National Energy Transition Roadmap: The Future of Malaysia's Climate and Next Economic Boom

Khaw Jia-Shu

Editor, Review Unit, UoRM Law Society

Abstract

In the Q3 of 2023, Prime Minister Dato' Seri Anwar Ibrahim launched the National Energy Transition Roadmap which is a key policy framework which places major emphasis on the acceleration of Malaysia's green and sustainable growth agenda. In his announcement, PM Dato' Seri Anwar Ibrahim stressed that the NETR is a significant milestone for Malaysia, which comprehensively charts Malaysia's trajectory towards a brighter, cleaner, and more resilient future. This paper aims to look at the technical aspects of the roadmaps and analyse how the NETR addresses Malaysia's long-term climate problems and targets, as well as its potential of being the vehicle for Malaysia's next economic boom.

The Climatic Problems

Climate change is a subject that is not mentioned enough in most developing countries for many reasons. Some of the more prominent arguments lie in the fact that for most developing countries, their primary aim is alleviate poverty, enable social mobility and increase the standard of living of its society through whatever means necessary. This is achieved more often than not, at the expense of climate responsibility. Another element of it lies in the fact that the topic and subject of climate change itself is a highly complex and technical subject to understand for most administrators and governments. Even if there's an awareness of climate consequences amongst government officials, the climate agenda often falls in the bottom bracket when in comes to the opportunity cost of policy making, ie. Balancing climate change and the economy.

Thus, the recent announcement and launch of the National Energy Transition Roadmap in August 2023 has received much media coverage and managed to capture the imagination of

civil societies and more importantly the younger more climate-conscious populace.[1] While many may not understand the intricacies of climate change and the technicalities of the climate mitigation and adaptation methods, the population in general is aware of how huge the climate consequences are should we not act on it now. Over the past few years, Malaysia has increasingly been experiencing the effects of climate change.[2] Rising temperatures have led to an exponential increase of extreme weather events such as floods, heat waves, droughts, and wildfires.[3]

These events would not only be detrimental to the Government's treasury and the country's infrastructure but also cause damage and loss to lives, livelihoods and property. Increase in the frequency of floods, landslides and droughts whose spillover detriment have been accompanied by rising food and property prices which is fast becoming unbearable for most Malaysians. For those that ask how does climate change affect food prices? Climate change will affect and significantly decrease the fertility of crops and yields thus decreasing the supply which will lead to higher prices for food that may even be of poorer quality. Increasing droughts and floods as well as rising sea levels will mean more lands will be deemed unhabitable and unsuitable to be developed and build on which would lead to higher housing cost.

It is commendable that the present Government is planning to address and tackle these issues. Although it is impossible for us to talk about all the climate challenges one by one, this paper will try to pinpoint and highlight the few key initiatives under the NETR and how it will help achieve the climate objectives and the economic benefits of it at the same time.

The Levels

There are 6 main energy transition levers recorded in the NETR focusing on the areas of energy efficiency, renewable energy, hydrogen, bioenergy, green mobility, and carbon capture, utilisation and storage (CCUS).[4]

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[1] Malay Mail (2023) *Nik Nazmi: Netr project implementation to ensure fair, Equitable Energy Transition* , *Malay Mail*. Available at: https://www.malaymail.com/news/malaysia/2023/07/30/nik-nazmi-netr-project-implementation-to-ensure-fair-equitable-energy-transition/82584 (Accessed: 28 November 2023).

[2] Lum, D.M. (2022) *The effects of climate change in Malaysia*, *The Star*. Available at: https://www.thestar.com.my/lifestyle/health/the-doctor-says/2022/07/05/the-effects-of-climate-change-in-malaysia (Accessed: 28 November 2023).

[3] Yin, S.L. (2022) *Khazanah Research Institute*, *A Climate Strategy for Malaysia Pressure Global Big Polluters, Reduce Local Climate Vulnerabilities*. Available at: https://www.krinstitute.org/assets/contentMS/img/template/editor/Views%20YSL%2030082022%20-%20Malaysian%20Climate%20Strategy.pdf (Accessed: 28 November 2023).

[4] Ministry of Economy and Ramli, R. (2023) *National Energy Transition Roadmap: Energizing the nation, Powering our future*. Putrajaya, Putrajaya: Ministry of Economy. Available at:

1st Lever

The 1st lever is energy efficiency. The key point in the whole energy efficiency discussion is about preventing wastage or leakage in achieving the optimisation of resources. A proposed *Energy Efficiency and Conservation Bill 2023* has been passed in the Dewan Rakyat in October 2023 subject to approvals from the Dewan Negara and Royal Assent, this bill will come into effect in the very near future.[5]

The passing of the proposed legislation is vital in terms of strengthening the legal framework related to energy efficiency and conservation practices to ensure full involvement at various levels. While we welcome the government's proactive steps in implement this, more needs to be done in terms of disseminating information and educating the public. While it is true that the focus of enhancing energy efficiency is mostly targeted at large energy consuming industries, there is also a need to cut down unnecessary energy usage amongst households and small-medium enterprises (SME), as SMEs account for 80% of total energy consumption.

2nd Lever

The 2nd lever focuses on renewable energy. It is undeniable that Malaysia is blessed with an abundance of natural resources and hydrocarbon reserves, and the country and its populace has for a long time benefited massively from the profits that the state earned from monetizing on these natural resources. The primary industries such as rubber and palm oil plantations for example generate huge profits for the state in terms of export value, not to mention natural gas, petroleum and oil. This has enabled the government to subsidise products to ease household spending burdens.

However, like many other resource rich countries around the world, due to how valuable and profitable these commodities and natural resources are, Malaysia has got a problem when it comes to diversification in its economy which is also dubbed as the "resource curse"[6]. While the issue is not as severe as compared to other oil rich states such as Angola, Brunei, Venezuela and the middle eastern countries, it is something that has in many ways indirectly slowed down Malaysia's progression in the manufacturing, R&D, and services sector. The highlighted new

https://www.ekonomi.gov.my/sites/default/files/2023-09/National%20Energy%20Transition%20Roadmap_0.pdf (Accessed: 04 November 2023).

[5] Sallehuddin, Q. and Radhi, N.A.M. (2023) *Dewan Rakyat passes energy efficiency and conservation bill 2023, to regulate energy use and conservation: New straits times*, *NST Online*. Available at: https://www.nst.com.my/news/nation/2023/10/965761/dewan-rakyat-passes-energy-efficiency-and-conservation-bill-2023-regulate (Accessed: 28 November 2023).

[6] Coren, M.J. (2021) *Climate action is poised to punch a $9 trillion hole in petrostates' budgets*, *Quartz*. Available at: https://qz.com/1970294/economies-reliant-on-oil-will-lose-trillions-to-climate-action (Accessed: 28 November 2023).

focus on renewable energy is undoubtedly a positive development as it incentivizes the private sector to invest more into new areas and thus creating more job opportunities that are higher up the value chain.

3rd Lever

The 3rd lever places specific emphasis on hydrogen. While many have argued that Malaysia should not be wasting time on hydrogen, since the technology of utilising hydrogen as an energy source remains in its infancy and that there is as of now still little supply and demand for hydrogen. However, there is genuine cause for Malaysia's optimism in the hydrogen sector. For one, Malaysia has got an ample untapped stockpile of hydrogen particularly in the state of Sarawak.[7] The Sarawak state government has had a hydrogen energy roadmap since 2005 and they have pumped a considerable number of resources on hydrogen research and development.[8]

As of now, the hydrogen produced in Malaysia is not merely restricted to research and development, but it has now been utilised as a green energy source that is capable of powering trams and bikes while also acting as a secondary energy source to power factories and electrification of towns. The hydrogen market is something that is worth exploring by the Malaysian government as it has the potential to be an extremely profitable industry.

4th Lever

The 4th lever of the NETR focuses on bioenergy. Bioenergy is renewable energy derived from biological materials, known as biomass, which are directly or indirectly produced by photosynthesis. Common biomass materials include plants, wood, wood products, and waste. These materials are usually burned, converting the energy within into solid, liquid, or gaseous fuels used to produce heat and electricity, or used as transport fuel. To put it simply, bioenergy essentially starts off as solar energy, which is then transformed into another renewable energy, which makes it highly advantageous. Besides, bioenergy is also commonly derived from waste materials that have already been created, hence adds value to what would otherwise be thrown into a landfill.[9]

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[7] Liew, J.J.S. and leong, Y.L. (2022) *My say: Sarawak's Green Hydrogen plans will take some doing*, *The Edge Malaysia*. Available at: https://theedgemalaysia.com/article/my-say-sarawaks-green-hydrogen-plans-will-take-some-doing (Accessed: 28 November 2023).

[8] Amirul (2021) *Hydrogen as an attractive new energy source/carrier - MIDA: Malaysian Investment Development Authority*, *MIDA*. Available at: https://www.mida.gov.my/hydrogen-as-an-attractive-new-energy-source-carrier/ (Accessed: 28 November 2023).

[9] *What is Bioenergy & Why are we getting excited about it?* (2022) *Energy Watch: Global & Regional Energy Insights, Thought leadership, & Conversations*. Available at: https://www.energywatch.com.my/blog/2022/12/22/what-is-bioenergy-why-are-we-getting-excited-about-

To put it into context, Malaysia is already a prominent bioenergy player for quite some time now. Malaysia has the *National Biofuel Policy* which was launched 2006 to encourage the use of sustainable and viable sources of biomass energy. Under this policy, the government identified biomass as one of five potential sources of renewable energy for the country's energy roadmap. Due to the country's extensive agricultural operations, at least 168 million tons of biomass is produced annually from timber, oil palm waste, rice husks, coconut trunk fibres and sugar cane waste. Municipal waste also contributes to this figure.[10]

It is well-documented that Malaysia is one of the biggest palm oil producing countries in the world[11], and that over the past few years there has been shocks and uncertainties surrounding the palm oil industry due to multiple reasons such as allegations of unsustainability, health hazards etc. Tapping into the bioenergy sphere would allow Malaysia to repackage our palm oils and timber waste into energy which can use and potentially export.[12]

5th Lever

The 5th lever focuses on green mobility. Green mobility refers to transporting goods and people from one place to another in a more environmentally friendly manner. One of the most talk-subject of green mobility lies in electric vehicles (EV). Now since the Madani government came into power in September 2022, there has been a clear shift in policy in terms of promoting the use of EVs. We have seen that there have been drastic policy measures which has been undertaken that promotes the use of EVs such as the removal of blanket subsidies of petrol, income tax exemptions for those spending on EV charging facilities as well as the granting preferential treatment to welcome the arrival of Tesla into the Malaysian market.[13]

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it/#:~:text=In%20total%2C%20bioenergy%20makes%20up,potential%20that%20still%20remains%20untapped. (Accessed: 28 November 2023).

[10] *What is Bioenergy & Why are we getting excited about it?* (2022) *Energy Watch: Global & Regional Energy Insights, Thought leadership, & Conversations*. Available at: https://www.energywatch.com.my/blog/2022/12/22/what-is-bioenergy-why-are-we-getting-excited-about-it/#:~:text=In%20total%2C%20bioenergy%20makes%20up,potential%20that%20still%20remains%20untapped. (Accessed: 28 November 2023).

[11] Times, N.S. (2023) *[exclusive] Jokowi: Malaysia, Indonesia would be world's largest palm oil producers if they team up [NSTTV]: New straits times*, *NST Online*. Available at: https://www.nst.com.my/news/nation/2023/05/906848/exclusive-jokowi-malaysia-indonesia-would-be-worlds-largest-palm-oil (Accessed: 28 November 2023).

[12] Reporters, F. (2022) *EU ban on palm oil products concerning, says Mpob*, *EU ban on palm oil products concerning, says MPOB*. Available at: https://www.freemalaysiatoday.com/category/highlight/2022/12/13/eu-ban-on-palm-oil-products-concerning-says-mpob/ (Accessed: 28 November 2023).

[13] Online, T.S. (2023) *Budget 2024: Major incentives for EV users*, *The Star*. Available at: https://www.thestar.com.my/news/nation/2023/10/13/budget-2024-major-incentives-for-ev-users#:~:text=According%20to%20Anwar%2C%20present%20income,more%20years%2C%22%20added%20Anwar. (Accessed: 28 November 2023).

While consumer based electrical vehicle such as electric cars and motorcycles are the ones that are at the centre of attention to the masses. Under the NETR, there is also huge emphasis in revamping the public transport system to make it "greener". In the recent budget 2024, it has been announced that 150 electric buses will be acquired by Prasarana Malaysia Berhad and three bus depots will be built with a RM600mil allocation.[14] While the government is also planning on studying the long-term viability of hydrogen buses and trams that are currently on trial in Sarawak.

6th Lever

The 6th and final lever deals with carbon capture, utilisation and storage (CCUS). CCUS refers to a suite of technologies that enable the mitigation of carbon dioxide (CO_2) emissions from large point sources such as power plants, refineries and other industrial facilities, or the removal of existing CO_2 from the atmosphere.

CCUS is very distinct to the 5 levers above as it is totally different operation-wise. Whist the first 5 seeks to cut down carbon emissions, the CCUS primary function and objective lies in decarbonising the energy sector. To achieve the lofty goals of Net Zero in 2050, CCUS would have to play an instrumental role in it as countries around the world seeks to achieve those targets. Emitting less is simply not enough, being able to decarbonise is not a luxury but a necessity. In this instance, the Economic Minister Rafizi Ramli has announced in November 2023 that Malaysia has got ambitious plans to be the first nation in ASEAN to have sound policies for Carbon Capture, Utilisation and Storage (CCUS) activities, highlighting the benefits of environmental care as well as the potential economic benefits as a result of this growth boom in CCUS which has seen the USA allocating 12 billion USD under the Infrastructure Investment and Jobs Act and the United Kingdom (U.K) funding 20 billion pounds worth of incentives in CCUS related activities.[15]

[14] Online, T.S. (2023) *Budget 2024: Major incentives for EV users*, *The Star*. Available at: https://www.thestar.com.my/news/nation/2023/10/13/budget-2024-major-incentives-for-ev-users#:~:text=According%20to%20Anwar%2C%20present%20income,more%20years%2C%22%20added%20Anwar. (Accessed: 28 November 2023).

[15] Loheswar, R. (2023) *Rafizi wants Malaysia to be a leader in carbon capture, utilisation and storage activities in ASEAN*, *Malay Mail*. Available at: https://www.malaymail.com/news/malaysia/2023/11/23/rafizi-wants-malaysia-to-be-a-leader-in-carbon-capture-utilisation-and-storage-activities-in-asean/103750 (Accessed: 28 November 2023).

Thoughts

Since independence more than 6 decades ago, Malaysia largely relies on coal and natural gas for its surging energy demand to support its industrial, residential, and other sectors.[16] However, the science and data are clear for all to see. Continuous reliance on these is simply not sustainable nor is it climate friendly. While it well-known that Malaysia has got an abundance of natural gas deposits to draw and leverage on, At the current exploration rates, scientists predict that we are likely to run out of petroleum by 2052 and natural gas by 2060.[17] Therefore, it is crucial and high time for Malaysia to start developing its renewable energy right away to ensure its future energy security.

The NETR showcases the current Madani administration's desire, ambitions and seriousness in tackling climate change while charting its new economic agenda to move Malaysia into a high-income economy. Contrary to the argument put forward by most 'climate denialist', the climate emergency is not a woke or ultra-liberal agenda trying to dictate what Malaysia does with its land and resources, but an inevitable reality that if we do nothing now. There will perhaps be nothing left for Malaysia in 2 decades time. What the NETR also do is that with a clear government guideline and policy, it gives policy assurances and confidence to the private sector to invest in new climate-friendly and sustainable energy industries.[18] This will help expedite the growth of green economy, green energy and green technologies and will create more high-value industries and job opportunities that will further thrust the Malaysian economy into a higher gear.

While Malaysia might not be the biggest polluters in the world, it nevertheless still has got a global and moral responsibility to ensure that that the country plays its part in countering the climate emergency. The climate problem is not a national problem, nor is it a regional problem. It is a global problem, and it is already at a pressing stage. The challenge of balancing climate responsibility while making continuous economic progress falls in the hands of the government and it is safe to say that under the present administration, it is at least taking proactive steps to address them. The NETR itself is not the golden bullet to resolve all problems,

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[16] S. (2023, May 21). *Why is Sustainable Energy Vital for Malaysia and What are the Main Challenges?* https://bizsu.co/blog/why-is-sustainable-energy-vital-for-malaysia-and-what-are-the-main-challenges#:~:text=Malaysia%2C%20one%20of%20the%20economic,but%20also%20addicted%20to%20them.

[17] Daim, N., & Basyir, M. (2023, March 29). *M'sia has 15yrs of petroleum reserves left, can last up to 40 with right tech, investment*. NST Online. https://www.nst.com.my/news/nation/2023/03/894080/msia-has-15yrs-petroleum-reserves-left-can-last-40-right-tech-investment?utm_source=nst&utm_medium=mostpoplatest

[18] *Malaysia to invest heavily in green and digital economy - MIDA | Malaysian Investment Development Authority*. (2023, May 30). MIDA | Malaysian Investment Development Authority. https://www.mida.gov.my/mida-news/malaysia-to-invest-heavily-in-green-and-digital-economy/

but at least it is a start, and we are hopeful that under the current prime minister as well as his cabinet which is one of the youngest Malaysia has had in generations will be able to do more about the climate crisis.

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