INSTITUT AKUNTAN MANAJEMEN INDONESIA
The Indonesian Institute of Management Accountants

IAMI's Report on the Study of The Readiness of Indonesian Companies in Adopting IFRS Sustainability Standards (IFRS S2)

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Think Ahead

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About IAMI

IAMI (Institut Akuntan Manajemen Indonesia) is a professional association for management accountant, under the oversight of Ministry of Finance of Indonesia, which was established on April 1, 2008. Currently, IAMI's members are professionals, mostly serving as executives in private companies as well as non-profit entities, government, and academia. As of 2024, IAMI has 2019 active members and 890 CPMA holders. We are proud to organize the Certified Professional Management Accountants (CPMA), a high-caliber professional certification which may lead to ASEAN CPA to the holders. IAMI has regional offices in four provinces : Jakarta, Banten, West Java and East Java.

IAMI's vision is to become a leading professional association to develop knowledge and practices in management, finance, accounting and other related fields, such as ethics, social and environmental responsibility. Our membership is inclusive of all professionals in the accounting and financial field which comprises three levels: Professional membership for CPMA Holders, associate membership for non-CPMA holders and young membership for undergraduate students.

More information about IAMI is available in our website https://www.iamiglobal.or.id/

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FOREWORD

Greetings,
Praise to Allah SWT for all His mercy and blessing so that this very important research can be finalized and reported.

This research is the result of the hard work, dedication, and collaboration of our researchers who we hope can make a valuable contribution to the companies and other interested parties to implement IFRS 2. We hope that the results of this research can provide great benefits for stakeholders in making decisions, as well as for preparation of standards. Hopefully, this research result can be a useful reference and make a positive contribution to the development of sustainable reporting and the implementation of Sustainable Standards in Indonesia.

We would like to express our deepest gratitude to ACCA (the Association of Chartered Certified Accountants) for inspiring and acknowledging this research. We also extend our thanks to all parties who have supported and assisted in preparing this research report, either directly or indirectly. Without the support and cooperation of various parties, the results of this research would not be well delivered and widely recognized.

Finally, we hope that this report will be well received by readers and provide the greatest benefits to our stakeholders.

Gatot Trihargo
Chairman
Indonesia Institute of Management Accountant

GLOSSARY / DAFTAR ISTILAH

- ACCA : Association of Chartered Certified Accountants
- ARA : Annual Report Award
- BNEF : Bloomberg New Energy Finance
- BP : British Petroleum
- CDSB : Climate Disclosure Standards Board
- DEN : Dewan Energi Nasional
- EKC : Environmental Kuznets Curve
- FSA : Financial Service Authority
- GHG : Greenhouse gas
- GRI : Global Reporting Initiative
- IAI : Ikatan Akuntan Indonesia
- IASB : International Accounting Standards Board
- IDX : Indonesian Stock Exchange
- IEA : International Energy Agency
- IFRS : Internasional Financial Accounting Standard
- IFRS S1 : International Financial Reporting Standards Sustainability 1
- IFRS S2: International Financial Reporting Standards Sustainability 2
- IPIECA : International Petroleum Industry Environmental Conservation Association
- IPCC : Intergovermental Panel on Climate Change
- IIRC : International Integrated Reporting Council
- IRENA : International Renewable Energy Agency
- ISSB : International Sustainability Standards Board
- KNKG : Komite Nasional Kebijakan Governansi
- MEF : Ministry of Environment & Forestry
- MEMR : Ministry of Energy & Mineral Resources
- MSCI : Morgan Stanley Capital International
- NCCR : National Centre for Corporate Reporting
- NGFS : Network for Greening Financial Systems
- OJK : Otoritas Jasa Keuangan
- RPP KEN : Rancangan Peraturan Pemerintah Kebijakan Energi Nasional
- RPJPN : Rencana Pembangunan Jangka Panjang
- SASB : Sustainability Accounting Standards Board
- SDG : Sustainable Development Goals
- TCFD : Task Force on Climate- related Financial Disclosures
- VRF : Value Reporting Foundation
- WEF : World Economic Forum

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Executive Summary

Many jurisdictions are considering adopting IFRS Sustainability Standards issued by the International Sustainability Standard Board (ISSB), including Indonesia. Since the launching of IFRS S1 and S2 in June 2023, the National Standard Setter in Indonesia has shown a strong interest in adopting the standard in the country. However, the current practice of sustainability reporting in Indonesia requires more challenging disclosures than the IFRS sustainability standard. This study aims to analyse the gap for Indonesian companies should they want to adopt IFRS S2. This study analyses 89 sample companies from energy, chemical, and construction materials, the three industries that use significant natural resources. We map the 2022 sustainability reports of the companies to the IFRS S2 requirements. The study reveals that the gap between current practice and IFRS S2 requirements is significantly wide for Indonesian companies, with a range of 8% - 30% overall means of disclosures. As ISSB developed the IFRS S2 standard using the TCFD framework, we found it is highly unpopular in Indonesia, with only 3% of the companies using the framework. We also found a lack of evidence for the linkage between the climate transition strategy and the company's financial figure, as required by IFRS S2. The study also found that companies in the energy sectors have smaller gaps than the chemical and construction material sectors in IFRS S2 compliance.

1. Introduction: Background and Objective

Over the last 20 years, more governments and organisations have focused on moving the global economy towards a net-zero carbon state because of the significant detrimental effects of climate change. At the same time, companies face increasing pressure from investors to address specific risks and opportunities associated with long-term operations and their sustainability. As a result, there has been a significant global increase in the various reporting frameworks related to sustainability issues, such as GRI, SASB standards, and TCFD Framework. These frameworks cover subjects like water management, emissions, pollution, and climate change in addition to the broader framework of their social responsibility and governance.

In 2021, the International Sustainability Standards Board (ISSB) was established by the IFRS Foundation as a global standard-setter for financial disclosures connected to sustainability intended for investors. The primary aim of the ISSB, as stated by the IFRS Foundation, is to combine and enhance the work that has already been done on financial sustainability reporting by different organisations. These organisations include the World Economic Forum (WEF), the Climate Disclosure Standards Board (CDSB), the International Accounting Standards Board (IASB), the Task Force for Climate-related Disclosures (TCFD), the Value Reporting Foundation (VRF), which combined the Sustainability Accounting Standards Board (SASB) Standards and the International Integrated Reporting Council (IIRC) .

1. Pendahuluan: Latar Belakang dan Tujuan

Dalam 20 tahun terakhir, semakin banyak pemerintahan dan organisasi yang fokus untuk menggerakkan perekonomian global menuju kondisi nol karbon *(net zero carbon)* akibat dampak buruk perubahan iklim yang signifikan. Pada saat yang sama, perusahaan menghadapi tekanan yang semakin besar dari investor untuk menangani risiko dan peluang terkait operasi jangka panjang dan keberlanjutan mereka. Akibatnya, terdapat peningkatan signifikan kerangka pelaporan yang berhubungan dengan isu keberlanjutan di seluruh dunia, seperti standar GRI, SASB, dan kerangka TCFD. Kerangka-kerangka ini mencakup subjek seperti manajemen air, emisi, polusi, dan perubahan iklim sebagai kerangka yang lebih luas dari tanggung jawab sosial dan tata kelola perusahaan.

Pada tahun 2021, International Sustainability Standards Board (ISSB) dibentuk oleh IFRS Foundation sebagai penyusun standar global untuk pengungkapan keuangan yang terkait dengan keberlanjutan, ditujukan kepada investor. Sebagaimana dinyatakan oleh IFRS Foundation, tujuan utama dari ISSB adalah untuk mengkombinasikan dan meningkatkan hasil yang telah dilakukan terkait pelaporan keberlanjutan keuangan oleh berbagai organisasi. Organisasi-organisasi ini termasuk World Economic Forum (WEF), Climate Disclosure Standards Board (CDSB), International Accounting Standards Board (IASB), Task Force for Climate-related Disclosures (TCFD) dan Value Reporting Foundation (VRF) yang telah menyatukann Sustainability Accounting Standards Board (SASB) Standards dan International Integrated Reporting Council (IIRC) .

In June 2023, the International Sustainability Standards Board (ISSB) introduced IFRS S1, which outlines general requirements for disclosing sustainability-related financial information, and IFRS S2, which focuses on climate-related disclosures. These standards provide a consistent foundation that regulators in different jurisdictions can adopt, potentially addressing the current fragmentation among existing reporting frameworks.

Since the launching of IFRS S1 and S2, the national standard setter in Indonesia has shown a strong interest in adopting the standard in the country. However, the IFRS sustainability standard requires more challenging disclosures than Indonesia's current sustainability reporting practices.

The primary goal of this study is to analyse Indonesian companies' readiness to adopt IFRS S2. This analysis assesses 89 company sustainability reports in three industries, i.e. energy, chemicals, and construction materials, to understand the gap in the disclosures required by IFRS S2. These three industries face significant risks related to climate change as they are considered to use significant natural resources, which result in high levels of greenhouse gas (hereafter GHG) emissions from their operations.

Pada Juni 2023, International Sustainability Standards Board (ISSB) memperkenalkan IFRS S1, yang menguraikan persyaratan umum untuk pengungkapan informasi keuangan terkait keberlanjutan, dan IFRS S2, yang berfokus pada pengungkapan terkait iklim. Standar-standar ini memberikan landasan yang konsisten yang dapat diadopsi oleh regulator di berbagai yurisdiksi, sehingga berpotensi mengatasi fragmentasi yang ada di antara berbagai kerangka pelaporan saat ini.

Sejak peluncuran IFRS S1 dan S2, penyusun standar nasional di Indonesia menunjukkan minat yang kuat untuk mengadopsi standar tersebut di Indonesia. Namun, standar keberlanjutan IFRS mengharuskan pengungkapan yang lebih kompleks dan menantang dibandingkan dengan praktik pelaporan keberlanjutan di Indonesia saat ini.

Tujuan utama dari penelitian ini adalah untuk menganalisis kesiapan perusahaan Indonesia dalam mengadopsi IFRS S2. Analisis ini menilai laporan keberlanjutan dari 89 perusahaan pada tiga industri yaitu industri energi, kimia, dan material konstruksi dalam rangka memahami kesenjangan dalam pengungkapan yang disyaratkan oleh IFRS S2. Ketiga industri ini menghadapi risiko signifikan terkait perubahan iklim karena perusahaan ini dianggap menggunakan sumber daya alam yang besar sehingga menimbulkan emisi gas rumah kaca (*Greenhouse Gas-GHG*) yang tinggi dari operasi mereka.

The study will gather evidence which shed light on the following objections:

1. The most and least common climate-related disclosures currently provided by companies based on IFRS S2 Requirements.
2. The resilient analysis of risk management disclosures
3. Reporting frameworks Mostly used in producing sustainability reports
4. Types and quantities of external assessments applied

Penelitian ini akan mengumpulkan bukti yang memberikan wawasan mengenai hal berikut:

1. Pengungkapan terkait iklim yang paling umum dan paling jarang dilakukan oleh perusahaan berdasarkan persyaratan IFRS S2.
2. Analisis ketahanan pengungkapan manajemen risiko
3. Kerangka pelaporan yang paling sering digunakan dalam laporan keberlanjutan.
4. Jenis dan jumlah penilaian eksternal yang diterapkan

2. Indonesian Regulations on Sustainability Reporting

The Indonesian government has long issued some regulations which require companies to implement Corporate Social and Environmental Responsibility (CSER) activities as mandated by Law No.19/2003 and Law 40/2007. Then, Government Regulation No. 47 of 2012 requires companies involved in natural resources to include reports on CSER implementation in their annual report. Following this Government Regulation, the Financial Service Authority (OJK) issued Regulation No.51/2017, which mandates all Indonesian companies listed in the Indonesian Stock Exchange (IDX) to publish Sustainability Reporting.

However, even before being mandated by the Government, some Indonesian-listed companies have voluntarily published their Sustainability Reporting using Global Reporting Initiative (GRI) Guidelines. It started with only one company in 2006, then 70 in 2016 out of 400 listed companies. Following up on OJK Regulation N0.51/2017, all banks operating in Indonesia must publish their sustainability report starting in 2019. Then, all other companies must publish the reports starting from 2020.

2. Peraturan Laporan Keberlanjutan di Indonesia

Pemerintah Indonesia telah lama mengeluarkan sejumlah peraturan yang mewajibkan perusahaan untuk melaksanakan kegiatan Tanggung Jawab Sosial dan Lingkungan Perusahaan *(Corporate Social and Environmental Responsibility / CSER)* sebagaimana diamanatkan dalam UU No.19 Tahun 2003 dan UU No 40 Tahun 2007. Kemudian, Peraturan Pemerintah No. 47 Tahun 2012 mewajibkan perusahaan yang bergerak di bidang sumber daya alam untuk mencantumkan pelaksanaan CSER dalam laporan tahunannya. Menyusul Peraturan Pemerintah tersebut, Otoritas Jasa Keuangan (OJK) menerbitkan Peraturan No.51 Tahun 2017 yang mewajibkan seluruh perusahaan Indonesia yang tercatat di Bursa Efek Indonesia (BEI) untuk menerbitkan Laporan Keberlanjutan.

Bahkan sebelum diamanatkan oleh Pemerintah, beberapa perusahaan terbuka di Indonesia telah menerbitkan Laporan Keberlanjutan secara sukarela dengan menggunakan Pedoman *Global Reporting Initiative (GRI).* Dimulai dengan hanya satu perusahaan pada tahun 2006, kemudian menjadi 70 perusahaan dari 400 perusahaan terbuka pada tahun 2016. Menindaklanjuti Peraturan OJK No.51/2017, semua bank yang beroperasi di Indonesia harus menerbitkan laporan keberlanjutan mereka mulai tahun 2019. Kemudian, seluruh perusahaan lainnya harus menerbitkan laporan keberlanjutan mulai tahun 2020.

It is noteworthy that there are some important initiatives from the government and Non-governmental organisations to keep improving the company's sustainability practices and reporting in Indonesia. They include the PROPER Award (Public Disclosure Program for Environmental Compliance) - an initiative by Indonesia's Ministry of Environment and Forestry to improve the environmental performance of companies in Indonesia.

The Annual Report Award (ARA) is a competition for annual reports, or corporate governance and sustainability disclosure, initiated by the National Committee for Governance Policy (KNKG) in collaboration with the OJK. Finally, NCCR (National Centre for Corporate Reporting) has organised the annual Indonesian Sustainability Reporting Award since 2005.

In 2023, the Indonesian FSA (OJK) guided the banking sector in developing Climate Risk Stress Testing (CRST). This guidance was upgraded in 2024 by OJK with the issuance of a second technical guidebook titled "Banking Climate Risk Management and Scenario Analysis". The OJK follows the NGFS (Network for Greening Financial Systems) guidance and scenario for stress testing for financial institutions. The OJK provides significant guidance for the industry if they want to comply with TCFD requirements, which is also an important reference for NGFS.

Penting dicatat bahwa terdapat beberapa inisiatif penting dari pemerintah dan organisasi non-pemerintah dalam upaya terus meningkatkan praktik dan pelaporan keberlanjutan perusahaan di Indonesia. Inisiatif ini termasuk Penghargaan PROPER (Program Pengungkapan Publik untuk Kepatuhan Lingkungan) - sebuah inisiatif yang diselenggarakan oleh Kementerian Lingkungan Hidup dan Kehutanan Indonesia untuk meningkatkan kinerja lingkungan perusahaan di Indonesia.

Kedua, *Annual Report Award (ARA)* yang diprakarsai oleh Komite Nasional Kebijakan Governansi (KNKG) dan OJK, adalah kompetisi untuk laporan tahunan atau pengungkapan tata kelola perusahaan dan keberlanjutan. Terakhir, *National Centre for Corporate Reporting (NCCR)* telah menyelenggarakan *Indonesian Sustainability Reporting Award* secara tahunan sejak 2005.

Pada tahun 2023, Otoritas Jasa Keuangan (OJK) memberikan arahan dalam mengembangkan Climate Risk Stress Testing (CRST) kepada sektor perbankan. Arahan ini disempurnakan pada tahun 2024 oleh OJK dengan menerbitkan buku panduan teknis kedua yang berjudul *"Banking Climate Risk Management and Scenario Analysis"*. OJK mengikuti arahan dan skenario *NGFS (Network for Greening Financial Systems)* untuk *stress testing* bagi lembaga keuangan. OJK memberikan arahan penting bagi industri jika ingin mematuhi persyaratan TCFD yang juga menjadi acuan penting bagi NGFS.

As this report is written, there is no formal decision by the Indonesian regulator on how and when IFRS S1 and S2 will be implemented in Indonesia. This is despite the Indonesian Institute of Chartered Accountants (IAI) 's eagerness to establish the national sustainability board and translate the standards into the Indonesian language.

Saat laporan ini ditulis, belum ada keputusan resmi dari regulator di Indonesia tentang bagaimana dan kapan IFRS S1 dan S2 akan diterapkan di Indonesia. Kehati-hatian dalam memutuskan ini diambil walaupun Ikatan Akuntan Indonesia (IAI) telah membentuk Dewan Keberlanjutan Nasional dan menerjemahkan standar tersebut ke dalam bahasa Indonesia.

3. Methodology

As the main research instrument, this study developed a disclosure index inspired by ACCA and Adam Smith Business School University of Glasgow (2022).[1] The index consists of 102 disclosure requirements in IFRS S2. However, we adjusted the index from the ACCA and Glasgow Reports.

3. Metodologi

Studi ini mengembangkan indeks pengungkapan yang terinspirasi dari laporan ACCA dan Adam Smith Business School University of Glasgow (2022)[2] sebagai instrumen utama penelitian. Indeks tersebut terdiri dari 102 persyaratan pengungkapan dalam IFRS S2. Namun, kami menyesuaikan indeks dari ACCA dan Glasgow Reports.

[1] https://www.accaglobal.com/gb/en/professional-insights/global-profession/readiness-for-IFRS-S2.html

[2] https://www.accaglobal.com/gb/en/professional-insights/global-profession/readiness-for-IFRS-S2.html

Instead of using the exposure draft version of IFRS S2, we use the final version of the standard in developing the index of this study. The study focused on 89 companies sampled from energy, chemical, and construction materials. These three industries are considered to use significant natural resources and are the largest emitting companies (based on their average Scope 1 and Scope 2 GHG emissions).

Jika studi ACCA dan Univ of Glasgow menggunakan versi exposure draft IFRS S2, kami menggunakan versi final standar IFRS S2 dalam mengembangkan indeks studi ini. Studi ini difokuskan pada 89 sampel perusahaan sektor energi, kimia, dan material konstruksi. Ketiga industri ini dinilai secara signifikan menggunakan sumber daya alam dan merupakan perusahaan dengan penghasil emisi terbesar (berdasarkan rata-rata Cakupan 1 dan Cakupan 2 emisi GRK).

The 89 sample companies consist of 63 companies from the energy sector, 19 from the chemical sector and 7 from the construction materials sector (detailed in Appendix 1). We evaluate sample companies' sustainability reports based on disclosure requirements prescribed in IFRS S2. Our analysis covers climate-related disclosures on Governance with 7 subcategories), Strategy (with 16 subcategories), Risk management (with 8 subcategories) and M,etrics, and Targets (with 11 subcategories)

Delapan puluh Sembilan (89) sampel perusahaan terdiri dari 63 perusahaan dari sektor energi, 19 perusahaan dari sektor kimia, dan 7 perusahaan dari sektor material konstruksi (Lampiran 1). Kami mengevaluasi laporan keberlanjutan perusahaan sampel berdasarkan persyaratan pengungkapan IFRS S2. Penelitian ini mencakup analisis mengenai pengungkapan terkait iklim dari aspek Tata Kelola (dengan 7 subkategori), , Strategi (dengan 16 subkategori), Manajemen Risiko (dengan 8 subkategori) dan, Target dan Metrik (dengan 11 subkategori)

Based on the IFRS S2 disclosure requirement above, we develop a scoring index to evaluate current climate-related disclosures published by sampled entities. The scoring index is based on the criteria as shown in Table 1.

Berdasarkan persyaratan pengungkapan IFRS S2 di atas, kami mengembangkan indeks penilaian untuk mengevaluasi pengungkapan terkait iklim yang diterbitkan oleh sampel perusahaan. Indeks penilaian didasarkan pada kriteria sebagaimana dalam Tabel 1 berikut ini:

Table 1: Scoring Index Methodology (Metodologi Indeks Penelitian)

Criteria	Score
No disclosure	0%
Only mention keywords related to IFRS S2 disclosure requirements.	20%
Completely mention the information required by IFRS S2	40%
Completely mention the information required by IFRS S2 and the information coherent with other information	60%
Explain in detail the information required by IFRS S2, the information related to other information, and mention the implications of the information.	80%
Completely explain the information required by IFRS S2, including implications for the company and mitigating risks.	100%

We carefully checked each sustainability report of the sample companies to see how well each aspect was disclosed. A group of Research assistant received a proper training on how to analyse the information in the sustainability report and how to fill the working paper we designed. The result is peer reviewed by two senior research assistants. The final result from the senior assistant is then reviewed by the three authors of this report.

Kami dengan cermat memeriksa setiap laporan keberlanjutan dari perusahaan sampel untuk melihat seberapa baik setiap aspek diungkapkan. Sekelompok asisten peneliti telah menerima pelatihan yang memadai tentang cara menganalisis informasi dalam laporan keberlanjutan dan cara mengisi kertas kerja yang telah kami siapkan. Hasilnya kemudian ditinjau oleh dua asisten peneliti senior. Hasil akhir dari asisten senior kemudian ditinjau Kembali oleh tiga penulis dalam laporan ini.

4. Key findings

4.1. Level of Climate-related Disclosures Based on IFRS S2 Requirements

According to the IFRS S2 outline, climate-related disclosures are divided into four dimensions: Governance, Strategy, Risk Management metrics and Target. Our analysis reveals that companies in three industries (Energy, Chemicals and Construction Materials) exhibit a poor overall level of climate-related disclosures prescribed by IFRS S2, with a range of 8% - 30% overall means of disclosures in those four dimensions.

As shown in Table 2, disclosures covered by the Risk Management dimension exhibit the highest mean score of 16%.

4. Temuan Utama

4.1. Tingkat Pengungkapan Terkait Iklim Berdasarkan Persyaratan IFRS S2

Berdasarkan standar IFRS S2, pengungkapan terkait iklim mencakup empat aspek utama yaitu Tata Kelola, Strategi, Manajemen Risiko, serta Metriks dan Target. Berdasarkan hasil analisis, perusahaan di sektor Energi, Kimia, dan Material Konstruksi memiliki tingkat pengungkapan terkait iklim yang masih rendah dengan rentang 8%-30% kesesuaian pengungkapan dengan persyaratan dalam IFRS S2 untuk empat aspek tersebut.

Seperti yang ditunjukkan pada Tabel 2, pengungkapan pada dimensi "*Strategy*" memiliki nilai rata-rata tertinggi, yaitu sebesar 16%.

Table 2: Overall of Mean of Climate-related Disclosures (Nilai Rata-Rata Pengungkapan Terkait Iklim)

Content		Overall Mean
Governance		**8%**
Strategy		**16%**
Risk and Opportunities	*20%*	
Business Model & Value Chain	*18%*	
Strategy & Decision-Making	*30%*	
Financial position, financial performance & cash flow	*4%*	
Climate Resilience	*18%*	
Risk Management		**7%**
Metrics and Targets		**12%**
Metrics	*11%*	
Targets	*12%*	

Disclosures on the Strategy dimension vary considerably among its four subcategories: Risk and opportunities (20%), Business Model and Value Chain (18%), Strategy and decision-making (30%), Financial Position (4%) and Climate resilience (18%). By contrast, our sample companies engage less with disclosures for the Governance dimension (8%). A special note needs to be made about the Financial Statement disclosures subcategory, in which 84% of the sample companies do not disclose anything.

Pengungkapan pada dimensi *Strategy* menunjukkan variasi yang cukup besar di antara empat subkategori, yakni *Risk and Opportunities* (20%), *Business Model & Value Chain* (18%), *Strategy & Decision-Making* (30%), *Financial Position* (4%) serta *Climate Resilience* (18%). Namun, sampel perusahaan penelitian ini cenderung jarang mengungkapkan informasi pada dimensi *Governance*, yang nilai rata-ratanya mencapai 8%. Perlu dicatat bahwa pada subkategori pengungkapan terkait Laporan Keuangan, 84% dari perusahaan dalam sampel tidak memberikan informasi apa pun.

Concerning the final dimension, Metrics and Targets, our samples engage slightly more with the Climate-related targets (12%) than with the Metrics disclosures (11%). This finding may indicate that companies experience difficulties measuring and disclosing their actual performance against relevant metrics set, although they still disclose future commitments.

Pada dimensi terakhir, yaitu *Metrics and Targets*, sampel perusahaan yang diteliti sedikit lebih banyak mengungkapkan target terkait iklim (12%) dibandingkan dengan pengungkapan metriks (11%). Temuan ini mungkin menunjukkan bahwa perusahaan mengalami kesulitan dalam mengukur dan mengungkapkan kinerja aktual berdasarkan metrik yang ditetapkan, meskipun perusahaan tetap mengungkapkan komitmen untuk masa depan.

4.1.1. Level of Climate-related Disclosures – Governance

As suggested by IFRS S2 Paragraph 5, climate-related financial disclosures on governance aim to enable users of general-purpose financial reports to understand the governance processes, controls and procedures an entity uses to monitor, manage and oversee climate-related risks and opportunities.

Table 3 demonstrates the mean disclosures of IFRS—S2 in the Governance dimension. Companies in the Construction Materials industry exhibit a mean disclosure score of 11%, whereas companies in the Energy and Chemicals industries have a lower mean score of 8% and 6%, respectively.

4.1.1. Tingkat Pengungkapan Terkait Iklim – Tata Kelola *(Governance)*

Sesuai dengan IFRS S2 Paragraf 5, pengungkapan keuangan terkait iklim pada aspek *Governance* bertujuan untuk membantu pengguna laporan keuangan umum memahami proses, kontrol dan prosedur yang digunakan perusahaan untuk memantau, mengelola, dan mengawasi risiko serta peluang terkait iklim.

Tabel 3 menunjukkan rata-rata skor pengungkapan IFRS S2 pada dimensi *Governance*. Perusahaan di industri Material Konstruksi memiliki skor pengungkapan rata-rata sebesar 11%, sementara perusahaan di industri Energi dan Kimia memiliki skor rata-rata yang lebih rendah, yaitu masing-masing 8% dan 6%.

Table 3: Mean Disclosures of IFRS S2 – Governance
(Rata Rata Pengungkapan IFRS S2 – Tata Kelola)

	Energy	Chemicals	Construction Materials	All samples
Governance	8%	6%	11%	8%

In a more detailed analysis, Table 4 below reveals the mean disclosures of 7 subcategories.

Untuk analisis lebih detail, Tabel 4 di bawah ini menunjukkan rata-rata pengungkapan dari 7 subkategori.

Table 4: Mean Disclosure of Governance Subcategories (Rata-Rata Pengungkapan Subkategori Tata Kelola)

	Energy	Chemicals	Constructions Materials	All Samples
Responsibilities for climate-related risks and opportunities	12%	14%	26%	13%
Appropriate skills and competencies to oversee	11%	6%	26%	11%
How often the body(s) is informed about climate-related risks and opportunities	2%	0%	0%	1%
How the body(s) takes into account climate-related risks and opportunities when overseeing the entity's strategy	13%	9%	23%	13%
Setting targets related to climate-related risks and opportunities and monitoring progress towards those targets.	7%	5%	0%	6%
The role is delegated to a specific management-level position	6%	5%	0%	5%
Management uses controls and procedures to support the oversight of climate-related risks and opportunities	3%	5%	0%	4%

Compared to the energy and chemicals sectors, companies in the construction materials disclose more in the following three aspects:

- Responsibilities for climate-related risks and opportunities
- Appropriate skills and competencies to oversee and
- How the body takes into account climate-related risks and opportunities

Dibandingkan dengan sektor energi dan kimia, perusahaan di industri material konstruksi lebih banyak mengungkapkan informasi pada tiga aspek berikut:

- Tanggung jawab atas risiko peluang terkait iklim
- Keterampilan dan kompetensi yang memadai untuk mengawasi
- Cara manajemen memperhitungkan risiko dan peluang terkait iklim

By contrast, companies in Construction Materials lack disclosures regarding the frequency with which they are informed about climate-related risks and opportunities, the setting of targets for climate-related risks and opportunities and monitoring of those targets, the role given to specific management positions and how management uses control and procedures to support the oversight of climate-related risks and opportunities. In these subcategories, companies in the energy sector disclose slightly more.

Details of gap analysis and some extracts for Governance disclosures are presented in Appendix 2 and 3.

4.1.2. Level of Climate-related disclosures - Strategy

As suggested in the IFRS S2 standard paragraph 8, the main objective of the strategy disclosure is to enable users of general-purpose financial reports to understand an entity's strategy for managing climate-related risks and opportunities.

Table 5 illustrates the mean disclosures of IFRS-S2 across the Strategy subcategories.

The **Strategy and Decision-Making** category has the highest mean disclosure at 30%. Within this category, companies in the construction materials sector have the highest mean at 42%, followed by energy companies at 32%, and chemical companies at 20%.

Namun, perusahaan di sektor material konstruksi kurang dalam pengungkapan mengenai frekuensi informasi terkait risiko dan peluang iklim yang diterima, penetapan target untuk risiko dan peluang tersebut serta pemantauan targetnya, peran yang diberikan kepada posisi manajemen tertentu serta bagaimana manajemen menggunakan pengendalian dan prosedur untuk mendukung pengawasan terhadap risiko dan peluang terkait iklim. Pada subkategori-subkategori tersebut, perusahaan di sektor Energi mengungkapkan sedikit lebih banyak.

Untuk rincian analisis kesenjangan (*gap analysis*) serta paparan untuk pengungkapan *Governance* disajikan dalam Lampiran 2 dan 3.

4.1.2. Tingkat Pengungkapan Terkait Iklim – Strategi *(Strategy)*

Berdasarkan standar IFRS S2 paragraf 8, tujuan utama dari pengungkapan strategi adalah untuk memungkinkan pengguna laporan keuangan umum memahami strategi perusahaan dalam mengelola risiko dan peluang terkait iklim.

Tabel 5 menggambarkan rata-rata pengungkapan IFRS-S2 dalam dimensi subkategori Strategi.

Kategori **Strategi dan Pengambilan Keputusan** memiliki rata-rata pengungkapan tertinggi sebesar 30%. Dalam kategori ini, perusahaan di sektor materialkonstruksi memiliki rata-rata tertinggi sebesar 42%, diikuti oleh perusahaan energi sebesar 32%, dan perusahaan kimia sebesar 20%.

Table 5: Mean Disclosure of Strategy Subcategories
(Nilai Rata-Rata dari Subkategori Strategi)

	Energy	Chemicals	Construction Materials	All Samples
Climate-Related Risks & Opportunity	21%	17%	22%	20%
Business Model & Value Chain	30%	10%	3%	18%
Strategy & Decision Making	32%	20%	42%	30%
Financial Statements	3%	6%	0%	4%
Climate Resilience	19%	17%	14%	18%

The financial statements disclosures subcategory is worth noting, in which the effects of climate-related risks and opportunities are linked to the entity's financial position. Companies in the three industries exhibit a very low score for these disclosures (a mean score of 4%). This finding is especially interesting as the strong connection between climate-related disclosures and financial statements is expected to enable the decision-usefulness of such disclosures. Our analysis reveals that companies do not inherently connect climate-related disclosures with information in their financial statements.

Details of gap analysis and some extracts for Strategy disclosures are presented in Appendix 4 and 5.

Subkategori pengungkapan *financial statements* menjelaskan dampak risiko dan peluang terkait iklim dihubungkan dengan posisi keuangan perusahaan. Subkategori ini tidak memiliki nilai pengungkapan yang cukup signifikan, dimana perusahaan sampel menunjukkan skor yang sangat rendah yakni dengan nilai rata-rata 4%. Temuan ini sangat menarik karena hubungan yang kuat antara pengungkapan iklim dan laporan keuangan diharapkan dapat meningkatkan kegunaan pengungkapan tersebut dalam pengambilan keputusan. Hasil analisis mengungkapkan bahwa perusahaan tidak secara inheren menghubungkan pengungkapan terkait iklim dengan informasi dalam laporan keuangan perusahaan.

Untuk rincian analisis kesenjangan (*gap analysis*) serta beberapa contoh untuk pengungkapan *Strategy* disajikan dalam Lampiran 4 dan 5.

4.1.3. Level of Climate-related disclosures - Risk Management

Table 6 presents the mean disclosures of Risk Management, which stand at 7% across all samples. Companies in the construction materials sector have a slightly higher mean score at 13%, compared to 4% for chemical companies and 8% for energy sector.

4.1.3. Tingkat Pengungkapan Terkait Iklim – Manajemen Risiko *(Risk Management)*

Tabel 6 menunjukkan rata-rata pengungkapan Manajemen Risiko, yang berada di angka 7% untuk semua sampel. Perusahaan di sektor material konstruksi memiliki skor rata-rata yang sedikit lebih tinggi, yaitu 13%, dibandingkan dengan 4% untuk perusahaan kimia dan 8% untuk sektor energi.

Table 6: Mean Disclosures of IFRS S2 – Risk Management
(Rata-Rata Pengungkapan IFRS S2 – Manajemen Risiko)

	Energy	Chemicals	Construction Materials	All samples
Risk Management	8%	4%	13%	7%

When discloses of the risk management dimension is analysed in more detail analysis, table 7 below will further reveal the mean disclosures of 8 subcategories as follows:

Ketika pengungkapan dimensi *risk management* dianalisis lebih rinci, Tabel 7 berikut mengungkapkan rata-rata pengungkapan dari 8 subkategori sebagai berikut:

Table 7: Mean Disclosure of Risk Management Subcategories
(Nilai Rata-Rata Subkategori Manajemen Risiko)

	Energy	Chemicals	Constructions Materials	All Samples
Input & Parameters	16%	6%	17%	14%
Uses of Climate Related Scenario Analysis	11%	3%	11%	10%
How the entity assesses the risks	9%	3%	11%	9%
How the entity prioritises climate risks relative to other risks	1%	3%	9%	2%
How the entity monitors climate risks	9%	3%	20%	9%
How the entity has changed the processes	2%	1%	14%	2%
The processes to managed the climate risks	11%	3%	9%	10%
Climate risks are integrated into the entity's overall risk management process	1%	5%	9%	2%

In terms of ratio, companies in the construction materials sector are more likely to disclose information in almost all categories: inputs and parameters, how the company assesses risk, how the company monitors risk, how its processes have changed, the processes used to manage climate risk, and how climate risk is integrated into the overall risk management process. For climate-related risk identification, the ratio between companies in the energy and construction materials sectors is similar. There are two samples of companies in the energy sector that mentioned scenario and one in construction materials company.

Secara rasio, perusahaan di sektor material konstruksi lebih banyak yang mengungkapkan informasi pada hampir semua kategori: input dan parameter, cara perusahaan menilai risiko, bagaimana perusahaan memantau risiko, bagaimana prosesnya telah diubah, proses yang digunakan untuk mengelola risiko iklim, serta bagaimana risiko iklim diintegrasikan ke proses manajemen risiko secara keseluruhan. Untuk identifikasi risiko-terkait iklim, secara rasio antara perusahaan di sektor energi dan material konstruksi sama. Terdapat dua sampel perusahaan di sektor energi yang menyebutkan mengenai skenario dan satu di perusahaan material konstruksi.

Companies that disclose scenario analysis compared to the rest of the sample indicate that they may be more familiar with the TCFD framework or sector-specific sustainability reporting frameworks. These frameworks relate to climate risk assessment, which is in line with the requirements of IFRS S2 and is useful as a bridging framework to adopt IFRS S2.

Perusahaan yang mengungkapkan analisis skenario dibandingkan sampel perusahaan lainnya menunjukkan bahwa perusahaan tersebut mungkin lebih familiar dengan kerangka TCFD atau kerangka pelaporan keberlanjutan sektor tertentu. Kerangka kerja ini berkaitan dengan penilaian risiko iklim, yang sejalan dengan persyaratan IFRS S2 dan berguna sebagai kerangka penghubung untuk mengadopsi IFRS S2.

Based on the risk management requirement related to the inputs and parameters the entity uses (for example, information about data sources and the scope of operations covered in the processes)", most of the sample companies explain the inputs and parameters. However, regarding scenario analysis, only three companies mention about scenario, and the rest of the sample companies do not disclose fully related to scenario analysis. This evidence shows that the gap in scenario analysis is still big.

Berdasarkan persyaratan manajemen risiko terkait dengan input dan parameter yang digunakan oleh perusahaan (misalnya, informasi tentang sumber data dan cakupan operasi yang tercakup dalam proses), cukup banyak perusahaan dalam sampel memberikan penjelasan mengenai input dan parameter tersebut. Namun, terkait dengan analisis skenario, hanya tiga perusahaan yang menyebutkan mengenai skenario, sementara sisanya tidak mengungkapkan secara jelas mengenai analisis skenario. Bukti tersebut menunjukkan bahwa kesenjangan dalam analisis skenario masih cukup besar.

For the companies that disclose scenario analysis, it shows that they use internationally available scenarios such as scenarios from IEA and Paris Agreement aligned scenarios. Some companies only look at climate risk qualitatively, lacking in-depth analysis. This shows that scenario analysis must still be properly utilised as a risk management tool and not only formally utilised to fulfil sustainability reporting standards.

Untuk perusahaan yang mengungkapkan analisis skenario, perusahaan menggunakan skenario yang tersedia secara internasional seperti skenario dari IEA dan skenario yang selaras dengan Paris Agreements. Beberapa perusahaan hanya melihat risiko iklim secara kualitatif dan kurang mendalam. Hal tersebut menunjukkan bahwa analisis skenario masih perlu digunakan secara lebih tepat lagi sebagai alat manajemen risiko dan tidak hanya digunakan secara formal untuk memenuhi standar pelaporan keberlanjutan.

The situation follows for the next disclosure requirement about how the entity assesses the nature, likelihood and magnitude of the effects of those risks. There is a huge gap in this disclosure requirement. Since climate-related risks happen in the future, the risk assessment should be based on scenario analysis. Companies could use quantitative or qualitative scenario analysis to assess those risks. However, since most companies are less familiar with scenario analysis, scenario analysis is not fully utilised as a risk assessment tool.

Kondisi serupa berlaku untuk persyaratan pengungkapan berikutnya, yaitu bagaimana perusahaan menilai sifat, kemungkinan, dan besarnya dampak dari risiko-risiko tersebut. Terdapat kesenjangan yang besar dalam pengungkapan tersebut. Karena risiko terkait iklim terjadi di masa depan, penilaian risiko seharusnya didasarkan pada analisis skenario. Perusahaan bisa menggunakan analisis skenario kuantitatif atau kualitatif untuk menilai risiko tersebut. Namun, karena banyak perusahaan yang kurang familiar dengan analisis skenario, metode tersebut belum dimanfaatkan sepenuhnya sebagai sarana penilaian risiko.

The evidence for the next disclosure requirement, about whether and how the entity prioritises climate-related risks relative to other types of risk, shows that most sample companies need to prioritise climate-related risks over the other types of risks. Although only three companies mention about scenario and some companies disclose about how these companies assess the nature, likelihood and magnitude of the effects of climate-related risks, most companies do not prioritise climate-related risks.

Bukti untuk persyaratan pengungkapan berikutnya, yaitu apakah dan bagaimana perusahaan memprioritaskan risiko terkait iklim dibandingkan dengan jenis risiko lainnya, menunjukkan bahwa sebagian besar perusahaan dalam sampel perlu memprioritaskan risiko terkait iklim di atas jenis risiko lainnya. Meskipun hanya tiga perusahaan dalam sampel menyebutkan mengenai skenario dan beberapa menyebutkan mengenai bagaimana perusahaan-perusahaan tersebut menilai sifat, kemungkinan, dan besarnya dampak risiko terkait iklim, kebanyakan perusahaan tidak memprioritaskan risiko terkait iklim.

There are several possibilities related to these findings:

1. Climate-related risks are strategic risks that will mostly happen in the far future; they are difficult to assess, and preparing risk mitigation for such risks could become very exhaustive.

2. Scenario analysis utilised as a risk assessment tool is based on international scenarios lacking granularity and less grounded in the Indonesian situation. Therefore, it becomes difficult to imagine the existential threat of climate-related risks on a national or corporate-specific level.

3. Companies focus on frequent and immediate risks, such as operational or financial risks. For example, next year's economic slowdown will be perceived as riskier to business than climate-related risks. However, this possibility should be further explored.

When analysing the three industry sector samples, the risk strategy in the energy sector seems to provide more disclosures than those of chemicals and construction materials. One could argue that as a heavily regulated industry, the energy sector has probably been exposed more to environmentally related disclosures than the other two.

Details of gap analysis and some extracts for the risk management dimension are presented in Appendix 6 and 7.

Terdapat beberapa kemungkinan yang terkait dengan temuan ini:

1. Risiko terkait iklim adalah risiko strategis yang sebagian besar akan terjadi jauh di masa depan; risiko ini sulit untuk dinilai, dan mempersiapkan mitigasi risiko untuk jenis risiko ini bisa sangat memakan waktu dan sumber daya.
2. Analisis skenario yang digunakan sebagai alat penilaian risiko didasarkan pada skenario internasional yang kurang rinci dan kurang relevan dengan situasi di Indonesia. Oleh karena itu, menjadi sulit untuk membayangkan ancaman eksistensial dari risiko terkait iklim pada tingkat nasional atau spesifik perusahaan.
3. Perusahaan berfokus pada risiko yang sering terjadi dan langsung, seperti risiko operasional atau keuangan. Misalnya, perlambatan ekonomi tahun depan akan dianggap lebih berisiko bagi bisnis dibandingkan risiko terkait iklim. Namun, kemungkinan ini harus dieksplorasi lebih lanjut.

Saat menganalisis tiga sampel sektor industri, strategi risiko di perusahaan sektor energi tampaknya memberikan lebih banyak pengungkapan dibandingkan perusahaan sektor kimia dan material konstruksi. Orang dapat berpendapat bahwa sebagai industri yang sangat diatur, sektor energi mungkin lebih banyak terpapar pada pengungkapan terkait lingkungan daripada dua sektor lainnya.

Rincian *gap analysis* dan beberapa ekstrak untuk dimensi Manajemen Risiko disajikan dalam Lampiran 6 dan 7.

4.1.3.1 Resilient Analysis of Risk Management Disclosure

Aligned with TCFD requirements, one of the crucial purposes of the IFRS S2 is to enable users of general-purpose financial reports to understand an entity's strategy for managing climate-related risks and opportunities (IFRS S2 par. 8). This involves evaluating climate-related risks and opportunities as well as stress testing the entity's strategy and business model—including financial position, performance, and cash flows—under various climate-related uncertainties. This requirement helps users of general-purpose financial reports gain insights into the entity's strategy and enables the entity to evaluate its strategy under different climate scenarios. By doing so, reporting entities can better understand future uncertainties, identify risks and opportunities arising from the complexities of climate dynamics, and ultimately formulate a robust strategy based on these assessments. Given the importance of scenario analysis in evaluating climate-related risks and opportunities, the reporting entity should use appropriate climate scenarios to conduct these assessments.

4.1.3.1 Analisis Ketahanan Pada Pengungkapan Manajemen Risiko

Sesuai dengan persyaratan TCFD, salah satu tujuan utama dari IFRS S2 adalah untuk memungkinkan pengguna laporan keuangan memahami strategi perusahaan dalam mengelola risiko dan peluang terkait iklim (IFRS S2 par. 8). Hal tersebut melibatkan penilaian terhadap risiko dan peluang terkait iklim serta uji ketahanan terhadap strategi dan model bisnis perusahaan—termasuk posisi keuangan, kinerja, dan arus kas—dalam berbagai ketidakpastian terkait iklim. Persyaratan tersebut membantu pengguna laporan keuangan umum memperoleh wawasan tentang strategi perusahaan dan memungkinkan perusahaan untuk mengevaluasi strateginya di bawah berbagai skenario iklim. Dengan demikian, perusahaan yang melaporkan dapat lebih memahami ketidakpastian di masa depan, mengidentifikasi risiko dan peluang yang muncul dari kompleksitas dinamika iklim, dan akhirnya merumuskan strategi yang kuat berdasarkan penilaian tersebut. Mengingat pentingnya analisis skenario dalam mengevaluasi risiko dan peluang terkait iklim, perusahaan yang melaporkan harus menggunakan skenario iklim yang sesuai untuk melakukan penilaian tersebut.

Both IFRS S2 and TCFD require climate-related scenarios to assess climate-related risks and opportunities. Although IFRS S2 and TCFD do not define climate-related scenarios, the TCFD guidance states that climate-related scenarios could be divided into transition and physical climate scenarios. Transition scenarios are scenarios that articulate different policy outcomes and energy economic pathways that would result in achieving temperature increases. Physical climate scenarios start with a range of atmospheric GHG concentrations and articulate the likely resulting temperature to the physical impact of climate change.

Baik IFRS S2 maupun TCFD mengharuskan penggunaan skenario terkait iklim untuk menilai risiko dan peluang terkait iklim. Meskipun IFRS S2 dan TCFD tidak mendefinisikan secara rinci apa itu skenario terkait iklim, panduan TCFD menyatakan bahwa skenario terkait iklim dapat dibagi menjadi dua jenis yaitu skenario transisi dan skenario fisik iklim. Skenario transisi adalah skenario yang menggambarkan berbagai hasil kebijakan dan jalur ekonomi energi yang dapat mengarah pada pencapaian kenaikan suhu. Skenario fisik iklim dimulai dengan berbagai konsentrasi gas rumah kaca (GRK) atmosfer dan menggambarkan suhu yang mungkin terjadi serta dampak fisik dari perubahan iklim.

Although compliance with risk management practices is high among the sample entities, only a few have integrated climate risks into their risk management frameworks. Only three entities refer to scenario analysis to assess climate-related risks and opportunities in line with the TCFD framework, and only two provides further details on the scenarios used in the analysis.

Meskipun kepatuhan terhadap praktik manajemen risiko cukup tinggi di antara sampel perusahaan, hanya beberapa perusahaan yang telah mengintegrasikan risiko iklim ke dalam kerangka kerja manajemen risiko mereka. Hanya tiga entitas yang merujuk pada analisis skenario untuk menilai risiko dan peluang terkait iklim sesuai dengan kerangka TCFD, dan hanya dua yang merinci lebih lanjut mengenai skenario yang digunakan dalam analisis.

Most entities that engage in risk management identify natural disasters, such as droughts, landslides, or extreme weather, as part of their risk considerations. Nevertheless, they fail to acknowledge the increasing likelihood of these events due to climate change. This suggests that the entities are primarily focused on short-term risks and have not yet associated natural disasters with the broader context of climate change.

Sebagian besar entitas terlibat dalam manajemen risiko telah mengidentifikasi bencana alam seperti kekeringan, tanah longsor, cuaca ekstrem, sebagai bagian dari risiko yang dipertimbangkan. Namun, perusahaan gagal mengakui peningkatan dari kemungkinan keterjadian dari kejadian-kejadian tersebut akibat dari perubahan iklim. Hal ini menunjukkan bahwa fokus utama entitas adalah pada risiko jangka pendek dan belum menghubungkan bencana alam ke dalam konteks yang lebih luas dari perubahan iklim.

A few sample entities also consider changes in market conditions, price, and technology as risks. However, risk identification only uses business risk perspectives. Although changes in market, price, and technology are also part of transition risk, it could not be considered transition risk if it does not fit the concept. Transition risk related to human response to combat climate change should also be within the net zero emission commitment timeframe. Unfortunately, all the sample entities are exposed to transition risks.

Beberapa entitas sampel juga mempertimbangkan perubahan kondisi pasar, harga, dan teknologi sebagai risiko. Namun, identifikasi risiko hanya menggunakan perspektif risiko bisnis. Meskipun perubahan pasar, harga, dan teknologi juga merupakan bagian dari risiko transisi, namun hal tersebut tidak dapat dianggap sebagai risiko transisi jika tidak sesuai dengan konsep tersebut. Risiko transisi yang terkait dengan respon manusia untuk memerangi perubahan iklim juga harus berada dalam jangka waktu komitmen nol emisi bersih (NZE). Sayangnya, semua entitas sampel terpapar risiko transisi.

Currently, the Indonesian government is developing several pathways and regulations to fulfil its commitment to achieve Net Zero Emissions in 2060 or earlier. These commitments include phasing down coal, reducing reliance on oil imports, increasing electrification, or implementing carbon reduction-related regulations.

Saat ini, pemerintah Indonesia sedang mengembangkan beberapa jalur dan peraturan untuk memenuhi komitmennya dalam mencapai *Net Zero Emissions* pada tahun 2060 atau lebih awal. Komitmen ini termasuk mengurangi penggunaan batu bara secara bertahap, mengurangi ketergantungan pada impor minyak, meningkatkan elektrifikasi, atau menerapkan peraturan terkait pengurangan karbon.

Several examples of regulations that are currently being legislated or have already been mandated are as follows:

- *Rancangan Peraturan Pemerintah Kebijakan Energi Nasional* (RPP KEN): Government regulation that set out energy transition to achieve Net Zero in 2060 or sooner. This regulation includes quantitative energy transition and sectoral emission targets in 2030, 2040, 2050, and 2060. The quantitative targets elaborate several government commitments such as phasing down coal, reducing oil imports, including a pathway to reduce oil product consumption such as gasoline and gasoil, and increasing electrification.

- Several presidential or ministerial regulations include national biofuel utilization, carbon capture and storage, and carbon price.

- *Rencana Pembangunan Jangka Panjang* (RPJPN): a legislative law that set out long-term national planning, including a plan to increase industrial contribution to the Indonesian economy, down streaming mineral and energy, phasing down coal, and utilize nuclear power plants.

These regulations are just part of the transition risk the sample's entities should consider.

Beberapa contoh peraturan yang saat ini sedang dalam proses legislasi atau telah diamanatkan adalah sebagai berikut:

- Rancangan Peraturan Pemerintah Kebijakan Energi Nasional (RPP KEN): Peraturan pemerintah yang menetapkan transisi energi untuk mencapai Net Zero pada tahun 2060 atau lebih cepat. Peraturan ini mencakup target kuantitatif transisi energi dan target emisi sektoral pada tahun 2030, 2040, 2050, dan 2060. Target kuantitatif menguraikan beberapa komitmen pemerintah seperti mengurangi batu bara secara bertahap, mengurangi impor minyak, termasuk jalur untuk mengurangi konsumsi produk minyak seperti bensin dan gasoil, dan meningkatkan elektrifikasi.

- Beberapa peraturan presiden atau peraturan menteri mencakup pemanfaatan bahan bakar nabati nasional, penangkapan dan penyimpanan karbon, dan harga karbon.

- Rencana Pembangunan Jangka Panjang (RPJPN): undang-undang legislatif yang menetapkan perencanaan nasional jangka panjang, termasuk rencana untuk meningkatkan kontribusi industri terhadap perekonomian Indonesia, hilirisasi mineral dan energi, mengurangi penggunaan batu bara secara bertahap, dan memanfaatkan pembangkit listrik tenaga nuklir.

Peraturan-peraturan ini hanyalah sebagian dari risiko transisi yang harus dipertimbangkan oleh entitas sampel.

In Indonesia, a financial service authority, namely OJK, recently published climate risk stress testing guidance for the banking sector [3] in 2023 and an updated version in 2024. These documents guide financial institutions in conducting climate stress tests based on scenario analysis. Major banks in Indonesia have also conducted scenario analysis and climate risk stress testing using OJK and TCFD requirements. These major banks utilize globally available climate-related scenarios in their stress test analysis.

Di Indonesia, otoritas jasa keuangan, yaitu OJK, baru-baru ini menerbitkan panduan uji ketahanan iklim untuk sektor perbankan pada tahun 2023 dan versi terbarunya pada tahun 2024. Dokumen-dokumen tersebut menjadi panduan bagi lembaga keuangan dalam melakukan uji ketahanan iklim berdasarkan analisis skenario. Bank-bank besar di Indonesia juga telah melakukan analisis skenario dan uji ketahanan risiko iklim dengan menggunakan persyaratan OJK dan TCFD. Bank-bank besar ini menggunakan skenario terkait iklim yang tersedia secara global dalam uji ketahanan test mereka.

[3] https://www.ojk.go.id/keuanganberkelanjutan/BE/uploads/siaranpers/files/file_43c58be0-de3f-48a1-bfe6-b4ce47232812-14032024105702.pdf

Table 8 below shows examples of globally available climate-related scenarios:

Tabel 8 di bawah ini menunjukkan contoh-contoh skenario terkait iklim yang tersedia secara global:

Table 8. Global Climate-related Scenarios

Scenarios	Publisher	Climate-related scenario type	Scenario Methodologies
World Energy Outlook	IEA[4]	Transition Scenario	Qualitative & Quantitative
Representative Concentration Pathways (RCP)	IPCC[5]	Physical Climate Scenario	Quantitative
NGFS IIASA Scenario	NGFS[6]	Transition Scenario	Qualitative & Quantitative
NGFS CA Climate Impact	NGFS	Physical Climate Scenario	Quantitative
BP Energy Outlook	BP[7]	Transition & Physical Climate Scenario	Qualitative & Quantitative
New Energy Outlook	BNEF[8]	Transition Scenario	Qualitative & Quantitative
Energy Perspective	Equinor	Transition Scenario	Qualitative & Quantitative

All scenarios have provided quantitative methodology and not only qualitative scenario. All scenarios have satisfied the requirement of IFRS S2

[4] International Energy Agency
[5] Intergovermental Panel on Climate Change
[6] Network fo Greening the Financial System
[7] British Petroleum
[8] Bloomberg New Energy Finance

Nevertheless, the globally available scenarios are not granular and sufficient to cover Indonesia, including its sectoral challenges. The insufficiency of the globally available scenarios stated in OJK climate risk stress testing guidance for the banking sector. The guidance uses NGFS scenarios as a basis and acknowledges the limitation of the NGFS scenario, which is a lack of granularity. The guidance suggests banks consider key factors to identify risks as follows: (i) the coverage of relevant variables; (ii) the temporal, spatial, and/or sectoral coverage and how granular the data are; and (iii) whether there are any biases or other anomalies in the data set.

Meskipun demikian, skenario yang tersedia secara global tidak cukup rinci dan memadai untuk mencakup Indonesia termasuk tantangan-tantangan sektoralnya. Ketidakcukupan skenario yang tersedia secara global dinyatakan dalam panduan uji ketahanan risiko iklim OJK untuk sektor perbankan. Panduan ini menggunakan skenario NGFS sebagai dasar dan mengakui keterbatasan dari skenario NGFS, yaitu kurangnya granularitas. Panduan ini menyarankan bank untuk mempertimbangkan faktor-faktor kunci untuk mengidentifikasi risiko sebagai berikut: (i) cakupan variabel yang relevan; (ii) cakupan temporal, spasial, dan/atau sektoral dan seberapa rinci data tersebut; dan (iii) apakah ada bias atau anomali lain dalam set data.

Moreover, as a developing country that aspires to become a high-income economy, Indonesia will face challenges in the environmental Kuznets hypothesis. To achieve a high-income economy in 2045, Indonesia should boost its economic growth and increase energy and emissions above historical average growth.

Selain itu, sebagai negara berkembang yang bercita-cita untuk menjadi negara berpenghasilan tinggi, Indonesia akan menghadapi tantangan dalam hipotesis lingkungan Kuznets. Untuk mencapai negara berpenghasilan tinggi di tahun 2045, Indonesia harus meningkatkan pertumbuhan ekonominya serta meningkatkan energi dan emisi di atas rata-rata pertumbuhan historis.

After that, aligned with the Environmental Kuznets Curve (EKC), Indonesia can reduce its climate impact after passing its high-income state up to 2045. However, since Indonesia aspires to achieve net zero emissions in 2060 or sooner, it should immediately curb its emissions following EKC in less than 15 years.

Setelah itu, sesuai dengan Kurva Lingkungan Kuznets (*Environmental Kuznets Curve*/EKC), Indonesia dapat mengurangi dampak iklimnya setelah melewati kondisi ekonomi berpenghasilan tinggi hingga tahun 2045. Namun, karena Indonesia bercita-cita untuk mencapai emisi nol bersih pada tahun 2060 atau lebih cepat, Indonesia harus segera mengurangi emisinya sesuai dengan EKC dalam waktu kurang dari 15 tahun.

This will greatly impact fossil energy-related investments, with high demand until 2045 and then high reductions afterwards. This specific scenario should be considered in risk assessment.

Hal ini akan sangat berdampak pada investasi terkait energi fosil, dengan permintaan yang tinggi hingga tahun 2045 dan kemudian pengurangan yang tinggi setelahnya. Skenario spesifik ini perlu dipertimbangkan dalam penilaian risiko.

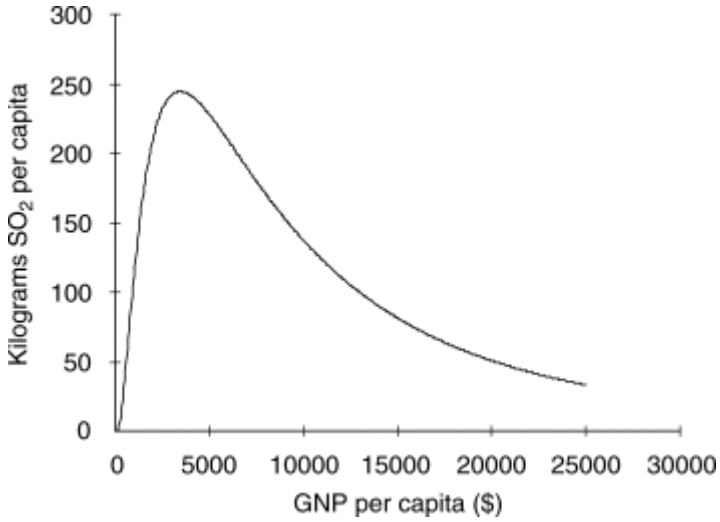


Figure 1. Environmental Kuznets Curve. Image from Chanal et al. (2021)[9]

[9] Chanal, D., Steiner, N. Y., Petrone, R., Chamagne, D., & Péra, M. C. (2021). Reference Module in Earth Systems and Environmental Sciences. Encyclopedia of Energy Storage, 2, 35.

Several nationally available scenarios consider Indonesia specific conditions as follows:

Beberapa skenario yang tersedia secara nasional mempertimbangkan kondisi spesifik Indonesia sebagai berikut

Table 9 . Climate-related scenarios for Indonesian Region (Skenario terkait iklim untuk wilayah Indonesia)

Scenarios	Publisher	Climate-related scenario type	Scenario Typology	Scenario Methodologies
Outlook Energi Indonesia	DEN[10]	Transition Scenario	Normative Scenario	Qualitative & Quantitative
An Energy Sector Roadmap to Net Zero Emissions in Indonesia	IEA & MEMR[11]	Transition Scenario	Normative Scenario	Qualitative & Quantitative
Indonesia Energy Transition Outlook	IRENA[12] & MEMR	Transition Scenario	Normative Scenario	Qualitative & Quantitative
Indonesia LTS-LCCR 2050	MEF[13]	Physical Climate Scenario	Normative Scenario	Qualitative & Quantitative
Pertamina Energy Outlook	Pertamina	Transition & Physical Climate Scenario	Exploratory & Normative Scenario	Qualitative & Quantitative

All scenarios have provided quantitative methodology and not only qualitative scenario. All scenarios have satisfied the requirement of IFRS S2

[10] Dewan Energi Nasional (National Energy Council)
[11] International Energy Agency, & Ministry of Energy & Mineral Resources
[12] International Renewable Energy Agency
[13] Ministry of Environment & Forestry

Most scenarios that available in Indonesia are normative scenarios. These scenarios show the pathway to achieve Net Zero Emission in 2060 or sooner. Therefore, pose high transition risks but lower physical climate risks caused by stringent climate policies. These scenarios are also less useful for climate stress tests because to achieve Net Zero Emission in 2060 or sooner, the combinations of several factors should be met together, such as technological advancement, lower cost of technology, stringent climate policies, business entities prioritize climate action over financial targets, and consumer act towards climate actions over economic optimization.

Sebagian besar skenario di Indonesia merupakan skenario normatif yang menunjukkan jalur untuk mencapai Net Zero Emission pada tahun 2060 atau lebih cepat. Skenario normatif ini memiliki risiko transisi yang tinggi, namun memiliki risiko iklim fisik yang lebih rendah yang disebabkan oleh kebijakan iklim yang ketat. Skenario ini juga kurang bermanfaat untuk uji ketahanan iklim karena untuk mencapai Net Zero Emission pada tahun 2060 atau lebih cepat, kombinasi dari beberapa faktor harus dipenuhi secara bersamaan, seperti kemajuan teknologi, biaya teknologi yang lebih rendah, kebijakan iklim yang ketat, entitas bisnis memprioritaskan aksi iklim daripada target keuangan, dan tindakan konsumen terhadap aksi iklim daripada optimalisasi ekonomi.

IFRS S2 Appendix B paragraph B17 suggests the reporting entity may start from simpler qualitative scenario narratives and then build capabilities to develop more advanced quantitative climate-related scenario analysis unless the reporting entity with a high degree of exposure to climate-related risks and opportunities and with access to the necessary skills, capabilities or resources is required to apply a more advanced quantitative approach.

IFRS S2 Lampiran B paragraf B17 menyarankan entitas pelapor untuk memulai dengan narasi skenario kualitatif yang lebih sederhana dan kemudian membangun kapabilitas untuk mengembangkan analisis skenario kuantitatif terkait iklim yang lebih canggih, kecuali jika entitas pelapor memiliki tingkat eksposur yang tinggi terhadap risiko dan peluang terkait iklim serta memiliki akses terhadap keterampilan, kapabilitas, atau sumber daya yang diperlukan untuk menerapkan pendekatan kuantitatif yang lebih canggih.

Nevertheless, the capability to develop quantitative climate-related scenario analysis lies in the foundation of climate-related scenarios and modelling. Indonesia requires granular and country-specific climate-related scenarios, especially transition scenarios because Indonesia faces challenges that are different from those of IEA member countries, which are part of the OECD.

Meskipun demikian, kemampuan untuk mengembangkan analisis skenario kuantitatif terkait iklim terletak pada dasar skenario dan pemodelan terkait iklim. Indonesia memerlukan skenario terkait iklim yang lebih rinci dan spesifik untuk suatu negara, khususnya skenario transisi karena Indonesia menghadapi tantangan yang berbeda dengan negara lain.

4.1.4. Level of Climate-related disclosures - Metrics and Targets

Table 11 demonstrates the mean of Metrics and Target disclosure. The companies are engaged slightly more with climate-related targets (23% for construction materials and 12% for chemicals) than metrics disclosures (10% for chemicals and 11% for energy).

4.1.4. Tingkat Pengungkapan Terkait Iklim – Metriks dan Target

Tabel 11 menunjukkan rata-rata pengungkapan Metrik dan Target. Perusahaan-perusahaan terlibat sedikit lebih banyak dengan target terkait iklim (23% untuk material konstruksi dan 12% untuk bahan kimia) daripada pengungkapan metrik (10% untuk bahan kimia dan 11% untuk energi).

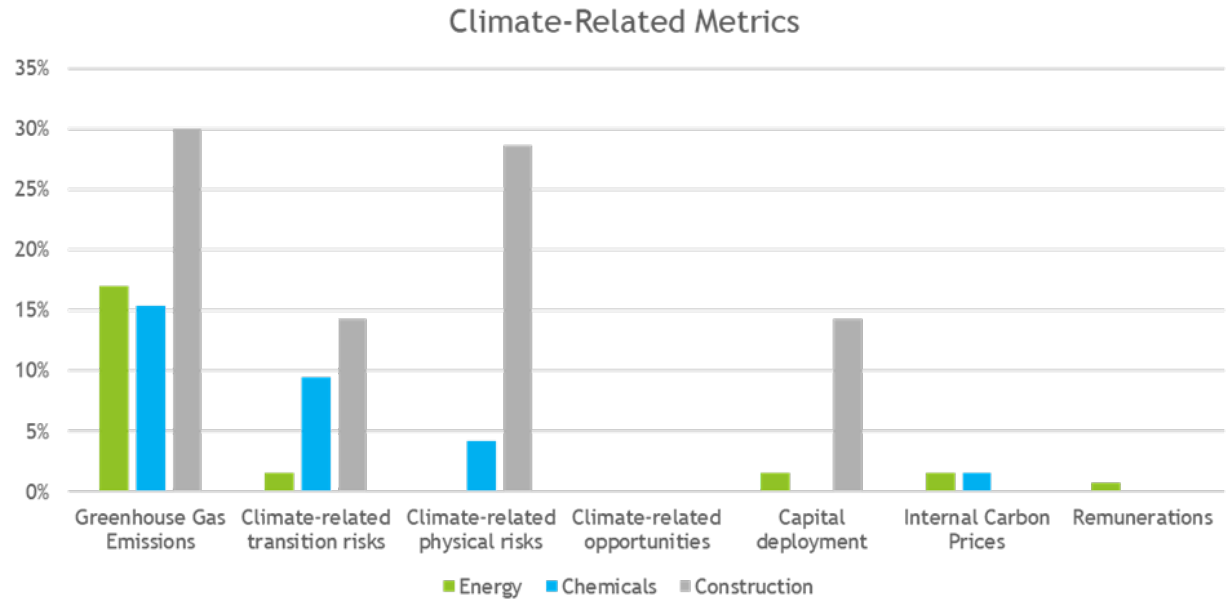
Table 10: Mean Disclosures of IFRS S2 – Metrics and Targets
(Rata-Rata Pengungkapan IFRS S2 – Metrik dan Target

	Energy	Chemicals	Construction Materials	All samples
Climate-related Metrics	11%	10%	21%	11%
Climate-related Targets	11%	12%	23%	12%

When climate-related metrics are further analysed, figure 2 below will reveal the mean disclosures of 7 subcategories as follows:

Ketika metrik terkait iklim dianalisis lebih lanjut, gambar 2 di bawah ini akan menunjukkan rata-rata pengungkapan 7 subkategori sebagai berikut:

Figure 2: Climate-related Metrics Subcategories
(Subkategori Metrik Terkait Iklim)



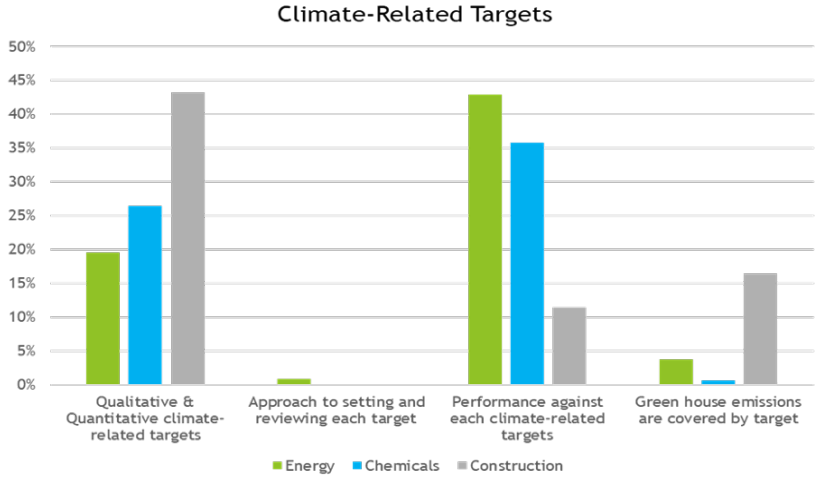
Companies in the Construction material sector exhibit higher disclosure scores in most Climate-related metrics: greenhouse gas emissions, climate-related transition risks, climate-related physical risks and capital deployment.

Perusahaan-perusahaan di sektor Material konstruksi menunjukkan skor pengungkapan yang lebih tinggi di sebagian besar metrik terkait Iklim, yaitu : emisi gas rumah kaca, risiko transisi terkait iklim, risiko fisik terkait iklim, dan penggunaan modal.

Then, figure 3 below will reveal the mean disclosures of the further four items of Climate-related Targets as follows:

Kemudian, gambar 3 di bawah ini akan menunjukkan rata-rata pengungkapan dari empat item target terkait iklim sebagai berikut:

Figure 3: Climate-related Targets Subcategories (Subkategori Target Terkait Iklim)



Concerning the disclosure of climate-related targets, both energy and chemical companies have revealed higher performance scores against each climate-related target. In contrast, construction companies score the highest in disclosing qualitative and quantitative climate-related targets.

Berkaitan dengan pengungkapan target terkait iklim, baik perusahaan energi maupun kimia telah mengungkapkan skor kinerja yang lebih tinggi terhadap setiap target terkait iklim. Sebaliknya, perusahaan material konstruksi mendapatkan skor tertinggi dalam mengungkapkan target terkait iklim secara kualitatif dan kuantitatif.

Overall, most sample companies disclosed scope 1 GHG emissions. 73% of the sample companies disclosed 100% of the scope 1 GHG emissions requirements as required by IFRS S2. However, 27% of companies still did not disclose any quantitative number of scope 1 emissions. The sample companies either disclose Scope 1 emissions very well or not at all. Scope 1 GHG emissions represent the company's total GHG emissions.

Secara keseluruhan, sebagian besar perusahaan sampel mengungkapkan emisi gas rumah kaca (GRK) cakupan 1. Sebanyak 73% dari perusahaan sampel mengungkapkan 100% persyaratan emisi GRK cakupan 1 sebagaimana disyaratkan oleh IFRS S2. Namun, 27% perusahaan masih belum mengungkapkan jumlah kuantitatif emisi cakupan 1. Perusahaan sampel mengungkapkan emisi GRK cakupan 1 dengan sangat baik atau tidak mengungkapkan sama sekali. Emisi GRK cakupan 1 mewakili total emisi GRK perusahaan.

The disclosure compliance of scope 2 GHG emissions among our sample companies is lower than that of scope 1. Only 48% of companies disclose their Scope 2 GHG emissions, while 52% of others did not disclose any quantitative number of Scope 2. The scope 2 figure is important to assess how clean the energy being used by the company is. Scope 2 represents the GHG emission by the energy supplier, which can be electricity, steam, heat or cooling.

Kepatuhan pengungkapan emisi GRK cakupan 2 di antara perusahaan sampel lebih rendah dibandingkan dengan cakupan 1. Hanya 48% perusahaan yang mengungkapkan emisi GRK cakupan 2 mereka, sementara 52% perusahaan lainnya tidak mengungkapkan jumlah kuantitatif apa pun dari cakupan 2. Cakupan 2 ini penting untuk menilai seberapa bersih energi yang digunakan oleh perusahaan. Cakupan 2 mewakili emisi GRK yang dihasilkan oleh penyedia energi, dapat berupa listrik, uap, panas, atau pendingin.

As expected, compliance for scope 3 disclosure among our sample companies is even lower than that for scope 2. Most of our sample companies, 85.5% of the total, do not disclose anything for scope 3 GHG emissions. On top of that, most companies do not follow the GHG protocol in calculating any scope of GHG emissions.

Seperti yang diperkirakan, kepatuhan pengungkapan cakupan 3 di antara perusahaan sampel bahkan lebih rendah dibandingkan kepatuhan cakupan 2. Sebagian besar perusahaan sampel, yaitu 85,5% dari total, tidak mengungkapkan apa pun terkait emisi GRK cakupan 3. Selain itu, sebagian besar perusahaan tidak mengikuti protokol GRK dalam menghitung cakupan emisi GRK apa pun.

Only 16.85% of companies disclose that they follow the GHG protocol and how to calculate the GHG emissions.

Hanya 16,85% perusahaan yang mengungkapkan bahwa mereka mengikuti protokol GRK dan cara menghitung emisi GRK.

Overall, the full compliance rate for a complete GHG emission (scope 1,2,3) is very low. Only 11% of sample companies come from the energy sector. As many as 16% of sample companies do not disclose any quantitative metrics at all. The energy sector is much better at disclosing metrics and targets than chemical and construction materials.

Secara keseluruhan, tingkat kepatuhan penuh untuk emisi GRK secara menyeluruh (cakupan 1,2,3) sangat rendah. Hanya 11% perusahaan sampel yang berasal dari sektor energi. Sebanyak 16% perusahaan sampel tidak mengungkapkan metrik kuantitatif sama sekali. Sektor energi jauh lebih baik dalam mengungkapkan metrik dan target dibandingkan sektor bahan kimia dan konstruksi.

Details of gap analysis and some extracts for Metrics and Targets are presented in Appendix 8 and 9.

Rincian *gap analysis* dan beberapa ringkasan *Metrics and Target* disajikan pada Lampiran 8 dan 9.

4.2. Reporting frameworks Mostly used in producing sustainability reports

4.2. Kerangka pelaporan yang banyak digunakan dalam pembuatan laporan keberlanjutan

As the regulator, the Indonesian Financial Service Agency (FSA) has issued a set of minimum items to be disclosed in the sustainability report. FSA Regulation No 51/2017 requires the listed companies to submit their sustainability report to FSA in 2018. The regulation also provides a list in its attachment of which items must be disclosed in companies' sustainability reports. Although the list is not as exhaustive as GRI standards or IFRS S2, listed companies in Indonesia would comply with this FSA regulation at the minimum. Although this study does not assess the level of compliance with the FSA regulation, it is worth noting that 97% of sample companies claim that they follow FSA regulations in preparing their sustainability report.

Sebagai regulator, Otoritas Jasa Keuangan (OJK) telah mengatur sejumlah hal minimum yang wajib diungkapkan dalam laporan keberlanjutan. Peraturan OJK No 51/2017 mewajibkan emiten untuk menyampaikan laporan keberlanjutannya kepada OJK pada tahun 2018. Dalam lampirannya, peraturan tersebut juga mencantumkan hal-hal apa saja yang wajib diungkapkan dalam laporan keberlanjutan perusahaan. Meskipun daftarnya tidak selengkap standar GRI atau IFRS S2, perusahaan tercatat di Indonesia setidaknya wajib mematuhi peraturan OJK ini. Meskipun penelitian ini tidak menilai tingkat kepatuhan terhadap peraturan OJK, perlu dicatat bahwa 97% perusahaan sampel menyatakan bahwa mereka mengikuti peraturan OJK dalam menyiapkan laporan keberlanjutannya.

The other popular standard used by sample companies is the GRI standard.

Standar populer lainnya yang digunakan oleh perusahaan sampel adalah standar GRI.

57 % of the sample companies claim they use the GRI standard for their sustainability report. 65% of the sample claim that they also try to map their sustainability report into Sustainable Development Goals (SDG).

Sebanyak 57% dari perusahaan sampel menyatakan bahwa mereka menggunakan standar GRI untuk laporan keberlanjutan mereka. 65% sampel menyatakan bahwa mereka juga mencoba memetakan laporan keberlanjutan mereka ke dalam *Sustainable Development Goals (SDG).*

Table 11: Sustainability Report Framework (Kerangka Kerja Laporan Keberlanjutan)

Framework of Sustainability Report	
GRI (Global Reporting Initiatives)	57%
FSA 51/2017 (Financial Service Authority Rule 51/2017)	97%
SDG (UN Sustainable Development Goals)	63%
TCFD (Task Force on Climate-related Financial Disclosures)	3%
SASB (Sustainability Accounting Standard Board)	4%
Other	2%

Many companies apply more than one framework in producing their sustainability report.

Banyak perusahaan menerapkan lebih dari satu kerangka kerja dalam menghasilkan laporan keberlanjutannya.

It is not uncommon for different frameworks to be disclosed in separate chapters or pages without any reference to one another, which creates information overload for users. For example, PTPT Medco Energi Internasional Tbk, one of our sample companies, applies Global GRI, TCFD, UNSDG, CDP and FSA 51/2007.

Bukan hal yang aneh jika kerangka kerja yang berbeda diungkapkan dalam bab atau halaman terpisah tanpa referensi satu sama lain, sehingga mengakibatkan informasi yang berlebihan *(information overload)* bagi pengguna. Misalnya, PT Medco Energi Internasional Tbk, salah satu perusahaan sampel kami, menerapkan Global GRI, TCFD, UNSDG, CDP dan Peraturan OJK No 51/2017.

It is also worth noting that different frameworks applied have caused different governance structures developed by the company in dealing with climate-related risks and opportunities (see extracts in Appendix 10).

Perlu juga dicatat bahwa perbedaan kerangka kerja yang diterapkan menyebabkan perbedaan struktur tata kelola yang dikembangkan oleh perusahaan dalam menghadapi risiko dan peluang terkait perubahan iklim (lihat di Lampiran 10).

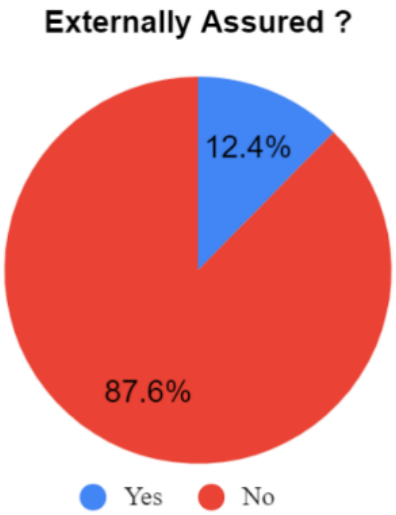
4.3 External Assurance for Sustainability Reporting

The final aspect of our analysis includes exploring the number of companies with climate-related disclosures assured by an independent party. We explored the extent to which companies have their disclosures assured, as this is expected to add credibility to their reporting. Whilst the level of assurance was not measured in our analysis, we find that only 12 % of our sample companies (11 companies) do have some form of external assurance for their disclosures, as shown in Figure 4 below.

4.3 Asurans Eksternal untuk Pelaporan Keberlanjutan

Aspek terakhir dari analisis mencakup penelitian terhadap jumlah perusahaan yang pengungkapan terkait perubahan iklim dijamin/dievaluasi oleh pihak independen. Kami mengeksplorasi sejauh mana perusahaan dapat menjamin pengungkapannya, karena hal ini diharapkan dapat menambah kredibilitas pelaporan mereka. Meskipun tingkat asurans tidak diukur dalam analisis, riset ini menemukan bahwa hanya 12% dari perusahaan sampel (11 perusahaan) yang memiliki asurans eksternal atas pengungkapannya, seperti yang ditunjukkan pada Gambar 4 di bawah.

Figure 4: External Assurance (Asurans Eksternal)

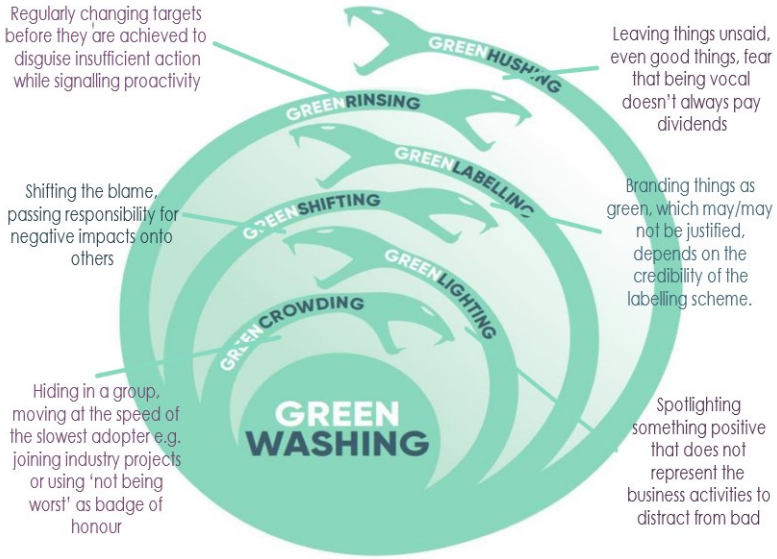


The eleven Sustainability Reporting assessed by the following external assurers: Moores Rowland (5), TUV Rheinland Indonesia (1), PT SGS Indonesia (1), LRQA (1), KAP Purwantoro, Sungkoro & Surja (1) and SR Asia Indonesia (2).

Sebelas Laporan Keberlanjutan dinilai oleh asurans eksternal berikut: Moores Rowland (5), TUV Rheinland Indonesia (1), PT SGS Indonesia (1), LRQA (1), KAP Purwantoro, Sungkoro & Surja (1) dan SR Asia Indonesia (2).

Most of the sustainability reports of our sample companies do not have external assurance to verify their claims, thus greenwashing possibilities are high. Whilst our research has not touched the issue of greenwashing in detail, one could argue that these unassured Sustainability Reporting may contain one or more of the following greenwashing.[14]

Sebagian besar laporan keberlanjutan dari perusahaan sampel kami tidak memiliki asurans eksternal untuk memverifikasi klaim mereka, sehingga kemungkinan terjadinya *greenwashing* cukup tinggi. Meskipun penelitian ini belum menyentuh isu *greenwashing* secara rinci, ada yang berpendapat bahwa Laporan Keberlanjutan yang tidak pasti ini mungkin berisi satu atau lebih *greenwashing* seperti berikut[15]:



On the other hand, the lack of external assurance may create an opportunity for accounting firms and accountant professionals in Indonesia to provide additional services to the companies. Although the domain of external assurance of sustainability reports has also attracted non-accounting players such as environmental experts, accountants have more experience in the assurance business.

Di sisi lain, kurangnya asurans eksternal dapat menciptakan peluang bagi kantor akuntan dan profesional akuntan di Indonesia untuk memberikan layanan tambahan kepada perusahaan. Meskipun domain asurans eksternal atas laporan keberlanjutan juga menarik pemain non-akuntansi seperti pakar lingkungan hidup, akuntan memiliki lebih banyak pengalaman dalam bisnis asurans.

Appendix 11 presents an extract from an energy company showing the Independent Assurance Statement on the Sustainability Reporting.

Lampiran 11 menyajikan kutipan dari sebuah perusahaan energi yang menunjukkan Pernyataan Asurans Independen atas Pelaporan Keberlanjutan.

[14] https://raoglobal.org/insights/six-shades-of-greenwashing

[15] https://raoglobal.org/insights/six-shades-of-greenwashing

5. Conclusions: Practical implications and policy recommendations.

Some preliminary findings from our analysis can inform standard setters, companies, national/regional regulators, and company report users. We outline the practical implications and policy recommendations accordingly.

Implications for the Indonesian Standard Setter

- By adopting IFRS S2 as the new reporting standard in both developed and developing economies globally, companies (and users), particularly in emerging economies like Indonesia, will gain from more educational resources and examples that clarify the disclosures needed under IFRS S2.

- Most sample companies, according to our analysis, do not yet offer disclosures against these new requirements since they are using various Sustainability Reporting standards that may not be compliant with IFRS S2. Indonesian Standard Setter should consider the implications of many standards currently applied and weigh in the cost-benefit analysis if only IFRS S2 were mandated.

- Despite the challenges, we support issuing the IFRS S2 exposure draft in Indonesia as early as possible, even when the regulator has not yet decided to stipulate a target year for application. The draft in Indonesian language, once released, will assist the prepares in learning the standard and applying it correctly.

5. Kesimpulan: Implikasi praktis dan rekomendasi kebijakan.

Beberapa temuan awal dari hasil analisis dapat memberikan informasi kepada pembuat standar, perusahaan, regulator nasional/regional, dan pengguna laporan perusahaan. Kami menguraikan implikasi praktis dan rekomendasi kebijakan yang sesuai.

Implikasi bagi Penetapan Standar Indonesia

- Dengan mengadopsi IFRS S2 sebagai standar pelaporan baru di negara maju dan berkembang secara global, perusahaan (dan pengguna), khususnya di negara berkembang seperti Indonesia, akan memperoleh lebih banyak sumber daya/bahan pendidikan dan contoh yang memperjelas pengungkapan yang diperlukan berdasarkan IFRS S2.
- Sebagian besar perusahaan sampel, menurut analisis kami, belum menawarkan pengungkapan terhadap persyaratan baru ini karena mereka menggunakan berbagai standar Pelaporan Keberlanjutan yang mungkin tidak mematuhi IFRS S2. Penetapan Standar Indonesia harus mempertimbangkan implikasi dari banyak standar yang diterapkan saat ini dan mempertimbangkan analisis biaya-manfaat jika hanya IFRS S2 yang diamanatkan.
- Meskipun terdapat tantangan, kami mendukung penerbitan *exposure draft* IFRS S2 di Indonesia sedini mungkin, bahkan ketika regulator belum memutuskan untuk menetapkan tahun target penerapannya. Draft dalam bahasa Indonesia, setelah dirilis, akan membantu para persiapan dalam mempelajari standar tersebut dan menerapkannya dengan benar.

Implications for Indonesian regulators

- Provided that Indonesia adopts IFRS S2, national regulators will need to allow firms enough time to transition to the ISSB norms, based on the relatively low level of preparedness found in our review.
- Regulators should carefully assess the implications of mandating any national disclosure requirements beyond those outlined in IFRS S2 and work on developing implementation guidance.
- If IFRS S2 should be adopted, we suggest that the regulators consider the application in different stages based on the company's size. Energy companies may be encouraged to adopt IFRS S2 earlier as they use more natural resources.
- The regulator should develop a blueprint for IFRS S2 adoption in Indonesia and consider inviting all relevant stakeholders for their input before the blueprint is released to the public. Relevant stakeholders may include, but are not limited to, accounting associations, environmentalists, sustainability consultants, preparers, assurance, sustainability training and certification providers, and academics.
- The regulator should also develop the capacity of key stakeholders in the sustainability ecosystems, which will support the quality of the sustainability report and its assurance. Continued training, capacity building, and certifications should be carefully embedded in the blueprint.

Implikasi bagi regulator di Indonesia

- Jika Indonesia mengadopsi IFRS S2, regulator nasional perlu memberikan waktu yang cukup bagi perusahaan untuk melakukan transisi ke norma ISSB, berdasarkan tingkat kesiapan yang relatif rendah seperti yang ditemukan dalam tinjauan kami.
- Regulator harus secara hati-hati menilai implikasi dari mewajibkan persyaratan pengungkapan nasional apa pun di luar yang diuraikan dalam IFRS S2 dan berupaya mengembangkan panduan implementasi.
- Jika IFRS S2 harus diadopsi, kami menyarankan agar regulator mempertimbangkan penerapannya dalam tahapan yang berbeda berdasarkan ukuran perusahaan. Perusahaan energi mungkin didorong untuk mengadopsi IFRS S2 lebih awal karena menggunakan lebih banyak sumber daya alam.
- Regulator harus mengembangkan *blueprint* adopsi IFRS S2 di Indonesia dan mempertimbangkan untuk mengundang semua pemangku kepentingan terkait untuk memberikan masukan sebelum *blueprint* tersebut dipublikasikan ke publik. Pemangku kepentingan yang relevan dapat mencakup, namun tidak terbatas pada, asosiasi akuntansi, aktivis lingkungan hidup, konsultan keberlanjutan, penyusun, penjaminan, penyedia pelatihan dan sertifikasi keberlanjutan, dan akademisi.
- Regulator juga harus mengembangkan kapasitas pemangku kepentingan utama dalam ekosistem keberlanjutan, yang akan mendukung kualitas laporan keberlanjutan dan jaminannya. Pelatihan berkelanjutan, peningkatan kapasitas, dan sertifikasi harus dimasukkan secara hati-hati ke dalam *blueprint*.

Implications for preparers/companies

- The main challenge for most companies is investing time and effort to collect and report information required by the new disclosure requirements in IFRS S2.
- Indonesian companies need to minimize the number of sources and reports containing climate-related disclosures, ensuring that these disclosures are focused and not overly extensive
- Climate-related disclosures relevant to financial statements are expected as the capital provider will use them as the primary user of sustainability disclosures.
- Companies will face increasing pressure from investors and other stakeholders to ensure that an external independent party assures their sustainability reports. Engaging with a trustworthy consultant or external independent party should be continued without ignoring the cost-benefit analysis.
- Preparers should start capacity building for their key management and relevant human resources to develop internal competency in IFRS S2 standards.

Implikasi bagi para pembuat laporan keberlanjutan/perusahaan

- Tantangan utama bagi sebagian besar perusahaan adalah menginvestasikan waktu dan tenaga untuk mengumpulkan serta melaporkan informasi yang diwajibkan oleh persyaratan pengungkapan baru dalam IFRS S2.
- Perusahaan-perusahaan di Indonesia perlu meminimalkan jumlah sumber dan laporan yang memuat pengungkapan terkait perubahan iklim, dengan memastikan bahwa pengungkapan tersebut terfokus dan tidak terlalu ekstensif.
- Pengungkapan terkait perubahan iklim yang relevan dengan laporan keuangan diharapkan karena investor akan menggunakannya sebagai pengguna utama pengungkapan keberlanjutan.
- Perusahaan akan menghadapi tekanan yang semakin besar dari investor dan pemangku kepentingan lainnya untuk memastikan bahwa pihak eksternal yang independen dapat menjamin laporan keberlanjutan mereka. Keterlibatan dengan konsultan terpercaya atau pihak eksternal independen harus terus dilakukan tanpa mengabaikan *cost-benefit analysis*
- Para penyusun harus memulai peningkatan kapasitas manajemen kunci dan sumber daya manusia yang relevan untuk mengembangkan kompetensi internal dalam standar S2 IFRS.

Implications for users

- As IFRS S2 is still under consideration to be adopted in Indonesia, and it will coexist with the various existing reporting frameworks, both internationally (such as GRI, SDG, TCFD, SASB, IPIECA, MSCI) and nationally recognized frameworks (like POJK 51/2017 in Indonesia). Nevertheless, there is a significant possibility that the standard will be adopted in Indonesia. Thus, the users need to familiarize themselves with these new disclosure requirements and understand how companies' reports may be impacted.
- Currently, external parties do not assure sustainability reports in Indonesia, ars IFRS S2 is not explicitly required to be externally assured either; users will continue to face the challenge of a potentially perceived lack of trust in the reliability of the information provided.

Implikasi bagi pengguna

- IFRS S2 masih dalam pertimbangan untuk diadopsi di Indonesia dan akan berdampingan dengan berbagai kerangka pelaporan yang ada, baik secara internasional (seperti GRI, SDG, TCFD, SASB, IPIECA, MSCI) maupun kerangka yang diakui secara nasional (seperti POJK 51 /2017 di Indonesia). Namun, terdapat kemungkinan yang cukup beralasan bahwa standar tersebut akan diadopsi di Indonesia. Oleh karena itu, pengguna perlu memahami persyaratan pengungkapan baru ini dan memahami dampaknya terhadap laporan perusahaan
- Saat ini, pihak eksternal tidak menjamin laporan keberlanjutan di Indonesia karena IFRS S2 juga tidak secara eksplisit diharuskan untuk dijamin oleh pihak eksternal, sehingga pengguna akan terus menghadapi tantangan berupa kurangnya kepercayaan terhadap keandalan informasi yang diberikan

Implication for IAMI

- IAMI operates independently or in partnership with the Association of Indonesian Certified Public Accountants to design and implement initiatives that raise national awareness of IFRS S1 and S2 and support their effective adoption.

- IAMI operates independently or in partnership with other organisations to build market readiness, supporting companies in implementing IFRS S1 and S2 standards.
- IAMI build capacity and upskilling amongst its members about IFRS S1 and S2 and the implementation of them through certification programmes and continuing professional education initiatives.

Implikasi bagi IAMI

- IAMI dapat melakukan sendiri atau bermitra dengan Ikatan Akuntan Publik Indonesia (IAPI) untuk merancang dan mengimplementasikan inisiatif untuk meningkatkan kesadaran nasional tentang IFRS S1 dan S2 dan mendukung penerapannya secara efektif.
- IAMI dapat melakukan sendiri atau bermitra dengan organisasi lain untuk membangun kesiapan pasar dan mendukung perusahaan dalam menerapkan standar IFRS S1 dan S2.
- IAMI membangun kapasitas dan meningkatkan keterampilan di antara para anggotanya mengenai IFRS S1 dan S2 dan penerapannya melalui kegiatan sertifikasi dan/atau pelatihan berkesinambungan.

- In partnership with reputable universities, IAMI supports funding research aimed at evaluating and improving companies' implementation of IFRS S1 and S2.

- The core issue of IFRS S2 is conducting scenario analysis to assess strategic risk & opportunities related to climate. This strategic assessment and scenario analysis should be conducted by management accountants, then reported by financial accountants. IAMI as an association for management accountants has a role to develops management accountant's capability to conduct scenario analysis as well as strategic risk and opportunity assessment based on scenario analysis.

- Dengan bekerja sama dengan universitas terkemuka, IAMI mendukung pendanaan penelitian yang bertujuan untuk mengevaluasi dan meningkatkan penerapan IFRS S1 dan S2 oleh perusahaan.
- Isu inti IFRS S2 adalah melakukan analisis skenario untuk menilai risiko & peluang strategis yang terkait dengan iklim. Penilaian strategis dan analisis skenario ini harus dilakukan oleh akuntan manajemen, kemudian dilaporkan oleh akuntan keuangan. IAMI sebagai asosiasi akuntan manajemen memiliki peran untuk mengembangkan kemampuan akuntan manajemen untuk melakukan analisis skenario serta penilaian risiko dan peluang strategis berdasarkan analisis skenario.

Appendix 1: Sample companies (Lampiran 1: Perusahaan Sampel)

No	Code	Company's name	Sector	Sub-sector
1	BYAN	Bayan Resources Tbk.	Energy	Oil, gas and coal
2	ELSA	Elnusa Tbk.	Energy	Oil, gas and coal
3	ENRG	Energi Mega Persada Tbk.	Energy	Oil, gas and coal
4	ABMM	ABM Investama Tbk.	Energy	Oil, gas and coal
5	ADRO	Adaro Energy Indonesia Tbk.	Energy	Oil, gas and coal
6	AKRA	AKR Corporindo Tbk.	Energy	Oil, gas and coal
7	APEX	Apexindo Pratama Duta Tbk.	Energy	Oil, gas and coal
8	BBRM	Pelayaran Nasional Bina Buana	Energy	Oil, gas and coal
9	BIPI	Astrindo Nusantara Infrastrukt	Energy	Oil, gas and coal
10	BSSR	Baramulti Suksessarana Tbk.	Energy	Oil, gas and coal
11	BULL	Buana Lintas Lautan Tbk.	Energy	Oil, gas and coal
12	BUMI	Bumi Resources Tbk.	Energy	Oil, gas and coal
13	CNKO	Exploitasi Energi Indonesia Tb	Energy	Oil, gas and coal
14	DEWA	Darma Henwa Tbk	Energy	Oil, gas and coal
15	DOID	Delta Dunia Makmur Tbk.	Energy	Oil, gas and coal
16	DSSA	Dian Swastatika Sentosa Tbk	Energy	Oil, gas and coal
17	GEMS	Golden Energy Mines Tbk.	Energy	Oil, gas and coal
18	HITS	Humpuss Intermoda Transportasi	Energy	Oil, gas and coal
19	IATA	MNC Energy Investments Tbk.	Energy	Oil, gas and coal
20	INDY	Indika Energy Tbk.	Energy	Oil, gas and coal
21	ITMA	Sumber Energi Andalan Tbk.	Energy	Oil, gas and coal
22	ITMG	Indo Tambangraya Megah Tbk.	Energy	Oil, gas and coal
23	KKGI	Resource Alam Indonesia Tbk.	Energy	Oil, gas and coal
24	KOPI	Mitra Energi Persada Tbk.	Energy	Oil, gas and coal
25	LEAD	Logindo Samudramakmur Tbk.	Energy	Oil, gas and coal
26	MBSS	Mitrabahtera Segara Sejati Tbk	Energy	Oil, gas and coal
27	MEDC	Medco Energi Internasional Tbk	Energy	Oil, gas and coal

No	Code	Company's name	Sector	Sub-sector
28	MYOH	Samindo Resources Tbk.	Energy	Oil, gas and coal
29	PGAS	Perusahaan Gas Negara Tbk.	Energy	Oil, gas and coal
30	PKPK	Perdana Karya Perkasa Tbk	Energy	Oil, gas and coal
31	PTBA	Bukit Asam Tbk.	Energy	Oil, gas and coal
32	PTRO	Petrosea Tbk.	Energy	Oil, gas and coal
33	RAJA	Rukun Raharja Tbk.	Energy	Oil, gas and coal
34	RIGS	Rig Tenders Indonesia Tbk.	Energy	Oil, gas and coal
35	TOBA	TBS Energi Utama Tbk.	Energy	Oil, gas and coal
36	TPMA	Trans Power Marine Tbk.	Energy	Oil, gas and coal
37	WINS	Wintermar Offshore Marine Tbk.	Energy	Oil, gas and coal
38	SHIP	Sillo Maritime Perdana Tbk.	Energy	Oil, gas and coal
39	TAMU	Pelayaran Tamarin Samudra Tbk.	Energy	Oil, gas and coal
40	FIRE	Alfa Energi Investama Tbk.	Energy	Oil, gas and coal
41	PSSI	IMC Pelita Logistik Tbk.	Energy	Oil, gas and coal
42	DWGL	Dwi Guna Laksana Tbk.	Energy	Oil, gas and coal
43	BOSS	Borneo Olah Sarana Sukses Tbk.	Energy	Oil, gas and coal
44	INPS	Indah Prakasa Sentosa Tbk.	Energy	Oil, gas and coal
45	TCPI	Transcoal Pacific Tbk.	Energy	Oil, gas and coal
46	SURE	Super Energy Tbk.	Energy	Oil, gas and coal
47	TEBE	Dana Brata Luhur Tbk.	Energy	Oil, gas and coal
48	UNIQ	Ulima Nitra Tbk.	Energy	Oil, gas and coal
49	RMKE	RMK Energy Tbk.	Energy	Oil, gas and coal
50	BSML	Bintang Samudera Mandiri Lines	Energy	Oil, gas and coal
51	ADMR	Adaro Minerals Indonesia Tbk.	Energy	Oil, gas and coal
52	SICO	Sigma Energy Compressindo Tbk.	Energy	Oil, gas and coal
53	COAL	Black Diamond Resources Tbk.	Energy	Oil, gas and coal
54	SUNI	Sunindo Pratama Tbk.	Energy	Oil, gas and coal
55	CBRE	Cakra Buana Resources Energi T	Energy	Oil, gas and coal

No	Code	Company's name	Sector	Sub-sector
56	HILL	Hillcon Tbk.	Energy	Oil, gas and coal
57	CUAN	Petrindo Jaya Kreasi Tbk.	Energy	Oil, gas and coal
58	SGER	Sumber Global Energy Tbk.	Energy	Oil, gas and coal
59	MCOL	Prima Andalan Mandiri Tbk.	Energy	Oil, gas and coal
60	GTSI	GTS Internasional Tbk.	Energy	Oil, gas and coal
61	RUIS	Radiant Utama Interinsco Tbk.	Energy	Oil, gas and coal
62	SMMT	Golden Eagle Energy Tbk.	Energy	Oil, gas and coal
63	SOCI	Soechi Lines Tbk.	Energy	Oil, gas and coal
64	OKAS	Ancora Indonesia Resources Tbk	Basic Materials	Chemicals
65	ADMG	Polychem Indonesia Tbk	Basic Materials	Chemicals
66	AGII	Samator Indo Gas Tbk.	Basic Materials	Chemicals
67	APLI	Asiaplast Industries Tbk.	Basic Materials	Chemicals
68	BMSR	Bintang Mitra Semestaraya Tbk	Basic Materials	Chemicals
69	BRPT	Barito Pacific Tbk.	Basic Materials	Chemicals
70	DPNS	Duta Pertiwi Nusantara Tbk.	Basic Materials	Chemicals
71	ESSA	Surya Esa Perkasa Tbk.	Basic Materials	Chemicals
72	LTLS	Lautan Luas Tbk.	Basic Materials	Chemicals
73	SRSN	Indo Acidatama Tbk	Basic Materials	Chemicals
74	TPIA	Chandra Asri Petrochemical Tbk	Basic Materials	Chemicals
75	MDKI	Emdeki Utama Tbk.	Basic Materials	Chemicals
76	MOLI	Madusari Murni Indah Tbk.	Basic Materials	Chemicals
77	SAMF	Saraswanti Anugerah Makmur Tbk	Basic Materials	Chemicals
78	AVIA	Avia Avian Tbk.	Basic Materials	Chemicals
79	CHEM	Chemstar Indonesia Tbk.	Basic Materials	Chemicals
80	KKES	Kusuma Kemindo Sentosa Tbk.	Basic Materials	Chemicals
81	UNIC	Unggul Indah Cahaya Tbk.	Basic Materials	Chemicals
82	INCI	Intanwijaya Internasional Tbk	Basic Materials	Chemicals
83	INTP	Indocement Tunggal Prakarsa Tb	Basic Materials	Construction Materials

No	Code	Company's name	Sector	Sub-sector
84	SMBR	Semen Baturaja Tbk.	Basic Materials	Construction Materials
85	SMCB	Solusi Bangun Indonesia Tbk.	Basic Materials	Construction Materials
86	WSBP	Waskita Beton Precast Tbk.	Basic Materials	Construction Materials
87	BEBS	Berkah Beton Sadaya Tbk.	Basic Materials	Construction Materials
88	CMNT	Cemindo Gemilang Tbk.	Basic Materials	Construction Materials
89	SMGR	Semen Indonesia (Persero) Tbk.	Basic Materials	Construction Materials

Appendix 2: Gap Analysis for Governance Subcategories (Lampiran 2: Gap Analysis sub-kategori Tata Kelola)

(i) how responsibilities for climate-related risks and opportunities are reflected in the terms of reference, mandates, role descriptions and other related policies applicable to that body(s) or individual(s);

	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	66	8	4	4	3	4

(ii) how the body(s) or individual(s) determines whether appropriate skills and competencies are available or will be developed to oversee strategies designed to respond to climate-related risks and opportunities;

	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	75	3	1	2	2	6

(iii) how and how often the body(s) or individual(s) is informed about climate-related risks and opportunities;

	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	87	1	0	0	0	1

(iv) how the body(s) or individual(s) takes into account climate-related risks and opportunities when overseeing the entity's strategy, its decisions on major transactions and its risk management processes and related policies, including whether the body(s) or individual(s) has considered trade-offs associated with those risks and opportunities; and

	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	72	5	1	1	2	8

(v) how the body(s) or individual(s) oversees the setting of targets related to climate-related risks and opportunities, and monitors progress towards those targets (see paragraphs 33–36), including whether and how related performance metrics are included in remuneration policies (see paragraph 29(g)).

	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	78	5	1	1	2	2

(i) whether the role is delegated to a specific management-level position or management-level committee and how oversight is exercised over that position or committee; and

	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	78	7	1	0	0	3

(ii) whether management uses controls and procedures to support the oversight of climate-related risks and opportunities and, if so, how these controls and procedures are integrated with other internal functions.

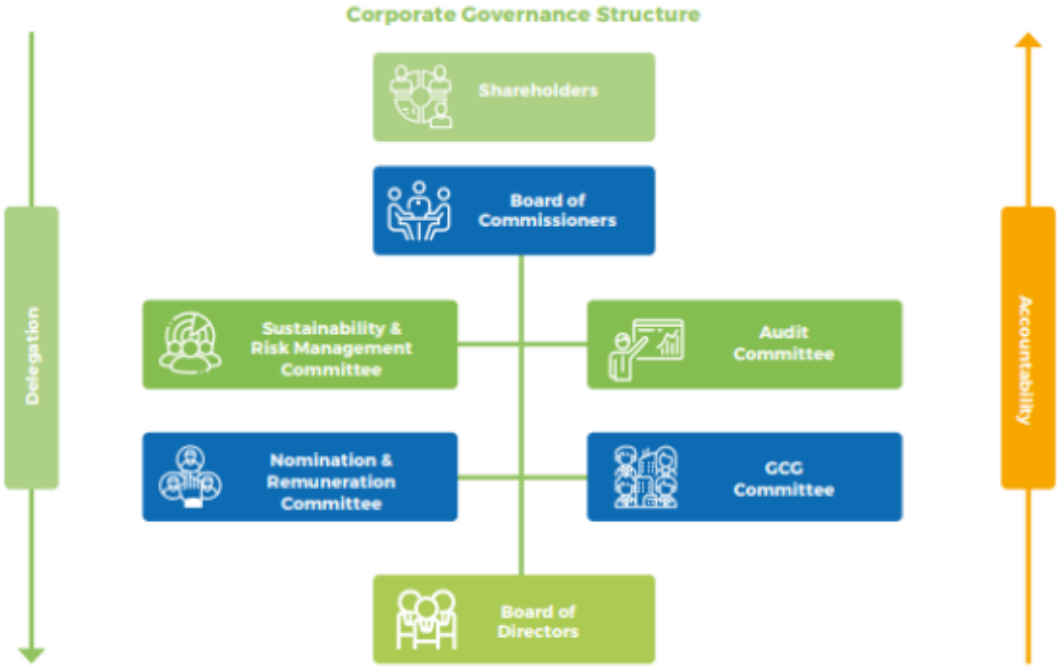
	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	84	2	0	0	1	2

Appendix 3: Some Extracts for Governance Disclosures
(Lampiran 3: Beberapa Ekstrak untuk Pengungkapan Tata Kelola)

Medco Energi Internasional Tbk (MEDC)

Figure 1: Extract from Medco Energy – Governance

Gambar 1 : Ekstrak dari Medco Energy – Tata Kelola



Appendix 4: Gap Analysis for Strategy (General)
(Lampiran 4: Gap Analysis untuk Strategi- Umum)

a) the climate-related risks and opportunities that could reasonably be expected to affect the entity's prospects (see paragraphs 10–12);

	Weight					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	22	24	12	7	4	20

b) the current and anticipated effects of those climate-related risks and opportunities on the entity's business model and value chain (see paragraph 13);

	Weight					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	37	11	14	10	7	10

c) the effects of those climate-related risks and opportunities on the entity's strategy and decision-making, including information about its climate-related transition plan (see paragraph 14);

	Weight					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	49	3	7	6	7	17

d) the effects of those climate-related risks and opportunities on the entity's financial position, financial performance and cash flows for the reporting period, and their anticipated effects on the entity's financial position, financial performance and cash flows over the short, medium and long term, taking into consideration how those climate-related risks and opportunities have been factored into the entity's financial planning (see paragraphs 15–21); and

	WEIGHT					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	75	6	4	1	2	1

e) the climate resilience of the entity's strategy and its business model to climate-related changes, developments and uncertainties, taking into consideration the entity's identified climate-related risks and opportunities (see paragraph 22).

	Weight					
	0%	20%	40%	60%	80%	100%
TOTAL SAMPLES	69	5	2	4	2	7

Appendix 5: Some Extracts for Strategy dimension
(Lampiran 5: Ekstrak dari Medco Energy – Strategi perubahan iklim)

Figure 2 : Extract from Wintermar Offshore Marine Tbk - Strategy

SR p.94

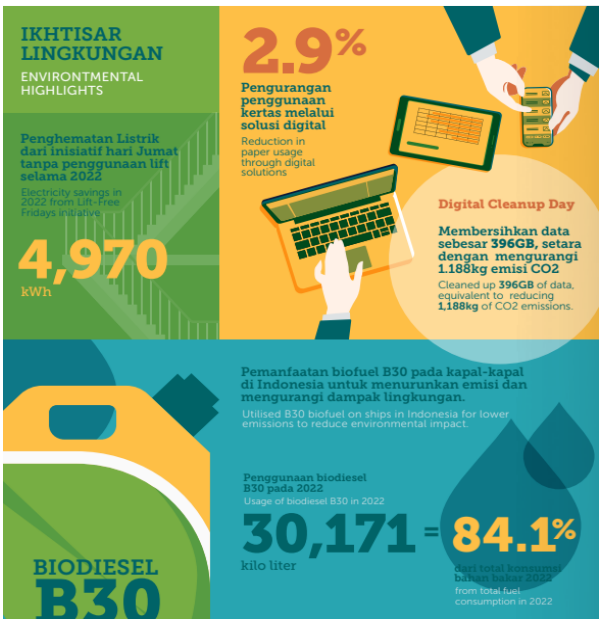


Figure 3 : Extract from Wintermar Offshore Marine Tbk - Strategy

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SEOJK P.5

Produk Ramah Lingkungan

Dalam operasionalnya, Perusahaan menggunakan material berupa bahan bakar dan kertas untuk keperluan kantor. Untuk bahan bakar, kami menggunakan bahan bakar ramah lingkungan yaitu bahan bakar B30 pada kapal-kapal yang beroperasi di Indonesia untuk pengurangan emisi karbon dengan kandungan sulfur 0,005 % m/m yang sangat rendah sesuai dengan *Global Sulphur Cap* 2020. Bahan Bakar B30 telah diuji sesuai dengan standar ASTM D 4294 dan telah mendapatkan sertifikat *Internasional Sustainability and Carbon Certification* (ISSC) dan telah memperoleh pengakuan bahwa penggunaan produk ini berkontribusi pada penurunan emisi karbon sehingga layak disebut sebagai *green product*.

Sementara untuk material kertas, kami menggunakan kertas bersertifikat PERC dari produsen dengan sertifikasi ISO 9001 yang menunjukkan material kertas yang yang ramah lingkungan.

Environmentally Friendly Products

In its operations, the Company uses materials such as fuel and paper for office needs. For fuel, we use environmentally friendly fuel, namely B30 fuel which has 30% biofuel content on vessels operating in Indonesia. This fuel has a very low sulfur content of 0.005% m/m according to the 2020 Global Sulfur Cap. B30 fuel has been tested according to the ASTM D 4294 standard and has received an International Sustainability and Carbon Certification (ISSC) certificate which has received recognition that the use of this product contributes to reducing carbon emissions so that it deserves to be called a green product.

Meanwhile for paper materials, we use PERC certified paper from manufacturers with ISO 9001 certification which shows that the paper material used is an environmentally friendly material.

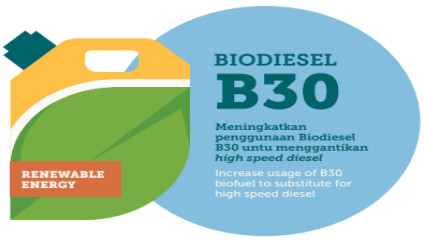
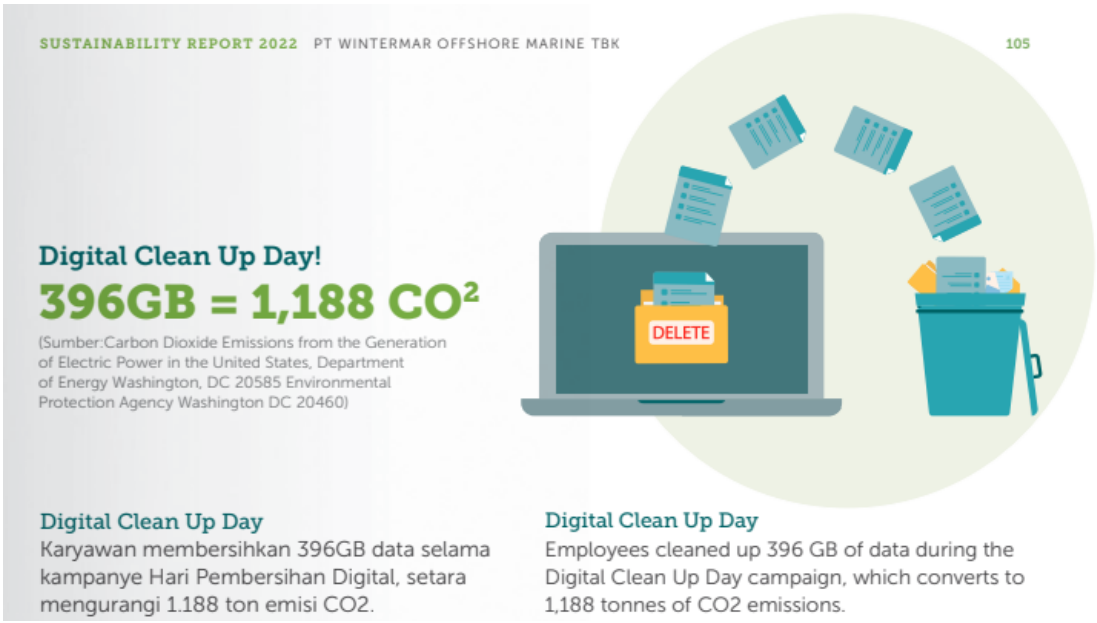


Figure 4 : Extract from Wintermar Offshore Marine Tbk - Strategy

SR p 105



Appendix 6: Gap Analysis for Risk Management Subcategories by Industry Sectors (Lampiran 6: Gap Analysis aspek Manajemen Risiko berdasarkan sektor perusahaan)

(1)

(i) the inputs and parameters the entity uses (for example, information about data sources and the scope of operations covered in the processes)						
Industry Sector	**Weight**					
	0%	**20%**	**40%**	**60%**	**80%**	**100%**
Energy	36	11	9	7	0	0
Chemicals	15	3	0	1	0	0
Construction material	3	1	1	1	0	0
All sample	54	15	10	9	0	0

(2)

(ii) whether and how the entity uses climate related scenario analysis to inform its identification of climate related risks;						
Industry Sector	**Weight (%)**					
	0%	**20%**	**40%**	**60%**	**80%**	**100%**
Energy	46	4	4	8	0	0
Chemicals	16	3	0	0	0	0
Construction material	5	1	0	1	0	0
All sample	67	8	4	10	0	0

(3)

(iii) how the entity assesses the nature, likelihood and magnitude of the effects of those risks (for example, whether the entity considers qualitative factors, quantitative thresholds or other criteria)						
Industry Sector	**Weight (%)**					
	0%	**20%**	**40%**	**60%**	**80%**	**100%**
Energy	48	4	5	5	0	0
Chemicals	18	0	0	1	0	0
Construction material	5	1	0	1	0	0
All sample	71	5	5	8	0	0

(4)

(iv) whether and how the entity prioritises climate related risks relative to other types of risk;						
Industry Sector	**Weight (%)**					
	0%	**20%**	**40%**	**60%**	**80%**	**100%**
Energy	60	1	0	1	0	0
Chemicals	18	0	0	1	0	0
Construction material	6	0	0	1	0	0
All sample	85	1	0	3	0	0

(5)

(v) how the entity monitors climate related risks; and						
Industry Sector	**Bobot**					
	0%	**20%**	**40%**	**60%**	**80%**	**100%**
Energy	50	1	6	5	0	0
Chemicals	17	1	1	0	0	0
Construction material	2	4	0	1	0	0
All sample	70	6	7	6	0	0

(6)

(vi) whether and how the entity has changed the processes it uses compared with the previous reporting period						
Industry Sector	**Weight (%)**					
	0%	**20%**	**40%**	**60%**	**80%**	**100%**
Energy	59	2	0	1	0	0
Chemicals	18	1	0	0	0	0
Construction material	4	2	0	1	0	0
All sample	82	5	0	2	0	0

(7) (b) the processes the entity uses to identify, assess, prioritise and monitor climate related opportunities, including information about whether and how the entity uses climate
related scenario analysis to inform its identification of climate
related opportunities; and

Industry Sector	Weight (%)					
	0%	20%	40%	60%	80%	100%
Energy	47	3	4	8	0	0
Chemicals	18	0	0	1	0	0
Construction material	6	0	0	1	0	0
All sample	71	3	4	11	0	0

(Extent)

(c) the extent to which, and how, the processes for identifying, assessing, prioritising and monitoring climate related risks and opportunities are integrated into and inform the entity's overall risk management process.

Industry Sector	Weight (%)					
	0%	20%	40%	60%	80%	100%
Energy	61	1	1	0	0	0
Chemicals	18	0	1	1	0	0
Construction material	6	0	0	1	0	0
All sample	85	1	1	2	0	0

Appendix 7: Some Extracts for Risk Management dimension

Below there is an extract from an energy company Medco Energy which shows how vision and mission of the company cascaded into Climate Aspiration, Risk Strategy and Key Initiatives to mitigate the climate-related risks.

Lampiran 7: Beberapa cuplikan dari aspek manajemen risiko

Di bawah ini terdapat kutipan dari perusahaan energi Medco Energy yang menunjukkan bagaimana visi dan misi perusahaan dijabarkan ke dalam Aspirasi Iklim, Strategi Risiko, dan Inisiatif Utama untuk mengurangi risiko terkait iklim.

Figure 5: Extract from Medco Energy - Climate Change Strategy

Gambar 5: Ekstrak dari Medco Energy – Strategi perubahan iklim

The extract shown in the figure below indicates that the cement company SIG has identified in detail the types of risk and the action plan to mitigate them.

Cuplikan yang ditunjukkan pada gambar di bawah menunjukkan bahwa perusahaan semen SIG telah mengidentifikasi secara rinci jenis risiko dan rencana tindakan untuk mengatasinya.

Figure 6: Extract from Semen Indonesia (Persero) - Risk Category, Implications & Action Plans

Gambar 6: Cuplikan dari Semen Indonesia (Persero) - Kategori risiko, Implikasi serta Rencana Tindakan

SIG telah melakukan identifikasi risiko dan mitigasi yang diperlukan dalam rangka menghadapi risiko fisik dan risiko transisi. Adapun penjelasan mengenai risiko fisik dapat dilihat pada tabel di bawah ini: [GRI 201-2]

SIG has conducted risk identification and mitigation required in order to deal with physical and transition risks. The explanation of physical risks can refer to the table below: [GRI 201-2]

Physical Risk : Acute Risk

Risiko Fisik Physical Risks	**Implikasi Operasional dan Finansial** Operational and Financial Implications	**Rencana Aksi SIG** SIG Action Plans
Risiko banjir dan badai siklon Flood and Cyclone risks	• Kerusakan aset baik itu pabrik atau peralatan Asset damage, both in plants and equipments • Pengiriman produk tertunda Delayed product delivery • Berkurangnya produk yang diproduksi dan dijual Decrease in products produced and sold • Meningkatkan Capex & Opex untuk pengurangan risiko Increase in Capex & Opex to reduce risks • Meningkatkan premi asuransi Increase in insurance premium • Meningkatkan risiko kesehatan untuk karyawan Increase in employees' health risks • Menurunkan nilai aset SIG Decrease in the Company's asset value • Menurunkan aset di sekitar *coastal area* Decrease in assets surrounding coastal area. • Meningkatkan premi asuransi di *area coastal* Increase in insurance premium in coastal area • Meningkatkan biaya operasi di *coastal area* Increase in operational costs in coastal area	• Melakukan *assesment* risiko secara periodik khususnya upaya mitigasi Conduct a periodical risk assessment, especially mitigation efforts • Mengembangkan *early warning system* Develop early warning system • Menginvestasikan aset ke daerah dengan risiko lebih rendah Invest in assets located in lower risk areas • Meningkatkan asuransi aset Increase the asset insurance • Mengembangkan *Business Continuity Plan* (BCP) Develop a Business Continuity Plan (BCP)

Physical Risk : Chronic Risk

Risiko Fisik Physical Risks	**Implikasi Operasional dan Finansial** Operational and Financial Implications	**Rencana Aksi SIG** SIG Action Plans
Risiko peningkatan temperatur dan *heat stress* Risk of a increasing temperature and heat stress	• Menurunkan produktivitas karyawan Decrease in the employees' productivity • Meningkatkan risiko K3 untuk karyawan Increase in the employees' OHS risks • Meningkatkan *cooling requirement* dan *cooling cost* Increase in cooling requirement and cooling costs • Menurunkan *output* produksi Decrease in production output	• Memastikan kondisi lingkungan kerja yang aman dan sehat Ensure healthy and safe work environment condition • Memastikan efek peningkatan temperatur tidak mengganggu kualitas *output* produksi Ensure the effects of increased temperature do not compromise the quality of production output
Risiko *water stress* dan kekeringan Risks of Water stress and drought	• *Water scarcity* yang berpengaruh terhadap produksi Water scarcity that affects on production • Meningkatkan harga penyediaan jasa air bersih Increase in clean water provision fee	• Menurunkan *freshwater withdrawal* Reducing freshwater withdrawal • Memastikan fasilitas penampungan dan pengolahan air bersih berjalan optimal Ensure that clean water storage and water treatment facilities are optimized

Transition Risk: Policy & Regulatory Risk

Risiko Fisik Physical Risks	**Implikasi Operasional dan Finansial** Operational and Financial Implications	**Rencana Aksi SIG** SIG Action Plans
Risiko implementasi pajak karbon Carbon tax implementation risks	Meningkatkan risiko beban pajak di masa depan bila pajak karbon segera dilakukan Increase in tax burden risks in the future in the event that the tax is applied	Melakukan upaya dekarbonisasi baik itu *scope* 1 maupun *scope* 2 dengan beragam inisiatif Carried out decarbonization efforts, both in scope 1 and scope 2, with various initiatives

Transition Risk: Market Risk

Risiko Fisik Physical Risks	**Implikasi Operasional dan Finansial** Operational and Financial Implications	**Rencana Aksi SIG** SIG Action Plans
Risiko peningkatan harga dasar listrik Risks of an increase in electricity base price	Meningkatkan biaya produksi Increase in production costs	Meningkatkan *energy mix* melalui instalasi solar panel Improve energy mix through solar panel installation
Risiko peningkatan biaya energi fosil Risks of rising fossil energy costs	Meningkatkan biaya produksi Increase in production costs	Meningkatkan penggunaan *alternative fuel* untuk substitusi penggunaan batubara Increase the use of alternative fuel to substitute the use of coal.

Transition Risk: Technology Risk

Risiko Fisik Physical Risks	**Implikasi Operasional dan Finansial** Operational and Financial Implications	**Rencana Aksi SIG** SIG Action Plans
Risiko ketidakpastian investasi teknologi rendah karbon Uncertainty risks of low carbon technology	• Membutuhkan dana investasi yang besar Required a large investment fund • Menambah kebutuhan R&D Increase in R&D needs	• Melakukan *right issues* untuk fokus terhadap upaya dekarbonisasi Execute right issues to focus on decarbonization efforts • Mengintegrasikan kinerja penurunan emisi karbon melalui *Sustainability Link Loan* Integrate the carbon emission reduction performance with Sustainability Link Loan
Risiko penonaktifan teknologi tinggi karbon Risks from the termination of high carbon technology	Devaluasi aset Asset devaluation	Melakukan evaluasi aset Conduct an asset evaluation

Transition Risk : Reputation Risk

Risiko Fisik	**Implikasi Operasional dan Finansial**	**Rencana Aksi SIG**
Risiko peningkatan tuntutan investor dan *stakeholder* Risks of increased demand of the investors and stakeholders	• Meningkatkan tuntutan investor terhadap upaya dekarbonisasi Increase in demand from the investor on the decarbonization efforts • Menurunkan akses terhadap pembiayaan berbasis *sustainable finance* Decrease in financing access related to sustainable finance • Meningkatkan *opportunity lost* terhadap segmen konsumen yang *concern* terhadap produk *low carbon footprint* Increase in opportunity lost of the consumers with concern on low carbon footprint products	• Melakukan *disclose* secara rutin di CDP Periodical disclosure at CDP • Memastikan rencana mitigasi risiko yang masuk ke dalam *framework* TCFD berjalan dengan baik Ensure the risk mitigation plan in the TCFD framework is running well • Mengintegrasikan kinerja penurunan emisi karbon melalui *Sustainability Link Loan* Integrate the carbon emission reduction performance with Sustainability Link Loan • Melakukan *engagement* secara periodik terhadap *stakeholder* Conduct a periodic engagement with stakeholders

Appendix 8: Gap Analysis for Metrics and Target (Scope 1, 2 and 3 GHG Emissions) by Industry Sectors
(Lampiran 8: Gap Analysis untuk Metrics and Target Cakupan 1, 2 and 3 Emisi Gas Rumah Kaca berdasarkan sektor perusahaan)

Scope 1 Greenhouse Gas Emissions (Emisi Gas Rumah Kaca Cakupan 1)

Industry Sector	Weight (%)					
	0%	20%	40%	60%	80%	100%
Energy	20	0	0	0	0	42
Chemicals	3	0	0	0	0	16
Conctruction material	1	0	0	0	0	6
All sample	24	0	0	0	0	65

Scope 2 Greenhouse Gas Emissions (Emisi Gas Rumah Kaca Cakupan 2)

Industry Sector	Weight (%)					
	0%	20%	40%	60%	80%	100%
Energy	33	0	0	0	0	29
Chemicals	11	0	0	0	0	8
Conctruction material	2	0	0	0	0	5
All sample	46	0	0	0	0	43

Scope 3 Greenhouse Gas Emissions (Emisi Gas Rumah Kaca Cakupan 3)

Industry Sector	Weight (%)					
	0%	20%	40%	60%	80%	100%
Energy	56	0	0	0	0	7
Chemicals	16	0	1	0	0	2
Conctruction material	4	0	0	0	0	3
All sample	76	0	1	0	0	12

Appendix 9: Some Extracts for Matrix and Target

Below are some examples of metrics and target disclosure of our sample companies:

This extract from PGN Sustainability Reporting discloses its GHG Emissions (Scopes 1, 2, and 3), including the method to calculate them, which would be very helpful for users.

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Lampiran 9: Beberapa cuplikan aspek Metriks dan Target

Berikut ini adalah beberapa contoh pengungkapan metrik dan target pengungkapan dari perusahaan sampel:

Cuplikan dari Pelaporan Keberlanjutan PGN ini mengungkapkan Emisi GRK (Cakupan 1, 2, dan 3), termasuk metode untuk menghitungnya yang akan sangat membantu bagi pengguna laporan

Figure 7: Extract from PGN - GHG Emissions Metric

Gambar 7: Cuplikan dari PGN – Metriks Emisi Gas Rumah Kaca GHG

EMISI GRK CAKUPAN 1 [305-1] [11.1.5] [11.2.1] [11.3.2] [A.6.e.4.a]

Scope 1 GHG Emissions [305-1] [11.1.5] [11.2.1] [11.3.2] [A.6.e.4.a]

Emisi GRK Cakupan 1 (Ton CO2eq)
Scope 1 GHG Emissions (Ton CO2eq)

Sumber Emisi Emission Resources	**2022**	**2021**	**2020**	**Metode Perhitungan** Calculation Method
Venting Venting	3.643,33	720,53	3.267,76	Data konsumsi gas (m3) dari perhitungan dikalikan dengan faktor emisi berdasarkan IPCC Guideline 2006 The gas consumption data (m3) from the calculation is multiplied by the emission factor based on the 2006 IPCC Guideline
Instrumentasi Instrumentation	856,85	1.107,04	2.125,38	
Blowdown Blowdown	1.013,14	398,84	3.077,13	
Kebocoran gas Gas leak	21.987,32	6.842,51	4.966,92	
Bahan bakar gas Gas Fuel	28.596,92	32.955,97	41.719,40	Data konsumsi gas (m3) dari pengukuran menggunakan alat ukur dikalikan dengan faktor emisi berdasarkan IPCC Guideline 2006 Gas consumption data (m3) from measurements using measuring devices multiplied by emission factors based on IPCC Guideline 2006

EMISI GRK CAKUPAN 2 [305-2] [11.1.6] [A.6.e.4.a]
Scope 2 GHG Emissions [305-2] [11.1.6] [A.6.e.4.a]

Emisi GRK Cakupan 2 (Ton CO2eq)
Scope 2 GHG Emissions (Ton CO2eq)

Sumber Emisi Emission Resources	2022	2021	2020	Metode Perhitungan Calculation Method
Konsumsi Listrik Electricity Consumption	9.686,28	7.624,91	8.712,55	Data konsumsi listrik (KWh) dari billing PLN dikalikan dengan faktor emisi berdasarkan data Ditjen Ketenagalistrikan ESDM Electricity consumption data (KWh) from PLN billing multiplied by emission factors based on data from the Directorate General of Electricity, MEMR

Keterangan: Emisi yang dihitung adalah CO2, CH4, dan N2O .

Description: The calculated emissions are CO2, CH4, and N2O.

EMISI GRK CAKUPAN 3 [305-3] [11.1.7] [A.6.e.4.a]
Scope 3 GHG Emissions [305-3] [11.1.7] [A.6.e.4.a]

Emisi GRK Cakupan 3 (Ton CO2eq)
Scope 3 GHG Emissions (Ton CO2eq)

Sumber Emisi Emission Resources	2022	2021	2020	Metode Perhitungan Calculation Method
Perjalanan bisnis (Penerbangan) Business Trips (Airplane)	82,28	40,12	96,54	Setiap perjalanan dinas dengan pesawat dicatat kemudian dikalikan dengan Total penumpang CO2 / perjalanan berdasarkan ICAO Every business trip by plane is recorded and then multiplied by Total CO2 passengers/trip based on ICAO

Appendix 10

The following extracts from Sustainability Reporting indicate different structures: TCFD Committee (separated units that report to the President Director) as in Figure 8 and Vice President Sustainability (part of the operating units that report to the President Director) in Figure 9.

Lampiran 10

Berikut kutipan berikut Laporan Keberlanjutan yang menunjukkan perbedaan struktur: Komite TCFD (unit terpisah yang melapor kepada Presiden Direktur) seperti pada Gambar 8 dan Wakil Presiden Keberlanjutan (bagian dari unit operasi yang melapor kepada Presiden Direktur) pada Gambar 9.

Figure 8: Extract from Semen Indonesia (Persero) TCFD Committee

Tim TCFD SIG terdiri atas *Steering Committee* dan *Organizing Committee*. Adapun *Organizing Committee* membawahi *Strategic & Operation Team, Risk Management Team* dan *Finance Team* dalam untuk menindaklanjuti terhadap rekomendasi yang telah diberikan dalam memitigasi risiko perubahan iklim di SIG.

Gambar 8: Ekstrak dari Komite TCFD Semen Indonesia

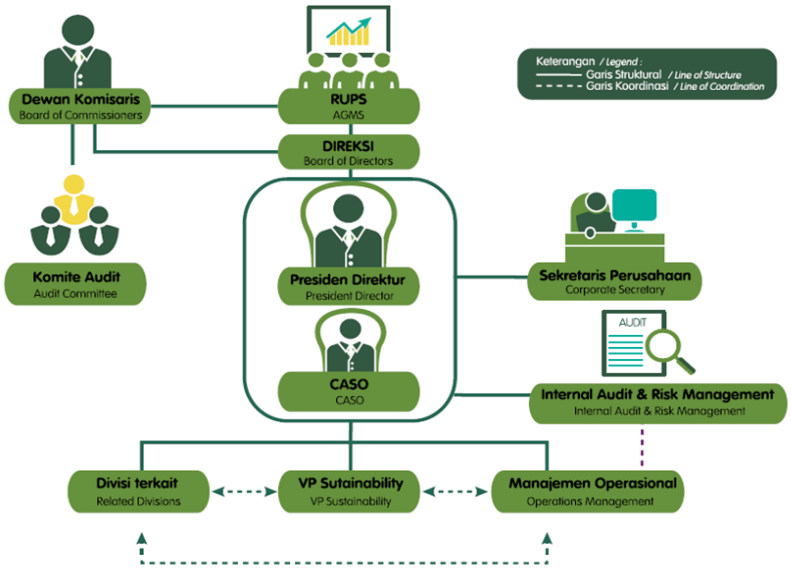
SIG's TCFD team consists of Steering Committee and the Organizing Committee. Organizing Committee supervises Strategic & Operation Team, Risk Management Team and Finance Team in following up on the recommendations that have been given in mitigating climate change risks at SIG.

Figure 9: Extract from PT Astra Agro - Sustainability Governance Structure

Gambar 9 : Ekstrak dari Struktur Tata Kelola Berkelanjutan PT Astra Argo

Berikut adalah struktur tata kelola keberlanjutan Astra Agro untuk periode 2022:

Astra Agro's sustainability governance structure for the period 2022 is as follows:



Appendix 11

PT Petrosea Tbk shows the Independent Assurance Statement on Sustainability Reporting.

Lampiran 11

PT Petrosea Tbk menunjukkan Pernyataan Jaminan Independen tentang Laporan Keberlanjutan.

Figure 10 : Extract from PT Petrosea Tbk - Independent Assurance Statement

Pernyataan Verifikasi Independen
Independent Assurance Statement

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Independent Assurance Statement
The 2023 Sustainability Report of PT Petrosea Tbk

Number : 08/000-758/IV/2024/SR-Asia/Indonesia

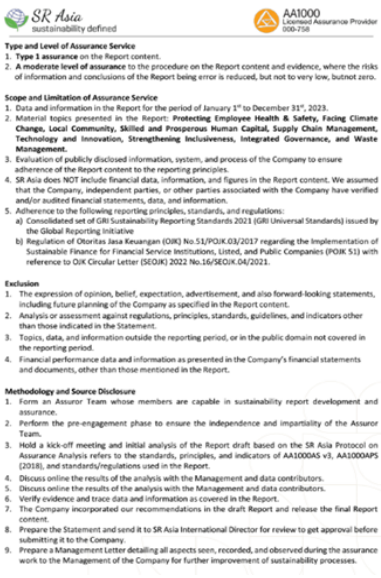
Assurance Type : Type 1
Assurance Level : Moderate
Reporting Standard : GRI Universal Standard 2021 Consolidated
Reporting Regulation : Sustainable Finance Regulation POJK No. 51/POJK.03/2017 (Indonesia)

Dear stakeholders,
Social Responsibility Asia or "SR Asia" is issuing an **Independent Assurance Statement** ("the Statement") of **the 2023 Sustainability Report** ("the Report") of **PT Petrosea Tbk** ("the Company"). The Company carries out multi-disciplinary sector that provides integrated services in contract mining, engineering, procurement and construction, oil and gas services, digitalization, 3D printing, and rebuild center, as well as training and certification center in Indonesia. The Report presents the commitment and efforts of the Company in managing its sustainability performance for the reporting period of **January 1st to December 31st, 2023**. As agreed with Management, SR Asia's responsibility isto make an assessment based on the data and content of the Report for the year.

Intended User and Purpose
The purpose of the Statement is to present our opinion including the findings and recommendations based on the results of assurance work to the Company's stakeholders. The Assurance Team in accordance with specific procedures and a specific scope of work carried out the assessment. Except for the areas covered in the scope of the assurance, we encourage all NOT to solely interpret the Statement as the basis to conclude the Company's overall sustainability performance.

Responsibilities
Our responsibilities to the Management are to evaluate the Report content, come up with findings and recommendations, and issue the Statement. We are also responsible for coming up with conclusions and recommendations based on the agreed standards, methods, and approaches. Hence, SR Asia is only evaluated for the latest received editorial and data on the final draft as of April 8th, 2024. SR Asia is only responsible for delivering assurance work, NOT an audit, by following the Non-Disclosure Agreement, the Assurance Engagement Agreement, Representation Letter, and Subsequent Event Testing. The Management has its sole responsibility for the presentation of data, information, and disclosures in the Report content. Therefore, any parties who depend on the Report and this Statement shall bear and manage their risks.

Independence, Impartiality, and Competency
SR Asia confirms NO relationships between the assuror team and the clients that can influence their independence and impartiality to conduct the assessment and generate the Statements. The assuror team is mandated to follow a particular assurance protocol and professional ethical code of conduct to ensure their objectivity and integrity. We carried out a pre-engagement assessment before the assurance work was taken to verify the risks of engagement as well as the independence and impartiality of the team. The assuror team members have knowledge of ISO 26000, AA1000 AccountAbility standards and principles, and also have experience in sustainability report assessment based on various reporting regulations, standards, and principles, such as POJK No. 51/ POJK.03/2017 (POJK51) regulation, Circular Letter of OJK (SEOJK No.16/SEOJK.03/2021) and GRI Standard 2021 Consolidated.



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Type and Level of Assurance Service
1. **Type 1 assurance** on the Report content.
2. **A moderate level of assurance** to the procedure on the Report content and evidence, where the risks of information and conclusions of the Report being error is reduced, but not to very low, butnot zero.

Scope and Limitation of Assurance Service
1. Data and information in the Report for the period of January 1st to December 31st, 2023.
2. Material topics presented in the Report: **Protecting Employee Health & Safety, Facing Climate Change, Local Community, Skilled and Prosperous Human Capital, Supply Chain Management, Technology and Innovation, Strengthening Inclusiveness, Integrated Governance, and Waste Management.**
3. Evaluation of publicly disclosed information, system, and process of the Company to ensure adherence of the Report content to the reporting principles.
4. SR Asia does NOT include financial data, information, and figures in the Report content. We assumed that the Company, independent parties, or other parties associated with the Company have verified and/or audited financial statements, data, and information.
5. Adherence to the following reporting principles, standards, and regulations:
   a) Consolidated set of GRI Sustainability Reporting Standards 2021 (GRI Universal Standards) issued by the Global Reporting Initiative
   b) Regulation of Otoritas Jasa Keuangan (OJK) No.51/POJK.03/2017 regarding the Implementation of Sustainable Finance for Financial Service Institutions, Listed, and Public Companies (POJK 51) with reference to OJK Circular Letter (SEOJK) 2022 No.16/SEOJK.04/2021.

Exclusion
1. The expression of opinion, belief, expectation, advertisement, and also forward-looking statements, including future planning of the Company as specified in the Report content.
2. Analysis or assessment against regulations, principles, standards, guidelines, and indicators other than those indicated in the Statement.
3. Topics, data, and information outside the reporting period, or in the public domain not covered in the reporting period.
4. Financial performance data and information as presented in the Company's financial statements and documents, other than those mentioned in the Report.

Methodology and Source Disclosure
1. Form an Assuror Team whose members are capable in sustainability report development and assurance.
2. Perform the pre-engagement phase to ensure the independence and impartiality of the Assuror Team.
3. Hold a kick-off meeting and initial analysis of the Report draft based on the SR Asia Protocol on Assurance Analysis refers to the standards, principles, and indicators of AA1000AS v3, AA1000APS (2018), and standards/regulations used in the Report.
4. Discuss online the results of the analysis with the Management and data contributors.
5. Discuss online the results of the analysis with the Management and data contributors.
6. Verify evidence and trace data and information as covered in the Report.
7. The Company incorporated our recommendations in the draft Report and release the final Report content.
8. Prepare the Statement and send it to SR Asia International Director for review to get approval before submitting it to the Company.
9. Prepare a Management Letter detailing all aspects seen, recorded, and observed during the assurance work to the Management of the Company for further improvement of sustainability processes.

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