



KINGDOM OF THAILAND SUSTAINABILITY-LINKED FINANCING FRAMEWORK



สำนักงานบริหารหนี้สาธารณะ
PUBLIC DEBT MANAGEMENT OFFICE

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Table of Contents

Table of Contents.....	2
DNV'S INDEPENDENT ASSESSMENT	3
Scope and Objectives	3
Responsibilities of the KOT and DNV.....	3
Basis of DNV's Opinion	4
Work Undertaken.....	4
Findings and DNV's Opinion – Sustainability-Linked Finance Instruments	5
Schedule 1. The KOT's Sustainability Performance Targets	7
Schedule 2. Sustainability-Linked Financing Eligibility Assessment Protocol	8
Schedule 3. Sustainability-Linked Financing Instruments (SFIs) External Review Form	21

Disclaimer

Our assessment relies on the premise that the data and information provided by the client to us as part of our review procedures have been provided in good faith. Because of the selected nature (sampling) and other inherent limitation of both procedures and systems of internal control, there remains the unavoidable risk that errors or irregularities, possibly significant, may not have been detected. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied as per scope of work. DNV expressly disclaims any liability or co-responsibility for any decision a person or an entity may make based on this Statement.

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DNV applies its own management standards and compliance policies for quality control, in accordance with ISO IEC 17029:2019 - Conformity Assessment - General principles and requirements for validation and verification bodies, and accordingly maintains a comprehensive system of quality control, including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements. We have complied with the DNV Code of Conduct¹ during the assessment and maintain independence where required by relevant ethical requirements. This engagement work was carried out by an independent team of sustainability assurance professionals. DNV was not involved in the preparation of statements or data included in the Framework except for this Statement. DNV maintains complete impartiality toward stakeholders interviewed during the assessment process.

¹ DNV Code of Conduct is available from DNV website (www.dnv.com)

DNV'S INDEPENDENT ASSESSMENT

Scope and Objectives

The Kingdom of Thailand ("KOT") has developed a Sustainability-Linked Financing Framework ("Framework") with the aim to raise Sustainability-Linked Bonds, Loans or other debt instruments (collectively "Sustainability-Linked Finance Instruments" or "SFIs") as described in the Framework. The Framework is in alignment with the stated standards and principles (collectively the "Principles & Standards"):

- International Capital Market Association ("ICMA") Sustainability-Linked Bond Principles ("SLBP") 2024².
- ASEAN Capital Markets Forum ("ACMF") ASEAN Sustainability-Linked Bond Standards ("ASEAN SLBS") 2022³.
- Loan Market Association ("LMA"), Loan Syndications and Trading Association ("LSTA") and the Asia-Pacific Loan Market Association ("APLMA") Sustainability-Linked Loan Principles ("SLLP") 2023⁴.

DNV (Thailand) Co., Ltd. ("DNV") has been commissioned by the KOT to review its Framework and provide a Second Party Opinion on the Framework, based on the above-mentioned Principles & Standards.

Our methodology to achieve this is described under the 'Work Undertaken' below. We were not commissioned to provide independent assurance or other audit activities.

Responsibilities of the KOT and DNV

The KOT has provided the information and data used by DNV during the delivery of this review. Our statement represents an independent opinion and is intended to inform the KOT and other interested stakeholders in the Framework as to whether the Framework is aligned with Principles & Standards. In our work, we have relied on the information and the facts presented to us by the KOT. DNV cannot be held liable if estimates, findings, opinions, or conclusions are incorrect. Thus, DNV shall not be held liable if any of the information or data provided by the KOT and used as a basis for this assessment were not correct or complete.

² [ICMA Sustainability-Linked Bond Principles \(June 2024\)](#)

³ [ACMF ASEAN Sustainability-Linked Bond Standards \(October 2022\)](#)

⁴ [LMA/LSTA/APLMA Sustainability-Linked Loan Principles \(February 2023\)](#)

Basis of DNV's Opinion

We have adapted our assessment methodology to create the KOT-specific Eligibility Assessment Protocol (henceforth referred to as "Protocol"). Our Protocol includes a set of suitable criteria that can be used to underpin DNV's opinion.

As per our Protocol, the criteria against which the Framework has been reviewed are grouped accordingly:

Sustainability-Linked Financing Protocol includes the five core components:

- **Principle One: Selection of Key Performance Indicators (KPIs).** The KOT, as the issuer of an SFI, should clearly communicate its overall sustainability objectives, as set out in its sustainability strategy, and how these relate to its proposed SPTs. The KPI should be reliable, material to the KOT's core sustainability goals and commitment toward reducing greenhouse gas emissions and promoting climate-resilient development, address relevant ESG challenges to achieving the SPTs.
- **Principle Two: Calibration of Sustainability Performance Targets (SPTs).** The SPTs should be ambitious, meaningful, and realistic. The target setting should be done in good faith and based on a sustainability improvement in relation to a predetermined performance target benchmark.
- **Principle Three: Financial Characteristics.** The SFI will need to include a financial and/or structural impact depending on whether the selected KPIs reach (or not) the predefined SPTs. The loan/bond documentation needs to include the definitions of the KPI(s) and SPT(s) and the potential variation of the SFI's financial and/or structural characteristics. Any fallback mechanisms in case the SPTs cannot be calculated or observed in a satisfactory manner, should be explained.
- **Principle Four: Reporting.** The KOT should publish and keep readily available and easily accessible up to date information on the performance of the selected KPI(s), as well as a verification assurance report (see Principle 5) outlining the performance against the SPTs and the related impact and timing of such impact on the SFI's financial and/or structural characteristics, with such information to be provided to those institutions participating in this securities/loan or to investors participating in the Loan at least once per annum.
- **Principle Five: Verification (Post-Issuance).** The KOT should have its performance against its SPTs independently verified by a qualified external reviewer with relevant expertise, at least once per annum. The verification of the performance against the SPTs should be made publicly available.

No assurance is provided regarding the financial performance of instruments issued via the Framework, the value of any investments, or the long-term environmental benefits of the transaction. Our objective has been to provide an assessment that the Framework has met the criteria established on the basis set out below.

Work Undertaken

Our work constituted a high-level review of the available information, based on the understanding that this information was provided to us by the KOT in good faith. We have not performed an audit or other tests to check the veracity of the information provided to us. The work undertaken to form our opinion included:

- Creation of the KOT-specific Protocol, adapted to the purpose of the Framework, as described above and in Schedule 2 to this Assessment.

- Assessment of documentary evidence provided by the KOT on the Framework and supplemented by high-level desktop research. These checks refer to current assessment best practices and standards methodology.
- Review of published materials by the KOT and the website of the KOT, and where relevant, associated ministries and government bodies.
- Discussions with the KOT's interministerial working group, and review of relevant documentation and evidence related to the criteria of the Protocol.
- Documentation of findings against each element of the criteria.

Our opinion as detailed below is a summary of these findings.

Findings and DNV's Opinion – Sustainability-Linked Finance Instruments

DNV's findings on the alignment with Principles are listed below:

1. **Principle One: Selection of Key Performance Indicators (KPIs).** DNV confirms that the KOT's KPIs are core, relevant, material, and consistent with the KOT's overarching sustainability position and strategy:
 - KPI 1: Total Greenhouse Gas Emissions, excluding removals from land use, land-use change and forestry (LULUCF) (ktCO₂e).
 - KPI 2: Annual registrations of Zero Emission Vehicles (ZEV) passenger cars and pick-up trucks.
2. **Principle Two: Calibration of Sustainability Performance Targets (SPTs).** DNV concludes that the SPTs:
 - SPT 1: Achieve total greenhouse gas (GHG) Emissions (excluding removals from LULUCF) of 388,500 ktCO₂e by 2030, which would represent a 30% reduction from the business-as-usual (BAU) scenario in 2030.
 - SPT 2: Increase annual registrations of passenger cars and pick-up trucks that are ZEVs by 476% by 2030, equivalent to 440,000 passenger cars and pick-up trucks

DNV concludes that the KOT's targets are ambitious and deemed to go beyond what is considered 'business-as-usual'. DNV has also reviewed the credibility of the KOT's approach to achieve the SPTs and considers them to be achievable within the timing set.
3. **Principle Three: Financial Characteristics.** DNV reviewed the disclosures related to the SFIs characteristics stated in the KOT's Framework and, in our opinion, the financial characteristics of securities to be issued under the Terms that could be impacted based on KPI performance under SPTs, are in line with the Principles & Standards. This impact includes coupon/margin rate variation via step-ups and/or step-downs applying to the relevant securities.
4. **Principle Four: Reporting.** DNV concludes that the SFIs Terms include the required information on annual reporting of KOT's annual performance including measurement, monitoring, and reporting of metrics including chosen formats for reporting and meets the requirement as outlined in the Principles & Standards. The KOT confirms that dedicated reporting will be provided to lenders/investors on an annual basis.

5. **Principle Five: Verification.** DNV confirms that the SFIs Terms require KOT to have its performance against the SPTs independently verified annually by an independent third party.

On the basis of the information provided by the KOT and the work undertaken, it is DNV's opinion that the Framework proposed meets the criteria established in the Protocol and is aligned with the Principles & Standards. The SPTs are material and relevant to KOT's strategy, operational environment and are considered to be ambitious and meaningful in the context of Thailand.

For DNV (Thailand) Co., Ltd.

Bangkok, Thailand / 31 October 2024



Thomas Leonard
Lead Verifier



Jerus D'Silva
Quality Reviewer

Schedule 1. The KOT's Sustainability Performance Targets

KPI 1: Total Greenhouse Gas Emissions, excluding removals from land use, land-use change and forestry (LULUCF) (ktCO₂e)

Year	KPI 1: Total GHG Emissions (excluding removals from LULUCF) (ktCO ₂ e) ⁵	GHG Emissions in BAU scenario (ktCO ₂ e) ⁶	Emissions Reduction to BAU (%)
2005	306,783	306,783	0%
2006	311,850	314,146	1%
2007	323,535	321,686	-1%
2008	327,326	329,406	1%
2009	328,289	337,312	3%
2010	339,241	345,407	2%
2011	337,271	353,697	5%
2012	352,470	362,186	3%
2013	348,076	370,878	6%
2014	346,177	379,779	9%
2015	345,917	388,894	11%
2016	360,805	398,228	9%
2017	370,370	407,785	9%
2018	372,649	417,572	11%
2019	372,447	427,594	13%
SPT 1 2030	388,500	555,048	30%

KPI 2: Annual registrations of ZEV passenger cars and pick-up trucks

Baseline: 2023: 76,361

Target Observation Date: 31 December 2030

	Historical Data			SPT 2030
	2021	2022	2023 (Baseline)	
KPI 2: Annual registrations of ZEV passenger cars and pick-up trucks	1,958	9,674	76,361	440,000
Percentage Increase (%)	-	-	-	476%

⁵ Thailand's GHG emission inventory (excluding LULUCF) from the 4th Biennial Update Report (BUR)

⁶ Thailand's GHG emission in BAU scenario projected with 2.4% annual growth rate

Schedule 2. Sustainability-Linked Financing Eligibility Assessment Protocol

1. Selection of Key Performance Indicators (KPIs)

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
1a	KPI – material to core sustainability and business strategy	<p>The KOT's sustainability performance is measured using sustainability KPIs that can be external or internal.</p> <p>The KPIs should be material to the KOT's core sustainability and business strategy and address relevant environmental, social and/or governance challenges of the industry sector and be under management's control. For sovereign issuers, the KPIs should be material to the KOT's core sustainability policies and address relevant environmental, social and/or governance objectives.</p> <p>The KPI should be of high strategic significance to the KOT's current and/ or future operations, consistent with the overall KOT sustainability strategy or policies but also reflecting the most material strategic dimensions for the issuer.</p> <p>It is recommended that the KOT communicate clearly to investors the rationale and process according to which the KPI(s) have been selected and how the KPI(s) fit into its</p>	<p>Review of:</p> <ul style="list-style-type: none"> Kingdom of Thailand Sustainability-Linked Financing Framework Thailand's 2nd Updated Nationally Determined Contribution Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy, November 2022 Power Development Plan (PDP) Alternative Energy Development Plan (AEDP). EV 30@30 	<p>DNV has reviewed KOT's proposed KPIs for the prospective SFIs including:</p> <ul style="list-style-type: none"> KPI 1: Total Greenhouse Gas Emissions, excluding removals from land use, land-use change and forestry (LULUCF) (ktCO₂e). KPI 2: Annual registrations of Zero Emission Vehicles (ZEV) passenger cars and pick-up trucks. <p>DNV regards these KPIs as appropriate indicators.</p> <p><u>KPI 1</u> Addresses the United Nations Sustainable Development Goals (SDG) 13 (Climate Action) by integrating climate measures into policy. It is crucial for managing GHG emissions across Energy, Industrial Processes and Product Use (IPPU), Waste, and Agriculture sectors, under the KOT's management. Thailand has committed to achieving carbon neutrality by 2050 and net-zero GHG emissions by 2065, which is consistent with the long-term temperature goals of the Paris Agreement. The KPI is aligned with the Thailand's 2nd Updated Nationally Determined Contribution (NDC) emission reduction targets, aiming for a 30% unconditional reduction below BAU levels by 2030. Thailand has outlined various policies and measures to support its NDC goals, including those in the energy, transportation, and forestry sectors.</p> <p><u>KPI 2</u> Measures the annual number of newly registered passenger cars and pick-up trucks that are ZEVs. The KPI aligns with the KOT's core sustainability and business strategy by promoting the adoption of sustainable</p>

		sustainability strategy.		transport solutions. This KPI is material as it directly addresses the environmental challenge of reducing emissions within the transport sector and supports the strategic goal of transitioning to a greener vehicle fleet. This is significant, not only for its contribution to reducing GHG, but also due to the crucial role of EVs in reducing local pollution, particularly the particulate matter (PM2.5), which is responsible for respiratory illnesses and premature deaths. The KPI is aligned with the UN SDGs, specifically SDG 9 on sustainable infrastructure and SDG 11 on sustainable cities and communities, by promoting reliable zero-emission transportation. The KPI's methodology ensures the data is accurately measured and reported, providing transparency and accountability. This KPI is strategically significant for both current and future operations, reinforcing the KOT'S commitment to sustainability.
1b	KPI – Measurability	<p>KPIs should be measurable or quantifiable on a consistent methodological basis; externally verifiable; and able to be benchmarked, i.e., as much as possible using an external reference or definitions to facilitate the assessment of the SPT's level of ambition.</p> <p>The KOT is encouraged, when possible, to select KPI(s) that they have already been included in their previous annual reports, sustainability reports or other non-financial reporting disclosures to allow investors to evaluate historical performance of the</p>	<p>Review of:</p> <ul style="list-style-type: none"> • Kingdom of Thailand Sustainability-Linked Financing Framework • Thailand's 2nd Updated Nationally Determined Contribution • Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy, November 2022 • Correspondence with KOT representatives through meetings. • Power Development Plan (PDP). • Alternative Energy 	<p>DNV concludes that the KPIs are measurable using quantifiable performance data and established benchmarks as follows:</p> <p><u>KPI 1</u> Based on Intergovernmental Panel on Climate Change (IPCC) guidelines, ensuring a consistent methodology for calculating GHG emissions (CO₂, CH₄, N₂O, HFCs, PFCs, SF₆) across key sectors (Energy, IPPU, Waste, Agriculture), but excluding LULUCF. Reported biennially through Biennial Update Reports (BUR) and Biennial Transparency Reports (BTR), KPI 1 allows for external verification and benchmarking against international norms, enhancing transparency and reliability in sustainability reporting.</p> <p><u>KPI 2</u> The KPI is measurable and quantifiable on a consistent basis, as it tracks the annual number of newly registered ZEVs</p>

		KPIs selected. In situations where the KPIs have not been previously disclosed, Borrowers/Issuers should, to the extent possible, provide historical externally verified KPI values covering at least the previous 3 years.	<p>Development Plan (AEDP).</p> <ul style="list-style-type: none"> EV 30@30. 	<p>under the Motor Vehicle Act, with data available from the Department of Land Transport website. It is externally verifiable and can be benchmarked against prior performance, with the baseline set in 2023. The historical data allows investors to evaluate past performance, enhancing transparency and facilitating the assessment of the SPT's ambition level.</p> <p>DNV concludes that the measurement methodology is robust and a reliable set of metrics to measure the KPIs has been selected.</p>
1c	KPI – Clear definition	A clear definition of the KPI(s) should be provided and include the applicable scope or perimeter as well as the calculation methodology	<p>Review of:</p> <ul style="list-style-type: none"> Kingdom of Thailand Sustainability-Linked Financing Framework Thailand's 2nd Updated Nationally Determined Contribution Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy, November 2022 Correspondence with KOT representatives through meetings. Power Development Plan (PDP). Alternative Energy Development Plan (AEDP). EV 30@30. 	<p>DNV confirms that the KPIs have been clearly defined and are readily understood in the correct context:</p> <p><u>KPI 1</u> Measures direct GHG emissions from Energy, IPPU, Waste, and Agriculture sectors, excluding LULUCF, aligned with IPCC Guidelines and Thailand's NDC commitments.</p> <p>Reporting and verification of the national GHG inventory is subject to an international consultation and analysis process through a Subsidiary Body for Implementation. A technical team has analysed Thailand's third Biennial Update Report (BUR) and found it mostly consistent with the United Nations Framework Convention on Climate Change (UNFCCC) guidelines and transparent. The report covered national circumstances, GHG inventory, mitigation actions, constraints, and support needs. Thailand has established institutional arrangements for BUR preparation, including a GHG inventory system and progress on Nationally Appropriate Mitigation Actions (NAMA).</p> <p><u>KPI 2</u> The KPI is clearly defined as the annual number of newly registered passenger cars and pick-up trucks that are classified as ZEVs under the Motor Vehicle</p>

				<p>Act. It covers vehicles first registered under this act, excluding transfers, renewals, and deregistrations. This KPI has been chosen based on defined vehicle classes and excludes non-ZEVs like hybrids, ensuring clear and consistent measurement. The underlying data is collected and reported annually by the Department of Land Transport, and subsequently aggregated and reported separately by the Public Debt Management Office (PDMO) in the SLB Progress Report, ensuring consistency and clarity in measurement. This definition provides a precise scope and methodology for calculating the KPI.</p> <p>DNV concludes that KPIs proposed by KOT are clearly defined.</p>
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2. Calibration of Sustainability Performance Targets (SPTs)

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
2a	Target Setting – Meaningful	The SPTs should be ambitious, realistic and meaningful to the Borrower’s business and be consistent with the Borrowers’ overall strategic sustainability/ESG strategy	<p>Review of:</p> <ul style="list-style-type: none"> Kingdom of Thailand Sustainability-Linked Financing Framework Thailand’s 2nd Updated Nationally Determined Contribution Thailand’s Long-Term Low Greenhouse Gas Emission Development Strategy, November 2022 Correspondence with KOT representatives through meetings. Power Development Plan (PDP). Alternative Energy 	<p>DNV confirms that the SPTs are consistent with the KOT’s sustainable development policy and aligned with core ESG policy goals.</p> <p>The targets are ambitious in the context of the KOT’s aspirations:</p> <p>SPT 1 Aligns with the country strategic sustainability/Environmental, Social, and Governance (ESG) strategy. By targeting a 30% reduction in GHG emissions from the projected BAU scenario in 2030, SPT 1 aligns with Thailand’s NDC under the Paris Agreement. This goal supports Thailand’s broader commitments to Carbon Neutrality by 2050 and Net Zero by 2065, ensuring consistency with international climate objectives. The target is backed by comprehensive strategies across key sectors.</p> <p>Despite representing a net increase in emissions, the 30% emission reduction target against</p>

			Development Plan (AEDP).	<p>the projected BAU level in 2030 can be seen as ambitious due to Thailand's ongoing reliance on industrial production as a means of achieving economic development and in recognition of Thailand as an emerging economy. Balancing economic growth with emissions cuts requires significant investments in renewable energy, infrastructure, and adaptation measures. It is also noted that Thailand is endeavouring to transition away from fossil fuels, with a growing emphasis on renewable energy sources, such as wind and solar, as well as investing in clean transport and other cleaner technologies. It is expected that this current decade (2020-2030) will witness the peak in GHG emissions, with progressive emissions reductions thereafter.</p> <p><u>SPT 2</u> The SPT to increase annual registrations of passenger cars and pick-up trucks that are ZEVs by 476% by 2030, aiming for 440,000 registrations, is ambitious yet aligned with Thailand's strategic goals under the 30@30 plan. This target directly supports the country's objective of having ZEVs account for 50% of new vehicle registrations by 2030, showing consistency with the national sustainability strategy.</p> <p>The SPT is realistic, considering Thailand's implementation of supportive policies, such as subsidies and tax incentives, to drive EV adoption. Additionally, the target is meaningful as it addresses the broader challenges of reducing greenhouse gas emissions and aligns with Thailand's commitment to developing sustainable transportation systems, as highlighted by its alignment with UN SDGs 9 and 11.</p>
2b	Target Setting – Meaningful	SPTs should represent a material improvement in the respective KPIs and	Review of: <ul style="list-style-type: none"> Kingdom of Thailand 	DNV confirms that the chosen SPTs represent a material improvement of the KPIs, being substantial improvements over

		<p>be beyond a "Business as Usual" trajectory; where possible be compared to a benchmark or an external reference and be determined on a predefined timeline, set before (or concurrently with) the issuance of the Bond/Loan.</p>	<p>Sustainability-Linked Financing Framework</p> <ul style="list-style-type: none"> • Thailand's 2nd Updated Nationally Determined Contribution • Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy, November 2022 • Correspondence with KOT representatives through meetings. • Power Development Plan (PDP). • Alternative Energy Development Plan (AEDP). 	<p>the baseline condition and through the SFIs term:</p> <p>SPT 1 Meets the criteria and requirements by setting an ambitious target to reduce GHG emissions by 30% from the projected BAU level of 555,000 ktCO₂e by 2030. This target is beyond a "Business as Usual" trajectory.</p> <p>The NDC target should be seen in the context of Thailand as a developing nation. Between 2005 and 2019, the projected BAU increase in GHG emissions was 39%, compared to an actual 21% increase in emissions, meaning that actual emissions were 13% less than BAU. Note that the economy of Thailand grew 168% in this period.⁷</p> <p>SPT 2 The transport sector in Thailand contributes approximately 29% of GHG emissions, as well as being a contributor to local pollution. As such, this sector is a significant part of Thailand's efforts to improve environmental performance.⁸ The SPT to increase annual registrations of ZEVs by 476% by 2030, reaching 440,000 vehicles, goes beyond a "Business as Usual" trajectory by requiring significant growth in ZEV adoption, supported by government policies, subsidies, and infrastructure development. Note also that Thailand has also set interim targets of 225,000 (corresponding to 30% of total new registrations) new registrations of passenger cars and pick-up trucks by 2025. The target is ambitious, focusing on transforming Thailand's automotive market, which is currently dominated by internal combustion engine vehicles. SPT 2 represents 50% of new registrations of passenger cars and pick-up trucks by 2030. This compares with 46% of new registrations for electric light-duty vehicles under the IEA</p>
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⁷ World Bank, data accessed 26 August 2024 from <https://data.worldbank.org/country/thailand>

⁸ [Braving hurdles for green transport - TDRI: Thailand Development Research Institute](#)

				global Announce Pledges Scenario. ⁹
2c	Target Setting – Benchmarks	<p>The target setting exercise should be based on a combination of benchmarking approaches:</p> <ol style="list-style-type: none"> 1. The KOT's own performance over time for which a minimum of 3 years, where feasible, of measurement track record on the selected KPI(s) is recommended and when possible forward-looking guidance on the KPI 2. The SPTs relative positioning versus the Borrower's peers where comparable or available, or versus industry or sector standards 3. Systematic reference to science-based scenarios, or absolute levels (e.g., carbon budgets) or official country / regional / international targets or to recognised Best-Available-Technologies or other proxies 	<p>Review of:</p> <ul style="list-style-type: none"> • Kingdom of Thailand Sustainability-Linked Financing Framework • Thailand's 2nd Updated Nationally Determined Contribution • Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy, November 2022 • Correspondence with KOT representatives through meetings. • Power Development Plan (PDP). • Alternative Energy Development Plan (AEDP). 	<p>Based on discussions and review of documents, DNV confirms that the SPT target setting exercise has been based on an appropriate combination of methodologies including benchmarking approaches.</p> <p><u>SPT 1</u> The KOT's SPT aligns with its NDC goal of a 30% reduction in GHG emissions from the BAU scenario by 2030, supporting its broader strategies for carbon neutrality by 2050, net zero emissions by 2065, and the Paris Agreement. The SPT is positioned within the context of global climate commitments, reflecting Thailand's alignment with international standards. Additionally, it references science-based scenarios and long-term strategies like carbon neutrality by 2050, ensuring that the target is both ambitious and credible.</p> <p><u>SPT 2</u> Registrations of ZEVs increased in Thailand by 3,800% from 2021 to 2023. The target of increasing annual registrations of ZEVs to 440,000 by 2030 is supported by the Thai government's policies, including EV 3.0 and EV 3.5, which provide subsidies and tax incentives to stimulate both the production and purchase of electric vehicles. The target is ambitious yet achievable, considering Thailand's ongoing efforts to enhance EV infrastructure, such as increasing the number of charging stations, and the adoption of supportive policies aimed at building a sustainable EV ecosystem.</p> <p>The target is also broadly aligned with the following from the International Energy Agency (IEA) Southeast Asia Energy</p>

⁹ <https://www.iea.org/reports/global-ev-outlook-2024/outlook-for-electric-mobility>

				<p>Outlook 2022¹⁰ with respect the Sustainable Development Scenario (SDS). This projects that electric vehicles will reach nearly 50% of total vehicle sales by 2030.</p> <p>Overall, the KOT target-setting process effectively integrates past performance, and scientific benchmarks. DNV has also reviewed the credibility of the KOT's approach to achieve the SPTs and, based on current progress, considers them to be achievable within the timing set.</p>
2d	Target setting – Disclosures	<p>Disclosures on target setting should make clear reference to:</p> <ol style="list-style-type: none"> the timelines for the target achievement, including the target observation date(s)/ period(s), the trigger event(s) and the frequency of review of the SPTs Where relevant, the verified baseline or reference point selected for improvement of KPIs as well as the rationale for that baseline or reference point to be used Where relevant, in what situations recalculations or pro-forma adjustments of baselines will take place Where possible and taking into account competition and confidentiality considerations, 	<p>Review of:</p> <ul style="list-style-type: none"> Kingdom of Thailand Sustainability-Linked Financing Framework Thailand's 2nd Updated Nationally Determined Contribution Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy, November 2022 Correspondence with KOT representatives through meetings. Power Development Plan (PDP). Alternative Energy Development Plan (AEDP). 	<p>DNV confirms that the relevant disclosures on target setting are appropriately referenced.</p> <p>SPT 1 The baseline reference point selected for the SPT is the year 2005, a critical year from which the BAU projection for 2030 is derived. This baseline was chosen because it reflects emissions levels before the implementation of major climate change policies, providing a relevant and consistent reference for measuring improvements in GHG emissions. The rationale for this baseline is rooted in Thailand's commitment to the Paris Agreement and its NDCs, making it a credible reference point for the target.</p> <p>KPI 1 should be seen in the context of benchmarking with other, comparable, nations¹¹ (large non-OECD Asian economies – i.e., large ASEAN members, India and China), emissions per GDP for Thailand are relatively low.¹² It has been noted that specific initiatives for reductions in GHG emissions need to be reflected in more detail in the NDC. However, it is recognised that the 2022 2nd updated NDC reflected a transition to stronger ambition compared to the previous version</p>

¹⁰ [Southeast Asia Energy Outlook 2022 – Analysis - IEA](#)

¹¹ Large non-OECD Asian economies – i.e., large ASEAN members (Thailand, Indonesia, Malaysia, Philippines, Viet Nam), based on [Data for Thailand, Indonesia, Malaysia, Philippines, Viet Nam | Data \(worldbank.org\)](#), data accessed 26 August 2024

		<p>how the Borrower intends to reach such SPTs</p>	<p>of the NDC. The Thailand NDC 2030 unconditional targets against BAU are generally comparable in terms of ambition with ASEAN Member States in a similar economic and developmental situation¹³.</p> <p>The KOT meets the target-setting disclosure requirements through a clear and systematic approach. The timeline for target achievement is structured around the biennial reporting cycle of Thailand's GHG inventory. Historically reported in the Biennial Update Reports (BUR), this cycle will transition to Biennial Transparency Reports (BTR) starting in 2024.</p> <p>The KOT intends to reach the SPTs by integrating climate change measures into its policy and planning. Thailand's strategy to achieve its SPT involves aligning with its NDCs and Long-term Greenhouse Gas Emission Development Strategy (LT-LEDS) by focusing on GHG reductions across key sectors like energy, transport, waste, IPPU, and agriculture, while emphasizing cooperation among various stakeholders. The plan includes implementing renewable energy, improving energy efficiency, and enhancing waste management and sustainable agriculture, with progress monitored through periodic updates to the NDC Action Plan.</p> <p><u>SPT 2</u></p> <p>The KPI 2 aligns with the target-setting disclosure requirements by specifying a clear timeline for achieving the SPT 2 of increasing annual registrations of ZEVs with an observation date of December 31, 2030. This aligns with targets set in the Thailand NDC.</p> <p>Revisions to KPIs, SPTs, or baselines due to changes in methodologies, data access, or significant events will be made if justified by the government and confirmed by an external</p>
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¹³ [Examining climate ambition enhancement in ASEAN countries' nationally determined contributions - ScienceDirect](#)

				<p>reviewer. The revision must align with national policies, maintain or exceed the initial SPT ambition, and not materially affect the original second-party opinion. If there is a material impact, the Framework will be updated, and a new second-party opinion will be required.</p> <p>After review of the KOT's overall policy strategy and management approach, DNV concludes that the SPTs are realistic and possible to meet.</p>
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3. Financial Characteristics

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
3a	Loan/Bond Characteristics – SPT Financial / structural impact	The SFI will need to include a financial and/or structural impact based on whether the KPI(s) reach the predefined SPT(s).	Review of: <ul style="list-style-type: none"> Kingdom of Thailand Sustainability-Linked Financing Framework Correspondence with KOT representatives through meetings. 	<p>The SFIs are structured to change based on the achievement of SPTs by the specified observation date. If the SPTs are not met, or if KPI performance is not verified through a timely assurance report, the financial terms, such as interest rates or payment amounts, may vary in a manner that is meaningful relative to the original terms. These variations and the associated legal documentation will detail all relevant terms, including KPI definitions, calculation methods, and any necessary fallback mechanisms. Recalculations or adjustments may be made in case of significant changes to the regulatory or socio-economic environment, ensuring that the targets remain aligned with national policies and strategies. The legal framework also includes mechanisms for automatic adjustments if future SFIs are issued with more ambitious SPTs based on the same KPI and observation date, ensuring consistency and progressive ambition over time.</p> <p>DNV concludes that the SFI characteristics are in line with the Principles & Standards.</p>

4. Reporting

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
4a	Reporting	<p>Borrowers of SFIs should publish, and keep readily available and easily accessible:</p> <ol style="list-style-type: none"> 1. Up-to-date information on the performance of the selected KPI(s), including baselines where relevant 2. A verification assurance report relative to the SPT outlining the performance against the SPTs and the related impact, and timing of such impact, on the Loan's financial and/or structural characteristics 3. Any information enabling investors to monitor the level of ambition of the SPTs 4. This reporting should be published regularly, at least annually, and in any case for any date/period relevant for assessing the SPT performance leading to a potential adjustment of the SFI's financial and/or structural characteristics. 	<p>Review of:</p> <ul style="list-style-type: none"> • Kingdom of Thailand Sustainability-Linked Financing Framework • Correspondence with KOT representatives through meetings. 	<p>The reporting requirements for the KOT SLBs are met through an annual publication of the SLB Progress Report on the PDMO website, available until after the last SPT trigger event date. This report includes qualitative and quantitative explanations of the KPIs' evolution and progress, ensuring transparency for investors. KPI 1 data, due to its complexity, will be reported biennially with a time lag of up to three years, while KPI 2 data will be updated annually with a time lag of 6 months. The report will also provide additional information for investors to monitor the SPTs' ambition levels and may include any necessary recalculations due to changes in KPI methodologies or external events. This ensures that all relevant data for assessing SPT performance and potential financial adjustments are regularly and clearly communicated.</p> <p>DNV concludes that the reporting provisions are in line with the Principles & Standards.</p>

5. Verification

Ref	Criteria	Requirements	Work Undertaken	DNV Findings
5a	External Verification	Borrowers should have its performance against each SPT for each KPI independently verified by a qualified external reviewer with relevant expertise, at least once a year.	Review of: <ul style="list-style-type: none"> Kingdom of Thailand Sustainability-Linked Financing Framework Correspondence with KOT representatives through meetings. 	<p>The KOT ensures external verification of its KPIs by having KPI 1 reviewed and verified by UNFCCC technical experts through the International Consultation and Analysis process, with a summary report published on the UNFCCC website. Additionally, for KPI 2, the KOT commits to engaging an independent external reviewer to verify its performance against each SPT on an annual basis. The resulting limited assurance verification report will be made publicly available on the PDMO's website alongside the annual SLB Progress Report.</p> <p>DNV concludes that the verification provisions are in line with the Principles & Standards.</p>

Schedule 3. Sustainability-Linked Financing Instruments (SFIs) External Review Form

Section 1. Basic Information

Issuer name: Kingdom of Thailand ("KOT")

Bond ISIN¹⁴: TBD

Independent External Review provider's name for pre-issuance review: DNV (Thailand) Co., Ltd.

Completion date of this form: 31 October 2024 MM YYYY

Section 2. Overview

SCOPE OF REVIEW

The review:

- assessed the 5 core components of the SLBP/SLLP/ASEAN SLBS (**complete review**) and confirmed the alignment with the SLBP.
- assessed only some of them (**partial review**) and confirmed the alignment with the SLBP/SLLP/ASEAN SLBS; please indicate which elements:
 - Selection of Key Performance Indicators (KPIs)
 - Calibration of Sustainability Performance Targets (SPTs)
 - Verification
 - Financial characteristics
 - Reporting

ROLE(S) OF INDEPENDENT REVIEW PROVIDER

- Second Party Opinion
- Verification
- Other (*please specify*):
- Certification
- Scoring/Rating

Does the review include a sustainability quality score¹⁵?

- Of the issuer
- Of the framework
- No scoring
- Of the selected KPIs/SPTs
- Other (please specify):

ISSUER'S OVERARCHING OBJECTIVES

Does the review include:

- An assessment of the issuer's overarching sustainability objectives and strategy, and the policies and/or processes towards their delivery?
- An identification and assessment of environmental, social and governance related risks of adverse impact through the issuer's [actions] and explanations on how they are managed and mitigated by the issuer?
- A reference to the issuer's relevant regulations, standards, or frameworks for sustainability-related disclosure and reporting?

¹⁴ The ISIN code is mandatory for publishing the form in the Sustainable Bond Issuers Database.

¹⁵ The external review may indicate the provider's opinion of the overall sustainability quality of a bond or bond framework and assess whether it has a meaningful impact on advancing contribution to long-term sustainable development.

CLIMATE TRANSITION STRATEGY¹⁶**Does the review assess:**

- The issuer's climate transition strategy & governance?
- The alignment of both the long-term and short/medium-term targets with the relevant regional, sector, or international climate scenario?
- The credibility of the issuer's climate transition strategy to reach its targets?
- The level/type of independent governance and oversight of the issuer's climate transition strategy (e.g. by independent members of the board, dedicated board sub-committees with relevant expertise, or via the submission of an issuer's climate transition strategy to shareholders' approval).
- If appropriate, the materiality of the planned transition trajectory in the context of the issuers overall business (including the relevant historical datapoints)?
- The alignment of the issuer's proposed strategy and targets with appropriate science-based targets and transition pathways¹⁷ that are deemed necessary to limit climate change to targeted levels?
- The comprehensiveness of the issuer's disclosure to help investors assess its performance holistically?¹⁸

Overall comment on this section:

Thailand's climate transition strategy aims for carbon neutrality by 2050 and net zero GHG emissions by 2065, aligning with the Paris Agreement. The strategy integrates climate action into national plans and policies, including the 20-Year National Strategy and Climate Change Master Plan. Key initiatives include a shift to renewable energy, a target for 30% of new vehicles to be zero-emission by 2030, and substantial reductions in GHG emissions through energy efficiency and technological advancements. The National Committee on Climate Change Policy oversees implementation, supported by detailed plans for energy, transport, manufacturing, and waste sectors. The LT-LEDS and 2nd Updated NDCs outline Thailand's approach, emphasizing both domestic actions and international support to meet its climate goals.

Section 3. Detailed pre-issuance review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

SELECTION OF KEY PERFORMANCE INDICATORS (KPIs)¹⁹**Definition, Scope, and parameters**

- Clear definition of each selected KPIs
- Clear calculation methodology
- Other (*please specify*):

Relevance, robustness, and reliability of the selected KPIs

- Credentials that the selected KPIs are relevant, core and material to the issuer's sustainability and business strategy
- Evidence that the KPIs are externally verifiable, if that is not already the case

¹⁶ For issuers seeking to utilise green bonds, sustainability bonds or sustainability-linked bonds towards the achievement of their climate transition strategy, guidance on issuer level disclosures and climate transition strategies may be sought from the [Climate Transition Finance Handbook](#).

¹⁷ GHG emissions reduction targets that are in line with the scale of reductions required to keep the average global temperature increase to ideally 1.5°C, or at the very least to well below 2°C above pre-industrial temperatures. Science Based Targets Initiative (SBTi) is a branded verification body for science-based targets and SBTi verification is one way for issuers to validate the alignment of their emission reduction trajectories with science-based reference trajectories. In addition, ICMA has published a [Methodologies Registry](#) which includes a list of tools to specifically help issuers, investors, or financial intermediaries validate their emission reduction trajectories.

¹⁸ Including information such as the respective contribution (e.g. %) of the different measures to the overall reduction, the total expenses associated with the plan, or the issuer's climate policy engagement.

¹⁹ Reviewers are encouraged to provide the information for each KPI.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Credentials that the KPIs are measurable or quantifiable on a consistent methodological basis | <input checked="" type="checkbox"/> Evidence that the KPIs can be benchmarked |
| <input type="checkbox"/> Current verification or assurance status | <input type="checkbox"/> Other (<i>please specify</i>): |

Overall comment on this section:

DNV reviewed KOT's proposed KPIs and found them suitable. KPI 1, which measures total GHG emissions (excluding LULUCF), aligns with Thailand's NDC targets and the Paris Agreement by addressing emissions from key sectors. KPI 2 tracks annual registrations of ZEVs, supporting sustainable transport and aligning with SDGs. Both KPIs are measurable, with robust methodologies and clear definitions, ensuring reliable performance tracking and transparency.

CALIBRATION OF SUSTAINABILITY PERFORMANCE TARGETS (SPTs)²⁰**Rationale and level of ambition**

- | | |
|--|---|
| <input checked="" type="checkbox"/> Evidence that the SPTs represent a material improvement compared to issuer's own performance over baseline | <input checked="" type="checkbox"/> Credentials on the relevance and reliability of selected benchmarks and baselines |
| <input checked="" type="checkbox"/> Evidence that SPTs are consistent with the issuer's sustainability and business strategy | <input type="checkbox"/> Other (<i>please specify</i>): |

Does the review assess if the specificities of the sector and/or local context have been identified and addressed?

- | | |
|---|-----------------------------|
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Not applicable | |

Relevance and reliability of selected benchmarks and baselines

- | | |
|--|---|
| <input checked="" type="checkbox"/> Issuer's past performance | <input checked="" type="checkbox"/> Issuer's peer performance |
| <input checked="" type="checkbox"/> Science-based trajectories (<i>please specify the references</i>): | <input checked="" type="checkbox"/> Other (<i>please specify</i>): Thailand NDC |

Does the review assess the credibility of the issuer's strategy and action plan to achieve the SPTs?

- | | |
|---|-----------------------------|
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
|---|-----------------------------|

Does the review identify the key factors that may affect the achievement of the SPTs?

- | | |
|---|-----------------------------|
| <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
|---|-----------------------------|

Does the review opine on:

- | | |
|---|---|
| <input checked="" type="checkbox"/> the timelines for the target achievement | <input type="checkbox"/> the target observation date(s) |
| <input checked="" type="checkbox"/> the trigger event(s) | <input type="checkbox"/> Other (<i>please specify</i>): |
| <input checked="" type="checkbox"/> potential recalculations or adjustments description | |

Overall comment on this section:

²⁰ Reviewers are encouraged to provide the information for each SPT.

DNV confirms that KOT's SPTs align with the organization's sustainability and ESG goals, reflecting a strong commitment to Thailand's climate targets. SPT 1 aims for a 30% reduction in GHG emissions from the BAU scenario by 2030, aligning with Thailand's NDC and broader carbon neutrality goals. SPT 2 targets a 476% increase in annual ZEV registrations by 2030, supporting Thailand's transition to sustainable transport. Both SPTs are deemed ambitious yet feasible, backed by supportive policies and aligned with international climate benchmarks.

FINANCIAL CHARACTERISTICS

Does the review assess whether the SFIs' financial and/or structural characteristics are commensurate and meaningful?

Yes No

Does the review opine on the fallback mechanisms in case the SPTs cannot be calculated or observed in a satisfactory manner?

Yes No

Overall comment on this section:

The financial characteristics of sustainability-linked finance instruments, such as coupon adjustments, depend on meeting SPTs and verifying KPIs by set dates. These variations are detailed in the legal documentation, ensuring they are proportional and significant.

REPORTING

Does the review assess the commitments of the issuer to report:

Content:

The performance of the selected KPIs Verification
 The level of ambition of the SPTs Assurance report
 Other (*please specify*):

Frequency:

Annual Semi-annual
 Other (*please specify*):

Means of Disclosure

Information published in financial report, or annual report and accounts Information published in sustainability report or sustainability suite of reporting
 Information published in ad hoc documents Other (*please specify*):

Overall comment on this section:

DNV confirms that KOT's SLB reporting requirements are fulfilled through an annual publication of the SLB Progress Report on the PDMO's website, covering both qualitative and quantitative KPI updates. KPI 1 will be reported biennially with a potential delay of up to three years, while KPI 2 will be updated annually with a 6-month lag. The report ensures transparency and provides additional information for investors, including possible recalculations due to methodology changes or external events. DNV concludes that these reporting provisions align with established principles and standards.

Section 4. Post-issuance**CHANGE TO PERIMETER REVIEW²¹ (if applicable)****Material change:**

- | | |
|--|--|
| <input type="checkbox"/> Perimeter ²² | <input type="checkbox"/> KPI methodology |
| <input type="checkbox"/> SPTs calibration | <input type="checkbox"/> Other ²³ (please specify): |

VERIFICATION**Level of verification:**

- | | |
|---|---|
| <input checked="" type="checkbox"/> Limited assurance | <input type="checkbox"/> Reasonable assurance |
| <input type="checkbox"/> Other (please specify): | |

Frequency:

- | | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (please specify): | |

Section 5. Additional Information

Useful links (e.g. to the external review provider's methodology or credentials, to the full review, to issuer's documentation, etc.)

- <https://data.worldbank.org/country/thailand>
- [Energy Transition Outlook \(dnv.com\)](#)
- [Southeast Asia Energy Outlook 2022 – Analysis - IEA](#)
- [Data for Thailand, Indonesia, Malaysia, Philippines, Viet Nam | Data \(worldbank.org\)](#)
- [Examining climate ambition enhancement in ASEAN countries' nationally determined contributions - ScienceDirect](#)

Analysis of the contribution to the UN Sustainable Development Goals:

KPI 1 aligns with SDG 13, which focuses on integrating climate change measures into policy and planning. KPI 2 aligns with SDG 7, specifically aiming to substantially increase the share of renewable energy in the global energy mix by 2030.

Additional assessment in relation with the issuer/bond framework:

²¹ Post issuance, in case of any material change to perimeter/KPI methodology/SPT(s) calibration, issuers are encouraged to ask external reviewers to assess any of these changes.

²² E.g. a material change to baselines for which SPTs are measured against for example business acquisitions/disposals.

²³ Can cover other potential cases such as amendment to any applicable laws, regulations, rules, guidelines and policies relating to the business of the issuer.

ABOUT ROLE(S) OF REVIEW PROVIDERS AS DEFINED BY THE Principles & Standards

- 1. Second Party Opinion:** An institution with environmental expertise, that is independent from the issuer may issue a Second Party Opinion. The institution should be independent from the issuer's adviser for its Green Loan Framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second Party Opinion. It normally entails an assessment of the alignment with the Principles & Standards. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- 2. Verification:** An Issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Sustainability-Linked Finance Instruments proceeds, statement of environmental impact or alignment of reporting with the Principles & Standards, may also be termed verification.
- 3. Certification:** An Issuer can have its Sustainability-Linked Finance Instruments or associated Framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- 4. Green Loan Scoring/Rating:** An Issuer can have its Sustainability-Linked Finance Instruments or associated *Green Bond/Loan Framework* or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the *GLP/GBP*Principles & Standards, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.



About DNV

Driven by our purpose of safeguarding life, property and the environment, DNV enables organisations to advance the safety and sustainability of their business. Combining leading technical and operational expertise, risk methodology and in-depth industry knowledge, we empower our customers' decisions and actions with trust and confidence. We continuously invest in research and collaborative innovation to provide customers and society with operational and technological foresight. With our origins stretching back to 1864, our reach today is global. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping customers make the world safer, smarter and greener group. All rights reserved.