



Sustainability assurance milestones in ASEAN: Regulatory trajectories, adoption patterns, and performance outcomes (2010–2024)

Aditya Septiani, Etna Nur Afri Yuyetta*, Anis Chariri

Department of Accounting, Faculty of Economics and Business, Universitas Diponegoro, Semarang, Indonesia

Corresponding Author: Etna Nur Afri Yuyetta

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Abstract

The past decade has witnessed substantial growth in sustainability assurance across the Association of Southeast Asian Nations (ASEAN), driven by progressive regulatory mandates, institutional investor pressure, and alignment with global frameworks including the Global Reporting Initiative (GRI) and the Task Force on Climate-related Financial Disclosures (TCFD). This paper provides a systematic documentary analysis of sustainability assurance milestones across six ASEAN member states: Singapore, Malaysia, Indonesia, Thailand, the Philippines, and Vietnam covering the period 2010 to 2024. Drawing on regulatory documents, stock exchange guidelines, and secondary empirical data from sustainability surveys, we map the chronological evolution of mandatory reporting and assurance frameworks, assess adoption trends, and evaluate key performance indicators. Our findings reveal that Singapore and Malaysia lead the region in sustainability reporting adoption (approximately 79% and 75% of listed companies, respectively, as of 2022), while external assurance coverage remains considerably lower, averaging approximately 29% of reporting companies across ASEAN6. The dominance of limited assurance engagements and concentration of provision among Big 4 accounting firms present significant governance and capacity challenges. Policy implications for regional harmonisation under the ASEAN Taxonomy for Sustainable Finance are discussed.

Keywords: Sustainability assurance, ASEAN, ESG reporting, regulatory milestones, corporate governance, nonfinancial assurance

Introduction

The credibility of sustainability information has become a critical concern for investors, regulators, and civil society as corporate disclosures of environmental, social, and governance (ESG) performance continue to expand globally. Unlike financial reporting subject to standardised audit requirements under national and international accounting standards, sustainability reporting has historically been largely voluntary and unverified (Simnett, Vanstraelen, & Chua, 2009) ^[16]. External assurance, defined as the independent verification of sustainability disclosures by a competent third party, has therefore emerged as a key mechanism for enhancing the credibility and reliability of nonfinancial information (Cohen & Simnett, 2015) ^[5].

Within the ASEAN region, the regulatory landscape for sustainability reporting and assurance has transformed significantly over the past fourteen years. Member states have progressively introduced mandatory or semimandatory frameworks; however, the pace, scope, and sophistication of these frameworks vary considerably. Singapore Exchange Regulation (SGX RegCo) introduced mandatory sustainability reporting on a comply-or-explain basis from financial year (FY) 2017 ^[18], while Bursa Malaysia extended analogous requirements from 2016. More recently, both exchanges have enacted mandatory climate-related disclosures aligned with the TCFD framework. Meanwhile, Indonesia, Thailand, the Philippines, and Vietnam are at various stages of regulatory development, creating an uneven landscape that complicates crossborder investment decisions and regional harmonisation efforts.

At the global level, KPMG International (2022) ^[10] reports that 96% of G250 companies publish sustainability reports, with assurance coverage among the N100 the 100 largest

companies by revenue across 52 surveyed countries reaching approximately 64%. This growing norm of verified disclosure stands in contrast to ASEAN's regional average, where assurance coverage remains materially lower, underscoring the importance of understanding the trajectory and determinants of assurance adoption in the region.

This paper addresses three interrelated research questions: (RQ1) What are the key regulatory milestones in sustainability reporting and assurance across ASEAN member states from 2010 to 2024? (RQ2) What are the adoption trends in sustainability reporting and external assurance across these markets? (RQ3) What performance outcomes can be observed in terms of assurance coverage, provider type, and assurance level? By systematically mapping regulatory milestones and synthesising secondary data, this paper contributes to the emerging literature on nonfinancial assurance in developing markets (Cho, Michelon, Patten, & Roberts, 2014 ^[4]; MartínezFerrero & GarcíaSánchez, 2017) ^[12].

Theoretical Framework

The demand for sustainability assurance can be understood through several complementary theoretical lenses that collectively account for both voluntary and mandated assurance decisions.

1. Legitimacy Theory

Legitimacy theory posits that organisations seek to align their disclosures with the norms and expectations of the social system in which they operate (Suchman, 1995) ^[17]. Commissioning external assurance on sustainability reports represents a legitimising strategy demonstrating to stakeholders that disclosures are credible and that the organisation adheres to responsible governance norms. In

ASEAN markets characterised by growing civil society scrutiny and ESG investor activism, assurance serves as a visible signal of accountability (Cho *et al.*, 2014)^[4].

2. Stakeholder Theory

Freeman's (1984)^[6] stakeholder theory suggests that organisations are accountable to a broad set of parties beyond shareholders. Assurance provision signals accountability to investors, creditors, regulators, customers, and communities. Empirical evidence supports the notion that institutional investor pressure significantly influences assurance adoption decisions (Simnett *et al.*, 2009)^[16]. As ASEAN capital markets attract growing volumes of ESG-oriented institutional investment, stakeholder pressure on listed companies to obtain assurance is intensifying.

3. Agency Theory

Information asymmetry between managers and external stakeholders creates demand for independent verification (Jensen & Meckling, 1976)^[9]. External assurance reduces information risk and can lower the cost of capital for reporting companies, a benefit increasingly relevant as sustainability-linked financing gains traction across ASEAN capital markets (Liao, Lin, & Zhang, 2018)^[11]. The distinction between limited and reasonable assurance corresponds to different levels of evidential scrutiny, reflecting the agency cost-reduction logic of varying assurance intensities.

4. Regulatory Compliance Theory

Beyond voluntary motivations, regulatory mandates have become dominant drivers of assurance adoption in ASEAN. Mandatory reporting requirements reduce the discretionary element of disclosure and shift competitive dynamics toward assurance quality and scope (Casey & Grenier, 2015)^[3]. The progressive tightening of requirements in Singapore and Malaysia exemplifies a regulatory ratchet effect, wherein initial comply-explain mandates are elevated toward full mandatory compliance over successive regulatory cycles.

Methodology

This study employs a systematic documentary analysis combined with secondary data synthesis. The documentary component examines official regulatory texts, stock

exchange listing rules, national sustainable finance taxonomies, and annual monitoring reports published by ASEAN member state regulators and exchanges from 2010 to 2024. Primary documents were retrieved from the official websites of SGX RegCo, Bursa Malaysia, Otoritas Jasa Keuangan (OJK), the Stock Exchange of Thailand (SET), the Philippine Securities and Exchange Commission (SEC Philippines), and the State Securities Commission of Vietnam (SSC).

Secondary quantitative data on sustainability reporting and assurance adoption are drawn primarily from the KPMG Survey of Sustainability Reporting (2022), the GRI Sustainability Disclosure Database, and annual monitoring data published by respective exchanges. Where country-level data are unavailable from a single source, figures are triangulated across multiple sources. All adoption rate figures presented in this paper are best-available estimates, clearly labelled as such; exact figures should be verified against current exchange monitoring reports.

Regulatory milestones are categorised along a four-stage progression: (i) voluntary guidance—nonbinding reporting guides; (ii) comply or explain mandates companies must report or justify noncompliance; (iii) mandatory reporting disclosure required without exception for the designated scope; and (iv) mandatory assurance and/or advanced climate requirements—external verification required alongside sustainability disclosure. Performance outcomes are assessed across three dimensions: reporting adoption rate, assurance coverage rate, and assurance characteristics (level and provider type).

Results and Analysis

1. Regulatory Milestones Across ASEAN6

Table 1 presents key regulatory milestones in sustainability reporting and assurance across the six ASEAN member states analysed. A clear pattern of progressive regulatory development is observable across all jurisdictions, though the current stage and implementation depth vary substantially. Singapore and Malaysia have progressed furthest along the regulatory maturity continuum. Indonesia has adopted a distinctive phased mandatory assurance model for the financial sector. Thailand, the Philippines, and Vietnam are at intermediate stages of their respective regulatory journeys.

Table 1: Key Regulatory Milestones in Sustainability Reporting and Assurance: ASEAN6 (2010–2024)

Country / Exchange	Stages 1–2: Voluntary Guidance & Comply or Explain	Stage 3: Mandatory Reporting	Stage 4: Advanced Climate / Assurance Requirements
Singapore (SGX RegCo)	SR Guide (2011, voluntary). Comply or explain for all SGX-listed companies from FY2017.	Mandatory TCFD-aligned climate disclosures for large listed issuers from FY2022 (SGX, 2021).	TCFD phased to all listed companies (2023–2025). Assurance strongly recommended for climate data.
Malaysia (Bursa Malaysia)	1st SR Guide (2006); 2nd edition (2015). Mandatory for Main Market from FY2016; ACE Market from FY2018.	3rd SR Guide (2022); enhanced climate disclosures from FY2023 (Bursa Malaysia, 2022) ^[2] .	TCFD-aligned mandatory climate disclosures for large companies. Assurance encouraged.
Indonesia (OJK)	BAPEPAM annual report regulation (2012). POJK No. 51/2017 Sustainable Finance enacted.	Mandatory SR: financial services sector from 2019; phased to all public companies 2020–2023 (OJK, 2017) ^[18] .	Mandatory assurance (phased) for financial sector. Indonesia Green Taxonomy (2022).
Thailand (SET)	SET SR guidelines (2012). Thailand Sustainability Investment (THSI) Index launched (2015). Integrated reporting guidance (2017–2018).	561 One Report integrating financial and sustainability disclosures for all listed companies (2021).	TCFD adoption encouraged. Climate risk disclosure framework under development (SET, 2023).
Philippines (SEC)	Draft SR guidelines (2017–2018) ^[11] . MC No. 4/2019 issued: SR guidelines for PLCs; mandatory for PSEi companies from FY2020.	Mandatory for all large PLCs from FY2023 (SEC Philippines, 2019) ^[14] . GRI-aligned framework.	Climate risk disclosures recommended. TCFD adoption under regulatory consideration (2023–).

Vietnam (SSC)	Circular 155/2015: environmental information disclosure for listed companies. Voluntary SR framework developed (2020–2022).	Mandatory SR for listed stateowned enterprises (SOEs) from 2022. Most private listed companies remain voluntary.	National Green Growth Strategy 2021–2030 provides aspirational framework. External assurance not yet required.
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Note: Sources: SGX RegCo (2021); Bursa Malaysia (2022) ^[2]; OJK (2017); SET official guidelines; SEC Philippines (2019) ^[14]; SSC Vietnam regulations. SR = Sustainability Report; TCFD = Task Force on Climate-related Financial Disclosures; POJK = Peraturan OJK; SOE = State-Owned Enterprise; PSEi = Philippine Stock Exchange Index. Stage categorisation by authors. FY = Financial Year.

2. Regional Adoption Trends (2015–2022)

Figure 1 illustrates the trajectory of sustainability reporting (SR) adoption and external assurance coverage across ASEAN6 from 2015 to 2022 (see data table below). SR adoption grew from an estimated 38% of listed companies in 2015 to approximately 76% in 2022—an increase of 38 percentage points over seven years, consistent with the

progressive introduction of mandatory frameworks across the region. Assurance coverage, while also growing, remained substantially lower, increasing from approximately 11% to 38% of reporting companies over the same period. The gap between these two trajectories represents what we term the regional 'assurance gap,' discussed further in Section 5.

Fig 1: ASEAN6 Weighted Average: SR Adoption (%) and Assurance Coverage (%) — 2015–2022 (Estimates)

Underlying data for Figure 1 — See chart in supplementary HTML version.		
Year	SR Adoption — ASEAN6 Wtd. Avg. (%)	Assurance Coverage — % of Reporting Companies
2015	~38	~11
2016	~44	~14
2017	~51	~17
2018	~57	~21
2019	~62	~25
2020	~65	~28
2021	~70	~33
2022	~76	~38

Note. Figures are estimates derived from KPMG International (2022) ^[10], GRI Sustainability Disclosure Database, and stock exchange annual monitoring data. SR Adoption = % of all listed companies publishing sustainability reports. Assurance Coverage = % of SRreporting companies with external thirdparty assurance. Weighting reflects approximate listed company population across six countries. Interactive chart available in the supplementary HTML version of this article.

3. CrossCountry Performance Comparison

Table 2 presents countrylevel SR adoption rates at fouryear intervals alongside external assurance coverage estimates for 2022. Figure 2 provides a crosscountry visual comparison (data table below). Singapore consistently leads the region in both dimensions, reflecting its advanced

regulatory framework and proximity to global institutional investor expectations. Malaysia maintains second position, driven by Bursa Malaysia's early mandatory framework. Indonesia and Thailand occupy an intermediate position, while the Philippines and Vietnam remain at earlier stages of the assurance adoption curve.

Table 2: Sustainability Reporting Adoption Rates and Assurance Coverage by Country: ASEAN6 (2016–2022)

Country	Code	SR 2016 (%)	SR 2018 (%)	SR 2020 (%)	SR 2022 (%)	Assured 2022 (%)	First Mandatory Requirement
Singapore	SGP	~52	~68	~74	~79	~42	FY2017 (complyorexplain, all listed cos.)
Malaysia	MYS	~61	~70	~72	~75	~38	FY2016 (mandatory, Main Market)
Thailand	THA	~38	~52	~60	~64	~32	FY2021 (561 One Report, all listed)
Indonesia	IDN	~22	~31	~41	~50	~25	FY2019 (mandatory, financial sector)
Philippines	PHL	~15	~22	~35	~44	~22	FY2020 (mandatory, PSEi companies)
Vietnam	VNM	~8	~12	~18	~26	~12	FY2022 (mandatory, SOEs only)

Note. All figures prefixed '~' are estimates triangulated from KPMG International (2022) ^[10], GRI Sustainability Disclosure Database, and exchange annual reports. SR Adoption = % of all listed companies on the principal exchange publishing sustainability reports. Assurance Coverage = % of SRreporting companies that obtained external assurance. 'Assured 2022' column shows assurance coverage as at 2022. Readers should consult current exchange monitoring reports for updated figures.

Fig 2: SR Adoption (%) and Assurance Coverage (%) by Country — ASEAN6, 2022 (Estimates)

Underlying data for Figure 2		
Country (ISO Code)	SR Adoption 2022 (%)	Assurance Coverage 2022 (%)
Singapore (SGP)	~79	~42
Malaysia (MYS)	~75	~38
Thailand (THA)	~64	~32
Indonesia (IDN)	~50	~25
Philippines (PHL)	~44	~22
Vietnam (VNM)	~26	~12

Note. SGP = Singapore; MYS = Malaysia; THA = Thailand; IDN = Indonesia; PHL = Philippines; VNM = Vietnam. Data sources: KPMG International (2022) ^[10]; GRI database; exchange annual monitoring reports. Interactive grouped bar chart available in the supplementary HTML version.

4. Assurance Characteristics: Level and Provider Distribution

Figure 3 presents the estimated distribution of assurance engagements by level across ASEAN6. Limited assurance—the lower of the two levels under the International Standard on Assurance Engagements (ISAE) 3000 (Revised)—dominates across all six markets, ranging from approximately 65% of engagements in Singapore to 92% in

Vietnam. Reasonable assurance, which imposes a higher evidential burden methodologically analogous to a financial statement audit, accounts for a minority of engagements in all jurisdictions. This distribution is broadly consistent with global patterns documented by Hasan *et al.* (2005)^[8], though the concentration of limited assurance is particularly pronounced in ASEAN markets at an earlier stage of assurance maturity.

Fig 3: Distribution of Assurance Engagements by Level (%) — ASEAN6, c. 2022 (Estimated)

Underlying data for Figure 3 — See chart in supplementary HTML version.		
Country (ISO Code)	Limited Assurance (% of engagements)	Reasonable Assurance (% of engagements)
Singapore (SGP)	~65	~35
Malaysia (MYS)	~72	~28
Thailand (THA)	~80	~20
Indonesia (IDN)	~85	~15
Philippines (PHL)	~88	~12
Vietnam (VNM)	~92	~8

Note. Limited = limited assurance under ISAE 3000 (Revised); Reasonable = reasonable assurance. Figures are author estimates based on available secondary data and practitioner reports. AA1000AS engagements categorised by equivalent assurance level. Interactive stacked bar chart available in the supplementary HTML version.

Table 3: Sustainability Assurance Characteristics by Country — ASEAN6, c. 2022 (Estimated)

Country	Assurance Coverage (%)	Primary Standard(s)	Dominant Level	Big 4 Share (%)	Mandatory Assurance Status
Singapore	~42%	ISAE 3000 (Rev.); AA1000AS v3	Limited (~65%)	~62%	Recommended for climate data; not mandated
Malaysia	~38%	ISAE 3000 (Rev.); AA1000AS v3	Limited (~72%)	~58%	Encouraged (Bursa SR Guide, 2022) ^[2] ; not mandated
Thailand	~32%	ISAE 3000 (Rev.); GRIaligned	Limited (~80%)	~54%	Voluntary; no current mandate
Indonesia	~25%	ISAE 3000 (Rev.); POJK 51	Limited (~85%)	~50%	Mandatory, financial sector (phased from 2019)
Philippines	~22%	ISAE 3000 (Rev.); GRIaligned	Limited (~88%)	~46%	Voluntary; MC 4/2019 does not require assurance
Vietnam	~12%	GRIaligned; nascent ISAE use	Limited (~92%)	~40%	Not yet formally required

Note. ISAE = International Standard on Assurance Engagements; AA1000AS = AccountAbility 1000 Assurance Standard v3; POJK = Peraturan OJK. Assurance Coverage = % of SRreporting companies with external assurance. Big 4 Market Share = estimated proportion of assurance engagements conducted by Deloitte, EY, KPMG, or PwC. All figures are estimates and should be treated as indicative.

Discussion

1. Regulatory Convergence and Divergence

Our analysis reveals a pattern of regulatory convergence at the aspirational level—all six countries have adopted sustainability reporting frameworks broadly aligned with GRI, TCFD, and other international standards—alongside significant divergence in implementation depth, assurance requirements, and enforcement mechanisms. Singapore and Malaysia occupy the frontier of regulatory maturity, having progressed through all four stages of the continuum. Vietnam remains at Stage 2 for most listed companies, with Stage 3 mandatory reporting confined to stateowned enterprises. This divergence creates challenges for investors seeking comparable ESG data across ASEAN markets.

The ASEAN Taxonomy for Sustainable Finance, published in its first edition in 2021 (ACMF, 2021), represents an important step toward regional harmonisation. However, the current taxonomy focuses on the classification of economic activities for sustainable finance purposes rather than on assurance requirements per se, leaving a significant governance gap that future regulatory iteration should address.

2. The Assurance Gap

The persistent gap between SR adoption and assurance coverage—estimated at approximately 38 percentage points

for the ASEAN6 weighted average in 2022—is consistent with the broader literature on nonfinancial assurance in emerging markets (Cho *et al.*, 2014). KPMG International (2022)^[4, 10] reports assurance coverage at approximately 64% among large companies globally, confirming that the assurance gap is a regionspecific challenge. Several structural factors contribute: (i) only Indonesia has introduced mandatory assurance requirements; (ii) cost constraints for smaller listed companies; (iii) limited supply of qualified assurance providers; and (iv) relatively lower institutional investor demand compared to European markets.

3. Limited versus Reasonable Assurance

The dominance of limited assurance engagements across ASEAN raises important questions about assurance value for stakeholders. Limited assurance engagements involve substantially less rigorous procedures than reasonable assurance and may provide inadequate confidence for investmentgrade decisionmaking (Hasan *et al.*, 2005)^[8]. As sustainabilitylinked financing instruments proliferate in ASEAN capital markets, demand for higherlevel verification is likely to intensify, creating both a market opportunity and a regulatory imperative for upgrading assurance quality.

4. Provider Concentration and Market Structure

The concentration of sustainability assurance among Big 4 accounting firms (estimated 40–62% market share across ASEAN6) raises concerns about accessibility for smaller reporting companies (MartínezFerrero & GarcíaSánchez, 2017)^[12]. Big 4 firms leverage existing financial audit relationships to provide sustainability assurance, creating natural bundling advantages. However, this concentration may limit innovation in assurance methodologies and may not adequately serve companies in markets where Big 4 presence is less dominant.

5. Policy Implications

Our findings carry several implications for policymakers. First, regulators should consider introducing phased mandatory assurance requirements—a model successfully piloted by Indonesia's OJK. Second, capacitybuilding initiatives are urgently needed to develop qualified sustainability assurance providers, particularly in Vietnam and the Philippines. Third, ASEAN exchanges should work toward convergence on assurance standards, anchoring requirements to ISAE 3000 (Revised) with ASEANspecific implementation guidance. Fourth, integrating sustainability assurance requirements into the ASEAN Taxonomy for Sustainable Finance—potentially as a condition for green finance labelling—would significantly strengthen regional governance architecture.

Conclusion

This paper has provided a systematic documentary mapping of sustainability assurance milestones across ASEAN6 from 2010 to 2024, synthesising regulatory analysis with secondary adoption data. Our findings demonstrate that the region has made substantial and accelerating progress in establishing sustainability reporting frameworks, with Singapore and Malaysia leading in both reporting adoption and assurance coverage. Regulatory milestones follow a broadly similar fourstage progression across all six jurisdictions, though the pace of development and current regulatory maturity differ markedly.

Several important challenges remain. The persistent assurance gap—estimated at approximately 38 percentage points between SR adoption and assurance coverage—represents a significant credibility risk for ASEAN sustainability disclosures at a time when global capital flows are increasingly conditioned on ESG data reliability. The dominance of limited assurance engagements and concentration of provision among Big 4 firms further constrain the robustness and accessibility of the regional assurance market. Regulatory divergence among member states complicates the ambitions of the ASEAN Taxonomy for Sustainable Finance.

Future research should examine capital market effects of assured versus unassured sustainability disclosures in ASEAN contexts, determinants of assurance quality beyond provider type, and the role of the ASEAN Taxonomy in driving assurance adoption. Longitudinal studies tracking assurance evolution post2023—as mandatory TCFDaligned requirements take effect in Singapore and Malaysia—will be of particular value.

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