

# Second-Party Opinion

## TNB Transition Finance Framework



## Evaluation Summary

### Use of Proceeds Instruments

**Sustainability Bond Guidelines 2021, Green Bond Principles 2021, Social Bond Principles 2023, Green Loan Principles 2023 and Social Loan Principles 2023**

Sustainalytics is of the opinion that the TNB Transition Finance Framework is credible and impactful and aligns with the four core components of the Sustainability Bond Guidelines 2021, Green Bond Principles 2021, Social Bond Principles 2023, Green Loan Principles 2023 and Social Loan Principles 2023. The eligible categories for the use of proceeds – Renewable Energy, Energy Efficiency, Clean Transportation, Green Buildings, Affordable Basic Infrastructure and Services, Employment Generation and Access to Essential Services- Education – are aligned with those recognized by the applicable principles and are expected to lead to positive environmental and social impacts. Sustainalytics considers low-carbon power generation to be credible from a transition perspective.

### ASEAN Sustainability Bond Standards, ASEAN Green Bond Standards and ASEAN Social Bond Standards

The standards provide guidance to issuers and communicate more specifically on what issuers should do to issue credible green, social and sustainability bonds in ASEAN countries. Sustainalytics is of the opinion that the eligible green and social project categories under the TNB Transition Finance Framework align with the ASEAN Sustainability Bond Standards, ASEAN Green Bond Standards and ASEAN Social Bond Standards.

### Climate Transition Finance Handbook

Sustainalytics has evaluated TNB's transition governance, strategy, decarbonization targets and intentions to report on transition progress and finds TNB to be partially aligned with the recommendations of the Climate Transition Finance Handbook 2023. TNB's long-term target of achieving net zero emissions by 2050 is in alignment with the Transition Pathway Initiative's (TPI) 1.5° and 2° scenarios, however its interim targets do not align with the TPI's Decarbonization Pathway for the Electricity Utilities sector.

<b>Evaluation Date</b>	July 26, 2024
<b>Issuer/Borrower</b>	Kuala Lumpur,
<b>Location</b>	Malaysia

The UoPs contribute to the following SDGs:



## Table of Contents

<b>Evaluation Summary</b> .....	<b>1</b>
<b>Table of Contents</b> .....	<b>2</b>
<b>Scope of Work and Limitations</b> .....	<b>3</b>
<b>Introduction</b> .....	<b>4</b>
<b>Sustainalytics' Opinion</b> .....	<b>5</b>
Section 1: Alignment of the Framework with Relevant Market Standards .....	5
Section 2: Assessment of TNB's Sustainability Strategy .....	13
Section 3: Impact of the UoPs .....	16
<b>Conclusion</b> .....	<b>18</b>
<b>Appendix Alignment with the ASEAN Sustainability Bond Standards, ASEAN Green Bond Standards and ASEAN Social Bond Standards</b> .....	<b>19</b>
<b>About Sustainalytics, a Morningstar Company</b> .....	<b>21</b>

## Scope of Work and Limitations

Sustainalytics' Second-Party Opinion reflects Sustainalytics' independent<sup>1</sup> opinion on the alignment of the TNB Transition Finance Framework with current market standards. As part of this Second-Party Opinion, Sustainalytics assessed the following:

- The Framework's alignment with the Sustainability Bond Guidelines 2021 (SBG), Green Bond Principles 2021 (GBP), Social Bond Principles 2023 (SBP) as administered by ICMA;<sup>2</sup> Green Loan Principles 2023 (GLP) and Social Loan Principles 2023 (SLP), as administered by LMA, APLMA and LSTA;<sup>3</sup> and ASEAN Sustainability Bond Standards 2018 (ASEAN SUS), ASEAN Green Bond Standards 2018 (ASEAN GBS) and ASEAN Social Bond Standards 2018 (ASEAN SBS) as administered by ACMF;<sup>4</sup>
- The credibility and anticipated positive impacts of the use of proceeds;
- The issuer's sustainability strategy, performance and sustainability risk management;
- The alignment with the recommendations of the Climate Transition Finance Handbook 2023;<sup>5</sup>

As part of this engagement, Sustainalytics held conversations with various members of TNB's management team to understand the sustainability impact of its business processes and the core components of the Framework. TNB representatives have confirmed that:

- (1) They understand it is the sole responsibility of TNB to ensure that the information provided is complete, accurate and up to date;
- (2) They have provided Sustainalytics with all relevant information;
- (3) Any provided material information has been duly disclosed in a timely manner.

Sustainalytics also reviewed relevant public documents and non-public information. This document contains Sustainalytics' opinion of the Framework and should be read in conjunction with that Framework. Any update of the present Second-Party Opinion will be conducted according to the agreed engagement conditions between Sustainalytics and TNB. Sustainalytics' Second-Party Opinion assesses alignment of the Framework with current market standards but does not provide any guarantee of alignment nor warrants alignment with any future versions of such standards.

For use of proceeds instruments, Sustainalytics relied on its internal taxonomy, version 1.15, which is informed by market practice and Sustainalytics' expertise as an ESG research provider. This Second-Party Opinion:

- addresses the anticipated impacts of eligible projects but does not measure their actual impact. Reporting and measuring impact of projects financed under the Framework is the responsibility of the Framework owner.
- opines on the potential allocation of proceeds but does not guarantee their realized allocation towards eligible activities.

No information Sustainalytics provides under the present Second-Party Opinion shall be considered as being a statement, representation, warrant or argument in favour or against the truthfulness, reliability or completeness of any facts or statements and related circumstances that TNB may have disclosed to Sustainalytics for the purpose of this Second-Party Opinion.

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<sup>1</sup> When operating multiple lines of business that serve a variety of client types, objective research is a cornerstone of Sustainalytics and ensuring analyst independence is paramount to producing objective, actionable research. Sustainalytics has therefore put in place a robust conflict management framework that specifically addresses the need for analyst independence, consistency of process, structural separation of commercial and research (and engagement) teams, data protection and systems separation. Last but not the least, analyst compensation is not directly tied to specific commercial outcomes. One of Sustainalytics' hallmarks is integrity, another is transparency.

<sup>2</sup> The Sustainability Bond Guidelines, Green Bond Principles and Social Bond Principles are administered by the International Capital Market Association and are available at: <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/>

<sup>3</sup> The loan-related principles and guidelines are administered by the Loan Market Association, Asia Pacific Loan Market Association and Loan Syndications and Trading Association and are available at: [https://www.lsta.org/content/?\\_industry\\_sector=guidelines-memos-primary-market](https://www.lsta.org/content/?_industry_sector=guidelines-memos-primary-market)

<sup>4</sup> The ASEAN Sustainability Bond Standards, ASEAN Green Bond Standards and ASEAN Social Bond Standards are administered by the ASEAN Capital Markets Forum and are available at: <https://www.theacmf.org/sustainable-finance/publications>

<sup>5</sup> The Climate Transition Finance Handbook is administered by the International Capital Market Association and is available at: <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/>

## Introduction

Tenaga Nasional Berhad (“TNB” or the “Company”) is an electricity utility company headquartered in Kuala Lumpur, Malaysia. TNB’s core business comprises an end-to-end electricity supply chain, which includes electricity generation, transmission, distribution and retail. TNB is Malaysia’s primary electricity generation enterprise, supplying electricity in Peninsular Malaysia, Sabah and the Federal Territory of Labuan with international business operations and presence in eight countries including Ireland, the United Kingdom, Kuwait (operation and maintenance services), Türkiye, Saudi Arabia, Pakistan (operation and maintenance services), Cambodia (technical advisory services) and Australia. As of 31 December 2023, TNB employed 34,543 and serves over 10.85 million customers throughout Peninsular Malaysia, Sabah and the Federal Territory of Labuan.<sup>6</sup>

TNB has developed the TNB Transition Finance Framework dated July 2024 (the “Framework”) under which it intends to issue green, social, sustainability and transition bonds, loans and sukuks. TNB has engaged Sustainalytics to review the Framework and provide a Second-Party Opinion on the Framework’s alignment with the Sustainability Bond Guidelines 2021, Green Bond Principles 2021, Social Bond Principles 2023, Green Loan Principles 2023, Social Loan Principles 2023, ASEAN Sustainability Bond Standards 2018, ASEAN Green Bond Standards 2018 and ASEAN Social Bond Standards 2018, and the recommendations of the Climate Transition Finance Handbook 2023. The Framework has been published in a separate document.<sup>7</sup>

Under use of proceeds instruments, the proceeds will finance or refinance, in whole or in part, existing and future projects that are expected to create positive environmental and social outcomes in Europe, Asia and Australia.

The Framework defines eligibility criteria in the following areas:

1. Renewable Energy
2. Energy Efficiency
3. Green Buildings
4. Clean Transportation
5. Low-Carbon Power Generation
6. Affordable Basic Infrastructure and Services
7. Employment Generation
8. Access to Essential Services- Education

<sup>6</sup> TNB has communicated the information to Sustainalytics.

<sup>7</sup> The TNB Transition Finance Framework is available on TNB’s website at: <https://www.tnb.com.my/>

## Sustainalytics' Opinion

### Section 1: Alignment of the Framework with Relevant Market Standards

#### Alignment with Use of Proceeds Principles

Sustainalytics is of the opinion that the TNB Transition Finance Framework is credible, impactful and aligns with the GBP, SBP, GLP, SLP, ASEAN SUS, ASEAN GBS and ASEAN SBS. TNB intends to align the Framework with the ICMA's guidance on green, social and sustainability sukuk,<sup>8</sup> the Malaysia's Securities Commission (SC) Sustainable and Responsible Investment ("SRI") Sukuk Framework,<sup>9</sup> ASEAN Taxonomy for Sustainable Finance Version 2<sup>10</sup> and the ASEAN Transition Finance Guidance.<sup>11</sup> Sustainalytics highlights the following elements of TNB's Transition Finance Framework:



#### Use of Proceeds

##### Overall Assessment of Use of Proceeds

Use of Proceeds Category	Activity	Description and Sustainalytics' Assessment
Renewable Energy	Solar power generation	<ul style="list-style-type: none"> <li>- Investment in construction, research and development (R&amp;D), acquisition, installation, maintenance and operation of solar power generation facilities according to the following criteria:                             <ul style="list-style-type: none"> <li>▪ Onshore and offshore power generation through solar PV, including solar rooftop and floating farms.</li> <li>▪ Concentrated solar plant facilities where more than 85% of the electricity generated is derived from solar energy sources.</li> </ul> </li> <li>- Sustainalytics considers these expenditures to be aligned with market practice.</li> </ul>
	Wind power generation	<ul style="list-style-type: none"> <li>- Investment in construction, R&amp;D, acquisition, installation, maintenance and operation of onshore and offshore wind power facilities.</li> <li>- Sustainalytics considers these expenditures to be aligned with market practice.</li> </ul>
	Hydropower generation	<ul style="list-style-type: none"> <li>- Investment in construction, R&amp;D, acquisition, installation, maintenance and operation of hydropower facilities according to the following criteria:                             <ul style="list-style-type: none"> <li>▪ For facilities that became operational before 2020, TNB intends to finance assets which adhere to one of the following criteria: i) run-of-river facilities without artificial reservoir or low storage capacity; ii) having a power density greater than 5 W/m<sup>2</sup>; and iii) having a life cycle GHG emissions intensity from electricity generation lower than 100 gCO<sub>2</sub>e/kWh.</li> <li>▪ For facilities that became operational since 2020, TNB intends to finance assets which adhere to one of the following criteria: meeting all of the following requirements: i) run-of-river facilities without artificial reservoir or low storage capacity; ii) having a power density greater than 10 W/m<sup>2</sup>; iii) having a life cycle GHG emissions intensity from electricity generation lower than 50 gCO<sub>2</sub>e/kWh.</li> </ul> </li> </ul>

<sup>8</sup> ICMA, "ICMA, IsDB and LSEG publish guidance on green, social and sustainability sukuk", (2024), at: <https://www.icmagroup.org/News/news-in-brief/icma-publishes-guidance-on-green-social-and-sustainability-sukuk/>

<sup>9</sup> Sustainalytics Second-Party Opinion is limited to assessing alignment of the Framework with the principles listed in the Scope of Work and Limitations above. TNB has informed to Sustainalytics that the securities commissions of Malaysia have set out the requirements for the issuance of SRI Sukuk within the SRI Sukuk Framework of 2019. As such, TNB references the SC's SRI Sukuk Framework in the development of its Framework.

<sup>10</sup> ASEAN taxonomy for Sustainable Finance Version 2, at: <https://asean.org/wp-content/uploads/2023/03/ASEAN-Taxonomy-Version-2.pdf>

<sup>11</sup> ASEAN Transition Finance Guidance, at: <https://www.theacmf.org/images/downloads/pdf/ASEAN%20Transition%20Finance%20Guidance%20Version%201%20-%20FINAL%2017%20Oct%202023.pdf>

	<ul style="list-style-type: none"> <li>▪ Eligibility for all hydropower projects under the Framework will require an environmental and social impact assessment conducted by a credible third party to ensure that there are no significant risks, controversies or anticipated negative impacts.</li> </ul> <p>- Sustainalytics considers these expenditures to be aligned with market practice.</p>
Biomass Energy	<p>- Investment in construction, R&amp;D, acquisition, installation, maintenance and operation of bioenergy generation facilities, including biofuel production and energy generation, using waste feedstock as follows:</p> <ul style="list-style-type: none"> <li>▪ Forestry and agriculture residues, such as wood chips, sawdust straw or cane trash.</li> <li>▪ Palm kernel shells or palm oil mill effluent sourced from palm oil operations certified by the Roundtable on Sustainable Biomaterials (RSB)<sup>12</sup> or the Roundtable on Sustainable Palm Oil (RSPO).<sup>13</sup></li> <li>▪ Wastewater and sewage sludge, excluding those sourced from fossil fuel operations.</li> <li>▪ Sustainably sourced used cooking oil (UCO). TNB has communicated to Sustainalytics that it considers sourcing only UCO certified by the International Sustainability and Carbon Certification (ISCC) Plus under the Framework.<sup>14</sup></li> </ul> <p>- Sustainalytics considers these expenditures to be aligned with market practice.</p>
Waste to energy	<p>- Investment in construction, R&amp;D, acquisition, installation, maintenance and operation of waste-to-energy facilities using municipal solid waste where most of the recyclables are segregated before energy conversion.</p> <p>- TNB has confirmed to Sustainalytics that plastics, rubber and tire-derived fuels (TDF) will be excluded from being used as feedstock.</p> <p>- Sustainalytics recognizes that energy from waste could take out of circulation potentially recyclable materials and undermine two of the main objectives of a zero-waste circular economy, i.e., waste prevention and recycling. Additionally, for such projects to have low emissions intensities, the composition of residual waste, particularly fossil carbon content, is a crucial consideration. However, Sustainalytics also notes that due to constraints on recycling in many parts of the world, energy from waste can offer a better residual waste management option than landfills in many cases. Sustainalytics, therefore, encourages TNB to promote the removal of increasing amounts of recyclables, especially plastics and metals, and the monitoring of thermal efficiency of the financed facilities.</p>
Green hydrogen production	<p>- Investment in construction, R&amp;D, acquisition, installation, maintenance and operation of facilities for production of green hydrogen through electrolysis using energy from renewable sources.</p> <p>- Sustainalytics considers these expenditures to be aligned with market practice.</p>
Renewable grid infrastructure	<p>- Development, construction, installation and maintenance of grid infrastructure meeting one of the below criteria:</p> <ul style="list-style-type: none"> <li>▪ Dedicated to renewable energy.</li> <li>▪ Supporting the integration of renewables to increase the overall share of renewable energy in the grid to 90%.</li> <li>▪ Where integration of renewable energy falls short of 90% target but continues to grow, a pro-rata approach will be employed to determine the allocation to grid development and maintenance.</li> </ul> <p>- Sustainalytics considers these expenditures to be aligned with market practice.</p>
Energy storage	<p>- Investment in construction, R&amp;D, acquisition, installation, maintenance and operation of energy storage technologies and equipment connected to renewables or its grid infrastructure including battery and energy storage system (BESS) facilities.</p> <p>- Sustainalytics considers these expenditures to be aligned with market practice.</p>

<sup>12</sup> RSB: [https://rsb.org/library/?parent-lib-cat=21#block\\_49616230d7f1fd63642f3e952ae2594a](https://rsb.org/library/?parent-lib-cat=21#block_49616230d7f1fd63642f3e952ae2594a)

<sup>13</sup> RSPO: <https://rspo.org/as-an-organisation/our-standards/>

<sup>14</sup> ISCC Plus: <https://www.iscc-system.org/certification/iscc-certification-schemes/iscc-plus/>

	Carbon capture, utilization and storage (CCUS)	<ul style="list-style-type: none"> <li>- Investment in operation, construction and maintenance of carbon capture utilisation and storage (CCUS) technologies that lead to carbon sequestration in soil.</li> <li>- Bioenergy and carbon capture and storage including direct air capture using microalgae.</li> <li>- Sustainalytics considers these expenditures to be aligned with market practice.</li> </ul>
<b>Energy Efficiency</b>	Energy efficiency in transmission and distribution, end-user efficiency and demand management	<ul style="list-style-type: none"> <li>- Investments in development, manufacture, R&amp;D and installation of technologies or components, such as:                             <ul style="list-style-type: none"> <li>▪ Advanced metering infrastructure;</li> <li>▪ Smart grid technologies;</li> <li>▪ Smart transformers;</li> <li>▪ Smart meters excluding the meters designed for natural gas;</li> <li>▪ Monitoring and control automation devices;</li> <li>▪ Streetlight replacement with LED programme;</li> <li>▪ High efficiency windows, energy-efficient HVAC systems, building management systems.</li> </ul> </li> <li>- TNB has confirmed to Sustainalytics that financing under this category will exclude technologies or components designed or intended for processes that are inherently carbon intensive, primarily driven or powered by fossil fuels, such as oil or gas-fired boilers, and cogeneration and combined heat and power (CHP). Further, it will exclude the applications to transmission lines connected or dedicated to fossil fuel power.</li> <li>- Sustainalytics considers these expenditures to be aligned with market practice. TNB is encouraged to report on estimated or achieved energy efficiency gains, where feasible.</li> </ul>
<b>Green Buildings</b>	Construction, acquisition or retrofit of green buildings	<ul style="list-style-type: none"> <li>- Investments related to the construction, acquisition or retrofit of residential or commercial buildings that have achieved or are expected to achieve one of the following levels of green buildings certification:                             <ul style="list-style-type: none"> <li>▪ Green Building Index (Gold or above);<sup>15</sup></li> <li>▪ LEED (Gold or above);<sup>16</sup></li> <li>▪ BREEAM (Excellent or above);<sup>17</sup></li> <li>▪ GreenRE (Gold or above);<sup>18</sup></li> </ul> </li> <li>- Sustainalytics considers these expenditures to be aligned with market practice.</li> </ul>
	Retrofit, renovation or refurbishment of green buildings	<ul style="list-style-type: none"> <li>- Investment related to the retrofit, renovation or refurbishment of buildings that result in at least a 30% improvement in energy efficiency over the initial or pre-retrofit performance.</li> <li>- Sustainalytics considers these expenditures to be aligned with market practice.</li> </ul>
<b>Clean Transportation</b>	Transport fleet	<ul style="list-style-type: none"> <li>- Investment related to acquisition, modernization, R&amp;D and maintenance of vehicles with zero direct GHG emissions as per the following criteria:                             <ul style="list-style-type: none"> <li>▪ Electric vehicles, including passenger vehicles, such as buses, vans, corporate and operational vehicles;</li> <li>▪ Infrastructure for electric vehicles (EVs), such as charging infrastructure, equipment and stations, power supply, charging speed, maintenance of infrastructure and safety standards;</li> <li>▪ Expenditures related to analytical tools for EV infrastructure planning, such as EV telematics and Internet of Things;</li> <li>▪ EV charging station networks, including fast charging points, installation of energy efficiency monitoring and solar photovoltaic systems;</li> <li>▪ TNB has confirmed to Sustainalytics that it will exclude new construction and existing road infrastructure retrofits, including roads, bridges and parking facilities; and infrastructure dedicated to the transport or storage of fossil fuels.</li> </ul> </li> <li>- Sustainalytics considers these expenditures to be aligned with market practice.</li> </ul>
	EV parking	<ul style="list-style-type: none"> <li>- Investment in EV parking facilities designated specifically for EVs.</li> </ul>

<sup>15</sup> Green Building Index, at: <https://www.greenbuildingindex.org/>

<sup>16</sup> LEED, at: <https://www.usgbc.org/leed>

<sup>17</sup> BREEAM, at: <https://bregroup.com/products/breeam/>

<sup>18</sup> GreenRE, at: <https://www.greenre.org/>

		<ul style="list-style-type: none"> <li>- TNB has communicated to Sustainalytics that such parking spaces will be distinguished by a unique colour and accompanied by signage explicitly indicating their exclusive use for EVs, similar to parking spaces designated for individuals with disabilities.</li> <li>- Sustainalytics understands that EV infrastructure such as parking lots may enable adoption of low-carbon transportation. However, Sustainalytics also notes that such parking lots may not have mechanisms to prevent parking of conventional fossil fuel-powered vehicles and hence considers such expenditures as business-as-usual. Further, Sustainalytics encourages TNB to report on the environmental benefits achieved from financing such infrastructure.</li> </ul>
<p style="text-align: center;"><b>Low-Carbon Power Generation</b></p>	<p style="text-align: center;">New gas-fired power plants</p>	<ul style="list-style-type: none"> <li>- Investment in construction, development, acquisition, installation, maintenance and operation of new gas-fired power plants, including CHP, financing the below expenditures:                             <ul style="list-style-type: none"> <li>▪ New gas-fired power generation facilities with a life cycle GHG emissions intensity from the generation of electricity below 100 gCO<sub>2</sub>e/kWh or with direct GHG emissions below 288 gCO<sub>2</sub>e/kWh;</li> <li>▪ Application of CCUS technologies in new gas-fired power plants with life cycle GHG emissions intensity from the generation of electricity below 100 gCO<sub>2</sub>e/kWh or with direct GHG emissions below 288 gCO<sub>2</sub>e/kWh.</li> </ul> </li> <li>- Sustainalytics notes the following criteria applicable to financing new gas-fired assets:                             <ul style="list-style-type: none"> <li>▪ TNB intends to transition away from coal or oil power or to provide services for seasonal peaks, storage or high-temperature heat for industries;</li> <li>▪ TNB has confirmed to Sustainalytics that it will install measurement equipment to monitor physical emissions, such as methane leakages, introduce a leak detection and repair programme during the construction phase or report physical measurement of methane emissions to reduce leaks during the operational phase of the project;</li> <li>▪ Methane leakage measurement or its estimation from the supply chain, if any;</li> </ul> </li> <li>- Sustainalytics views the expenditures in this category to be credible transition activities as the gas-fired power generation facilities expected to be financed comply with the TPI's below 2 scenario benchmark value for the year 2027 for the electricity utilities sector.<sup>19</sup></li> </ul>
	<p style="text-align: center;">Existing gas-fired power plants</p>	<ul style="list-style-type: none"> <li>- Investment in construction, development, R&amp;D, acquisition, installation, maintenance and operation related to retrofitting of existing gas-fired power plants (including CHP units), financing the below expenditures:                             <ul style="list-style-type: none"> <li>▪ Application of CCUS technologies in the existing gas-fired power plants with life cycle GHG emissions intensity from the generation of electricity below 100 gCO<sub>2</sub>e/kWh or with direct GHG emissions below 288 gCO<sub>2</sub>e/kWh;</li> <li>▪ Sustainalytics notes that retrofitting such power plants is expected to result in a reduction of at least 50% life cycle emissions compared to the conventional natural gas-fired power plant or improve carbon capture efficiency to 90%.</li> </ul> </li> <li>- Sustainalytics notes that the Framework further defines the following criteria to financing existing gas-fired power generation assets:                             <ul style="list-style-type: none"> <li>▪ TNB intends to transition away from coal or oil power or to provide services for seasonal peaks, storage or high-temperature heat for industries;</li> <li>▪ Such facilities will consider measurement or estimation of methane leakage from their supply chain, if any.</li> </ul> </li> <li>- Sustainalytics views the expenditure under this category to be a credible transition activity as the gas-fired power generation facilities expected to be financed comply with the benchmark value in the TPI's below 2° scenario for the year 2027 for the electricity utilities sector.<sup>20</sup></li> </ul>

<sup>19</sup> TPI, "TPI Online Tool – Electricity Utility", at: <https://www.transitionpathwayinitiative.org/sectors/electricity-utilities>

<sup>20</sup> Ibid.



	Hydrogen production using steam reforming	<ul style="list-style-type: none"> <li>- Investment in production of hydrogen through steam reforming using natural gas or biogas with carbon capture storage adhering to a life cycle GHG emissions threshold of 3 tCO<sub>2</sub>e/tH<sub>2</sub>.</li> <li>- Sustainalytics notes that the emissions threshold consistent with the EU Taxonomy’s technical screening criteria for manufacture of hydrogen. and views the expenditure to be a credible transition activity. Further, Sustainalytics considers hydrogen production using steam reforming technique as interim solution and encourages TNB to transition to green hydrogen production technique.</li> </ul>
	Utilization of CO <sub>2</sub> from CCUS for biomass productions	<ul style="list-style-type: none"> <li>- TNB has communicated to Sustainalytics that investment in this activity is related to R&amp;D of projects focusing on the process of utilization of CO<sub>2</sub> from CCUS facilities connected to existing or new gas-fired power plants (including CHP) with a life cycle GHG emissions intensity below 100 gCO<sub>2</sub>e/kWh or direct GHG emissions below 288 gCO<sub>2</sub>e/kWh to produce biomass using microalgae photosynthesis process.</li> <li>- Sustainalytics views the expenditure under this category to be a credible transition activity as the CO<sub>2</sub> is being captured and utilized from gas-fired power generation facilities that comply with the benchmark value for the year 2027 for the electricity utilities sector in the TPI’s below 2°scenario.<sup>21</sup></li> </ul>
Affordable Basic Infrastructure and Services	Transmission and distribution networks	<ul style="list-style-type: none"> <li>- Development of transmission and distribution infrastructure powered by renewable energy sources to improve access to electricity in underserved and unserved areas that lack access to such services. The infrastructure will be accessible, free of cost to rural communities, indigenous and low-income populations, including the B40 income population.<sup>22</sup> Examples include rural electrification programme (BELB) and village street lighting (LJK) programmes.<sup>23</sup></li> <li>- Sustainalytics views expenditures under this category to be socially impactful.</li> </ul>
	Development of affordable housing	<ul style="list-style-type: none"> <li>- Investments in development of low-income housing units, shelters, halfway homes, community housing units and student housing, where accessible to the B40 income population in urban or rural regions<sup>24</sup> and indigenous populations, including Orang Asli settlements.<sup>25</sup> Examples include Better Brighter Shelter,<sup>26</sup> Homes for the Needy.<sup>27</sup></li> <li>- TNB confirmed that all the facilities and infrastructure will be accessible to all regardless of ability to pay.</li> <li>- Sustainalytics views expenditures under this category to be socially impactful.</li> </ul>
Employment Generation	Employment generation initiatives	<ul style="list-style-type: none"> <li>- Investment in job opportunities and training initiatives for the unemployed<sup>28</sup> belonging to the low-income populations (B40 income population)<sup>29</sup> in Malaysia.</li> </ul>

<sup>21</sup> Ibid.

<sup>22</sup> The Household Income and Expenditure Survey and Basic Amenities 2022 defines the B40 population as the bottom 40% household income group. The monthly income of the B40 population is less than MYR 4,850 in 2019 and less than MYR 5,250 in 2022 per the latest government definition. Government of Malaysia, “Twelfth Malaysia Plan 2021-2025”, (2021), at: [https://rmke12.epu.gov.my/file/download/2021092722\\_twelfth\\_malaysia\\_plan.pdf?path=fileUpload/2021/09/2021092722\\_twelfth\\_malaysia\\_plan.pdf&name=Twelfth%20Plan%20Document.pdf](https://rmke12.epu.gov.my/file/download/2021092722_twelfth_malaysia_plan.pdf?path=fileUpload/2021/09/2021092722_twelfth_malaysia_plan.pdf&name=Twelfth%20Plan%20Document.pdf)

<sup>23</sup> Aisa Pacific Energy Portal, “MALAYSIA: Rural Electricity Supply (BELB) Programme”, at: <https://policy.asiapacificenergy.org/node/2801>

<sup>24</sup> The Household Income and Expenditure Survey and Basic Amenities 2022 defines the B40 population as the bottom 40% household income group. The monthly income of the B40 population is less than MYR 4,850 (USD 1,032) in 2019 and less than MYR 5,250 (USD 1117.8) in 2022 per the latest government definition. The monthly income of the B40 population in the rural areas (with a population of less than 9,999) is less than RM 3,510 (USD 747.4) and in the urban areas is less than RM 6,030 (USD 1283.9) in 2022 based on the strata are listed as follows by the Department of Statistics in Malaysia.

Government of Malaysia, “Household Income Survey Report (2022), at: [file\\_20230728035437.pdf](file_20230728035437.pdf) (dosm.gov.my)

<sup>25</sup> Orang Asli are indigenous minority communities native to Sabah and Sarawak regions of the Peninsular Malaysia as per the report of the National Inquiry into the Land Rights of Indigenous People, at: <https://suhakam.org.my/portfolio/indigenous-peoples/>

<sup>26</sup> Tenaga Nasional Berhad, “Sustainability Report” (2022), at: [https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>27</sup> Ibid.

<sup>28</sup> The Department of Statistics, Malaysia defines unemployed is defined as person who did not work during the reference week but were interested to work and seeking for a job. They are classified into two groups which are i) actively and ii) inactively unemployed.

<sup>29</sup> The Household Income and Expenditure Survey and Basic Amenities 2022 defines the B40 population as the bottom 40% household income group. The monthly income of the B40 population is less than MYR 4,850 in 2019 and less than MYR 5,250 in 2022 per the latest government definition. Government of Malaysia, “Twelfth Malaysia Plan 2021-2025”, (2021), at: [https://rmke12.epu.gov.my/file/download/2021092722\\_twelfth\\_malaysia\\_plan.pdf?path=fileUpload/2021/09/2021092722\\_twelfth\\_malaysia\\_plan.pdf&name=Twelfth%20Plan%20Document.pdf](https://rmke12.epu.gov.my/file/download/2021092722_twelfth_malaysia_plan.pdf?path=fileUpload/2021/09/2021092722_twelfth_malaysia_plan.pdf&name=Twelfth%20Plan%20Document.pdf)

		<ul style="list-style-type: none"> <li>- TNB has confirmed to Sustainalytics that programmes enabling or supporting employment opportunities in the oil and gas sector will be excluded from financing under the Framework.</li> <li>- Sustainalytics views investment under this category to be socially impactful.</li> </ul>
<p><b>Access to Essential Services- Education</b></p>	<p>Educational infrastructures, programmes, scholarships and loans</p>	<ul style="list-style-type: none"> <li>- Investments in the provision of financial assistance through scholarships and study loans to vulnerable and undereducated students from low-income populations.<sup>30</sup> Suitable candidates from the targeted populations will be considered on the basis of merit to pursue higher education.</li> <li>- TNB has communicated to Sustainalytics that the terms of financial assistance provided to the target populations will remain uniform.</li> <li>- Further, TNB has confirmed to Sustainalytics that it has responsible lending policies and guidelines in place to assess the borrower’s financial situation.</li> <li>- Sustainalytics notes that TNB intends to extend one of the below financial advantages to the target population availing the loan facility- i) concessional interest rates compared to the market rate; ii) flexible loan repayment; iii) full or partial subsidies in educational costs.</li> <li>- Sustainalytics recognizes TNB’s intent to create a positive social impact for a well-defined set of target population and encourages TNB provide details of the financial advantages being offered and how they compare with the market rate in its reporting commitments as well as to make its responsible lending policies and guidelines publicly available.</li> </ul>

**Additional Considerations on Use of Proceeds and Transition Use of Proceeds**

- TNB has established a 36month look-back period for its refinancing operational expenditures under the Framework, which Sustainalytics considers to be in line with market practice.
- Sustainalytics notes that TNB excludes financing non-Shariah compliant business activities, products and goods, such as: i) riba bearing financial institutions; ii) non-Shariah compliant entertainment and gambling establishments; iii) non-halal food, beverage and animal-based related activities; iv) other suspicious or immoral related activities; v) unlicensed and illegal products, including drugs, hazardous chemicals, weapons and explosive products; vi) tobacco-based products or cannabis (including hookahs); and vii) activities deemed non-compliant according to Shariah principles as determined by the Shariah Advisory Council<sup>31</sup> under the Framework.



**Project Evaluation and Selection**

- TNB has established a Sustainable Finance Committee (SFC) responsible for the process of project evaluation and selection in accordance with the Framework’s eligibility criteria. The SFC is chaired by the Head of Corporate Finance and Treasury and the Lead of Corporate and Project Finance. Additionally, the SFC include representatives from TNB’s business functions, including the Sustainability division and Group Finance division.
- TNB has in place a risk assessment process to identify and manage environmental and social risks associated with its financed projects. Additionally, TNB has developed ESG standards that are defined in TNB’s Environmental Policy, Environmental Management System and Sustainability Energy Management Framework, which are applicable to all allocation decisions made under the Framework. Sustainalytics considers these environmental and social risk management systems to be adequate and aligned with the requirements of the GBP and SBP. For additional details, refer to Section 2.
- Based on the cross-functional oversight for the process of project evaluation and selection and the presence of risk management system, Sustainalytics considers this process to be in line with market practice.

<sup>30</sup> The target populations are the low-income populations defined as the B40 income population. The Household Income and Expenditure Survey and Basic Amenities 2022 defines the B40 population as the bottom 40% household income group earning a monthly income lower than MYR 5,250 in 2022.

Department of Statistics, Malaysia, “Household Expenditure Survey Report”, (2022), at: [https://www.dosm.gov.my/uploads/release-content/file\\_20230807212736.pdf](https://www.dosm.gov.my/uploads/release-content/file_20230807212736.pdf)

<sup>31</sup> Bank Negara Malaysia, “Shariah Advisory Council”, at: <https://www.bnm.gov.my/shariah-advisory-council>



### Management of Proceeds

- TNB’s Treasury team will be responsible for management of proceeds, which will be deposited into TNB’s account. Further, TNB has communicated to Sustainalytics that it intends to maintain a register to ensure that net proceeds are appropriately tracked and allocated.
- TNB aims to fully allocate the proceeds within 36 months of issuance. Pending allocation, the unallocated proceeds will be temporarily invested in money market instruments or fixed deposits as per the Company’s policies. TNB has confirmed to Sustainalytics that the debt instruments issued under the Framework may include multi-tranche loan facilities. TNB intends to label only those tranches whose proceeds will be allocated according to the eligibility criteria in the Framework.<sup>32</sup>
- Based on the process in place for the management of proceeds, Sustainalytics considers this process to be in line with market practice.



### Reporting

- TNB commits to report on allocation and corresponding impact of the financed projects through annual allocation and impact reports on its website until full allocation. Allocation reporting will include the issued and outstanding amount, the total amount allocated to eligible projects and a category breakdown, share of financing and refinancing and information on unallocated proceeds.
- TNB will report on the qualitative and quantitative impact of the eligible projects, through indicators such as annual GHG emissions reduced or avoided (measured in tCO<sub>2</sub>e), annual energy savings (measured in MWh) and types and number of beneficiaries.
- Based on the commitment to allocation and impact reporting, Sustainalytics considers this process to be in line with market practice.

### Alignment against the Climate Transition Finance Handbook 2023

Sustainalytics has assessed the TNB’s alignment with the recommendations of the Climate Transition Finance Handbook and considers the Company’s transition strategy to be partially aligned. Sustainalytics highlights the following key elements of the assessment:

Key Elements	ICMA Recommendation	Sustainalytics’ Assessment
Issuer’s climate transition strategy and governance	<ul style="list-style-type: none"> <li>- Transition strategy to address climate-related risks and contribute to alignment with the goals of the Paris Agreement</li> <li>- Relevant interim targets on the trajectory towards long-term goal</li> <li>- Governance of transition strategy</li> </ul>	<ul style="list-style-type: none"> <li>- In 2022, TNB established an Energy Transition Plan that outlines a decarbonization pathway for the Company along with strategies and initiatives such as early retirement of coal plants, upgrading existing plants with cleaner technology including hydropower, carbon capture, utilization and storage (CCUS), hydrogen fuel, among others. As part of this transition plan, TNB has set a target to increase its renewable energy installed capacity to 66% of its total capacity mix by 2035. Further, TNB aims to achieve a renewable energy target capacity of 14.3 GW by 2050, with an interim target to achieve 8.3 GW by 2025.<sup>33</sup> In terms of emissions reduction targets, TNB has in place a target to reduce scope 1</li> </ul> <p style="text-align: center;">Aligned</p>

<sup>32</sup> TNB does not intend to issue revolving credit facility under the Framework.

<sup>33</sup> TNB has communicated the information to Sustainalytics.

		<p>emissions intensity by 35% by 2035 (to reach 0.37 tCO<sub>2</sub>e/MWh) and a long-term target to reach net zero emissions by 2050, compared to base year 2020.</p> <ul style="list-style-type: none"> <li>- TNB intends to pursue its net zero goals by reducing coal capacity, expanding low-carbon energy generation portfolio, promoting cleaner fuel and green technology adoption, accelerating green technologies through strategic partnerships and enhancing operational efficiencies.</li> <li>- Additionally, the Company also targets to reduce its coal generation capacity by 50% by 2035 and 100% by 2050, compared to base year 2020. TNB plans to phase out the existing coal-based power plants upon expiry of its Power Purchase Agreements (PPA), or an early retirement subject to shareholders' approvals. TNB also aims to convert its operational vehicle fleet to 30% EV by 2030. Although, TNB's interim decarbonization targets are not in alignment with TPI's 1.5 or 2 °C scenarios, however, the Company's long-term target of achieving net zero emission by 2050 is in line with the TPI's 1.5 and 2 °C targets of 2050.</li> <li>- In 2022, TNB established a Sustainability and Energy Transition Council (SETC), which oversees the Company's Energy Transition Plan, with the objective of establishing energy transition initiatives, setting targets and commitments and re-establishing energy transition outcomes that align with TNB's corporate strategy. The SETC is led by the President-CEO of the Company and includes members from TNB's corporate senior management team. The SETC meets monthly and works in co-ordination with TNB's board of directors.</li> <li>- See detailed assessment in Section 2.</li> </ul>	
<p><b>Business model environmental materiality</b></p>	<ul style="list-style-type: none"> <li>- Transition trajectory should be relevant to the environmentally-material parts of the issuer's business model</li> </ul>	<ul style="list-style-type: none"> <li>- TNB's Energy Transition Plan addresses the environmental impact of the core part of its business, i.e., electricity generation, through implementation of initiatives and investments towards decarbonizing TNB's operations. As part of the strategy, the Company plans to increase the share of renewable energy installed capacity in its total electricity generation mix and reduce coal-based generation. The strategy is directly relevant to environmentally material aspects of TNB's operations.</li> </ul>	<p>Aligned</p>
<p><b>Climate transition strategy to be "science-based" including targets and pathways</b></p>	<ul style="list-style-type: none"> <li>- Transition strategy should reference science-based targets and transition pathways</li> </ul>	<ul style="list-style-type: none"> <li>- TNB has set a target to reduce scope 1 emissions intensity by 35% (in relation to 2020) by 2035 and a long-term target to reach net zero emissions by 2050. TNB has not set a target for scope 2 and scope 3 emissions. TNB is in the process of assessing its scope 3 emissions and plans to report on its scope 3 emissions in FY2023.</li> <li>- TNB's long-term target of achieving net zero emissions by 2050 is in alignment with the TPI's 1.5° and 2° scenarios, however its interim targets do not align with the TPI's Decarbonization Pathway for the Electricity Utilities sector. In view of the above, Sustainalytics considers the targets set by TNB under its Energy Transition Plan to be benchmarkable.</li> <li>- See detailed assessment in Section 2.</li> </ul>	<p>Partially Aligned</p>
<p><b>Implementation transparency</b></p>	<ul style="list-style-type: none"> <li>- Disclosure of capex and opex plans</li> </ul>	<ul style="list-style-type: none"> <li>- TNB has publicly disclosed its capital expenditures on initiatives and investments in renewable energy</li> </ul>	<p>Aligned</p>

	<ul style="list-style-type: none"> <li>- Climate-related outcomes and impacts that expenditures are intended to result in</li> </ul>	<p>and green technology projects in its Sustainability Report 2022. The report follows the Bursa Malaysia Sustainability Reporting Guide (3rd Edition), GRI standards, GRI Electric Utilities Sector Disclosures and disclosed TNB’s climate risk &amp; opportunities following the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD).</p> <ul style="list-style-type: none"> <li>- TNB plans to report on its progress on its transition strategy, including progress on its targets and initiatives, by way of its Sustainability Report, which is published on an annual basis.</li> <li>- TNB currently discloses planned investments in capital expenditures through standard reporting channels, such as its Sustainability Report or Annual Report; TNB intends to disclose its investments in capex and opex going forward through the same reporting channels.</li> </ul>
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## Section 2: Assessment of TNB’s Sustainability Strategy

### Credibility of TNB’s Climate Transition Strategy

#### Emissions Reduction Targets

TNB established an Energy Transition Plan that outlines a decarbonization pathway for the Company with strategies and initiatives through collaboration with strategic partners to diversify its power generation portfolio towards cleaner and renewable sources. The plan includes early retirement of coal plants, upgrading existing plants with technologies such as carbon capture, utilization and storage (CCUS), and switching to cleaner sources such as hydropower and hydrogen fuel, among other initiatives. As part of this transition plan, TNB has set a target to reduce scope 1 emissions intensity by 35% (compared to 2020) by 2035 and a long-term target to reach net zero emissions by 2050. The Company also targets to reduce its coal generation capacity by 50% by 2035 and 100% by 2050, compared to base year 2020. TNB plans to phase out its existing coal-fired plants upon expiry of its power purchase agreements, or an early retirement subject to shareholders’ approvals as well as approvals from the relevant authorities and regulators. TNB also aims to increase the share of renewable energy installed capacity in its total capacity mix to 66% by 2035, with an interim target to achieve an absolute 8.3 GW of installed renewable energy capacity by 2025,<sup>34</sup> finally doubling it to 14 GW by 2050. Additionally, TNB also aims to convert its vehicle fleet to 30% EV by 2030.<sup>35</sup>

Sustainalytics considers that TNB’s interim decarbonization targets do not align with the TPI’s 1.5° and 2° scenarios, however, the Company’s long-term target of achieving net zero emissions by 2050 is in line with the TPI’s 2050 targets for both scenarios. Sustainalytics considers that TNB’s decarbonization targets and pathway as a whole are expected to bring positive impacts, contributing to the decarbonization of TNB’s business operations.

#### Decarbonization Pathway and Implementation Plan

TNB has set a target to reduce 35% of its carbon emissions intensity by 2035, with a long-term goal to achieve net zero emissions by 2050.<sup>36</sup> In line with its net zero emissions target, TNB plans to undertake initiatives across its business units, divisions and subsidiaries, focusing on the following: i) reducing coal capacity; ii) expanding low-carbon energy generation; iii) increasing adoption of cleaner fuel and “green” technology; iv) accelerating “green” technologies via strategic partnerships; and v) increasing operational efficiency.<sup>37</sup>

TNB aims to reduce its coal generation capacity by 50% (in relation to 2020) by 2035 and by 100% by 2050.<sup>38</sup> TNB plans to phase out its existing coal-fired plants upon expiry of its power purchase agreements or an early retirement subject to shareholders’ approvals. Focusing on the expansion of its low-carbon generation portfolio, TNB has secured financing of MYR 185 million (USD 40 million) for development of a 50 MW large scale solar project in the Kuala Muda district. With an investment of MYR 5.8 billion (USD 1.25 billion) TNB has planned to upgrade the Sungai Perak hydroelectric plant of 650.75 MW by 2025 and develop the 300 MW Nenggiri hydropower plant by 2027. Internationally, TNB’s New Energy Division (NED) which was formed

<sup>34</sup> TNB has communicated the information to Sustainalytics.

<sup>35</sup> TNB, “Sustainability Report” (2022), at: [https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>36</sup> Ibid.

<sup>37</sup> Ibid.

<sup>38</sup> Ibid.

to expand the Company's renewable energy portfolio, has acquired a 97.3 MW onshore wind portfolio in the UK, with total capacity reaching 530 MW in FY 2022. These initiatives have increased TNB's renewable energy capacity reached 4,375 MW in 2023, a growth of 16% compared to FY 2022 (3,780 MW).<sup>39</sup> In relation to solar power more specifically, TNB plans to acquire a ready-to-build stage 102 MW solar PV greenfield project in the UK along with 65 MW co-located battery energy storage systems. Further, the NED has a mandate to increase TNB's installed capacity of renewable energy to more than 14 GW by 2050,<sup>40</sup> with an interim target to have renewable energy account for 66% of its total capacity mix by 2035.<sup>41</sup>

The Company is committed to using new emerging technologies, such as carbon capture utilization and storage (CCUS), in addition to expanding the use of ammonia, biomass and hydrogen co-firing, to contribute to Malaysia's national goal of reaching net zero emissions by 2050.<sup>42</sup> With an investment of MYR 6.3 billion (USD 1.36 billion), TNB plans to rebuild a retired 1,400 MW power plant located in Paka, Malaysia, using a combined cycle gas turbine (CCGT) with hydrogen-ready technology to enter in operation by 2030. TNB has also signed a memorandum of understanding with Petronas for the development of green hydrogen and carbon capture technologies following Malaysia's National Energy Policy 2022-2040. To further contribute towards its decarbonization efforts, TNB has a target to install 3,300 charging points in Malaysia by 2025, and another 18,000 charging points by 2030, with an investment of MYR 90 million (USD 19.43 million) to contribute to the development of Malaysia's EV ecosystem. In the same token, TNB has set a target of converting 30% of its vehicle fleet to EVs by 2030.<sup>43</sup>

Sustainalytics considers TNB's climate transition strategy as credible and supportive of its long-term decarbonization targets, however, Sustainalytics encourages TNB to consider setting short- and mid-term targets for reduction in carbon emissions to support the decarbonization of its operations.

### Environmental and Social Risk Management

Sustainalytics recognizes that the use of proceeds from the Framework will be directed towards eligible projects that are anticipated to have positive environmental impacts. However, Sustainalytics is aware that such eligible projects could also lead to negative environmental and social outcomes. Some key environmental and social risks potentially associated with the eligible projects include issues related to emissions, effluents and waste generated during operations; carbon – own operations; resource use; land use and biodiversity; occupational health and safety; and community relations.

Sustainalytics is of the opinion that TNB is able to manage or mitigate potential risks through implementation of the following:

- To manage the Company's overall environmental risks, TNB has established a Guideline for Environment Impact Assessment (EIA) Inspection in line with the following Malaysian laws and guidelines: Environmental Quality Act 1974,<sup>44</sup> Environmental Impact Assessment Guidelines in Malaysia 2016,<sup>45</sup> Environmental Mainstreaming Directive 2017<sup>46</sup> and Health Safety and Management System (HSEMS) manual 2019.<sup>47,48</sup> Under these guidelines and laws, TNB must evaluate the environmental impacts of a proposed project or development, considering factors related to socio-economic, cultural and human health aspects. They also require an EIA of qualitative and quantitative impacts, comparing scenarios before and after the execution of the project. The EIA must also identify environmental issues during the pre-construction, construction and operation stages of the project, followed by the development of an environmental management plan (EMP) and environmental mainstreaming tools (EMTs) detailing the implementation of mitigation measures for the issues identified through the EIA.<sup>49</sup> TNB has also developed an Environmental Policy that commits to reducing environmental impact by providing sustainable energy solutions.<sup>50</sup>

<sup>39</sup> TNB has communicated the information to Sustainalytics.

<sup>40</sup> TNB, "Sustainability Report" (2022), at: [https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>41</sup> Ibid.

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

<sup>44</sup> Government of Malaysia, Ministry of Environment, "Environmental Quality Act (1974)", at:

[https://www.env.go.jp/en/recycle/asian\\_net/Country\\_Information/Law\\_Regulation/Malaysia/Malaysia\\_mal13278.pdf](https://www.env.go.jp/en/recycle/asian_net/Country_Information/Law_Regulation/Malaysia/Malaysia_mal13278.pdf)

<sup>45</sup> Government of Malaysia, Department of Environment, "Environmental Impact Assessment (EIA) Guidelines In Malaysia (2016)", at:

<https://www.doe.gov.my/en/environmental-impact-assessment-eia-guidelines-in-malaysia-2016-2/>

<sup>46</sup> Government of Malaysia, Department of Environment, "Environmental Mainstreaming Directive", at: <https://www.doe.gov.my/wp-content/uploads/2021/08/Environmental-Mainstreaming-Directive-and-EMT-Compliance-Report.pdf>

<sup>47</sup> International Islamic University Malaysia, "Health Safety and Environmental Management System (HSEMS)

Booklet", at: <https://www.iiu.edu.my/media/42735/1.%20HSEMS%20Booklet%20Latest.pdf>

<sup>48</sup> Tenaga Nasional Berhad shared the Guideline for Environmental Impact Assessment (EIA) Inspection (2021) with Sustainalytics confidentially.

<sup>49</sup> Ibid.

<sup>50</sup> Tenaga Nasional Berhad, "Environmental Policy", at: [https://www.tnb.com.my/assets/files/TNB\\_Environmental\\_Policy\\_2023.pdf](https://www.tnb.com.my/assets/files/TNB_Environmental_Policy_2023.pdf)

- To reduce the impact of GHG emissions generated from its operations, TNB's Grid Division has an environmental management system that complies with ISO 14001:2015 standards to effectively manage environmental risks and enhance performance.<sup>51</sup> Additionally, it has obtained ISO 14064 verification for GHG emissions inventory, ensuring compliance to quantification and reporting requirements for GHG emissions.<sup>52</sup>
- To address risks related to waste and effluent generated during its operations, TNB has developed waste management guidelines in accordance with Malaysia's Environmental Quality (Scheduled Waste) Regulations 2005, which set requirements and procedures for disposal, handling, storage and transportation of the waste generated during the Company's operations.<sup>53</sup> The guidelines also set requirements for TNB to conduct training and awareness programmes for employees, focusing on handling of waste materials, waste storage inspection and response during spills and other such incidents.<sup>54</sup>
- To manage risks associated with resource use, such as water usage, TNB monitors water withdrawal at all its operational sites to minimize water overuse and contamination.<sup>55</sup> Further, TNB also investigates cases of deviations observed in water consumption levels at all of its power plants and carries out any required mitigation measures and implementation plans.<sup>56</sup> Additionally, TNB uses the World Resources Institute Aqueduct Water Risk Atlas to identify water stressed regions where the Company operates, to regulate water withdrawal and consumption in such regions.<sup>57</sup> In terms of fuel management, TNB commits to sustainable and cost-effective fuel supply and consumption for power generation. Finally, TNB's Environmental Policy commits to utilizing natural resources sustainably and adopting climate change mitigation actions.<sup>58</sup>
- To minimize risks related to biodiversity and land use, TNB has committed to implementing preventive and rehabilitative measures to reduce its impacts on local biodiversity, including minimizing its operations in areas of high biodiversity values.<sup>59</sup> Also, TNB conducts biodiversity studies on threatened flora and fauna identified on the International Union for Conservation of Nature's (IUCN) Red List.<sup>60</sup>
- Regarding occupational health and safety, TNB has established a Health Safety and Environmental Management System (HSEMS) to manage risks, identification and control requirements related to occupational health and safety aspects across TNB's divisions, departments and business units.<sup>61</sup>
- To ensure engagement with local communities and stakeholders, TNB's Guideline for Environment Impact Assessment (EIA) Inspection requires that a stakeholder engagement be conducted with key stakeholders that are likely to be impacted by the development of the project.<sup>62</sup> The objective of the stakeholder engagement is to interact with these stakeholders regarding potential environmental impacts, understand any concerns and gather feedback regarding the project.
- TNB's projects financed under the Framework could be located in countries that have been identified as high-risk countries, such as Saudi Arabia, Cambodia, Turkey, and Pakistan. Sustainalytics notes that these countries face issues related to human rights, labour and workers' rights and safety, women's safety, and discrimination against minorities.<sup>63</sup> In this context, Sustainalytics notes that some initiatives have been undertaken with respect to the issues relating to human rights, workers' safety and discrimination, which remain prevalent in these countries. Sustainalytics considers these to be ongoing risks and notes that such investments should be accompanied by thorough risk management

<sup>51</sup> Tenaga Nasional Berhad shared the Green Code of Conduct for Grid Division with Sustainalytics confidentially.

<sup>52</sup> Tenaga Nasional Berhad, "Sustainability Report" (2022), at:

[https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>53</sup> Tenaga Nasional Berhad shared the Waste Management Guidelines Scheduled (2021) with Sustainalytics confidentially.

<sup>54</sup> Ibid.

<sup>55</sup> Tenaga Nasional Berhad, "Sustainability Report" (2022), at:

[https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>56</sup> Tenaga Nasional Berhad, "Sustainability Report" (2022), at:

[https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>57</sup> Ibid.

<sup>58</sup> Tenaga Nasional Berhad, "Environmental Policy", at: [https://www.tnb.com.my/assets/files/TNB\\_Environmental\\_Policy\\_2023.pdf](https://www.tnb.com.my/assets/files/TNB_Environmental_Policy_2023.pdf)

<sup>59</sup> Tenaga Nasional Berhad, "Sustainability Report" (2022), at:

[https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>60</sup> Ibid.

<sup>61</sup> Tenaga Nasional Berhad, "Sustainability Report" (2022), at:

[https://www.tnb.com.my/assets/annual\\_report/TNB\\_Sustainability\\_Report\\_2022.pdf](https://www.tnb.com.my/assets/annual_report/TNB_Sustainability_Report_2022.pdf)

<sup>62</sup> Tenaga Nasional Berhad shared the Guideline for Environmental Impact Assessment (EIA) Inspection (2021) with Sustainalytics confidentially.

<sup>63</sup> International Labour Organization, "Labour Migration in Pakistan", at: <https://www.ilo.org/islamabad/areasofwork/labour-migration/lang-en/index.htm>

procedures to ensure that any adverse effects are sufficiently identified and addressed. Furthermore, Sustainalytics notes TNB has developed a Procurement Code of Conduct that mandates its suppliers to adhere to all legal requirements and contractual obligations as applicable.<sup>64</sup> TNB conducts annual risk due diligence assessments to determine risk exposure and identify areas of risk based on key risk indicators (KRIs) such as safety on loss-time injury frequency, compliance with regional health and safety regulations. Also, TNB communicated to Sustainalytics that it is currently in the process of developing a labour rights policy.<sup>65</sup>

Based on these policies, standards and assessments, Sustainalytics is of the opinion that TNB has implemented adequate measures to manage and mitigate environmental and social risks commonly associated with the eligible categories. Nevertheless, Sustainalytics encourages TNB to improve its disclosures on policies and measures pertaining to human and labour rights, and transparently report on its efforts in these areas, particularly any potential human and labour rights issues or violations found for the investments under the Framework.

### Section 3: Impact of the UoPs

#### Importance of financing transition and renewable energy enabling technologies to decarbonize power generation.

Emissions from the electricity and heat generation sector increased by 1.8% (261Mt CO<sub>2</sub>) in 2022, reaching a historic peak of 14.6 GtCO<sub>2</sub>, marking the sector's largest absolute increase in emissions in one year.<sup>66</sup> Substantial increases in natural gas prices and supply constraints due to global energy crises in 2021 and Russia's invasion of Ukraine prompted a significant shift to coal for electricity generation in key global markets with available coal plant capacity.<sup>67</sup> Global coal-fired generation, accounting for more than one-third of total electricity generation, accounted for a 2.1% increase in CO<sub>2</sub> emissions in 2022.<sup>68,69</sup> The current emissions trajectory deviates from the 2050 scenario of net zero emissions, which requires a global reduction of 55% in unabated coal-fired generation by 2030 compared to 2022 levels, with a complete phase out by 2040.<sup>70</sup>

In a 1.5°C emissions reduction scenario, natural gas is expected to be more resilient than other fossil fuels, primarily because it has a 67% lower average emissions factor than the rest of fossil fuels.<sup>71</sup> Additionally, it is estimated that coal-to-gas switching reduces emissions by an average of 50% when producing electricity.<sup>72</sup> In the context gas-fired power plants, CCUS is expected to play an important role in decarbonizing electricity generation,<sup>73</sup> as CCUS can achieve a 99.7% rate of CO<sub>2</sub> capture at low additional marginal costs, according to the IEA Greenhouse Gas R&D Programme.<sup>74</sup> It is estimated that the use of CCUS technology in gas-fired power generation is expected to avoid more than 300 MtCO<sub>2</sub> in 2040, as per the IEA's sustainable development scenario.<sup>75</sup> Although natural gas plays a bridging role between more polluting fossil fuels and zero-carbon technologies, it is regarded as a temporary measure due to its continued CO<sub>2</sub> emissions.<sup>76</sup>

Climate-driven scenarios demand swift increases in renewable power, energy efficiency and electrification.<sup>77</sup> Consequently, the renewable power sector witnessed a 17% growth in capacity additions as well as an 11% increase in total installed renewable power capacity, overall contributing to 28.3% of global electricity generation in 2021.<sup>78</sup> Electricity from wind and solar PV alone is

<sup>64</sup> TNB, "Procurement Code of Conduct", at: [https://www.tnb.com.my/assets/news\\_and\\_highlights/6.5\\_Procurement\\_Code\\_of\\_Conduct.pdf](https://www.tnb.com.my/assets/news_and_highlights/6.5_Procurement_Code_of_Conduct.pdf)

<sup>65</sup> As communicated to Sustainalytics by Tenaga Nasional Berhad in November 2023.

<sup>66</sup> IEA, "CO<sub>2</sub> Emissions in 2022", (2022), at: <https://iea.blob.core.windows.net/assets/3c8fa115-35c4-4474-b237-1b00424c8844/CO2Emissionsin2022.pdf>

<sup>67</sup> IEA, "Electricity Market Report", (2022), at: <https://iea.blob.core.windows.net/assets/660c2410-218c-4145-9348-c782e185dcd/ElectricityMarketReport-July2022.pdf>

<sup>68</sup> IEA, "Coal: Tracking Coal-fired Electricity Generation", (2023), at: <https://www.iea.org/energy-system/fossil-fuels/coal#tracking>

<sup>69</sup> IEA, "CO<sub>2</sub> Emissions in 2022", (2022), at: <https://iea.blob.core.windows.net/assets/3c8fa115-35c4-4474-b237-1b00424c8844/CO2Emissionsin2022.pdf>

<sup>70</sup> IEA, "Coal: Tracking Coal-fired Electricity Generation", (2023), at: <https://www.iea.org/energy-system/fossil-fuels/coal#tracking>

<sup>71</sup> McKinsey & Company, "The impact of decarbonization on the gas and LNG industry", (2021), at: <https://www.mckinsey.com/industries/oil-and-gas/our-insights/the-impact-of-decarbonization-on-the-gas-and-lng-industry>

<sup>72</sup> IEA, "The Role of Gas in Today's Energy Transitions", (2019), at: <https://iea.blob.core.windows.net/assets/cc35f20f-7a94-44dc-a750-41c117517e93/TheRoleofGas.pdf>

<sup>73</sup> Grantham Research Institute on Climate Change and the Environment, London School of Economics, "What is carbon capture, usage and storage (CCUS) and what role can it play in tackling climate change?", (2023), at: <https://www.lse.ac.uk/granthaminstitute/explainers/what-is-carbon-capture-and-storage-and-what-role-can-it-play-in-tackling-climate-change/>

<sup>74</sup> IEA, "The role of CCUS in low-carbon power systems", (2020), at: [https://iea.blob.core.windows.net/assets/ccdcb6b3-f6dd-4f9a-98c3-8366f4671427/The\\_role\\_of\\_CCUS\\_in\\_low-carbon\\_power\\_systems.pdf](https://iea.blob.core.windows.net/assets/ccdcb6b3-f6dd-4f9a-98c3-8366f4671427/The_role_of_CCUS_in_low-carbon_power_systems.pdf)

<sup>75</sup> Ibid.

<sup>76</sup> C. Gürsan, et al. (2021), "The systemic impact of a transition fuel: Does natural gas help or hinder the energy transition?" Renewable and Sustainable Energy Reviews, Science Direct, at: <https://doi.org/10.1016/j.rser.2020.110552>.

<sup>77</sup> IEA, "Financing Clean Energy Transitions in Emerging and Developing Economies", (2021), at: <https://www.iea.org/reports/financing-clean-energy-transitions-in-emerging-and-developing-economies/financing-transitions-in-fuels-and-emissions-intensive-sectors>

<sup>78</sup> REN21, "Renewables 2022 Global Status Report", (2022), at: [https://www.ren21.net/wp-content/uploads/2019/05/GSR2022\\_Full\\_Report.pdf](https://www.ren21.net/wp-content/uploads/2019/05/GSR2022_Full_Report.pdf)



expected to provide almost 20% of global power generation in 2027.<sup>79</sup> However, the capital-intensive nature of renewable energy investments coupled with technological limitations and high upfront costs present challenges to achieving widespread decarbonization.<sup>80</sup> Nevertheless, to meet the 2050 net zero emissions target, a significant increase in capital-intensive renewable energy assets is imperative,<sup>81</sup> despite the substantial upfront investment costs, due to their potential to offer lower operating and fuel expenditures over an extended time period.<sup>82</sup>

In view of the above, Sustainalytics considers that TNB's investments in transition activities and renewable power generation are expected to reduce the share of coal-based energy sources in its electricity production and contribute to the decarbonization of power generation in the markets where TNB operates.

### Contribution to SDGs

The Sustainable Development Goals were adopted in September 2015 by the United Nations General Assembly and form part of an agenda for achieving sustainable development by 2030. The instruments issued under the Framework are expected to help advance the following SDGs and targets:

Use of Proceeds	SDG	SDG Target
Renewable Energy	7. Affordable and Clean Energy	7.2. By 2030, increase substantially the share of renewable energy in the global energy mix.
Energy Efficiency	7. Affordable and Clean Energy	7.3. By 2030, double the global rate of improvement in energy efficiency.
Green Buildings	9. Industry Innovation and Infrastructure	9.4. By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.
Clean Transportation	11. Sustainable Cities and Communities	11.2. By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.
Low-Carbon Power Generation	7. Affordable and Clean Energy	7.a. By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology.
Affordable Basic Infrastructure and Services	9. Industry Innovation and Infrastructure	9.1. Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.
	11. Sustainable Cities and Communities	11.1: By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.
	10. Reduced Inequalities	10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average

<sup>79</sup> IEA, "Renewables 2022 Analysis and forecast to 2027", (2022), at: <https://iea.blob.core.windows.net/assets/ada7af90-e280-46c4-a577-df2e4fb44254/Renewables2022.pdf>

<sup>80</sup> REN 21, "Renewables 2023 Global Status Report", (2023), at: [https://www.ren21.net/wp-content/uploads/2019/05/GSR2023\\_GlobalOverview\\_Full\\_Report\\_with\\_endnotes\\_web.pdf](https://www.ren21.net/wp-content/uploads/2019/05/GSR2023_GlobalOverview_Full_Report_with_endnotes_web.pdf)

<sup>81</sup> IEA, "The cost of capital in clean energy transitions", (2021), at: <https://www.iea.org/articles/the-cost-of-capital-in-clean-energy-transitions>

<sup>82</sup> Ibid.

Employment Generation	8. Decent Work and Economic Growth	8.5. By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.
Access to Essential Services- Education	4. Quality Education	4.4: By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

## Conclusion

TNB has developed the TNB Transition Finance Framework under which it may issue use of proceeds instruments.

TNB intends to use the proceeds from the green, social, sustainability and transition bonds, loans and sukuk to finance projects related to Renewable Energy; Energy Efficiency; Green Buildings; Clean Transportation; Low-Carbon Power Generation; Affordable Basic Infrastructure and Services; Employment Generation and Access to Essential Services - Education. Sustainalytics considers that the eligible projects are expected to provide positive environmental and social impacts. The TNB Transition Finance Framework outlines a process for tracking, allocation and management of proceeds, and makes commitments for reporting on allocation and impact.

Based on the above, Sustainalytics is confident that TNB is well positioned to issue green, social, sustainability and transition use of proceeds bonds, loans and sukuk, and that TNB Transition Finance Framework is in alignment with the Sustainability Bond Guidelines 2021, Green Bond Principles 2021, Social Bond Principles 2023, Green Loan Principles 2023, Social Loan Principles 2023, ASEAN Sustainability Bond Standards 2018, ASEAN Green Bond Standards 2018 and ASEAN Social Bond Standards 2018.

## Appendix 1: Alignment with the ASEAN Sustainability Bond Standards, ASEAN Green Bond Standards and ASEAN Social Bond Standards

ASEAN Sustainability Bond Standards' Criteria	Alignment with ASEAN SUS, GBS and SBS	Sustainalytics' comments on alignment with the ASEAN Sustainability Bond Standards, <sup>83</sup> ASEAN Green Bond Standards <sup>84</sup> and Social Bond Standards <sup>85</sup>
Eligibility	Yes	The ASEAN SUS, GBS and SBS require issuers to be in or that the proceeds be directed to assets in an ASEAN country. TNB has communicated that proceeds will be directed towards assets in ASEAN countries as well as globally.
Use of Proceeds	Yes	The ASEAN SUS, GBS and SBS offer specific clarifications that fossil fuel power generation projects and projects which involve activities that pose a negative social impact related to adult entertainment, alcohol, gambling, tobacco products and weapon are excluded. TNB will be financing new and existing gas-fired power generation assets labelled as transition. Further, TNB has a set of exclusionary criteria in the Framework confirming to exclude financing non-shariah compliant business activities, products and goods referred in section 1.
Process for Project Evaluation and Selection	Yes	The ASEAN SUS, GBS and SBS specify information that must be clearly communicated to investors before issuance regarding project selection. TNB has established SFC to select, review, evaluate and monitor the eligible projects to be financed as per the Framework's criteria. TNB has in place the system to identify, evaluate and mitigate environment and social risks associated with the Framework's eligible projects.
Management of Proceeds	Yes	The ASEAN SUS, GBS and SBS mandate that proceeds must be appropriately tracked and that temporary investments be disclosed. TNB's Treasury team will be responsible for managing proceeds and will maintain a register to allocate and track the proceeds. TNB intends to fully allocate proceeds within 36 months of issuance. Pending allocation, unallocated proceeds will be temporarily invested in the money market instruments or fixed deposits as per the Company's policies.
Reporting	Yes	The ASEAN SUS, GBS and SBS recommend annual reporting on the allocation of funds and the expected impacts. TNB commits to annually report on the allocation and subsequent impact of the financed projects which will be available on its website.
External Review	Yes	The ASEAN SUS, GBS and SBS encourage, but do not require, external review. TNB may appoint an independent auditor to provide an annual assurance report on the allocation of proceeds until full allocation.

<sup>83</sup> The ASEAN Sustainability Bond Standards are available at: <https://www.theacmf.org/images/downloads/pdf/ASUS2018.pdf>.

<sup>84</sup> The ASEAN Green Bond Standards are available at: <https://afcw.asean.org/wp-content/uploads/2020/05/4.1-ASEAN-Green-Bond-Standards.pdf>

<sup>85</sup> The ASEAN Social Bond Standards are available at: <https://www.theacmf.org/images/downloads/pdf/ASBS2018.pdf#:~:text=To%20support%20ASEAN%E2%80%99s%20sustainable%20development%20needs%2C%20the%20ACMF,GBS%29%20that%20were%20first%20introduced%20in%20November%202017.>

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