central characteristics of foresight that have been pointed out by Renn (2002):

- Foresight is based on the philosophy that future developments are contingent on human actions and decisions; this is why foresight is not a process of forecasting the future but rather an attempt to explore the space for human actions and interventions to shape the future.
- Foresight is aimed at producing orientations rather than predictions; it provides guidance to all actors and reduces uncertainty.
- Foresight includes multiple perspectives, multiple actors and multiple disciplines on different levels of governance.
- Foresight is focused on opportunities and risks alike.
- Foresight emphasis the interrelations between the technological, economic, social, political and cultural sector of society.

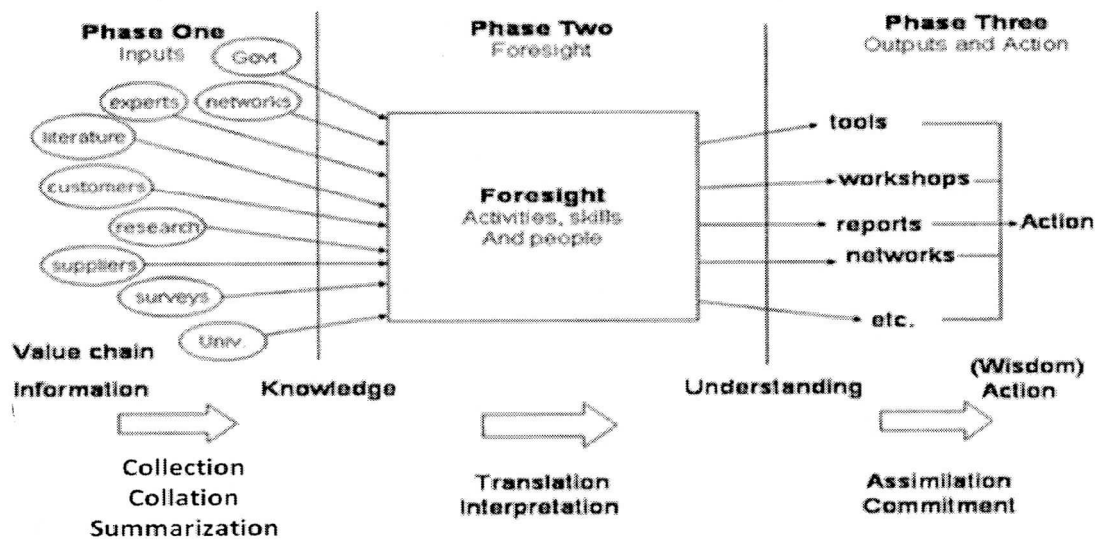
These augmented definitions are fragments of a big picture. Foresight clearly deals with the future and especially with the set of many possible futures trying to define the preferable future. It avoids prediction or single point forecasts. It could be inspired by the analysis of historical data but this is not a prerequisite. The definition of the big picture becomes valuable when it is sorted out and organized by a knowledge effort. By using the sustainability foresight method, we want to explore alternatives to conventional problem solving with a view to assess their practical potential for implementing reflexive governance for sustainability. We expect sustainability foresight to work complementary to conventional problem solving by increasing the reflexivity in 'wicked' problem areas which do not lend themselves to straightforward problem solving (Hisschemöller & Hoppe, 2001). As such it can play a mediating role in shaping sustainable transformation. Sustainability foresight provides for emerging structural patterns to be shaped not only by the interference of 'external effects' of specialised

rationalities and narrowly defined strategies but also by the anticipation of long-term consequences on a system level and mutual adaptation of strategies beforehand.

The foresight model in Figure 3 also features three phases of the foresight process, which include inputs, foresight and outputs and action:

- 1) Phase one comprises the collection, collation and summarisation of available information (usually that such as trends, expected developments, brainstorming unusual happenings and so on) and results in the production of foresight knowledge (construction of alternative paths of transformation).
- 2) Phase two comprises the translation and interpretation of this knowledge to produce an understanding of its implications for the future from the specific point of view of a particular organisation (discursive assessment of sustainability impacts).
- 3) Phase three comprises the assimilation and evaluation of this understanding to produce a commitment to action in a particular organisation (development of measures with respect to sustainability).

*Figure 3 - A successful foresight process and the value chain*



(source: Horton, 1999)

## 6.0 RESEARCH METHODOLOGY

### Research Instrument

A research instrument will be developed to investigate the research hypothesis and answer the research objectives. The respondents under this research will be covered by the “actors” that will be defined and identified from the sustainability foresight model. These “actors” may come from all sorts of lifestyles as long as they reside in Malaysia.

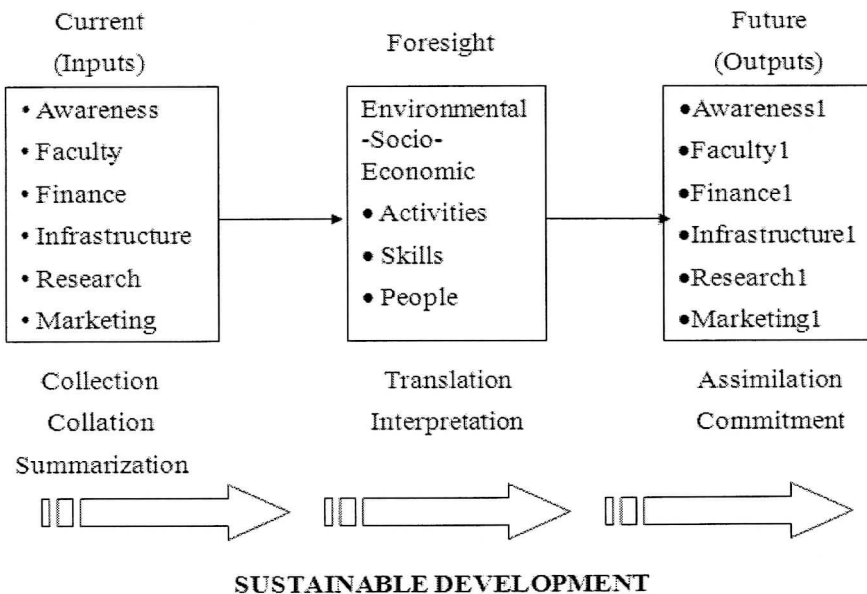
Data collected from the questionnaires will be distributed to the respondents by hands, e-mails and post-mailing. To ensure accurate address of green strategy issues of the research, the respondents will be subject to interview and should fall within the category of Primary One pupil and above. The intention is to avoid bias and to meet with the two theoretical framework of the research.

This research will involve two models: (1) Measurement model, which is about measurement and data collection (concerning reliability and Cronbach Alpha); and, (2) Structural model, that specifies how well some variables could predict some other variables (it could be viewed as a regression model). So, as two models are combined, they form a Structural Equation Model (SEM) whereby one could be used as a predictor to predict the other; that to be used in analyzing the research data.

## 7.0 CONCLUSION

Model (1) tries to show the needs for environmental-socio-economic system but however it is still unable to integrate with the A-F-F-I-R-M strategies or success factors. On the other hand, Model (2) was very clear in defining awareness in its role to foster the green strategy but again it is lacking in term of defining its necessity for the future state. This has left a gap between the two models in which the third Model (3) has to be considered. As the research calls for current activities for the future outputs/outcomes, this model seems fit to represent the purpose of the research framework. In order to complete the A-F-F-I-R-M strategy into this framework, the Author would suggest Model (4) below, a refine model and as such proposes the following:

*Figure 4 – An integration of foresight process for business sustainable development*



The Author is to

further

data collection and near future determinants as expected by the government.

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