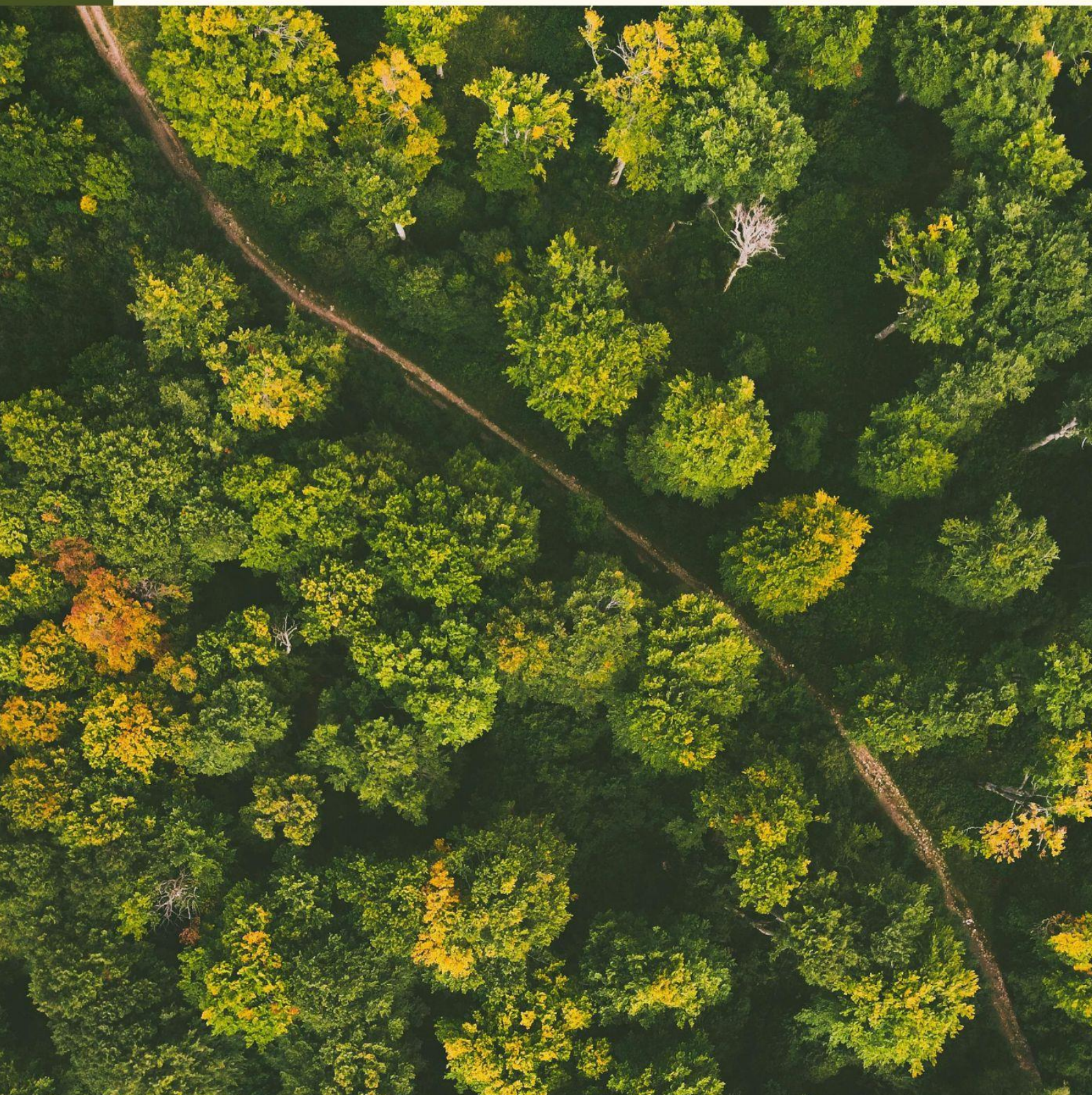
TCFD

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

REPORT 2024

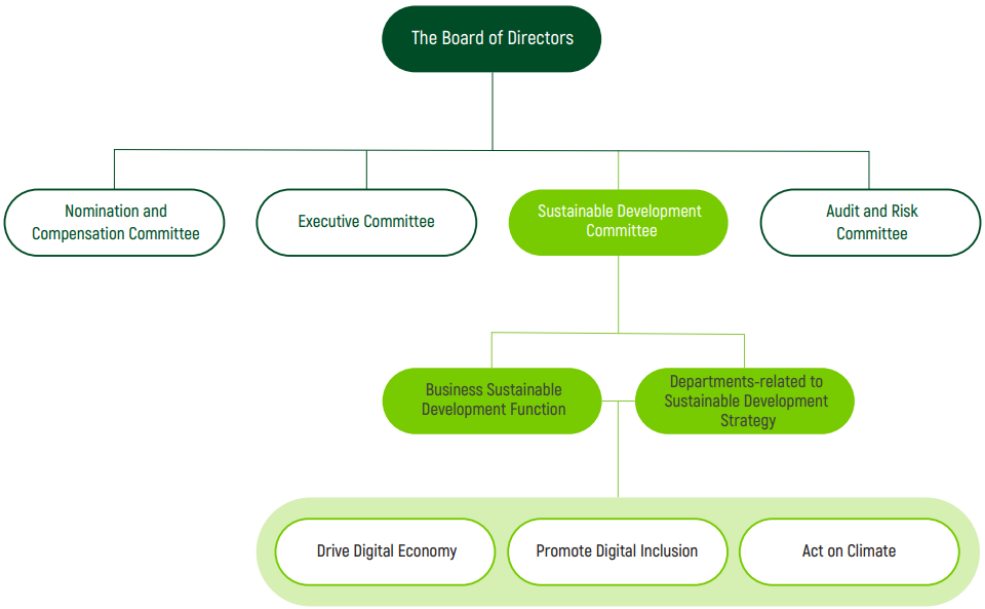


AIS: Task Force on Climate-related Financial Disclosures (TCFD) Report 2024

As Thailand's largest telecommunications provider, AIS aims to lead as a Digital Life Service Provider by enabling connectivity and accelerating digital adoption and transformation. Leveraging our nationwide network and service expertise, we recognize our dual responsibility—managing emissions and climate risks within our operations, while also creating opportunities to advance a low-carbon economy through our products and services.

This report aligns with the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, providing insights into our governance structures, strategic approaches, risk management processes, and performance metrics related to climate change. By transparently disclosing our initiatives and progress, we aim to inform stakeholders of our commitment to environmental stewardship and resilience.

Part 1: Governance



Our sustainability governance framework provides clear structures and defined processes that engage the Board of Directors, executive leadership, and operational teams in the oversight and management of climate-related risks and opportunities. This integrated approach ensures that climate considerations are embedded in decision-making and that all material issues are managed in alignment with our strategic priorities, commitments, and emissions reduction targets.

Board Oversight of Climate-Related Issues

The Board of Directors plays an active and integral role in overseeing AIS's response to climate-related risks and opportunities, as part of its broader responsibility for strategic direction and long-term value creation. The Board is regularly informed of material climate-related issues and is accountable for ensuring that climate considerations are embedded in corporate strategy, risk management, and overall business planning.

To provide focused oversight, the Board has delegated responsibility for climate governance to the **Sustainable Development Committee (SDC)**, a Board-level committee. The SDC is tasked with:

- Overseeing the development and review of climate-related **policies, strategies, and targets**
- Evaluating and monitoring **climate-related risks and opportunities**, including both transition and physical risks
- Working with management to **implement strategies and translate them into concrete initiatives** that support the achievement of climate-related goals
- Ensuring strategic alignment between climate action plans and the company's **long-term business direction**
- Supporting the integration of climate-related risks into the **Enterprise Risk Management (ERM) framework**
- Monitoring **stakeholder expectations**, including emerging regulatory requirements, investor priorities, and broader sustainability trends, to ensure informed and timely Board-level responses

The SDC receives regular updates from executive management on climate performance, progress against targets, risk assessments, and the effectiveness of climate initiatives. This structure ensures that AIS remains agile in responding to climate-related risks while also capitalizing on opportunities to drive innovation and support Thailand's transition to a low-carbon economy.

Management and Operational Oversight of Climate-Related Issues

At the **management level**, the **Management Committee (MC)**—comprising the CEO and C-level executives—plays a central role in steering AIS's climate strategy. The MC is responsible for assessing and managing climate-related risks and opportunities, guiding relevant business units in executing effective mitigation and adaptation measures. This includes considering climate targets, overseeing decarbonization initiatives aligned with the Company's strategic goals, evaluating project outcomes, and offering recommendations to enhance the execution and impact of climate-related strategies.

To strengthen **operational execution**, AIS has established a multi-tiered climate governance structure that ensures alignment and accountability across all levels of the organization. The **Climate Action Steering Committee**, comprising heads of business units overseeing GHG-emitting assets or activities and key support functions, is responsible for considering decarbonization targets and strategies within their respective units. The Committee also plays a critical role in providing insights and practical input to support the development of a company-wide decarbonization pathway. Supporting the Committee is the **Climate Action Taskforce**, which operates at the working level. The Taskforce is tasked with defining decarbonization initiatives and work plans, as well as implementing and monitoring the progress of these initiatives to ensure effective execution.

AIS integrates the development of decarbonization initiatives into its **annual business planning and budgeting process**, ensuring that climate considerations are embedded in core decision-making. All projects with potential GHG emissions are subject to a structured assessment process that evaluates lower-emission alternatives alongside the proposed approach. This includes a technical feasibility analysis to ensure that alternative approaches can achieve the project's operational objectives, as well as a financial assessment to evaluate cost-effectiveness and long-term financial viability. Each alternative is also reviewed for alignment with AIS's decarbonization strategy and emission reduction targets, helping to ensure that climate-related decisions support the company's broader sustainability goals.

To enable the implementation of these initiatives, AIS has allocated a dedicated climate budget specifically for funding decarbonization projects. This allows for proactive investment in lower-emission technologies, energy efficiency improvements, and climate mitigation measures. By incorporating climate-related criteria into both strategic and financial planning, AIS aims to avoid future investments in carbon-intensive assets and ensure its operations are well-positioned for the transition to a low-carbon economy.

AIS's **Corporate performance evaluation framework** balances short-term business performance with long-term sustainability goals. The framework encompasses three key areas: (1) Financial, (2) Strategic, and (3) Key Operational Indicators. **Sustainability-related performance metrics** are embedded into operational KPIs to drive continuous improvement across business units. For example, KPIs related to energy consumption and efficiency are included in OPEX and operational efficiency metrics. These targets are cascaded from management to relevant departments and employees. Performance in these areas influences merit-based salary adjustments and performance-based bonuses, reinforcing accountability and aligning incentives with climate and sustainability objectives.

Part 2: Risk Management

The integration of climate-related risks with overall risk management

AIS adopts a comprehensive and structured approach to climate-related risk management by fully integrating it into the company's **Enterprise Risk Management (ERM) framework**, which is aligned with the **COSO ERM 2017** standard. This integration ensures that climate risks are considered as part of AIS's strategic planning and operational decision-making, supporting the company's ability to achieve its business objectives in a rapidly evolving risk landscape.

The ERM process includes clearly defined steps: setting objectives aligned with AIS's strategy and risk appetite, identifying both internal and external risk factors, evaluating risks using qualitative and quantitative assessments, prioritizing risks based on their potential impact, developing appropriate mitigation and response strategies, implementing control measures, and regularly monitoring and reporting risks. This systematic approach enables the company to manage risks proactively and adapt to new developments effectively.

Oversight of AIS's ERM framework is provided by the **Board of Directors** through the **Audit and Risk Committee**, which is responsible for reviewing risk appetite, capacity, and tolerance, and evaluating the adequacy of the ERM policy proposed by the **Risk Management Committee**. Climate-specific risk oversight is delegated to the **Sustainable Development Committee**, which ensures that climate-related risks and strategies are effectively governed and remain aligned with the company's long-term sustainability objectives.

At the executive level, the **Management Committee** monitors the integration of climate-related risks into core business planning and investment decisions. The **Risk Management Function** coordinates cross-functional climate risk assessments and ensures they are reflected in the company-wide risk register, including appropriate mitigation actions. This function also ensures material climate-related risks are escalated to senior management and the Board when necessary.

AIS conducts **periodic reviews** of climate risks to reflect changes in regulatory requirements, stakeholder expectations, and lessons learned from past climate-related events, such as network disruptions due to extreme weather. In addition, the company tracks **key risk indicators (KRIs)** related to climate impacts, such as infrastructure vulnerability and energy use volatility, to identify early warning signs and ensure timely preparedness.

Beyond the ERM framework, AIS conducts a comprehensive **Materiality Assessment** every three years to identify and prioritize sustainability-related issues, including climate risks and broader environmental, social, and governance (ESG) topics. The assessment considers the relevance and potential impact of these issues on AIS's business operations, stakeholder relationships, and long-term success.

This process incorporates input from internal stakeholders and external parties, analysis of national and global sustainability trends, and alignment with recognized standards such as the GRI and CDP. The findings are synthesized into a Materiality Matrix, which is used to prioritize the most significant issues for action. Results are benchmarked against industry peers, reviewed and validated by relevant experts, and submitted for approval before being integrated into the company's strategic planning and operational execution.

Climate Risk Assessment and Management

AIS identifies and assesses climate-related risks and opportunities across short (0–1 year), medium (2–5 years), and long-term (6–30 years) timeframes. These risks are classified into two broad categories:

Physical Risks:

- **Acute risks** such as natural disasters (e.g., floods, storms) may damage network infrastructure and disrupt operations. AIS conducts location-specific assessments to identify infrastructure vulnerabilities and enhance site-level resilience.
- **Chronic risks** such as rising average temperatures, prolonged heatwaves, and sea level rise—may impact AIS operations over the long term. These risks can lead to increased cooling demand for data centers and network equipment, higher energy consumption, accelerated equipment degradation, and potential threats to assets located in coastal or heat-prone areas. AIS monitors long-term climatic trends to inform infrastructure planning, ensure business continuity, and manage the financial implications of gradual environmental shifts.

Transition Risks:

- **Regulatory risks** stem from evolving environmental laws and policies that may impose new compliance costs.
- **Reputational and market risks** driven by shifting consumer expectations toward sustainability and digital solutions that support a low-carbon economy.

AIS continuously reviews these risks in light of Thailand's national climate policies, including the target to achieve net-zero emissions by 2065, as well as broader global climate trends. These insights inform the company's strategic direction and the development of climate-resilient services and operations.

Climate change has been identified as one of AIS's seven sustainability focus areas. The company applies a multidisciplinary approach to assessing how different climate-related scenarios could impact its business. This includes internal workshops, risk-mapping exercises, and consultations with key business units to evaluate operational, financial, and reputational exposure under varying climate trajectories. Key implications for the business include:

- Disruption of services due to extreme weather events
- Rising operational costs from investment in climate-resilient infrastructure
- Regulatory exposure from emerging climate policies
- Evolving customer demands toward greener products and digital services

Details of these strategic responses are further discussed in Section 3: Strategy.

Part 3: Strategy

AIS recognizes that climate change presents both material risks and strategic opportunities for our business. While we are not in an industry that directly contributes to high levels of greenhouse gas emissions, the delivery of our services relies heavily on electricity, most of which in Thailand is still generated from fossil fuels such as natural gas and coal. This reliance underscores our exposure to energy-related transition risks, particularly as the country moves toward its net-zero emissions target by 2065. At the same time, we are increasingly concerned about the physical risks associated with more frequent and severe natural disasters, which may disrupt our network infrastructure and impact service reliability for customers. These evolving challenges require a proactive and forward-looking strategy to ensure business resilience, support Thailand's low-carbon transition, and create long-term value through climate-aligned innovation.

Climate-Related Risks and Opportunities

This section assesses AIS climate-related risks and opportunities across short (0–1 year), medium (2–5 years), and long-term (6–30 years) horizons, covering our operations as well as upstream and downstream activities. While AIS is not a direct emitter, our reliance on electricity, primarily from fossil fuels, makes us vulnerable to both physical and transition risks. At the same time, we see opportunities to enhance digital adoption and support a low-carbon economy through our services. The following tables outline the preliminary implications of these risks and opportunities on our strategy, operations, and financial planning.

Transition Risk: Emerging Climate Regulations	
Type: Policy Risk	**Time Horizon:** Medium Term (2–5 years)
Description: Thailand's forthcoming Climate Change Act, expected to come into force within the next few years, is likely to introduce more stringent climate-related regulations. These may include mandatory GHG emissions reporting, sector-specific emissions caps or reduction targets, carbon pricing mechanisms (e.g. carbon tax or trading), and stricter environmental compliance for businesses.	
Potential Impacts: • Increased compliance and reporting requirements, including third-party verification and assurance of emissions data • Rising operational costs from potential carbon pricing or mandated emission reduction measures • Investment in low-carbon technologies and energy-efficient infrastructure	
Strategic Response: • Strengthening internal climate governance and data systems to comply with future disclosure mandates • Integrating climate criteria into procurement, network expansion, and infrastructure upgrades • Enhancing partnerships with electricity providers, regulators, and technology vendors to explore scalable clean energy solutions • Scenario analysis and carbon cost stress testing in capital planning	
Affected Financial Items: • CapEx: Investment in energy-efficient infrastructure, renewable energy systems (e.g., solar) • OpEx: Compliance costs, external audits, procurement of renewable energy certificates • Depreciation & Amortization: Accelerated depreciation of carbon-intensive assets	

Transition Risk: Climate-related Litigation	
Type: Litigation Risks	**Time Horizon:** Short to Medium Term (0–5 years)
Description: Although climate-related litigation is still emerging in Thailand compared to more developed jurisdictions, regulatory and societal trends suggest that litigation risk is a growing area of concern for businesses, particularly in emissions-intensive sectors. As a low-emission industry, the telecommunications sector faces a lower likelihood of exposure. However, these risks may become more material as Thailand progresses its climate policy, especially under the forthcoming Climate Change Act and increasing pressure from international trade mechanisms like the EU's CBAM.	
Potential Impacts: • Legal action, penalties, and settlements may arise from non-compliance with climate-related regulations. • Reputation and stakeholder trust could be affected if the company is deemed non-compliant with climate-related obligations.	
Strategic Response: • Ensure environmental claims are substantiated through third-party assurance or recognized certifications. • Develop and enhance the Company's decarbonization roadmap to effectively reduce GHG emissions. • Strengthen internal approaches on climate-related disclosures and reporting. • Align climate disclosures with leading frameworks such as TCFD, ISSB, and GHG Protocol.	
Affected Financial Items: • CapEX: Investment in systems for compliance tracking and reporting may be required. • OpEX: Legal and advisory fees, stakeholder engagement, and compliance-related administrative costs may increase.	

Transition Risk: Reputation Risk	
Type: Reputation Risks	**Time Horizon:** Short to Medium Term (0–5 years)
Description: <u>Customer Perspective</u> • Modern customers are increasingly aligning their purchasing decisions with their environmental values. This shift has led to heightened expectations for businesses to demonstrate meaningful action on climate change. Failure to meet these expectations may affect the company's image and customer loyalty. <u>Investor Perspective</u> • Investors are placing greater value on companies with strong environmental performance. A perceived as lagging in sustainability performance or climate commitments may influence investment decisions.	
Potential Impacts: <u>Customer Perspective</u> • Customers may feel less engaged with the brand if its environmental actions are viewed as insufficient. • A negative perception of the company's climate practices could lead to lower brand loyalty.	

Investor Perspective

- Investor confidence may drop if the company appears to lag in climate responsibility.
- Downgrades in ESG ratings could reduce the company's appeal to investors.

Strategic Response:

- Enhance transparency and communication of climate performance.
- Engage proactively with ESG rating agencies and investment analysts.
- Develop campaigns that actively engage external stakeholders and communicate the company's commitment to sustainability and climate action.

Affected Financial Items:

Customer Perspective

- Brand Value: Negative perceptions can reduce brand equity and long-term customer loyalty.

Investor Perspective

- Cost of Capital: Lower ESG performance may increase the company's risk premium and financing costs.
- Valuation: A weaker sustainability profile may negatively affect market valuation and investor demand.

Transition Risk: Technology Risk	
Type: Technology Risks	**Time Horizon:** Medium to Long Term (2–10 years)

Description:

The company's transition to a low-carbon business depends on emerging technologies that meet financial, operational, and environmental needs. However, the alternative solutions that address all aspects currently remain limited, especially for business operations mainly rely on electricity, like telecommunications.

Potential Impacts:

- Delayed adoption of suitable green technologies may hinder the company's progress toward climate targets.
- Competitive disadvantage may arise if peers adopt more effective technologies faster.
- Additional resources may be required to evaluate and adapt to rapid technological changes.

Strategic Response:

- Conduct research and feasibility studies on potential green technology alternatives.
- Implement pilot projects to evaluate the practical application and identify real-world challenges.
- Monitor technological developments and innovation trends to stay informed.
- Build partnerships with technology providers to co-develop tailored low-carbon solutions.

Affected Financial Items:

- CapEX: Pilot projects and early-stage green technology investments may require increased capital expenditure.
- OpEX: Ongoing evaluation, testing, and adaptation of technologies may raise operational costs.
- Cash Flow: Delays in adopting effective technologies may postpone long-term energy cost savings, impacting future cash inflows.
- Opportunity Cost / CapEX: Investing too early in currently available technologies may result in inefficiencies or missed opportunities if superior solutions emerge shortly after.

Physical Risks: Climate-Related Threats to Operations and Infrastructure	
Type: Acute Physical Risks	**Time Horizon:** Short to Medium Term (0–5 years)
Description: The increasing frequency and severity of extreme weather events — such as heavy rainfall, flash floods, and intense storms — pose a significant risk to AIS's network infrastructure, service continuity, and safety of personnel and assets.	
Potential Impacts: • Damage to network equipment (e.g., base stations, fiber optics, switching centers) from flooding or high winds • Temporary service disruptions affecting customer experience and brand reputation • Increased costs for emergency response, network recovery, and equipment replacement • Potential penalties or loss of revenue from unmet service-level agreements (SLAs) with customers	
Strategic Response: • Conduct climate risk mapping for critical infrastructure sites • Invest in more resilient designs and elevated installations in flood-prone areas • Develop business continuity plans and early warning systems for extreme weather	
Affected Financial Items: • OpEx: Emergency response and repair costs • CapEx: Investments in infrastructure reinforcement or relocation • Revenue: Potential reduction due to service disruptions or downtime • Insurance Premiums: Higher premiums or deductibles due to increased risk exposure	

Physical Risks: Climate-Related Threats to Operations and Infrastructure	
Type: Chronic Physical Risks	**Time Horizon:** Medium to Long Term (6–30 years)
Description: Gradual climate changes, such as rising average temperatures and sea level rise, may affect network performance, energy demand, and asset longevity, particularly in coastal or heat-sensitive areas.	
Potential Impacts: • Increased energy usage and cooling demand in network equipment and data centers • Accelerated wear and tear on equipment, reducing asset lifespan • Higher electricity costs and GHG emissions associated with cooling requirements • Potential long-term disruptions in coastal areas due to erosion or sea-level encroachment	
Strategic Response: • Expand use of passive cooling and energy-efficient technologies at high-temperature sites • Prioritize climate-resilient designs in new infrastructure investments • Explore renewable energy solutions to mitigate increased energy consumption • Monitor long-term climate trends to guide asset planning and lifecycle management	
Affected Financial Items: • OpEx: Increased energy and maintenance costs • CapEx: Upgrades to climate-resilient systems (e.g., energy-efficient cooling) • Depreciation/Asset Impairment: Due to reduced equipment life or relocation of coastal sites	

Opportunity: Growth in Climate-Resilient and Low-Carbon Digital Services	
Type: Market and Policy Opportunity	**Time Horizon:** Medium to Long Term (2–10 years)
Description: As businesses and public agencies become more aware of climate-related risks, there is a growing demand for digital solutions that can help mitigate the impacts of climate change and natural disasters. This trend is creating new markets for AIS's digital and infrastructure services, including: • Cloud and data center services: Growing need for secure and climate-resilient IT infrastructure is driving demand for co-location, cloud computing, and scalable data storage. • Smart solutions and IoT: Corporate clients are seeking digital tools to optimize resource use, reduce greenhouse gas (GHG) emissions, and manage environmental performance. • Network stability as a differentiator: AIS's investment in network resilience and reliability enhances its competitive advantage in providing critical digital infrastructure amid increasing climate volatility.	
Potential Impacts: • New revenue opportunities in enterprise services: Digital infrastructure such as Cloud and data center, IoT, and smart solutions. In 2024, revenue generated from Cloud services totaled THB 844 million, accounting for 0.4% of the Company's total revenue. • Expansion of partnerships in smart cities and digitalization. • Strengthened market position as well as increased customer retention and acquisition from sustainability-aligned offerings.	
Strategic Response: • Leverage 5G, cloud, data centers, smart solutions, and data analytics tailored to climate resilience digital infrastructure offerings. • Position AIS as a technology partner to businesses and government entities navigating the low-carbon transition.	
Affected Financial Items: • Revenue growth from cloud, co-location, IoT, and climate-related enterprise solutions. • CapEx: Investment in digital infrastructure and smart technologies to support new offerings	

Climate Scenario Analysis

We have conducted scenario analysis on the following 3 implications to assess potential risks and financial impacts, and formulate the adaptation and mitigation plans accordingly.

I. Physical Risks Scenario: Major flooding

AIS conducted a physical risk scenario analysis focused on **major flooding** due to its high relevance to Thailand and the criticality of AIS's infrastructure. According to the *World Bank's Climate Risk Country Profile: Thailand*, flooding poses the most significant climate-related hazard to the country in terms of economic disruption and human impact. The increasing frequency and severity of floods, exacerbated by rising sea levels, land subsidence, and cyclone-induced storm surges, present a material risk to our operations, especially given the widespread distribution of base stations across Thailand.

Objective and Scope

The analysis aimed to assess the financial implications and resilience of our infrastructure under varying climate futures, using climate and socioeconomic pathways to evaluate risks and inform long-term strategy. It focuses on AIS's core business—**mobile telecommunication services**, which contribute approximately 75% of total revenue. The scope includes key telecommunication

infrastructure, particularly mobile base stations, across AIS's operational footprint in Thailand. A 10-year timeframe is used, aligned with the typical asset lifespan of mobile network infrastructure.

Scenario Selection and Assumptions

Focusing on rainfall-induced flood risk[1] under different climate conditions, AIS employed an approach that integrates **Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs)**[2] . This combined framework allows us to analyze how different levels of greenhouse gas (GHG) emissions, together with socioeconomic development trajectories, may shape climate outcomes and impact our infrastructure.

We assess the impact of rainfall under three climate scenarios;

1. **SSP1-2.6: (Low-Emission Scenario)** Represents a **sustainable pathway** aligned with RCP2.6, where global warming is limited to below 2°C, with aggressive mitigation and low physical risks. It assumes strong global cooperation, sustainable economic growth, rapid technological progress, and significant emissions reductions where the carbon dioxide (CO_2) emissions start declining by 2020 and go to zero by 2100.
2. **SSP2-4.5: (Intermediate Scenario)** Reflects a **moderate trajectory** of emissions aligned with RCP4.5, leading to 2.5–3°C temperature rise. It assumes moderate global efforts to reduce emissions, with uneven progress across regions; some environmental degradation persists, and emissions peak around 2040, then decline.
3. **SSP5-8.5: (High-Emission Scenario)** A **worst-case scenario** aligned with RCP 8.5, assuming continued fossil fuel dependency and emissions growth, leading to up to 5°C temperature rise. It assumes weak climate policy and fossil fuel–driven economic development, resulting in emissions continuing to rise throughout the 21st century.

Flood Likelihood Assessment Parameters:

To assess the likelihood and severity of major flooding under each scenario, AIS considered the following parameters:

- **Seasonal Maximum 1-day Rainfall**: Estimates short-term, high-intensity rainfall leading to flash floods.
- **Seasonal Maximum 3-day Rainfall**: Captures prolonged rainfall events contributing to widespread inundation.
- **Flood-prone Area Mapping**: Based on historical flood data[3] and topographical risk zones.
- **Elevation and Location Risk Factors**: Used to categorize areas as Cautious, Highly Cautious, or Crisis Areas based on their vulnerability to flooding.

Each site was evaluated using AIS's internal risk matrix, which categorizes risk likelihood into five levels (Very Low to Very High), allowing consistent integration into enterprise risk management.

[1] The climate impact on annual rainfall of Thailand is analyzed by the Hydro-Informatics Institute of Thailand, using different SSP scenarios.

[2] Explanation of the SSP scenarios comes from the German Climate Computing Center https://www.dkrz.de/en/communication/climate-simulations/cmip6-en/the-ssp-scenarios

[3] Data of flood-prone areas from Department of Water Resource of Thailand

Impact Assessment Assumptions:

- **Asset Damage Costs**: Estimated using the net book value of base station equipment located in flood-prone areas.
- **Revenue Loss**: Calculated based on the average monthly revenue generated by mobile base stations in affected areas, focusing on mobile network services.
- **Geographical Coverage**: Includes 100% of base stations nationwide, to comprehensively reflect exposure across different regional flood scenarios.
- **Timeframe**: A 10-year horizon, corresponding to the expected lifetime of network infrastructure, ensures alignment between physical risk exposure and asset depreciation.

Summary of Scenario Analysis Results

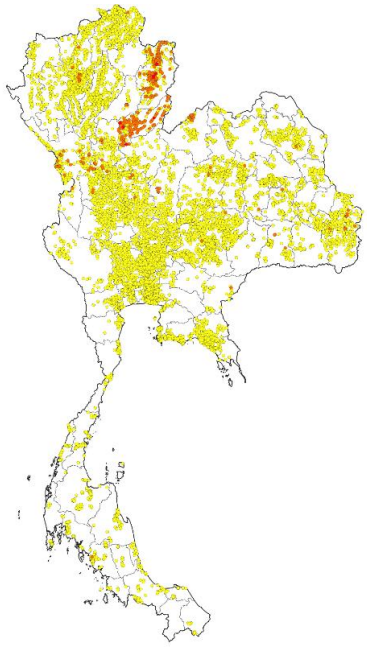
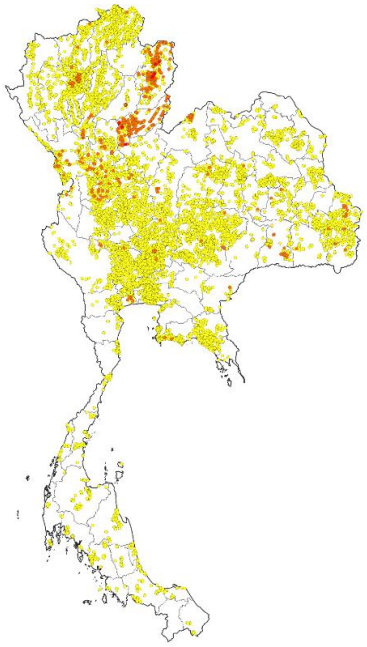
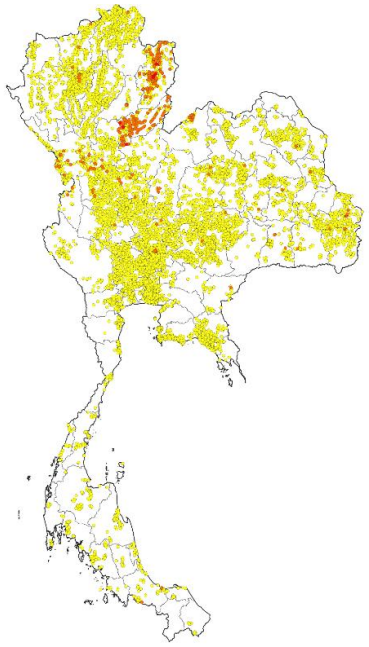
The scenario analysis indicates that major flooding poses a significant physical risk to AIS's network infrastructure, particularly in the central region of Thailand. Depending on the climate scenario (with projected temperature increases ranging from 2°C to 5°C), **between 8,100 and 10,300 base stations** nationwide may be affected.

The **estimated financial impact from asset damage** ranges **from THB 14,000 million to THB 19,000 million**. If these base stations are rendered inoperable, the resulting **revenue loss per month** is estimated at **THB 2,300 million to THB 3,300 million**. Details by scenario are presented in the table below.

In the 5 °C scenario (SSP5-8.5), extreme heat and prolonged dry periods reduce the likelihood of flooding in some areas, resulting in a lower number of high-risk sites despite the overall increase in climate-related hazards.

Table 1: Estimated Physical and Financial Impacts of Flooding on Mobile Base Stations under Climate Scenarios (2015–2039)

As of 2024

Scenario	SSP1-2.6	SSP2-4.5	SSP5-8.5
	Affected areas and base stations (medium to high risk levels)		
Risk Map			
Number of sites in risk area	9,529	12,562	9,679
	Financial impacts (Million THB)		
Asset damage (calculated from Netbook value)	14,267	19,181	14,396
Estimated Revenue loss per month	2,391	3,339	2,391

Implications for Business Resilience

AIS recognizes that climate-induced flooding, particularly in the central region of Thailand, poses a significant threat to our nationwide mobile telecommunications infrastructure. As uninterrupted digital connectivity becomes increasingly essential, strengthening our network's resilience is critical to maintaining customer trust, service reliability, and business continuity.

Based on scenario analysis results, AIS has developed a comprehensive set of adaptation and mitigation measures to manage physical risks from flooding across the short, medium, and long term. These actions aim to protect infrastructure, ensure service continuity, and minimize supply chain disruptions while supporting our long-term strategic and sustainability objectives.

Adaptation and Mitigation

Short- to Medium-Term Measures (0–5 Years)

Infrastructure and Operational Resilience

- **Business Continuity and Incident Response Plans**: AIS has developed robust business continuity plans (BCPs) and incident response protocols for key infrastructure, including base stations, mobile switching centers (MSCs), and data centers. These plans ensure rapid response and minimal disruption during extreme weather events.
- **Elevated Infrastructure**: In flood-prone areas, mobile base stations are elevated by 1.5 to 3.0 meters to reduce flood vulnerability. Permanent flood walls have also been constructed around critical MSCs.
- **Alternative Power Supply**: AIS continues to deploy backup power generators and mobile base stations to maintain critical service continuity during outages caused by flooding or power disruption.
- **Decentralized Power Sources**: Additional investment in solar panels at operational sites and data centers enhance energy autonomy, enabling operations to continue even during grid failures due to flooding.

Early Warning and Monitoring

- **Monitoring Tools**: AIS has installed localized flood warning systems in historically affected areas to support early decision-making and risk mitigation.

Upstream and Downstream Value Chain Readiness

- **Supply Chain Preparedness**: Collaborating with key suppliers to identify alternative warehousing and distribution routes for telecommunications equipment during high-risk flood periods.
- **Dealer and Partner Continuity**: Leveraging digital platforms and online tools to maintain uninterrupted service with dealers and retail partners in flood-affected regions.
- **Customer Service Channels**: Promoting self-service through mobile applications (e.g., myAIS), ensuring customer access to essential services even when physical locations are impacted.

Long-Term Measures (6–30 Years)

Climate-Resilient Infrastructure Planning

- **Site Selection Criteria**: Results from the scenario analysis are integrated into AIS's infrastructure planning processes. All new facilities and base stations will undergo flood risk assessment to avoid siting in high-risk areas.
- **Design Optimization**: Future network infrastructure will incorporate flood-resilient materials and designs, improving long-term durability against climate-induced events.

Strategic Investment and CapEx Allocation

- **Future-Proofing Network Assets**: AIS is aligning long-term capital expenditures with climate resilience priorities, including enhanced materials, elevated construction standards, and smart infrastructure integration.
- **Diversification of Energy Sources**: Continued efforts to increase the share of renewable energy in operations contribute to both emission reduction and energy security during physical climate events.

II. Transition Risk Scenario

Scenario 1: Carbon Pricing ('Thailand's Carbon Tax' case)

Thailand has committed to achieving Carbon Neutrality by 2050 and Net Zero GHG Emissions by 2065. To support this transition, the government introduced its first draft carbon pricing mechanism in January 2025. Administered by the Excise Department, the policy initially aims to **integrate a carbon tax of 200 THB per metric ton of CO_2 equivalent into the existing excise tax on oil and petroleum products** rather than an additional levy. The objective is to facilitate a transition for both consumers and businesses, encouraging behavioral and production process changes that contribute to reducing carbon dioxide emissions.

The mechanism marks a foundational step toward a broader, more comprehensive carbon pricing framework expected to be established under the forthcoming Climate Change Act. This regulatory evolution is part of Thailand's strategy to align with international climate commitments and enhance global trade competitiveness, particularly in light of the EU's Carbon Border Adjustment Mechanism (CBAM), which will be fully effective by 2026.

Objective and Scope

Although the carbon tax in Thailand is currently not an additional levy, AIS has conducted a transition risk scenario analysis to assess the potential financial exposure from carbon pricing policies to enhance strategic preparedness. The analysis **focuses on Scope 1 emissions**—direct greenhouse gas (GHG) emissions from company-controlled sources, such as fuel use in AIS's vehicle fleet and diesel-powered generators at network sites.

Key assumptions:

- **Carbon price**: 200 THB per tCO_2e (reflecting Thailand's announced carbon tax).
- **Timeframe**: 2024–2030.
- **Emission scope**: Scope 1 only; Scope 2 emissions are excluded consistent with international practice, as responsibility lies with electricity producers.
- **Forecast model**: Business-as-usual (BAU) growth adjusted for expected decarbonization initiatives (e.g., transition to electric vehicles, increased renewable energy use).

Financial Impact Estimation

The estimate is indicative only and does not represent a current obligation.

Based on FY2024 actual Scope 1 emissions and future projections, AIS estimates an annual exposure of approximately THB 6 million under a carbon price of 200 THB per tCO_2e. This estimate provides a baseline view of inherent financial risk should the carbon pricing regime expand beyond the energy sector.

Scenario 2: Carbon Pricing ('IEA NZE 2050' case)

The IEA Net Zero Emissions by 2050 (**IEA NZE 2050**) scenario has been applied as a benchmark to assess the financial impact of a transition aligned with **limiting global warming to 1.5°C**. The NZE scenario is internationally recognized and widely used in climate scenario analysis due to its scientific rigor and cross-sector coverage.

This analysis aims to evaluate potential financial exposure from misalignment with a 1.5°C pathway by comparing the company's forecasted emissions to the emission levels required under that scenario. The difference, or emissions gap, is **monetized using Thailand's carbon tax rate** to reflect regulatory cost exposure under this transition.

Objective and Scope

The objective of this scenario analysis is to estimate potential financial risks from transition-related policy developments, particularly carbon pricing, through 2030. **The scope of assessment covers Scope 1 and Scope 2 emissions** based on business-as-usual projections that are adjusted for expected decarbonization initiatives and compares them against a 1.5°C-aligned reduction pathway.

Key assumptions:

- **Carbon Price:** 200 THB per tCO_2e (Thailand's announced carbon tax).
- **Timeframe**: 2025-2030.
- **Emission scope**: Scope 1 & 2.
- **Scenario Reference:** IEA Net Zero Emissions by 2050.
- **Target Pathway:** Based on SBTi 1.5°C criteria, applying a 42% reduction by 2030 for Scope 1 and 2 emissions.
- **Forecast model**: Business-as-usual (BAU) growth adjusted for expected decarbonization initiatives (e.g., transition to electric vehicles, increased renewable energy use) compared with the pathway of applying the 42% reduction by 2030.

Financial Impact Estimation

The estimate is indicative only and does not represent a current obligation.

Based on the forecasted GHG emissions trajectory from 2025-2030, the company estimates a total cumulative emissions volume of 5.9 million tCO_2e under the BAU case adjusted for expected decarbonization initiatives. In comparison, the 1.5°C-aligned pathway, using SBTi's recommended reduction of 42% by 2030, indicates a target cumulative emissions volume of 4.4 million tCO_2e. **The emissions gap** between the BAU and target pathways, therefore, **amounts to 1.5 million tCO_2e**.

To quantify the potential financial exposure, the Company applied Thailand's announced carbon tax rate of 200 THB/tCO_2e to the emissions gap. As a result, **the estimated potential cost exposure is up to 307 million THB** from 2025 to 2030. This figure reflects modeled transition risk under a high-ambition climate scenario and supports strategic planning for emission reduction efforts.

Strategic Implications and Preparedness

Although AIS's exposure to carbon tax is currently limited, evolving regulations and broader adoption of carbon pricing may lead to future liabilities. Potential implications include:

- **Increased operational costs** associated with fossil fuel consumption.
- **Indirect price pass-through effects** from vendors or logistics partners.
- **Stakeholder pressure** to accelerate decarbonization and align with Thailand's climate commitments.

AIS has proactively integrated transition risk considerations into strategic and operational planning to enhance resilience and maintain competitiveness:

Operational Initiatives

- **Fleet Electrification**: AIS is transitioning its vehicle fleet to electric models to reduce Scope 1 emissions and exposure to fossil fuel volatility.
- **Energy Efficiency & Renewable Investments**: The Company is improving network energy efficiency and exploring renewable energy integration to reduce long-term carbon intensity.
- **Climate-Informed Capital Allocation**: Investment and cost structure reviews now factor in regulatory trends and potential future carbon-related costs.

Internal Engagement

- **Capacity Building**: AIS is enhancing internal awareness of climate-related risks and opportunities by engaging key functions such as finance and procurement in scenario planning and low-carbon strategy discussions.
- **Strategic Integration**: Climate risk mitigation has been embedded in business planning through collaboration between the sustainability team and core business units to identify opportunities for low-carbon alternatives without compromising performance.

Value Chain Engagement

- **Supplier Collaboration**: Through our green procurement policy, AIS encourages suppliers to adopt environmentally responsible practices, improve network operational efficiency, and reduce emissions.
- **Low-Carbon Solutions for Clients**: AIS is co-developing digital solutions with partners to support clients in enhancing operational efficiency and reducing emissions, thereby extending our climate-positive impact across the value chain.

AIS will continue monitoring developments under the forthcoming Climate Change Act and update its scenario assumptions to inform long-term risk mitigation and decarbonization strategies.

Decarbonization Roadmap

In response to the growing urgency of climate change and mitigating transition risks under emerging policy and regulatory frameworks, AIS has developed a forward-looking Decarbonization Roadmap as a core element of its climate strategy. This roadmap outlines a strategic framework, and actionable initiatives aimed at reducing greenhouse gas (GHG) emissions across AIS's operations, supply chain, and business growth areas, while supporting Thailand's national targets for carbon neutrality and net-zero emissions.

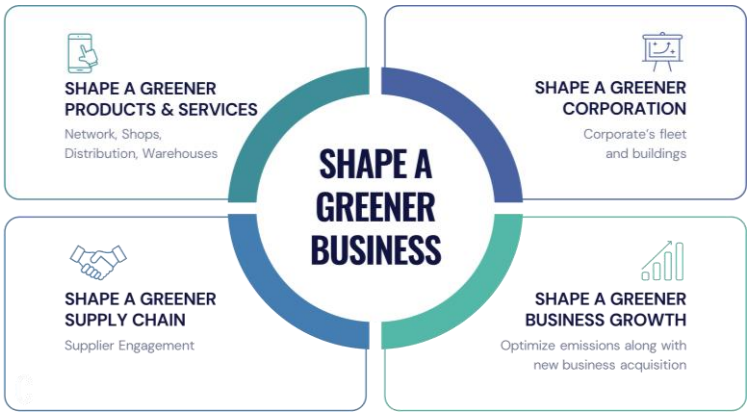
AIS's decarbonization efforts are structured around four focus areas:

Greener Products & Services – Minimizing emissions from the development and operation of core services, including network infrastructure, data centers, and retail locations.

Greener Corporation – Reducing emissions from supporting corporate functions such as office buildings, fleet operations, and emergency power systems.

Greener Supply Chain – Addressing indirect emissions from procured goods and services, business travel, and end-of-life treatment of equipment.

Greener Business Growth – Ensuring that new business expansion integrates emissions management from the outset, enabling sustainable revenue growth.



AIS conducted a comprehensive review of emission sources to identify feasible short- and medium-term decarbonization initiatives. Each initiative was assessed based on legal and technical constraints (e.g., infrastructure limitations or contractual terms) and financial viability (e.g., payback period and return on investment). The following table summarizes selected initiatives planned for implementation from 2025–2030:

Initiative	Workplan (2025–2030)	Expected GHG Reduction (tCO_2e/year)	% Contribution to the Interim Target	Estimated Financial Savings (THB/year)
Solar Power for sites and facilities	>40,000 kW	13,000	52%	140 million
AC Unit Upgrade to Inverter Type	>2,600 units	6,300	25%	65 million
Fleet Electrification (EVs/Hybrids)	>3,700 vehicles	3,400	14%	5 million
Smart Cooling Systems	>10 buildings	1,100	4%	11 million
Renewable Power Purchasing Agreement	>1,500 kW	1,100	4%	2 million
LED Lighting Replacement	>8,400 bulbs	150	1%	1 million

Opportunities and Challenges for Further Decarbonization

To achieve deeper and sustained emissions reduction beyond the current roadmap, AIS recognizes several emerging opportunities and challenges:

EV Charging Infrastructure – Expanding AIS's EV fleet depends on the availability of robust and widespread charging infrastructure, particularly in remote or underserved areas.

Emerging Fuel Cell Technologies – Advancements in hydrogen and fuel cell storage could offer low-emission backup power for base stations, potentially replacing diesel generators in the long term.

Grid Decarbonization Constraints – AIS's electricity consumption is significant and widely distributed. Under Thailand's Power Development Plan (PDP), renewable energy capacity is expected to grow, but current grid mix limitations constrain full-scale decarbonization of network operations.

Standardization and Support Mechanisms – Further guidance from relevant state agencies, particularly on the calculation and publication of the residual mix used to account for emissions from grid-purchased electricity, is essential for accurate and transparent reporting, in accordance with GHG Protocol. The availability of standardized, country-specific emission factors (EFs) will also enhance consistency in greenhouse gas accounting and support alignment with international reporting frameworks and best practices.

AIS will continue to monitor these developments, explore scalable decarbonization solutions, and integrate them into future strategic planning.

Participation in Climate Action Initiatives

Our company is an active member of the GSM Association (GSMA), a global organization representing the interests of mobile network operators and the broader mobile ecosystem. Through our membership, we engage in the GSMA Climate Action Taskforce, which advances initiatives such as accelerating emissions reductions, expanding renewable energy adoption, promoting circular economy practices, and addressing Scope 3 emissions across the mobile industry. Our involvement includes supporting GSMA's "Path to Net Zero" initiative, which aligns with our management approach to reduce carbon emissions through energy efficiency improvement, renewable energy integration, and e-waste management. We have continued contributing to membership funding to support GSMA's sustainability programs, research, and collaborative industry action, which are consistent with the goals of the Paris Agreement.

Part 4: Metrics and Target

AIS establishes its climate-related targets through a data-driven approach, beginning with a review of past GHG emissions to project future emissions trends through 2050. The Company then compiles all viable decarbonization initiatives, outlined in the Strategy Pillar, to estimate achievable emission reductions or avoidance. By applying these initiatives to the forecasted emissions, AIS sets a solid and achievable target that reflects both ambition and feasibility. The proposed target undergoes review by the Management Committee, the Sustainable Development Committee, and approval by the Board of Directors.

In 2024, AIS conducted a comprehensive target review as the previous target had been successfully achieved and was no longer effective. Additionally, the acquisition of TTTBB brought significant organizational changes, necessitating a reassessment to ensure the target remains aligned with the Company's expanded operations and strategic direction.

Targets

AIS believes our goals demonstrate to our stakeholders that we are committed to internalizing our negative externalities, while also managing possible risks and opportunities arising from climate change. Our commitment is to:

Reduce GHG emissions intensity as calculated from the ratio of direct **(GHG scope 1)** and indirect emissions **(GHG scope 2) to data traffic, by 25% by 2030** compared to the **2024 baseline.**

However, the Company recognizes the importance of aligning short-and long-term targets with science-based targets, which will provide a clear and reliable framework for GHG emission reduction. The Company will continue to monitor developments in green electricity procurement domestically, as this will be a vital tool in reducing indirect GHG emissions from electricity consumption, which represents a significant portion of the Company's overall emissions.

Progress and performance

Despite increasing energy consumption driven by network expansion and rising data demand, AIS has maintained strong performance in reducing greenhouse gas (GHG) emission intensity. This reflects the efficiency of our network design and resource utilization. In 2024, AIS achieved a **98% reduction in GHG emissions intensity**—measured as GHG emissions per unit of data traffic—compared to the 2015 base year, meeting our short-term decarbonization target. This milestone highlights our ability to decouple emissions growth from service expansion.

Promoting Energy Efficiency

AIS has prioritized energy efficiency by integrating advanced technologies across its operations. In 2024, the key initiatives involve

- **The adoption of AI in processing and analyzing network utilization** to manage signal and energy use according to customers' usage to deliver solid quality and energy efficiency. These efforts resulted in annual electricity savings of approximately 31,936 MWh and a reduction of 15,965 tCO_2e in greenhouse gas emissions.
- **Optimized operations in its Data Centers and Switching Centers** by managing equipment utilization and procuring high-efficiency systems. These efforts have led to additional energy savings of 380 MWh per year and a further reduction of 190 tCO_2e.

Alternative Energy Use

Progress has also been made in transitioning to renewable energy. In 2024, **renewable energy usage rose to 3.06% of total energy consumption**, up from 2.25% in 2023. This improvement is attributed to our continued deployment of solar panels across our infrastructure, including base stations mobile switching centers, and data centers. As of 2024, a total of 13,413 sites have been equipped with solar panels, generating a total of 51,917 MWh of electricity from renewable sources and contributing to a reduction of 25,953 tCO_2e in GHG emissions. The total investment in renewable energy from 2019 to 2024 amounts to THB 1,920 million.

Decarbonizing Value Chain

In parallel, AIS recognizes the importance of managing emissions across our entire value chain. In 2024, we completed a comprehensive review and **assessment of all 15 categories of Scope 3 emissions**, in alignment with the GHG Protocol methodological guidelines. This assessment, conducted in collaboration with an external reviewer, focused on categories most relevant to our operations and forms a critical input for developing a robust and actionable decarbonization roadmap.

AIS gives importance to **raising awareness and educating its suppliers** on climate change. As part of its efforts, the Company has engaged with its significant suppliers on issues related to managing and achieving the climate change targets. Discussions covered a range of topics, including the urgency and current impacts of the changing weather patterns, methodologies for collecting and calculating GHG emissions in compliance with international standards, programs dedicated to GHG emission reduction as well as AIS's short- and long-term targets for mitigating the impacts of GHG emissions. In 2024, AIS engaged with 16 significant suppliers, accounting for 64% of the total procurement expenditure.

Further details of our key actions to respond to climate issues, including customer engagement and low-carbon products and services, are available in the sustainability report 2024

https://sustainability.ais.co.th/storage/sustainability-report/2024/20250127-advanc-srd-2024-en.pdf

Table 4 : Our metrics and performance

	Unit	2021	2022	2023	2024	Target 2024
GHG Emission						
Total GHG emissions (Scope 1 and 2)	tCO_2e	645,321	675,497	704,264	798,881	780,000
Scope 1 - Direct GHG emissions [1]	tCO_2e	8,931	7,411	9,351	30,349	
Scope 2 - Indirect GHG emissions [2]						
• Location-based	tCO_2e	636,390	668,086	694,913	768,532	
• Market-based	tCO_2e	636,390	668,086	694,913	768,532	
Scope 3 - Indirect GHG emissions[3]	tCO_2e	132,614	456,538	414,205	729,107	
• Category 1: Purchased goods and services	tCO_2e		234,742	179,328	191,612	
• Category 2: Capital goods	tCO_2e	15,259	75,985	85,857	128,932	
• Category 3: Fuel- and Energy-Related Activities not included in Scope 1 or Scope 2	tCO_2e	-	89,963	100,310	154,494	
• Category 4: Upstream transportation and distribution	tCO_2e	-	-	-	9,399	
• Category 5: Waste generated in operations	tCO_2e	-	-	-	460	
• Category 6: Business travel	tCO_2e	-	-	-	930	
• Category 7: Employee commuting	tCO_2e	1,198	-	-	48,079	
• Category 8: Upstream leased assets	tCO_2e	-	-	-	82	
• Category 11: Use of sold products	tCO_2e	116,157	55,848	48,710	186,832	
• Category 12: End of life treatment of sold products	tCO_2e	-	-	-	256	
• Category 13: Downstream leased assets	tCO_2e	-	-	-	8,031	
GHG Intensity[4]	tCO_2e per Terabyte	0.037	0.032	0.026	0.018	

	Unit	2021	2022	2023	2024	Target 2024
Energy						
Total Energy Consumption	MWh	**1,318,495**	**1,394,989**	**1,456,351**	**1,694,283**	
	Terajoule	**4,747**	**5,022**	**5,243**	**6,099**	
1) Total non-renewable energy consumption	MWh	1,302,213	1,370,769	1,423,592	1,642,366	
	Terajoule	4,688	4,935	5,125	5,913	
• Direct energy consumption: Fuel and other [5]	MWh	29,178	34,356	33,488	104,994	
	Terajoule	124	121	121	378	
• Indirect energy consumption: Electricity [6]	MWh	1,273,035	1,336,440	1,390,104	1,537,372	
	Terajoule	4,583	4,811	5,004	5,535	
2) Total renewable energy consumption	MWh	16,282	24,193	32,759	51,917	50,000
	Terajoule	58.62	87.09	118	187	
% Energy from renewable sources	%	1.23	1.73	2.25	3.06	
Power Usage Effectiveness (PUE) at Data Centers [7]	Unit	1.51	1.505	1.502	1.58	1.50
Energy consumption in data centers	MWh	77,261	83,851	89,629	117,214	
% Energy from renewable sources in data centers	%	1.57	1.74	1.69	1.30	
Energy cost	Million baht	5,138	5,798	6,877	7,628	

Remarks

1. GHG emissions result from the burning of fuels, vehicles, power generators, coolant leakage and carbon dioxide type fire extinguishers. Emission factor and Global Warming Potential (GWP) values used in the calculation are based on a 100-year time frame indicated in the Fifth Assessment Report (AR5) used by the Inter-Government Panel on Climate Change (IPCC). The GHG Inventory Calculation tool is from the Thailand Greenhouse Gas Management Organization (TGO). The consolidation approach used in this report is 'operational control'.
2. The source of Indirect GHG emissions (Scope 2) comes from the national grid so the reported data for location-based and market-based are the same.

3. Significant improvements were made to our Scope 3 assessment in 2023, employing GHG protocol methodologies and gathering data at a more granular level, resulting in substantial variations between the 2022 and 2023 data sets. These changes in data coverage account for the observed differences. In 2024, the Company reported Scope 3 emissions across 11 categories as the numbers reported on the above table. These reported emissions have been independently verified by a third-party auditor, ensuring accuracy and reflecting the expanded reporting scope for more comprehensive coverage.
4. GHG Intensity is the ratio of GHG per data traffic generated the whole year. It is specific for telecommunication industry which shows efficiency of the emission by stating how much GHG is emitted for every terabit of generated traffic. In 2024, the unit was changed from tCO2 e per terabit to tCO2 e per terabyte, along with the data traffic scope was expanded to cover both mobile and fixed broadband businesses. Previous reported numbers have been adjusted accordingly to ensure consistency with these changes.
5. Direct energy consumption results from fuel for operation vehicles and backup generators. The monthly collected data in liters are derived to obtain energy by a conversion factor provided by Department of Alternative Energy Development and Efficiency (DEDE).
6. Indirect energy consumption is from electricity used in the business including network operations. Data is compiled to total MWh of usage through either Metropolitan or Provincial Electricity Authority billing, which is recorded in the system.
7. Power Usage Effectiveness (PUE) is a metric to measure efficiency of data centers. PUE is defined as total energy used in a data center divided by the usage of the IT equipment load that such data center serves. The increase in PUE in 2024 is attributed to the expanded data collection scope, which now encompasses all data centers currently operated by the company and its subsidiaries.