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TU FAN:

In the face of the challenges of climate change, and the depleting natural resources, humans exploring physical solutions to sustainable development Green technology can be one of the good options. Since 2009, Malaysia has been facilitating application of green technology through implementing the national green technology policy.

Over the centuries, humans have tried to change the weather. People have prayed and used strategies to get more rain and decrease the heat. While we have not intentionally tried to change the climate, we have unintentionally brought about changes that are affecting us today. Starting in the middle 1700s, the Industrial Revolution and the modern agriculture practice began to [INAUDIBLE] amount of human-created carbon dioxide emissions in the atmosphere.

Global carbon dioxide emissions have been rising at an annual average of 2.7% during the past decade. Countries all over the world are used different techniques to reduce carbon emissions. These include establishing power markets, creating policy and legislation, and a green technology. My research has focused on green technology in Malaysia, but do you know what green technology is?

Green technology is a development and preparation of products, equipment, and systems that conserve natural resources, which minimizes and reduces negative environmental impact of human activities. What makes a technology green? It minimizes environmental degradation. It has zero or low green gas emissions. It is safe to use, and it promotes a healthy environmental for all life forms. It conserves energy and natural resources. It relies on renewable resources.

Green technology is not a new concept. People have been trying to go green for decades, including using wave motors, wind turbines, solar power plants, and other [INAUDIBLE] energy ideas. In keeping with global trends, Malaysia has recently proactively promoted and adopt green technology.

In 2009, Malaysia has established the country's ministry of energy, green technology, and the water, also called KeTTHa in Malay, and adopted national green technology policy. The main goal is to contribute to economic growth, and to reduce Malaysia's carbon footprint. The

objective of the policy is to conduct industrial and government through supporting in putting buildings, green transportation, renewable energy use, waste and water management.

The most important components of this policy include setting up institutions and launching fiscal instruments. Setting up institutions is a key strategy in the policy. Since green technology involves many different sectors, it is important to have a structure that involves all the relevant stakeholders to ensure consensus and support. The national green technology and climate change council coordinates green technology issues between the ministries, agencies, the private sector, and other stakeholders that implement policies, in addition, the agencies that assist and contribute to development of green technology, like the Green Technology Corporation. As a focal point for green technology development in Malaysia, green technology cooperation provide facilities and the services in advisory, consultancy, urban energy management, and training. Malaysia green technology [INAUDIBLE] scheme is a most important fiscal instruments to attract private entities to use green technology.

This scheme is for both the users and producers of green technology. It was initially started with 1.5 billion ringgits soft loan and has now increased to 3.5 billion ringgits. The scheme offers a 2% interest subsidy, and 60% of the loan will be guaranteed by the government. From 2009 to November, 2014 351 projects were covered by this scheme, including 243 energy efficiency projects, 17 green building projects, 91 waste and water projects. The majority of projects are located in Kuala Lumpur, Selangor, and the Johor Bahru.

Most of projects focus on electrical electronics subsector, and the biotechnology subsector. Besides actions stipulated from the ministry level, we can also see some progress at a regional level. Iskander Malaysia is an important economic corridor in the southern part of peninsula Malaysia. It has recently begun low carbon programs. The Low Carbon Blueprint Iskander Malaysia 2025 was endorsed by the product minister of Malaysia in the Summit 2012. This blueprint was prepared by a group of urban planners and researchers. Professor Ho Chin Siong from University Technology Malaysia is a main member of this team.

HO CHIN SIONG: I think green technology policy is a very important policy, because you focus on the use of green technology in city building or city planning. So in our country here, we are trying to use energy efficiency technology. We are trying to use renewable energy technology, and also recycling. The solid waste management office, urban planning have to reconsider how to promote green technology, or green energy, or green transport, or green industry in city planning. So I think this is the way forward for our nation [INAUDIBLE]

TU FAN: Also Malaysia has made progress in promoting green technology. Interviews with government officials, researchers, and industrial firms, shows that many pieces as still missing. First, information about green technology and the policies are still very limited. I conducted a questionnaire in 15 factories. It shows that one of the main barriers for industrial firms to use green technology is information.

TEH KEE SIN: The government intention is good. But sometimes the SME are facing another challenges. When it comes to the green technology or green industries, sometimes when we want to get someone to justify that you are in the green industries, sometimes we cannot get the right person, to confirm and justify that we are in that field. Sometimes we may not be able to get the [INAUDIBLE] So this is another challenge that we are facing.

HO CHIN SIONG: Some of this information may not have reached other industrialists. But I think the important part is, actually, this information have to be disseminated to a bigger group. And then I think we strongly feel that the chamber of commerce industry association should look closely, also trying to get to know more about this green-- I think the ministry themselves do know. They are trying ways and means to disseminate this information so that actually more and more people have opportunity to access to this green tech plan.

TU FAN: Did you hear about that green technology policy?

SPEAKER: What?

TU FAN: Green technology.

SPEAKER: I myself, I like all these things. Green energy, now maybe they use more of these solar energy, green energy. I think these are the two main things they are using now. So solar energy-- actually, I myself am using it. Now they use it for as a hobby, but later on when I know more about it, maybe I will use it partially to reduce my company's electricity to replace other supplies to cut down the cost.

TU FAN: Secondly, there is a mismatch between the needs of the firms, and the focus of government programs. According to the questionnaire, industrial firms priorities were waste water, energy utilization, solid waste, energy supply, and then green buildings. However, most of the government incentives go to energy projects, mostly for solar.

PRAKASH We feel that too much emphasis has been given to solar, and we are trying to look into other

NAGALINGAM: areas like thermal energy and also the ocean thermal energy which will lead new energies as well. Because initially the green technology concentration was only by the federal government. We didn't incorporate with the state governments. As you can see, the green technology concept is a federal concept. But these [INAUDIBLE] encouraged all the state governments to have their own green technology concept in state level. So once the state level has their own green technology concept, so this kind of mission can be discussed more in the particular states. So then you can see, now, I do agree with you, the advantage is pretty much low.

TU FAN: To improve the wave implementation, there is urgent need to have a validation of the policy. Until now, there has no assessment of the green technology policy implementation.

PRAKASH
NAGALINGAM: They can do so much in [INAUDIBLE] investment, I mean creating a scenario for the investment, for the green technology players. But then, as I can tell you that we are not really sure how much benefit [INAUDIBLE] by these people, and how much green technology has contributed to the policies of--

TU FAN: Adopting green technology will not be easy for developing countries. The most important reason is that green technology is a comparatively expensive approach. Even in developing countries, we still can see that the argument about if government should invest in green technology. But it is clear from the experience from Malaysia that government incentives are still very important to encourage green technology.

PRAKASH
NAGALINGAM: People say that only developing countries, I mean, concentrate too much on subsidies and incentives, but actually it's a [INAUDIBLE] scenario. Last time I went to Holland, Netherlands. As you can Netherlands is a very developed country, and they really pay much attention to the environment. They are very environment friendly people. But, they have, when it comes to transport industry, the government, in 2013, they came up with this incentive for green, I mean electric vehicles, and also plug-in electric vehicles.

So when the incentive was introduced in 2013, the sales of EV rocketed. And the highest sale [INAUDIBLE] went to Mitsubishi Outlander. It's known as PHEV. It's actually a plug-in hybrid, electric vehicle. But when the incentive ended by 31st December, 2013, sales of electric vehicles in Netherlands dropped tremendously in 2014. So as you can see, the lifestyle of people, the consumers are very much related to incentives and subsidies.

TU FAN: Secondly, for developing countries, having consensus will be equally critical for launching

green technology actions across every area, from construction, to transportation, to industrial. Malaysia has developed incentive policies, but local government needs to be involved for that knowledge to be diffused across the country.

This is also an important law for other non-government institutions such as industrial associations. The way the funding of SME comes now, the funding of SME.

TEH KEE SIN: No, we have no funding. Yeah, we don't have funding because we should be self funded, I think. So sometimes when we talk about the funding for the R and D. R and D is a long term investment. At the beginning stage you may not be earning benefit at all. So you have to come up with a lot of resources. For the green [INAUDIBLE] or green industry or even the [INAUDIBLE] We still have to-- the government [INAUDIBLE] whether it be the [INAUDIBLE] or whether it be the [INAUDIBLE] the government should take the lead. [INAUDIBLE] in terms of the green [INAUDIBLE] green technology, green industry, we are still so much behind some other countries in our region. You know, Japan, Taiwan or even China, I think we are still pretty much behind them. So we hope [INAUDIBLE]

Also blaming some of the ministry. [INAUDIBLE] that never [INAUDIBLE] That's why [INAUDIBLE]

TU FAN: The size of government support, both federal and the local government, and the cooperation from associations, public education and capacity building for the labor force are also important. No matter how difficult it is, people in Malaysia have become aware that behavior change is much important. Without behavior change, nothing will happen.

HO CHIN SIONG: We should not only look at mitigation. We have to look at adaptation. Adaptation means, we see that also we have to how to adapt to this climate change. So mitigation can be expensive. Adaptation should come in together. And I think the most challenging part is that mind change, the mindset. How do you promote low carbon society to the local society so that they have the mind change, the mindset changing from very high consumption to a low consumption society?

So by doing that they could cut down their waste. They could cut down their consumption, and they could actually improve their quality of life, even without having a very high consumption. So I think mindset change is very important. That's why in our campaign we started, we call it, low carbon society. We didn't call it low carbon city.

TU FAN:

In developing countries, the government and the citizens are equally for ways to grow economically, but at the same time, protect environment and mitigate global climate challenges. Critics of green technology is that it's a very expensive investment for developing countries, and that it's not easy to get access and adopt because of knowledge barriers. From 2009, Malaysia has taken steps to implement green technology. Each step has not been easy. The Malaysia experience with promoting green technology can provide insights for other developing and developed countries.

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