DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING

FINAL DEGREE PROJECT

DESIGN OF A 30-HOUR COURSE ON ESG APPLIED TO BUSINESS STRATEGY IN VARIOUS INDUSTRIAL SECTORS

Author: Blanca María Serrano Vázquez

Director: Daniel Fernández Alonso

Madrid

July of 2025

Declaro, bajo mi responsabilidad, que el Proyecto presentado con el título

DISEÑO DE UN CURSO DE 30 HORAS SOBRE ESG APLICADO A LA ESTRATEGIA EMPRESARIAL EN DIVERSOS SECTORES INDUSTRIALES

en la ETS de Ingeniería - ICAI de la Universidad Pontificia Comillas en el

curso académico 2024/25 es de mi autoría, original e inédito y

no ha sido presentado con anterioridad a otros efectos.

El Proyecto no es plagio de otro, ni total ni parcialmente y la información que ha sido

tomada de otros documentos está debidamente referenciada.

Fdo.: Blanca María Serrano Vázquez **Fecha: 30/07/2025**

Autorizada la entrega del proyecto

EL DIRECTOR DEL PROYECTO

Fdo.: Daniel Fernández Alonso **Fecha: 30/ 07/ 2025**

DOUBLE DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING AND BUSINESS ADMINISTRATION

FINAL DEGREE PROJECT

DESIGN OF A 30-HOUR COURSE ON ESG APPLIED TO BUSINESS STRATEGY IN VARIOUS INDUSTRIAL SECTORS

Author: Blanca María Serrano Vázquez

Director: Daniel Fernández Alonso

Madrid

July of 2025

Acknowledgments

I would like to express my deepest gratitude to my parents, whose unconditional support has been essential throughout this entire process. I also wish to thank the classmates who offered their help at key moments of this work. In particular, I am especially grateful to my thesis advisor, Daniel Fernández Alonso, for his constant availability, support, and enthusiastic attitude toward the subject, which not only facilitated the development of this project but also further increased my motivation to work on such a relevant topic.

DISEÑO DE UN CURSO DE 30 HORAS SOBRE ESG APLICADO A LA ESTRATEGIA EMPRESARIAL EN DIVERSOS SECTORES INDUSTRIALES

Autor: Serrano Vázquez, Blanca Maria

Director: Fernández Alonso, Daniel

Entidad Colaboradora: ICAI – Universidad Pontificia Comillas

RESUMEN DEL PROYECTO

Hoy en día, el desarrollo sostenible y la rendición de cuentas empresarial en torno a las acciones ESG se han vuelto cada vez más relevantes. Los inversores están incorporando criterios ESG en sus procesos de toma de decisiones, y los prestamistas esperan que las empresas integren la sostenibilidad en sus estrategias centrales. Aquellas que no lo hagan se arriesgan a enfrentar mayores costos de financiación o incluso a perder el acceso al capital [1]. Al mismo tiempo, los grupos de interés ejercen una presión creciente para que las compañías actúen de forma más responsable. Como resultado, aplicar criterios ESG ya no es solo un compromiso voluntario, se ha convertido en una necesidad estratégica y en un elemento clave de una gestión de riesgos eficaz.

Reconocer la importancia de los criterios ESG en el ámbito empresarial es esencial para concientizar a los líderes corporativos sobre el valor estratégico y los beneficios concretos de incorporar prácticas sostenibles en la gestión de sus organizaciones. Este proyecto se centra precisamente en eso: en la elaboración de un curso de 12 sesiones sobre los estándares ESG en empresas de diversos sectores, con el objetivo de capacitar al senior management en esta materia. Si la dirección de la empresa no comprende la importancia del tema o no cuenta con el conocimiento adecuado, resulta de extrema dificultad que la organización pueda integrar con éxito los criterios ESG en su estrategia empresarial. Cabe mencionar que en todas las sesiones se incorporan ejemplos prácticos que refuerzan y complementan los conceptos teóricos tratados.

ESG son un conjunto de estándares, políticas y métricas utilizados por las organizaciones e inversores para evaluar tanto el impacto social como ambiental de sus operaciones [2]. Dado que se trata de un tema amplio y multidimensional, la mayoría de los cursos actuales tienden a enfocarse únicamente en ciertos aspectos específicos. No obstante, este curso adopta una visión más integral, abordando ESG desde múltiples perspectivas: la gobernanza, la estrategia empresarial, las finanzas sostenibles, la tecnología, la infraestructura, el reporting y muchos otros enfoques clave.

A continuación se describen las 12 sesiones que componen el curso y los principales temas abordados en cada una de ellas:

- **Sesión 1:** Introducción al concepto de ESG, explicando qué es, sus tres dimensiones (ambiental, social y de gobernanza) y los factores que impulsan la necesidad de su implementación.
- **Sesión 2:** Regulaciones y marcos de reporte actuales sobre sostenibilidad, incluyendo la Taxonomía de la UE y la Directiva de Reporte de Sostenibilidad Corporativa (CSRD).
- **Sesión 3:** Fuentes principales de datos ESG, puntuaciones ESG y herramientas como el análisis de doble materialidad y la cuenta de pérdidas y ganancias ambientales.
- **Sesión 4:** Gobierno corporativo, la función del consejo de administración en temas ESG y cómo incluir estos asuntos en la agenda del consejo.
- **Sesión 5:** Aspectos estratégicos y desafíos que enfrentan las empresas al integrar los estándares ESG en su estrategia corporativa.
- **Sesión 6:** Beneficios de incorporar criterios ESG en las organizaciones, destacando a su vez la importancia de la gestión de riesgos y el papel fundamental que desempeña ESG en dicho proceso.
- **Sesión 7:** Opciones estratégicas que pueden adoptar las empresas en materia de sostenibilidad y pasos para desarrollar una estrategia ESG eficaz.
- **Sesión 8:** Explicación sobre cómo gestionar eficazmente la relación con los grupos de interés y el papel que desempeña ESG en la creación de valor a largo plazo para ellos.
- **Sesión 9:** Influencia de los criterios ESG en la toma de decisiones financieras, tipos de instrumentos financieros sostenibles y los beneficios económicos que conlleva incorporar ESG en la estrategia empresarial.
- **Sesión 10:** Papel fundamental que tiene la inteligencia artificial para impulsar y acelerar el proceso de sostenibilidad en las empresas.
- **Sesión 11:** Infraestructura sostenible y economía circular como elementos clave para facilitar la transición hacia un modelo económico más sostenible.
- **Sesión 12:** Estudio de caso sobre Iberdrola, en el que se aplican de forma integrada la mayoría de los conceptos vistos durante el curso para ilustrar su implementación en una empresa real.

Tras analizar las sesiones del curso, se identifican cinco temas clave que todo equipo de alta dirección debe llevarse como aprendizaje. El primero es el **análisis de doble materialidad**, el cual exige a las empresas evaluar, por un lado, cómo los asuntos relacionados con la sostenibilidad pueden afectar su desempeño financiero, ya sea como riesgo u oportunidad, y por otro, cómo sus actividades impactan en la sociedad y el medio ambiente [3]. Esta herramienta permite a las organizaciones identificar los temas más relevantes para ellas y tomar decisiones más efectivas (Un ejemplo de los slides utilizados para explicar este tema se muestra en la Figura 1). El segundo tema clave es la **gobernanza corporativa**, que constituye la base sobre la cual se construyen las dimensiones ambiental y social. Sin un liderazgo capacitado, comprometido con la sostenibilidad y consciente de su papel dentro del marco ESG, resulta muy difícil implementar estos criterios de manera efectiva.

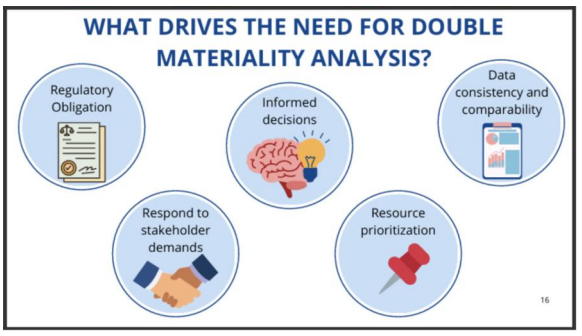

Figura 1. *Slides de la sesión 3 del curso (Elaboración Propia)*

El tercer tema clave es la **gestión de riesgos**, que resalta cómo los estándares ESG permiten identificar, evaluar y mitigar riesgos no financieros que pueden afectar tanto el valor como las operaciones de la empresa, además de prevenir la pérdida de inversiones y daños a la reputación. En cuarto lugar, la **creación de valor para los stakeholders** se muestra como un eje central, ya que las acciones ESG bien alineadas con las expectativas de los grupos de interés generan beneficios compartidos, confianza y fidelidad [4]. Finalmente, la **inteligencia artificial** se presenta como una herramienta clave para acelerar la sostenibilidad empresarial, optimizar procesos y mejorar el reporting ESG.

Se puede concluir que el contenido de este curso es fundamental para empresas de cualquier tamaño y nivel de avance en la integración de criterios ESG, ya que ofrece una base teórica sólida, acompañada de casos reales y herramientas prácticas que pueden aplicarse directamente en el entorno empresarial. Las sesiones destacan por abordar los criterios ESG desde múltiples perspectivas y por ofrecer materiales actualizados, relevantes y con recursos visuales accesibles. Asimismo, el curso subraya la importancia de comprender la regulación vigente y de contar con una alta dirección comprometida con la sostenibilidad. Por ello, quienes finalicen este curso salen con un entendimiento claro de qué es ESG, cómo y por qué implementarlo, y sabiendo que su rol es clave para garantizar el éxito de la estrategia empresarial sostenible.

Referencias

[1] Accountancy Age. (2024). *Study shows lenders anticipate growing influence of ESG credentials on mid-market borrowing*. https://www.accountancyage.com/2024/05/27/esg-credentials-in-borrowing/

[2] Krantz, T., & Jonker, A. (2024). *What is environmental, social and governance (ESG)?*. IBM. https://www.ibm.com/think/topics/environmental-social-and-governance

[3] PwC. (2024). *CSRD - Double Materiality Assessment*. PwC Netherlands. https://www.pwc.nl/en/topics/sustainability/esg/corporate-sustainability-reporting-directive/csrd-double-materiality-assessment.html

[4] Kay, I., Brindisi, C., & Martin, B. (2020). *The stakeholder model and ESG*. Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2020/09/14/the-stakeholder-model-and-esg/

DESIGN OF A 30-HOUR COURSE ON ESG APPLIED TO BUSINESS STRATEGY IN VARIOUS INDUSTRIAL SECTORS

Author: Serrano Vázquez, Blanca Maria

Director: Fernández Alonso, Daniel

Collaborative Entity: ICAI – Comillas Pontifical University

ABSTRACT

Nowadays, sustainable development and corporate accountability regarding ESG actions have become increasingly relevant. Investors are incorporating ESG criteria into their decision-making processes, and lenders expect companies to integrate sustainability into their core strategies. Those that fail to do so risk facing higher financing costs or even losing access to capital [1]. At the same time, stakeholders are exerting growing pressure for companies to act more responsibly. As a result, applying ESG criteria is no longer just a voluntary commitment, it has become a strategic necessity and a key component of effective risk management.

Recognizing the importance of ESG criteria in the business environment is essential to raise awareness among corporate leaders about the strategic value and tangible benefits of incorporating sustainable practices into their organizational management. This project focuses precisely on that: the development of a 12-session course on ESG standards in companies from various sectors, with the aim of training senior management in this area. If a company's leadership does not understand the importance of the topic or lacks the necessary knowledge, it becomes extremely difficult for the organization to successfully integrate ESG criteria into its business strategy. It is worth noting that all sessions incorporate practical examples that reinforce and complement the theoretical concepts discussed.

ESG refers to a set of standards, policies, and metrics used by organizations and investors to assess both the social and environmental impact of their operations [2]. Since ESG is a broad and multidimensional topic, most existing courses tend to focus solely on specific aspects. However, this course adopts a more comprehensive perspective, addressing ESG from multiple angles: governance, business strategy, sustainable finance, technology, infrastructure, reporting, and other key approaches.

Below is a description of the 12 sessions that make up the course and the main topics covered in each of them:

- **Session 1:** Introduction to the concept of ESG, explaining what it is, its three dimensions (environmental, social, and governance), and the factors driving the need for its implementation.
- **Session 2:** Current regulations and sustainability reporting frameworks, including the EU Taxonomy and the Corporate Sustainability Reporting Directive (CSRD).

- **Session 3:** Main sources of ESG data, ESG scores, and tools such as the double materiality assessment and the environmental profit and loss account.
- **Session 4:** Corporate governance, the role of the board of directors in ESG matters, and how to incorporate these topics into the board's agenda.
- **Session 5:** Strategic issues and challenges companies face when integrating ESG standards into their corporate strategy.
- **Session 6:** Benefits of incorporating ESG criteria into organizations, while also highlighting the importance of risk management and the key role ESG plays in this process.
- **Session 7:** Strategic options companies can adopt regarding sustainability and steps for developing an effective ESG strategy.
- **Session 8:** How to manage stakeholder relationships effectively and the role ESG plays in creating long-term value for stakeholders.
- **Session 9:** Influence of ESG criteria on financial decision-making, types of sustainable financial instruments, and the economic benefits of integrating ESG into business strategy.
- **Session 10:** The fundamental role of artificial intelligence in advancing and accelerating sustainability processes within companies.
- **Session 11:** Sustainable infrastructure and circular economy as key elements to facilitate the transition toward a more sustainable economic model.
- **Session 12:** Case study on Iberdrola, in which most of the concepts covered throughout the course are applied in an integrated way to illustrate their implementation in a real company.

After analyzing the course sessions, five key topics have been identified that every senior management team should take away as essential learnings. The first is the **double materiality assessment**, which requires companies to evaluate, on one hand, how sustainability-related issues can affect their financial performance, whether as risks or opportunities, and on the other, how their activities impact society and the environment [3]. This tool enables organizations to identify the most relevant topics and make more effective decisions. (An example of the slides used to explain this concept is shown in Figure 1). The second key topic is **corporate governance**, which forms the foundation upon which the environmental and social dimensions are built. Without a leadership team that is well-trained, committed to sustainability, and aware of its role within the ESG framework, it becomes very difficult to implement these criteria effectively.

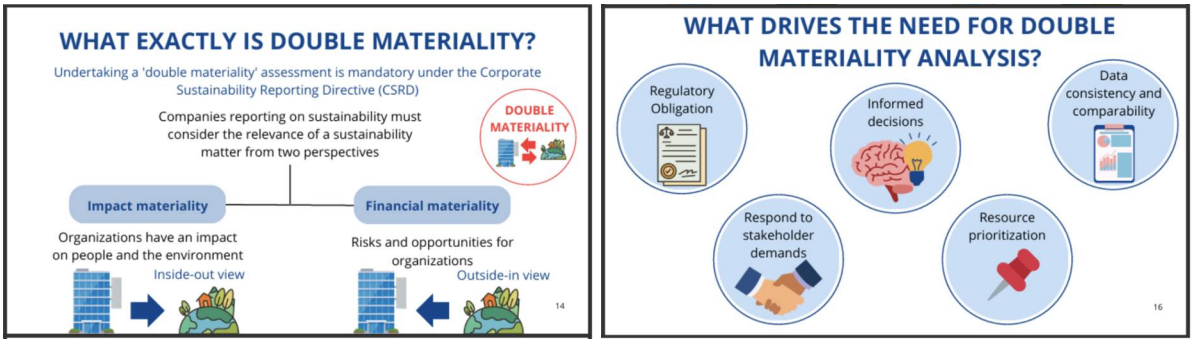

Figure 1. *Slides from Session 3 of the course (Own Work)*

The third key topic is **risk management**, which highlights how ESG standards help identify, assess, and mitigate non-financial risks that can impact both the value and operations of a company, as well as prevent investment losses and reputational damage. Fourth, **stakeholder value creation** is presented as a central pillar, as ESG actions that are well aligned with stakeholder expectations generate shared benefits, trust, and loyalty [4]. Finally, **artificial intelligence** is introduced as a key tool to accelerate business sustainability, optimize processes, and improve ESG reporting.

It can be concluded that the content of this course is essential for companies of any size and at any stage of ESG integration, as it offers a solid theoretical foundation, supported by real-life cases and practical tools that can be directly applied in business environments. The sessions stand out for approaching ESG from multiple perspectives and for providing updated, relevant content with accessible visual resources. Likewise, the course emphasizes the importance of understanding current regulations and having a leadership team committed to sustainability. Therefore, participants who complete this course will come away with a clear understanding of what ESG is, how and why to implement it, and the crucial role they play in ensuring the success of a sustainable business strategy.

References

[1] Accountancy Age. (2024). *Study shows lenders anticipate growing influence of ESG credentials on mid-market borrowing*. https://www.accountancyage.com/2024/05/27/esg-credentials-in-borrowing/

[2] Krantz, T., & Jonker, A. (2024). *What is environmental, social and governance (ESG)?*. IBM. https://www.ibm.com/think/topics/environmental-social-and-governance

[3] PwC. (2024). *CSRD - Double Materiality Assessment*. PwC Netherlands. https://www.pwc.nl/en/topics/sustainability/esg/corporate-sustainability-reporting-directive/csrd-double-materiality-assessment.html

[4] Kay, I., Brindisi, C., & Martin, B. (2020). *The stakeholder model and ESG*. Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2020/09/14/the-stakeholder-model-and-esg/

INDEX

Introduction

In recent decades, environmental regulations and reporting requirements for companies have increased significantly. However, nowadays, merely complying with these rules is no longer enough to ensure a company's long-term viability and success. Stakeholders are placing growing pressure on businesses to adopt sustainability measures and develop concrete plans to act more responsibly and minimize their environmental impact. As a result, ESG (Environmental, Social, and Governance criteria) has moved to the forefront of corporate strategy, becoming a widely recognized standard framework for companies around the world. As investors and society place more value on sustainable and responsible companies, integrating ESG has evolved from a voluntary action into a strategic necessity and an essential tool for managing risk. However, true sustainability goes beyond environmental actions, it also requires attention to social responsibility and strong corporate governance.

Nonetheless, many company leaders struggle to prioritize sustainability because the actions required for doing so often conflict with the short-term financial returns they typically look for. Therefore, it is crucial to raise awareness among the senior management of companies so that they can recognize the long-term value and advantages of adopting sustainable practices. If a company's leaders do not understand the importance of integrating sustainability into their strategies and decision-making, or lack the necessary knowledge to do so, it will be very difficult for the organization to successfully implement ESG criteria and move toward a truly sustainable business model. This project addresses that need by designing a 12-session training course to equip senior management with the knowledge, tools, and strategies needed to embed ESG principles effectively into their business models.

Following an extensive review of courses from institutions such as IESE Business School, IMD, and the University of Pennsylvania, it became clear that most of these resources present the ESG concept in a general and theoretical way. Even while the theoretical content is sufficient, these courses lack useful tools that business executives can directly use into their strategy and reporting. Also, these courses typically don't provide many in-depth real-world examples, which limits their understanding of the real implementation procedures or difficulties that businesses encounter. The lack of attention to international standards and ESG-related rules, which are crucial for comprehending legal responsibilities, controlling risk, and enhancing competitiveness, is another serious flaw that can be found in courses available nowadays. With this in mind, this project aims to address all of these gaps by offering a more practical, applied, and regulation-aware perspective.

This project was driven by the need to develop a training program that combines both theoretical and practical approaches to the integration of ESG criteria in business strategy. Additionally, while some existing courses cover ESG topics, they tend to be broad, focusing on only a few aspects and lack detailed real-world applicability. In contrast, this course aims to provide a comprehensive overview, covering different topics such as risks, opportunities, tools, finance, technology and strategy, supported by real company examples to ensure relevance.

The objectives to be achieved with this project is to provide senior management with a solid understanding of ESG principles by explaining their key concepts, relevance, and application in corporate strategy. It also seeks to develop clear and updated educational content for a 12-session course, including visual aids, summarized concepts, and news to facilitate learning. Additionally, it incorporates case studies from companies in various sectors that are already applying ESG strategies, highlighting their successes, challenges, and methodologies to offer practical insights beyond theoretical knowledge.

Since this project is about ESG, it is connected to each and every one of the SDG objectives. This is due to the fact that ESG criteria represent the actions that companies adopt in order to contribute to these universal goals. This course places particular emphasis on SDGs 9, 12, 13, and 16. Regarding SDG 9 (Industry, Innovation and Infrastructure), the course includes sessions focused on investing in technology to improve operational efficiency and reduce environmental impacts. It also highlights the importance of sustainable infrastructure and the role of financing for its development. In alignment with SDG 12 (Responsible production and consumption), the course teaches corporate leaders how to embed environmental criteria into their operations, encouraging sustainable production models such as the circular economy model.

For SDG 13 (Climate Action), the course raises awareness about climate change and the importance of transitioning toward low-emission models. It presents tools and strategies for measuring impact, planning initiatives, reporting on their environmental impact and making sustainable investments. Finally, SDG 16 (Peace, Justice and Strong Institutions) is addressed through a strong focus on corporate governance. The course promotes ethical and transparent decision-making and addresses issues such as greenwashing and green hushing. It also encourages companies to establish robust governance frameworks that support long-term sustainability goals.

The 12 sessions of this course correspond to the following chapters of this project, where the content of each session will be described in detail. The sessions are as follows:

- Session 1: Introduction to the concept of ESG
- Session 2: Regulations and reporting frameworks
- Session 3: Data as the soul of strategy
- Session 4: Corporate governance
- Session 5: Strategic issues and ESG challenges
- Session 6: Advantages and risk management
- Session 7: Strategic options and how to develop a sustainability strategy
- Session 8: Stakeholder value creation
- Session 9: Investment and Financing
- Session 10: The role of AI in sustainability
- Session 11: Transition towards a sustainable economy
- Session 12: Case study

Session 1: Introduction to the concept of ESG

The concept of ESG is a topic that is hardly unknown to companies and of critical importance to them. This first session, which will be delivered to the company's senior management, will mainly focus on explaining what ESG criteria are and how they have evolved over time. The goal is to ensure that leaders truly understand what these criteria consist of and how this important topic emerged.

First, all the topics that will be covered during the different sessions will be introduced so that those participating in this course know in advance what will be covered in each session. Once this is done, before getting into the subject matter and with the intention of attracting participants' attention, the Unilever vs. Heinz case will be discussed. The ESG trainer will explain how, in 2017, the president of Kraft Heinz offered to buy the entirety of Unilever, its rival company. Kraft Heinz was part of the Brazilian venture capital firm 3G, known for cutting costs to increase short-term margins and for paying little tax. In contrast, Unilever was known for operating for the benefit of the numerous groups of people the company affected, serving a better world instead of focusing all its actions on shareholders. To this end, it had a strategy known as the Unilever Sustainable Living Plan (USLP) which aimed to generate financial gains because of sustainability rather than in spite of it (Polman & Winston, 2022) [1].

The money earned by accepting the offer was significant and would have been beneficial for Unilever's executives, but the company did not consider it right to accept the acquisition when there was such a large difference in strategies and values between the two companies. There was significant pressure to sell at that time, but Unilever's leaders believed that with their sustainable business model, they could generate more long-term value than 3G, and decided to decline the offer. A key factor for this decision was the support of various partners and stakeholders that Unilever had cultivated through its net positive impact project, despite being criticized in the past for working with communities, governments, and organizations rather than maximizing short-term profits (Polman & Winston, 2022) [1].

In the following years, the money invested in Unilever yielded four times more than the same amount invested in Kraft Heinz. Moreover, during the pandemic, Unilever was able to quickly adapt to changes and successfully face challenges, demonstrating a strong financial position and solid connections with its employees, partners, and governments. That said, a model focused on sustainability and the well-being of all stakeholders in a company is something that businesses should consider, as "companies that follow this model are better positioned for the future and ultimately have more success" (Polman & Winston, 2022, pg. 34) [1].

After illustrating this example, the concept of sustainability will be explained as "Our society's ability to exist and develop without depleting all of the natural resources needed to live in the future" (Courseira Staff, 2025) [2]. Likewise, the trainer will explain how sustainability does not consist of mere care for the environment but is based on three

fundamental pillars: environmental sustainability, economic sustainability and social sustainability, which can help build a path towards a sustainable future.

Following the definition of sustainability, there will be a description of what ESG is and a detailed explanation of each of the three dimensions that cover this concept. In short, ESG are a set of standards, policies and metrics used by organisations and investors to assess both the social and environmental impact of their operations (Krantz & Jonker, 2024) [3]. The letters ESG stand for Environmental, Social, and Governance, which are three key criteria that every company should manage and incorporate into their strategy. Firstly, environmental standards refer to how a company impacts the environment. This includes key aspects that companies are expected to consider, such as carbon footprint, use of renewable energy sources, waste management, pollution control, freshwater consumption, biodiversity and ecosystem protection, and resource conservation. Considering the environmental dimension of ESG is crucial for assessing whether an organization will remain competitive in the long term. Ignoring environmental sustainability may pose significant risks to the company, especially as investors are increasingly concerned about these issues (Hoos, 2024) [4].

To fully understand the environmental pillar of ESG, three key concepts will be explained: greenwashing, greenhushing, and net positive impact. Starting with greenwashing, this refers to situations in which companies claim to have made an environmental commitment without actually implementing meaningful changes to their environmental policies (Novillo, 2019) [5]. One of the main consequences of greenwashing is the loss of trust. Once consumers feel deceived, it becomes very difficult for a company to rebuild its image and restore its reputation. Additionally, companies may settle for positive results without genuinely investing in sustainable practices that generate real environmental benefits. That being said, failing to identify companies that have truly integrated sustainability into their operations can be very costly for ESG-focused investors. In other words, there is a high risk of financing initiatives and businesses that offer no real benefit to society or the environment (del Río, 2024) [6].

The second concept to be described is greenhushing, which refers to the deliberate undercommunication of a company's sustainability efforts. Greenhushing is a concerning concept, as staying silent about a major global issue reduces impact and limits the potential to inspire change in other companies (Dhanani, 2023) [7]. As well as this, the lack of transparent information can lead to mistrust among buyers who are interested in sustainability. Finally, the third concept to be addressed is net positive impact, which can be understood as “a new way of doing business which puts back more into society, the environment, and the global economy than it takes out” (Forum for the Future, n.d.) [8]. When a company aims for a net positive impact, net zero is no longer the final goal but rather a crossing point in the process.

To better understand the "G" dimension of ESG standards, the course instructor will present two current company examples. First, the speaker will discuss Acciona, the world’s largest 100% renewable energy company. Acciona promotes the decarbonization of the energy model, leads in sustainable water management, ensures universal access, and

improves transportation efficiency (Acciona, 2025) [9]. If possible, it would be interesting to read during the course the key points from Acciona's 2024 Sustainability Report to get an idea of the many solutions the company has developed to regenerate the planet and promote more prosperous societies. The second example used is IKEA, a multinational company well known for its furniture retail business. Some of its sustainable practices include the use of 100% renewable electricity in its factories and a predominant use of renewable and recyclable materials, over 60% of IKEA's products are made from renewable resources and more than 10% contains recycled materials (IKEA, n.d) [10]. Additionally, the company has launched a second-hand platform called IKEA Preowned, where users can buy and sell used furniture (Prakash, 2024) [11]. Through this initiative, IKEA is betting on the circular economy and promoting responsible consumption.

Moving on to the social dimension of ESG, the instructor will explain that social standards concern the impact businesses have on society. This includes key considerations such as labor practices, employee relations, human rights, diversity and inclusion, customer satisfaction and welfare, and community engagement. This dimension assesses an organization's relationships with stakeholders and how its activities affect the parties involved. Usually, when talking about the "S" in ESG, the concept of Corporate Social Responsibility is addressed and that is what will be done here. The speaker will explain that the objective of CSR is to help companies work to limit environmental impact and contribute to solving societal problems. The "triple bottom line" is a theory that helps companies practice social responsibility. It means focusing on maximizing the three P's (people, planet, and profit) in order to grow while making a positive impact on the world (McGrath & Jonker, 2023) [12].

Corporate social responsibility initiatives are usually classified into four types: environmental responsibility, which aims to reduce or offset the negative impact of business operations; ethical responsibility, which focuses on social impact and respect for human rights; philanthropic responsibility, which involves donating time, money, or resources to support communities and social causes; and economic responsibility, which ensures that financial decisions reflect the company's values and are not only driven by profit (McGrath & Jonker, 2023) [12].

The B Corp certification is a practical and verifiable tool that reflects a company's commitment to social responsibility. It represents a model of business that meets the highest standards of social and environmental performance, public transparency, and corporate accountability. In order to achieve this certification a company must: Demonstrate high social and environmental performance (B Impact Assessment score >=80) and pass the risk review, change their corporate governance structure to be accountable to all stakeholders, and be transparent by making information publicly available on their B Corp profile (Bcorporation, 2025) [13].

The last key concept to understand the social dimension of ESG standards is social washing. Social washing consists of companies communicating about social responsibility without real commitment or meaningful actions behind it. Some examples of social washing

are: False diversity and inclusion claims, taking advantage of movements without internal inclusive policy and apparent support for labor rights without decent conditions (ExpokNews, 2025) [14]. A clear example of a company committed to social objectives is Mercadona. The course leader will explore in detail how Mercadona ranks among the top three companies in the Merco ESG Responsibility ranking and will highlight many of its social initiatives. Some of these initiatives include supporting the purchase of products from local suppliers (Radio Rioja, 2025) [15], providing stable and high-quality jobs to its workers, offering support during natural disasters such as the DANA in Spain (Williamson, 2024) [16], and collaborating with social action programs.

The third and final pillar of ESG standards is Governance. Governance refers to a company's internal processes, structures, and policies that guide its overall direction and decision-making. It involves taking into account several key factors, such as the composition and independence of the board of directors, executive compensation, risk management practices, and adherence to ethical business standards (Hoos, 2024) [4]. Effective governance is important for ensuring transparency, accountability, and building trust among investors and stakeholders. It also offers an opportunity for companies, as it lays the groundwork for long-term sustainability.

A great example of a company that uses governance as an opportunity for long-term sustainability is Inditex. Inditex is a global fashion retail group that publishes annual reports detailing its corporate governance practices. The company has a Code of Conduct and Responsible Practices in place, along with a risk management system that includes regulatory compliance and information security (Inditex, 2022) [17]. If possible, it would be interesting for the course instructor to ask participants to briefly review Inditex's Annual Corporate Governance Report, so they can see the company's objectives, risk management system, and governance structure.

To better understand how the concept of corporate sustainability has evolved over the years, a timeline will be presented highlighting some of the key ESG-related events and regulatory developments. The first key milestone to be mentioned is the creation of the Global Reporting Initiative (GRI) in 1997. Its aim was to develop a framework for corporate sustainability reporting, ensuring that companies adhered to principles of responsible environmental conduct. Later, this accountability framework was expanded to include social, economic, and governance issues. GRI helped create a common language around the world for companies to report on their impacts (Global Reporting Initiative, n.d.) [18].

The second key moment in the timeline is the publication of the report *Who Cares Wins* in 2004, where the term "ESG" was introduced for the first time. The report's subtitle, "Connecting financial markets to a changing world," emphasizes its goal of offering financial institutions guidance on governance, social, and environmental issues by describing how businesses that do better in these aspects can boost shareholder value. This can be done by managing risks appropriately, foreseeing regulatory changes, or entering new markets, all while helping the sustainable development of the communities where the company operates (Sustainability Economics, 2024) [19]. Following this, in 2006, the Principles for Responsible Investment (PRI) were introduced. According to these principles, integrating ESG factors into

investing decision-making procedures is a strategy known as responsible investment (PRI, 2019) [20]. The course instructor will read the six voluntary principles designed to guide investors, which are included in the course slides.

In 2015, the United Nations General Assembly adopted the 2030 Agenda for Sustainable Development. This agenda outlines 17 goals, known as the Sustainable Development Goals (SDGs), which serve as a universal call to fight for sustainability across all dimensions (social, environmental, and governance) through common goals shared by governments, businesses, and citizens worldwide. With these objectives in mind, ESG criteria represent the practices that companies implement to help achieve these goals (Noticias ONU, 2015) [21].

That same year, the Paris Agreement, a legally binding treaty negotiated at COP21 in Paris, was signed by 196 countries (O'Connor, B, 2022) [22]. In this agreement three key long-term goals were established. First, to limit global warming to below 2°C compared to pre-industrial times. Second, to improve countries' ability to adapt to the impacts of climate change and promote resilience. And third, to make sure investments go to projects that support low-carbon and climate-resilient development (Durham University, 2023) [23]. The course slides will include a map highlighting the four countries that are not parties to the Paris Agreement: Iran, Libya, and Yemen, which have never ratified the agreement (Lo, 2020) [24], and the United States, which formally withdrew in January 2025 (Calma, 2025) [25].

The last key event on the timeline is the European Taxonomy of Sustainable Activities, introduced in 2020. Its main objective is to inform investors whether an economic activity can be considered environmentally sustainable. The EU taxonomy describes six environmental objectives, and for an activity to qualify as sustainable, it must: contribute to at least one of these six objectives; do no significant harm to any of the others; comply with minimum social and governance safeguards; and meet the technical screening criteria (Roncalli, 2025) [26].

After gathering information from various books, articles, and courses, it can be said that the key factors driving the need for ESG practices include: the climate crisis and natural disasters, the global energy transition, sustainability regulations, resource scarcity and the shift toward a circular economy, evolving consumer expectations, and technological innovation. To conclude the first session, an image from the IMD course will be shown, illustrating the nine Earth systems and each of their planetary boundaries. These boundaries represent the limits within which human beings must operate to ensure the planet's stability and resilience. However, most of these boundaries have already been crossed. Nevertheless, there is still hope, some of the damage can be reversed, and the remaining boundaries can still be protected. How? By implementing ESG criteria in every company across the globe.

Session 2: Regulations and reporting frameworks

The instructor will begin the session by presenting an image of a pyramid divided into three sections: regulations, reporting frameworks, and global goals. Most of the global goals, such as the SDGs, the Paris Agreement, and the PRI, were already covered in the first session. Therefore, this session will focus first on regulations and then on reporting frameworks.

First, the lecturer will discuss the International Sustainability Standards Board (ISSB). The ISSB establishes industry standards and practices to ensure high-quality, transparent disclosure of sustainability-related information. These standards are included in the regulation section because various countries have adopted the ISSB standards into their regulatory frameworks. The International Financial Reporting Standards (IFRS) Foundation created the ISSB in response to the growing demand for increased accountability and transparency in disclosures pertaining to sustainability from investors and other stakeholders (Salgado, 2023) [27].

The four pillars that form the foundation of the ISSB standards are: Governance, Strategy, Risk Management, and Metrics and Targets. Governance refers to the role of the Board and senior management in overseeing, evaluating, and addressing sustainability and climate-related issues. Strategy refers to how businesses must disclose their sustainability-related strategies, including information on the implications of sustainability opportunities and risks. Risk Management involves the identification and evaluation of sustainability-related risks and their integration into the organization's overall risk management framework. Finally, Metrics and Targets refers to the expectation that companies define metrics and set goals aligned with their material topics to monitor risks and opportunities (Oliari, n.d.) [28].

The ISSB released its first standards in 2023, which lay the foundation for sustainability reporting. Known as the IFRS Sustainability Disclosure Standards, these include two key standards: IFRS S1 and IFRS S2. The instructor will explain these two standards in more detail, including their scope and the specific requirements of each (as presented in the slides). Broadly speaking, it is important to note that IFRS S1 provides the general requirements for disclosure of sustainability-related financial information, while IFRS S2 focuses specifically on climate-related disclosures. In other words, the primary goal of IFRS S1 is to "disclose all information about sustainability-related risks and opportunities that could reasonably be expected to affect a company’s prospects" (Carroll, 2023) [29], while IFRS S2 focuses specifically on disclosing information related to climate-related risks and opportunities.

With this in mind, the course instructor will pose the question, “Why should companies apply the ISSB standards?” and will answer it with four key points. First, the standards help deliver decision-useful, consistent, and comparable information to investors. Second, the ISSB framework unifies past initiatives such as TCFD, CDSB, SASB, and integrated reporting by adopting key concepts and aligning with accounting standards. Third, it improves data quality and optimizes a company’s sustainability reporting process, which is expected to positively impact the organization, its reputation, and stakeholder engagement.

Finally, the application of ISSB standards enables greater transparency of information (IFRS, n.d.) [30]. Although both the SASB and TCFD frameworks have been consolidated under the ISSB, they will still be presented separately in the reporting frameworks section of this session. This is due to the fact that knowing their unique composition and contributions offers important background information on the development of the ISSB standards.

The second key regulation to understand when discussing ESG is the EU Taxonomy. The speaker will explain that the EU Taxonomy provides clear criteria to identify which economic activities can be considered sustainable. As a classification system, it offers companies a uniform basis for evaluating the sustainability of their operations, helping to prevent greenwashing (Nexia, n. d.) [31]. It accomplishes this by establishing six environmental objectives: Climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and the protection and restoration of biodiversity and ecosystems (Doyle, 2021) [32]. For an economic activity to be considered sustainable, it must meet four criteria. These requirements were already introduced in Session 1 and will also appear in the slides for Session 2, so it is not necessary to repeat them in this part of the document.

Next, the instructor will explain who is required to comply with the EU Taxonomy. This includes large companies already obligated to report under the Non-Financial Reporting Directive (NFRD) and, more recently, the Corporate Sustainability Reporting Directive (CSRD); financial market participants such as investors and asset managers offering financial products within the EU; and, listed small and medium-sized enterprises, which will become subject to reporting requirements under the CSRD beginning in 2026. In this slide (Slide 9 of Session 2), an illustrative diagram will be shown to help the course participant begin connecting and understanding the key concepts. The illustration shows that companies are required to report under the CSRD (Corporate Sustainability Reporting Directive), a topic that will be explained in more detail later in the session. The CSRD is developed based on criteria provided by the EU Taxonomy, and the information disclosed under the CSRD is used by financial market participants to meet their reporting obligations under the SFDR (Sustainable Finance Disclosure Regulation), which will also be covered later.

Continuing with the EU Taxonomy, the instructor will introduce the main reporting requirements. Companies subject to this regulation are expected to report how their economic activities align with the Taxonomy by using specific Key Performance Indicators (KPIs). These KPIs include: Turnover, which measures the share of total revenue derived from Taxonomy-aligned activities; Capital Expenditures (CapEx), which captures investments in assets or projects consistent with the Taxonomy's environmental criteria, indicating the company's commitment to sustainable transformation; and Operating Expenditures (OpEx), referring to spending on the operation and maintenance of assets aligned with the EU Taxonomy. Additionally, companies are required to submit accompanying qualifying information, such as the accounting methods used and an explanation of how Turnover, CapEx, and OpEx were calculated and allocated (Anderson, 2025) [33].

One key aspect to mention when discussing ESG regulation is the current level of regulatory intensity. There has been a clear transition from soft law, characterized by the "comply or explain" principle, to hard law, which imposes legal obligations on companies, with sanctions for non-compliance. The recent increase in regulatory pressure has created significant compliance risks, leading to three main unintended consequences. First, many companies are primarily focused on understanding and adapting to the new regulations, which limits their capacity to address real sustainability impacts. Second, European businesses may face a loss of competitiveness, as they are subject to stricter requirements than many of their global counterparts. Third, in some cases, the cost of compliance exceeds the benefits, especially when considering the substance of certain regulatory obligations (Forética, 2025) [34].

A clear example of this increased regulatory intensity is the Corporate Sustainability Reporting Directive (CSRD), which defines ESG reporting obligations for companies and seeks to significantly broaden the scope of the Non-Financial Reporting Directive (NFRD). This expansion applies both to the range of companies required to report and to the type of information that must be disclosed. The CSRD mandates that companies carry out a more thorough assessment of sustainability information, aiming to align it with financial disclosures and enhance comparability across companies within Europe (Forética, 2024) [35].

Slide 13 of this session presents a timeline showing how the Corporate Sustainability Reporting Directive will be progressively applied to various categories of companies. In 2024, it applies to listed companies already subject to the Non-Financial Reporting Directive (NFRD). From 2025, it extends to large EU companies that were not previously covered. In 2026, listed small and medium-sized enterprises (SMEs), credit institutions, and captive insurance companies will be included. Finally, starting in 2028, non-EU companies with a branch or subsidiary operating in the EU will also be required to comply. This phased approach ensures a structured transition towards more comprehensive and harmonized sustainability reporting (Forética, 2024) [35].

When introducing the CSRD, four main changes are presented in the reporting process: double materiality, assurance of information, ESRS standards, and digitalization of reporting. The double materiality approach requires organizations to assess two aspects: financial materiality, which takes into account how sustainability-related issues affect the company's financial position, and impact materiality, which assesses the company's effects on people and the environment. Establishing appropriate thresholds is another requirement for businesses in order to decide whether opportunities, risks, and impacts qualify as material. It is important to mention that double materiality will be explained in detail in session 3. The second modification introduced by the CSRD is the requirement for external assurance of reported information. This assurance must be carried out by an independent third party, who will verify that the disclosed information complies with the standards established by the European Union (Forética, 2024) [35].

In the same way, another innovation is the requirement for companies to report their non-financial information in accordance with the European Sustainability Reporting Standards (ESRS). Clear and well-organized communication of sustainability-related

information is the goal of the ESRS's general framework. Its three main components are strategy, which covers the business model, governance, and the materiality assessment of sustainability-related impacts, risks, and opportunities (IROs); implementation measures, which cover the company's policies, targets, action plans, and resource allocation; and performance metrics, which demand that businesses accurately reflect their ESG impacts, both positive and negative. The fourth key change is that the CSRD mandates businesses to use a digital categorization system to "tag" the reported sustainability information and to prepare their financial statements and management reports in XHTML format (Forética, 2024) [35].

In the third key change of the reporting process when introducing CSRD, the instructor briefly introduced the ESRS. Now, a more detailed explanation will follow. The European Sustainability Reporting Standards (ESRS) are the specific standards developed to help companies comply with the CSRD. It is important to note that different sets of ESRS apply to different types of companies within the scope of the directive. These include the full ESRS, used by listed and large companies; a separate standard for listed SMEs; and a dedicated standard for third-country companies operating in the EU (Global Reporting Initiative, 2024) [36]. The full ESRS are divided into three categories: topical standards, cross-cutting standards, and sector-specific standards. The topical standards cover 10 key ESG topics, addressing environmental, social, and governance issues. The cross-cutting standards, include ESRS 1, that outlines the mandatory principles for preparing and presenting sustainability disclosures, and ESRS 2 that focuses on general disclosures that must be reported regardless of the outcome of the materiality assessment. Finally, the sector-specific standards, not yet published, will provide specific requirements for companies operating in particular industries (EY denkstatt, 2023) [37].

The final regulation to be covered by the course instructor is the Sustainable Finance Disclosure Regulation (SFDR). The SFDR provides guidelines on how financial market participants and advisers incorporate ESG factors into their investment procedures and overall decision-making. Under the SFDR, the level of disclosure required varies depending on the extent to which a financial product incorporates ESG considerations. With this in mind, products are classified into three categories (Article 6, 8 and 9). Article 6 products are standard financial products that do not have ESG characteristics, and therefore cannot be classified as Article 8 or 9. Article 8 products promote environmental or social characteristics, and also require that the companies in which investments are made follow good governance practices. However, they do not have a specific sustainable investment objective. In contrast, Article 9 products go further, as they are designed with a clearly defined sustainable investment objective. For both Article 8 and 9 products, the regulation requires more detailed disclosures, including both qualitative and quantitative ESG information (Roncalli, 2025) [26].

There are two levels of disclosure requirements under the SFDR: entity level and product level. Tables summarizing these requirements will be shown on Slide 18. While the product-level standards concentrate on certain investment funds or financial products, the entity-level criteria are applicable to the entire financial organization. The kinds of funds affected by each disclosure requirement are also shown in the tables (Casado, 2021) [38].

To conclude the regulation section of this session, the instructor will present a comparison table covering the four regulations discussed: ISSB, EU Taxonomy, CSRD/ESRS, and SFDR. The table compares each regulation based on its approach, geographical scope, topics covered, audience of disclosure, and audit requirement (voluntary or mandatory).

The second part of this session will focus on reporting frameworks. The first framework to be addressed is the Global Reporting Initiative (GRI), an internationally recognized set of principles and guidelines for reporting on sustainability aspects. These principles can be followed by companies of any size, public or private entities, and organizations from any sector or geographic location (Envoria, 2023) [39]. In 2022, the European Commission gave its approval for the GRI standards to be interoperable. Therefore, they will be in conformity with the guidelines of the Corporate Sustainability Reporting Directive (Salgado, 2024) [40].

Three fundamental elements form the framework of the GRI Standards: Universal Standards, Sector Standards, and Topic-Specific Standards. All businesses, regardless of size or industry, are subject to the Universal Standards, which include fundamental disclosures on topics like ethics, governance, and stakeholder engagement. This ensures consistency and comparability among different sectors. The Sector Standards provide industry-specific guidance, focusing on the particular sustainability issues and opportunities that are most relevant to each sector. Finally, the Topic-Specific Standards focus on key sustainability issues such as emissions, labor practices, and waste management, allowing companies to report on the most important material impacts related to their activities (Crowe, 2025) [41].

In Slide 24 of this session, an illustration from a Global Reporting document titled “A Short Introduction to the GRI Standards” will be shown. The diagram represents the reporting process using the GRI Standards. Understanding the system and putting its fundamental reporting principles into practice are the first steps in the reporting process. The next step is for organizations to determine and evaluate their potential and actual impacts. This involves analyzing the organization’s context, evaluating the significance of each impact, and prioritizing those that are most relevant, also known as material topics. This step is crucial for guaranteeing that the report focuses on the most significant sustainability issues for the organization (Global Reporting, n.d.) [42].

Following the definition of the material topics, the organization must use the relevant Sector Standards, Topic Standards, and Universal Standards to report pertinent disclosures. In the event that a disclosure is not possible, the organization must explain why. After reporting, a GRI content index that ties each disclosure to its place in the report and enumerates all the standards used must be created. In the end, the organization notifies GRI and publishes the report (Global Reporting, n.d) [42].

The FY22 Impact Report from Nike will now be used as an example, as it follows the GRI reporting standards. The instructor will open the report and show how it has been prepared in accordance with the Global Reporting Initiative Standards. At the end of its FY22 Impact Report, Nike provides a comprehensive GRI index that lists the GRI Standards that were applied and gives information on where each disclosure is located in the report. The

report also contains a declaration of conformity, confirming that it was prepared in accordance with the GRI Standards. As well as this, it contains both universal and topic-specific standards, addressing areas such as carbon emissions, water, waste, and human rights. Additionally, the report provides a materiality assessment based on the organization's most important sustainability impacts (Nike, 2023) [43].

The second reporting framework covered in this session is the Sustainability Accounting Standards Board (SASB). SASB provides industry-specific guidelines that help companies disclose ESG issues that are financially material to their business. The main characteristics of this reporting framework include its global applicability, which ensures that most indicators are meaningful and comparable across companies worldwide; its emphasis on financial materiality, by identifying ESG matters that could notably influence a company's risk exposure or capital allocation; and its evidence-driven approach, which relies on external sources to evaluate the financial relevance of sustainability matters across industries. Furthermore, the SASB framework places a strong emphasis on industry specificity, acknowledging that the relevance and expression of ESG issues differ across sectors. As a result, it offers sector-specific ESG topics and is informed by the market, taking into account input from investors, companies, and other stakeholders to determine which sustainability issues are appropriate for a particular sector to disclose (IBM, 2023) [44].

The core objective of SASB is to facilitate more effective disclosure of material sustainability information by issuers to investors. To achieve this, SASB follows a rigorous due process aimed at developing standards that focus on information that is reasonably likely to be material, useful for decision-making by both companies and their investors, and cost-effective for corporate issuers to report. The SASB standards help companies identify sustainability risks and opportunities through five core "sustainability dimensions": Environment (e.g., GHG emissions, air quality, water and waste management), Human Capital (labor practices, employee health and safety, diversity and inclusion), Social Capital (human rights, data security, product quality), Business Model & Innovation (product design, supply chain management, business model resilience), and Leadership & Governance (business ethics, competitive behavior, and critical incident risk management).

To conclude the section on the SASB reporting framework, the instructor will present an example using the SASB indicators disclosed by Ferrovial in its 2024 Integrated Annual Report. This example will be particularly useful for participants of the course, as it shows a real-life case where a company applies the SASB standards by reporting financially material ESG topics relevant to its industry.

The next reporting framework is Integrated Reporting (IR), which explains how an organization generates, preserves, or diminishes value over time. An integrated report aims to provide insight into three key areas. First, it considers the external environment that influences the organization. Second, it addresses the resources and relationships used and affected by the organization, also known as capitals. These are divided into six categories: financial, manufactured, intellectual, human, social and relationship, and natural. Third, it explains how the organization interacts with both the external environment and its available

capitals to generate, preserve, or erode value over the short, medium, and long term (Integrated Reporting, 2021) [45].

The six types of capital in the IR framework represent the resources and relationships that an organization uses or affects to create value. Financial capital includes the funds available to produce goods or provide services. Manufactured capital covers physical objects such as buildings, equipment, and infrastructure. Intellectual capital refers to knowledge-based intangibles like intellectual property as well as organizational systems and protocols. Human capital includes people's competencies, experience, and capabilities. Social and relationship capital refers to the relationships, trust, and reputation with stakeholders. Lastly, natural capital includes all renewable and non-renewable environmental resources (Integrated Reporting, 2021) [45].

The Integrated Reporting framework is based on seven guiding principles: Strategic focus and future orientation, connectivity of information, stakeholder relationships, materiality, conciseness, reliability and completeness, and consistency and comparability. The principle of strategic focus and future orientation requires companies to explain their strategy and its link to long-term value creation and their use of the six capitals. Connectivity of information involves a holistic view of the interconnections among key factors that affect value creation. Stakeholder relationships explains how the organization considers and responds to the needs of its stakeholders. Materiality emphasizes disclosing issues that significantly affect value creation. The principle of conciseness, requires reports to be concise, offering essential context without unnecessary details. Reliability and completeness demand accurate, balanced information, including both positive and negative material matters. Finally, consistency and comparability aim to maintain reporting standards over time and allow comparison with other organizations (Integrated Reporting, 2021) [45].

Additionally, an integrated report includes eight content elements, which are designed as questions to be answered. These elements guide the structure of the report and ensure comprehensive coverage of key areas. The eight content elements are: Organizational overview and external environment, governance, business model, risks and opportunities, strategy and resource allocation, performance, outlook, and basis of preparation and presentation (Integrated Reporting, 2021) [45]. All of these questions will be shown and read aloud during the corresponding slide in the session, making it clear that the integrated report must include clear answers to each of them.

The final reporting framework covered in this session is the Task Force on Climate-related Financial Disclosures (TCFD). It consists of "a set of voluntary, consistent disclosure recommendations for use by companies in providing information to investors, lenders and insurance underwriters about their climate-related financial risks" (FSB, 2020) [46]. The TCFD organizes its recommendations into four main themes that capture fundamental aspects of an organization's operations. The first is governance, which consists of how an organization controls and supervises climate-related risks and opportunities. The second is strategy, which takes into account the real and possible impacts of climate-related risks and opportunities on the company's financial planning, strategic direction, and operations. The third is risk management, which focuses on the procedures the company

employs to identify, evaluate, and deal with these risks. Finally, metrics and targets cover the specific indicators and goals the company uses for tracking and managing climate-related issues (TCFD, 2017) [47].

In short, the TCFD's main goal is to help companies understand how climate risks may impact their finances, offering insight into how these factors could shape financial strategies and decision-making. To conclude this session, the instructor will present how BBVA's 2020 report follows the TCFD framework and its four thematic areas: governance, strategy, risk management, and metrics and targets. Under governance, the report presents BBVA's corporate governance, the transversal integration of sustainability at the executive level, and the remuneration system. In the strategy section, it addresses how BBVA defines climate-related risks and opportunities, implements its strategy, and builds resilience to climate risks. The risk management section describes how the BBVA integrates climate change into risk planning and decision-making, and mentions ESG sector norms and the Equator Principles. Finally, in the metrics and targets section, the report shows indicators such as mobilization metrics, indirect and direct impacts, and portfolio alignment (BBVA, 2020) [48]. For better clarity, the instructor may open the report and walk through each of the four sections, highlighting concrete examples such as BBVA's climate change risks and opportunities.

Session 3: Data is the soul of strategy

The third session of the course on ESG applied to business strategy focuses on ESG data. The instructor discusses the primary sources of ESG data, the role of rating agencies and ESG scores, the double materiality assessment, the environmental profit and loss account and concludes with an explanation of the balanced scorecard. Sustainability information must be reliable, relevant, complete and comparable. To ensure these qualities, it is essential to develop clear policies and procedures that identify the source of the information, define the methodology used to prepare the indicators, document the values obtained, and establish appropriate controls and responsibilities. Relevant and high-quality information forms the foundation for effective strategic decision-making.

To begin the discussion on the primary sources of ESG data, it is important to understand that these sources provide valuable insights into how companies manage sustainability and ethical issues. One significant category of ESG data sources are company disclosures. Among these are annual reports and filings, as publicly traded companies are frequently required to include ESG-related information in their annual reports through documents such as sustainability reports or integrated reports. These documents provide information on the company's ESG practices, performance and its goals. Similar to this, a lot of businesses voluntarily release separate sustainability reports that include details on their ESG activities, strategy, and performance indicators (Thompson, 2023) [49]. Another type of company disclosure is the proxy statement. A proxy statement is a document submitted by publicly traded companies ahead of annual or special shareholder meetings, providing shareholders with the information necessary to make informed decisions on matters related to board business (Farnham, 2023) [50]. These documents often contain details on executive compensation and corporate governance practices, thereby providing important information on the governance dimension of ESG.

Another source of ESG data are ESG rating agencies and research firms. Specialized ESG rating agencies are organizations that focus on evaluating and scoring companies according to their environmental, social, and governance performance. These agencies gather data, conduct research, and give businesses ESG scores, which serve as valuable tools for investors in their decision-making processes. Some of the main agencies include MSCI, Sustainalytics, and ISS ESG, which will be explained in greater detail later on. Additionally, mainstream financial data providers have increasingly integrated ESG data and analytics into their platforms. This integration enables investors to access ESG information alongside traditional financial data. Examples of such providers include Bloomberg, Refinitiv (formerly Thomson Reuters), and FactSet (Thompson, 2023) [49].

When discussing ESG data, it is also essential to consider mandatory reporting requirements established by governments and national regulations. In some regions, companies are legally required to report on specific ESG metrics. For example, the CSRD compels companies operating in the European Union to disclose certain sustainability criteria in accordance with standardized guidelines. Additionally, there are environmental agencies, which are government bodies responsible for environmental oversight. These agencies frequently gather and publish information on issues such as pollution, greenhouse

gas emissions, and resource consumption. This publicly available data can be highly valuable for assessing a company's environmental impact (Thompson, 2023) [49].

Other useful sources of ESG data include crowdsourced and alternative data, like social media and news analysis, which help understand how the public views companies. Institutional investors may also carry out in-house research and collect specific ESG data to match their investment strategies. Third-party providers gather information from different sources and offer standardized ESG datasets. In addition, some investors use surveys and questionnaires to get direct input from companies, and there are also specialized organizations that verify whether sustainable finance instruments, such as green bonds, are used for environmentally beneficial projects (Thompson, 2023) [49].

Many key ESG metrics and ratios are directly reported or derived from the ESG data sources previously discussed. These indicators help transform raw ESG data into measurable insights, which are used to assess a company's performance across the environmental, social, and governance dimensions. Environmental metrics help evaluate how a company handles its environmental responsibilities and impact. Key indicators include carbon emissions (CO2e), reported across Scope 1, 2, and 3, which reflect direct emissions, emissions from purchased energy, and those from the supply chain. Energy consumption is measured through total energy use, including electricity and fuel. Water usage is measured by the total amount of water a company extracts from natural sources, providing insight into the organization's approach to water management. Rates of waste generation and recycling measure the quantity of waste generated and the percentage kept out of landfills. Lastly, the percentage of energy that comes from renewable sources is used to measure the use of renewable energy (Thompson, 2023) [49].

Social metrics focus on how a company manages relationships with its stakeholders. Regarding diversity and inclusion, some of the key indicators are gender diversity, ethnic and racial diversity, and pay equity, which measure representation and fairness across groups. Labor practices and human rights are assessed through employee turnover rates, the level of labor union engagement, and reports of discrimination or harassment. Social metrics also include product safety and quality, such as product recalls and compliance with safety testing, as well as community engagement, where companies report on financial contributions to local development, philanthropy, and social initiatives (Thompson, 2023) [49].

Governance metrics focus on a company's governance performance, evaluating how it is directed and controlled. In terms of board composition, key metrics include board diversity (measuring representation across gender, race, age, and skills) and board independence, which reflects the proportion of independent directors. Executive compensation is another important area, assessed through indicators such as the CEO-to-worker pay ratio and the presence of performance-based incentives. Ethical conduct is evaluated through reports of ethical violations and whistleblower complaints. Other governance indicators include shareholder rights, such as proxy access and whether the board is staggered, as well as the quality of sustainability reporting, which reflects the transparency of ESG disclosures. Finally, anti-corruption measures include metrics like the

number of reported incidents and the existence of formal anti-corruption policies (Thompson, 2023) [49].

Four types of ESG rating agencies will be explained in the following section. First, MSCI ESG Ratings. These ratings evaluate how well a company can manage long-term ESG risks that are specific to its industry, using a rules-based approach. The assessment considers the company's level of exposure to significant ESG-related risks, the effectiveness of its governance and management systems in addressing those risks, and, when relevant, its ability to meet market demand for environmentally or socially beneficial products and services. MSCI ESG Ratings evaluate companies in comparison to others within the same industry and are assigned based on a global seven-tier scale, ranging from AAA (the highest ESG rating) to CCC (the lowest). Based on the degree of ESG risks that a company confronts as a result of its industry and market environment, each company is evaluated using a specific set of two to seven environmental and social key issues, chosen from a total of 33. In addition, all companies undergo evaluation on the governance pillar, which includes six key topics related to corporate governance and corporate behavior. It measures the difference between industry best practices and the company's actual governance practices (MSCI, 2024) [51].

The second ESG rating agency to be discussed is Sustainalytics. It evaluates the potential financial impact of ESG-related risks on a company's economic value. Its ESG Risk Ratings quantify the amount of ESG risk that the business does not manage. In order to do this, a set of material ESG issues are assessed, taking into consideration the company's exposure as well as the effectiveness of its risk management. The individual scores for each issue are combined into a single figure that reflects the company's total level of unmanaged ESG risk. The score shows how much ESG risk a company has not managed. In other words, lower scores indicate less unmanaged risk. Based on this score, companies are classified into five risk levels: negligible, low, medium, high, and severe (Sustainalytics, 2024) [52].

The third ESG rating agency to be discussed is ISS ESG, which evaluates companies using criteria that consider both their performance compared to industry peers and their compliance with international sustainability standards (Flesher, 2025) [53]. The ratings address multiple ESG factors, such as supply chain management, pollution prevention, climate change, and human rights risk assessment. The use of company-specific key performance indicators (KPIs) ensures that the assessment remains relevant and accurately reflects the organization's particular context (ESGVoices, 2023) [54]. Companies are rated on a scale from D- to A+, reflecting their overall sustainability performance from lowest to highest.

The final ESG rating model covered is FTSE Russell. Its ESG Scores and data models are designed to help investors assess both a company's exposure to ESG risks and how effectively those risks are managed across the three ESG pillars and 14 underlying themes. For each issue within the pillars, a separate score is calculated along with an associated level of exposure. The final ESG score is calculated using an exposure-weighted average, assigning more weight to the most material issues (FTSE Russell, 2023) [55].

These ratings are commonly used among investors to help them identify companies that align with their sustainability goals.

After reviewing four of the main ESG rating agencies, the instructor will explain how ESG scores are typically assigned. The process generally follows five key steps that most agencies use to evaluate and score companies. First, data is collected from multiple sources, including company disclosures, regulatory filings, third-party data providers, and the media. Second, unprocessed ESG data is standardized to ensure comparability between companies and sectors. This step includes adjustments for variables such as company size, industry-specific characteristics, and geographical context. Third, ESG issues are weighted based on their materiality to the company's sector and business model. Fourth, agencies apply their proprietary methodologies to calculate ESG scores. Finally, ESG rating agencies deliver scores, rankings, and analytical reports to investors, offering insights into a company's performance in different ESG areas (Thompson, 2023) [49].

Although ESG scores and reports from rating agencies play a key role in investor decision-making and in supporting corporate sustainability strategies, there are several challenges that should be addressed. One key issue is data variability, ESG scores across agencies may vary, because of differences in methodologies, data sources, and interpretations of ESG criteria. This highlights the importance of investors consulting multiple sources. Another challenge is the concept of materiality, because ESG factors are evaluated in relation to a company's business model and industry. An issue considered material for one business may be irrelevant for another, which is why investors should take into account the industry-specific nature of ESG assessments (Thompson, 2023) [49].

Additionally, ESG data and company performance are dynamic and may shift over time, which means that ratings can become outdated if not reviewed regularly. Finally, ESG scores must be interpreted taking into consideration each investor's specific objectives. Scores can help investors find businesses that align with their ESG priorities and investment strategy (Thompson, 2023) [49]. Another challenge of ESG scores is the lack of transparency in data aggregation. To fully understand the results, it is important to know what information was used, what assumptions were made, and what limitations exist. For example, some rating agencies assign greater weight to certain ESG topics or adjust their scores using sentiment analysis. Therefore, it is essential that these agencies clearly explain how their ESG scores are calculated in order to make well-informed decisions (Mehrotra, Ahluwalia, & Khushalani, 2023) [56].

Once the primary sources of ESG data and ESG scores have been discussed, the instructor will introduce a concept of crucial importance in the context of analyzing ESG data: The double materiality assessment. As it was mentioned in session 2, undertaking a double materiality assessment is mandatory under the Corporate Sustainability Reporting Directive (CSRD). Companies reporting on sustainability must consider the relevance of a sustainability matter from two perspectives. From one perspective, organizations influence society and the environment through their activities; this is known as impact materiality and reflects an inside-out view. From another perspective, environmental and social issues can, in turn, affect the organization's financial outcomes by creating risks and opportunities. This

second perspective is referred to as financial materiality and represents an outside-in view (PwC, 2024) [57].

In general, the concept of double materiality makes sure that sustainability reporting covers the issues that are most important to the company and its stakeholders. These material topics serve as the basis for the organization's sustainability strategy. Building reports and strategies around what is truly material enhances transparency, supports more informed decision-making, and helps direct time and resources toward the issues that matter most. According to this concept, a sustainability issue may be considered material either due to its external impact, the financial risks and opportunities it poses to the company, or both (PwC, 2024) [57].

So, what drives the need for double materiality analysis? Several factors contribute to this. First, and as previously mentioned, regulatory requirements play a key role. The CSRD mandates that companies conduct a double materiality assessment, where the results of the analysis determine the content of the sustainability report. In other words, they define which European Sustainability Reporting Standards (ESRS) the company must disclose information on. Another factor is the need to respond to stakeholder demands. Today, companies face increasing pressure from a wide range of stakeholders to address all ESG-related factors, such as risks, impacts, and opportunities, in a transparent and effective manner. In addition, companies seek to make well-informed decisions. The double materiality assessment achieves this by using a methodology based on internationally recognized measurement parameters. This approach enables companies to identify ESG impacts, risks, and opportunities in their activities objectively, thereby supporting strategic and evidence-based decision-making (Cámara Valencia, 2024) [58].

Another factor is resource prioritization, as most companies are not able to address all ESG issues simultaneously. Through the double materiality assessment, companies can identify the most relevant issues, allowing them to focus their efforts and resources more effectively. This helps maximize positive impact while minimizing potential risks. The last main reason that drives the need for double materiality analysis is data consistency and comparability. The methodology developed by EFRAG under the CSRD framework was designed to meet the information needs of various stakeholders, particularly investors. As a result, it provides a common foundation for all companies, ensuring that sustainability information is disclosed in a consistent and comparable way across organizations (Cámara Valencia, 2024) [58].

After explaining what the double materiality assessment is and why it is required in corporate sustainability reporting, the instructor will outline six key steps involved in conducting a double materiality assessment. The first step is to assess the company environment, which helps to understand the full scope of the organization and structure it according to the double materiality process. This involves analyzing several key aspects, such as the business plan, strategy, financial statements, core activities, products and/or services, geographic locations, and value chain mapping. Another important element at this stage is to define the scope and determine the level of granularity for the double materiality assessment. This includes identifying which entities should be covered under the CSRD

reporting requirements. This initial analysis provides critical inputs for identifying impacts, risks, and opportunities. It also helps the company understand which stakeholders are most affected and what the relevant concerns and priorities are for both the organization and its stakeholders (Greenomy Academy, 2025) [59].

The second step is to identify material impacts, risks, and opportunities related to sustainability matters. A sustainability matter is considered material from an impact perspective when the company's operations result in concrete effects on the environment or society. It is considered material from a financial perspective when it leads to financial risks or opportunities for the company. To identify such matters companies can use multiple sources. The starting point should be the list of sustainability matters provided in the European Sustainability Reporting Standards (ESRS). In addition, companies must also consider matters that are specific to their activities or sector and may not appear in ESRS 1. Other sustainability frameworks, such as those from IFRS or GRI, can support the identification of company-specific topics. This assessment should cover the company's own operations as well as its upstream and downstream value chain. The outcome of this step is a broad list of potentially material impacts, risks, and opportunities that will be further analyzed in the following phases (Greenomy Academy, 2025) [59].

The third step is to assess the severity of the previously identified impacts, risks, and opportunities (IROs). The company must apply criteria to evaluate both impact materiality and financial materiality over the short, medium, and long term. To determine whether an impact is material, it can be assessed based on its severity, using three main criteria: scale (how serious the impact is), scope (how widespread it is), and irremediability (extent to which it can be remediated), along with the likelihood of occurrence. For financial materiality, companies can assess the magnitude of the potential risk or opportunity (expressed in euros) and the likelihood of its occurrence. After this assessment, companies should rank the IROs and apply thresholds to determine which ones meet the criteria to be considered material for reporting purposes (Greenomy Academy, 2025) [59].

The fourth step is to identify and involve stakeholders. This means listening to the people who may be affected by the company's activities in order to understand their concerns and learn about any actual or potential impact on society or the environment. By talking to stakeholders and including their opinions in the materiality assessment, companies can better understand which sustainability topics are most important to those who are impacted. Stakeholders can be grouped into two categories: those directly impacted by the company's activities or who directly impact (affected stakeholders) and those indirectly impacted (users of sustainability statements) (Euronext Corporate Services, 2024) [60].

After identifying and engaging with stakeholders, the next step is to draw up the materiality overview. The CSRD requires a decision on the materiality thresholds for both impact and financial materiality results, whether assessed separately or together. However, it does not impose any specific format for presenting the outcomes of the materiality assessment (Euronext Corporate Services, 2024). Finally, the last step is to report not only the sustainability metrics and targets defined based on the materiality assessment, but also

the related policies and action plans the company intends to implement to achieve those objectives (PwC, 2024) [57].

After providing an in-depth explanation of the double materiality assessment, the instructor will present practical examples. The first case will be Repsol. The instructor will walk through the steps Repsol follows to carry out its double materiality assessment, highlighting its main stakeholders, and presenting its double materiality matrix, which is structured around six main topics, each containing several material aspects. If the information provided in the session slides is sufficient, the example of Repsol can be reviewed directly from there. However, for a more in-depth understanding, Appendix V of Repsol's 2023 Integrated Management Report can be consulted, where the full details of the double materiality assessment are presented.

Observing Repsol's double materiality matrix, it is clear that the most critical issue from both perspectives, impact materiality and financial materiality, is energy transition and decarbonization technologies (Aspect #5), as shown in Figure 1. Similarly, there is an issue with high impact but low financial relevance, aspect 19 (Good governance and responsible leadership). This suggests that while it has a significant effect on society and the environment, it does not represent a direct financial risk. Other topics include aspects 17 (Responsible tax policy) and 9 (Attacks on facilities and employees), which show high financial materiality but relatively low impact on society and the environment.

Figure 1. *Repsol's Double Materiality Matrix (Repsol, 2024) [61]*

Other examples of double materiality matrices that will be shown during this session include Telefónica's 2023 double materiality matrix and Coca-Cola's. In Telefónica's double materiality matrix, several issues appear in the upper-right quadrant, indicating high relevance from both an impact and financial perspective. Among them are: responsible management of the customer experience, network and data security, digital inclusion, and contribution to the decarbonisation of the economy. In contrast, issues like water, pollution of the environment, terrestrial ecosystems, and marine ecosystems are placed in the lower-left quadrant, suggesting they are not considered material for the company (Observe slide 28 in

session 3) (Telefónica, 2024) [62]. Similarly, the 2023 double materiality matrix of Coca-Cola will be presented, highlighting the topics with the highest impact and financial materiality for the company.

To complement the double materiality assessment, the instructor will introduce the concept of the Environmental Profit and Loss Account (EP&L), a method for assigning a monetary value to a company's environmental impacts. Many environmental services, like clean air and water, are not priced in the market, so companies do not account for them in their financial statements. The EP&L seeks to correct this by assigning a monetary value to these hidden environmental costs. As explained in a Philips whitepaper by Michela van Kampen (2018, p. 2) [63], referring to a statement made by a sports brand, "the monetary value of the EP&L is the amount to be paid if the environment billed us for providing clean water and air, restoring soils and the atmosphere, and decomposing waste".

Having explained the concept, the instructor will present a practical example using Puma's 2023 Environmental Profit and Loss (EP&L) results, valued at €415 million as shown in the table on slide 32 of session 3. The table breaks down the environmental impact by type (such as greenhouse gas emissions, land use, or air pollution) and by supply chain stage, from the company's own operations (Tier 0) to raw material production (Tier 4). Key points to highlight include that the largest impact occurs at Tier 4, accounting for 48% of the total impact, mainly due to land use and water pollution. Similarly, greenhouse gas (GHG) emissions represent the largest individual impact, making up 33% of the total impacts, and it is present across several tiers. It is also worth noting that Puma's own operations contribute only 2% of the total impact, which illustrates that the majority of environmental harm happens outside the company's direct control (PUMA, 2024) [64]. Similarly, another example will be presented using the 2020 EP&L results of the company Kering. With a total EP&L value of €515.9 million, the largest share of environmental impact comes from raw material production which accounts for 56% of the total. Among the different types of environmental pressures, GHG emissions represent the most significant impact, contributing 35% (€183.7 million) of the total EP&L value (Kering, 2021) [65].

To conclude this session on ESG data, the concept of the balanced scorecard will be introduced. This is a strategic management tool that helps organizations measure and manage their performance across several key areas, including financial, customer, internal processes, and learning and growth (Dayal, 2023) [66]. When integrating ESG considerations into the balanced scorecard, each perspective is adapted to reflect sustainability goals. In the financial dimension, companies can evaluate the financial impact of sustainability initiatives, such as cost reduction, eco-efficiency, or risk mitigation. The customer perspective focuses on assessing customer satisfaction and loyalty related to sustainability, as well as the development of sustainable products or services. The internal processes dimension involves identifying and enhancing operations that support sustainability, such as responsible supply chains, eco-design, or cleaner production. Finally, the learning and growth perspective addresses the development of competencies and a sustainability-driven culture, including ESG training, employee engagement, and strategic partnerships (Haygert, 2024) [67].

Session 4: Corporate Governance

To begin Session 4 on Corporate Governance, the course instructor will open with the question: “Have you ever asked yourself how companies get caught up in big scandals?” He will then confidently state that the answer is often the “G”, the governance dimension of ESG. To support this point, he will briefly reference several high-profile cases, such as the Wells Fargo scandal, the Volkswagen diesel scandal, and the BP oil spill disaster. The 2016 Wells Fargo fake accounts scandal broke out when it was discovered that bank employees had opened millions of fake customer accounts. This case highlights serious governance failures, including a sales culture that pressured staff to meet unrealistic targets and rewarded unethical behavior. Additionally, weak oversight by the board and senior leadership allowed these practices to persist due to a lack of transparency, accountability, and effective internal controls (Eradiri et al., 2025) [68]. A similar pattern can be observed in the Volkswagen diesel scandal, where the company deliberately installed software to cheat emissions tests. Additionally, the 2010 BP oil spill disaster revealed serious deficiencies in risk management and safety culture, along with weak oversight at the board level.

To begin the discussion on corporate governance, the instructor will explain how this concept has evolved over time. Between the 17th and 19th centuries, governance focused on controlling large and powerful trading companies that operated across the world. One of the earliest known cases of corporate conflict happened in 1609 with the Dutch East India Company, being one of the first recorded disputes between company managers and shareholders. At the same time, companies like the British East India Company became so powerful that the UK Parliament had to create laws to limit their influence, especially as Britain moved toward a more open and less monopolistic economic model. In the late 19th and 20th centuries, corporate governance began to focus more on limiting the power of dominant companies within national markets. In the U.S., laws like the Sherman Antitrust Act (1890) and the Clayton Act (1914) were introduced to prevent monopolies and protect consumer interests. Similar efforts took place in Europe with the creation of the European Community in 1957, where competition laws aimed to support the development of an integrated common market (Müller & Kusen, 2020) [69].

Since the 1970s, corporate governance began focusing on financial reporting and preventing misconduct, with the U.S. SEC emphasizing its importance and promoting structures like audit and compensation committees. Up until the 1990s, governance was mainly about control, focusing on limiting monopolies, enforcing rules, and protecting shareholders. But from the 1990s, a shift toward guidance emerged. Europe strengthened its approach, led by the UK’s 1992 Cadbury Report, which introduced key recommendations on board structure and financial oversight, laying the foundation for the UK Corporate Governance Code. Since the 2000s, organizations like the OECD and the EU have shaped governance through principles and directives focused on transparency and disclosure. In 2015, the UN Sustainable Development Goals (SDGs) marked a turning point, linking governance to long-term environmental and social responsibility, and redefining it as a tool not just for control, but as guidance toward global responsibility (Müller & Kusen, 2020) [69].

Before diving into corporate governance and its role in ESG, it is important to understand that there are six critical differences between the fundamental logic of business and that of activists and legislators. These differences make it hard for managers to fully understand sustainability challenges and to take strong action. The first difference is the starting point. Most business leaders believe that companies are a force for good and have shaped modern society, improving our quality of life. In contrast, critics start from the view that business harms people and the environment, prioritizing profits over responsibility. The second difference is time. While business managers usually think in short-term cycles, those focused on environmental issues tend to consider long-term trends over decades or centuries. This gap in time perspectives makes it hard to align business strategy with sustainability goals. The third difference is focus. Senior management mainly concentrates on the company's financial performance and its financial reporting obligations. In contrast, environmental issues often involve social, scientific, and moral concerns that are not easy to measure in financial terms (Rosenberg, 2015) [70].

The fourth difference is risk. In business logic, risk is unavoidable but is something to manage and reduce. On the other hand, environmental thinking considers that certain risks, especially catastrophic ones, should not be taken at all. The fifth difference is the role of government. Business sees the government as a fair rule-setter and views its duty as simply complying with the law. However, environmentalists often see the political process as heavily influenced by business and believe companies should act beyond legal requirements. The last main difference between the fundamental logic of business and that of environmental activists is purpose. From a business perspective, the main goal is to provide goods and services and earn revenue. In contrast, many environmental activists believe the human purpose is to care for the planet and for one another (Rosenberg, 2015) [70]. It is important for a company's leadership to understand these differences so they can be better prepared to find common ground, align priorities, and make more informed decisions. Instead of being stuck only in a business-focused mindset, they need to start thinking more about sustainability and how it connects to long-term success.

Corporate governance, as defined by Alex Thompson in the book Sustainable and ESG Investing (2023, p. 81) [49], refers to "the system of rules, practices, and processes by which companies are directed and controlled". Good governance is not just a static structure or a compliance-focused exercise. It should be seen as active, value-adding, and more than just staying out of trouble. True governance is lean, ethical, and transparent, helping organizations manage operational challenges while creating long-term value. It's about continuously looking for the best outcomes for all stakeholders (Corbett-Nolan, 2022) [71]. When discussing corporate governance, it is important to mention the Principles of Corporate Governance, which are designed to help policy makers strengthen corporate governance frameworks to promote economic efficiency, sustainable growth, and financial stability (OECD, 2023) [72]. The OECD Principles of Corporate Governance are organized into six main categories, which will be explained by the course instructor.

The first category is *Ensuring the basis for an effective corporate governance framework*. This means that the governance system should promote transparency, fairness, and efficient resource allocation. It must also follow the rule of law and enable effective

oversight and enforcement. The second category is: *The rights and equitable treatment of shareholders and key ownership functions*. This category focuses on protecting shareholders' rights and ensuring fair treatment for all, including minority and foreign shareholders. It also emphasizes the importance of giving all shareholders access to effective redress for violation of their rights, without excessive cost or delay. The third category is: *Institutional investors, stock markets, and other intermediaries*. This category highlights the need for proper incentives within the corporate governance framework across the investment chain, and encourages stock markets to operate in ways that support strong corporate governance practices (OECD, 2023) [72].

The fourth category is: *Disclosure and transparency*. It focuses on the importance of the corporate governance framework ensuring timely and accurate disclosure of all material information about the company, such as its financial position, performance, sustainability, ownership, and governance. The fifth category is: *The responsibilities of the board*. It emphasizes that the corporate governance framework should guarantee strategic guidance, effective oversight of management by the board, and the board's accountability to both the company and its shareholders. The last category is: *Sustainability and resilience*. It highlights the need for the corporate governance framework to encourage companies and investors to make decisions and manage risks in ways that support the long-term sustainability and resilience of the business (OECD, 2023) [72].

After explaining the principles of corporate governance, the instructor will discuss the main roles and responsibilities within a corporate governance structure. Typically, in a Western company there is a board of directors, a chief executive officer (CEO), and various vice presidents or directors managing departments responsible for specific functional areas. The board's main role is to ensure the company's long-term viability, which involves making key strategic decisions about the size and scope of the company such as whether to pursue major acquisitions or expand into new business areas. To do this effectively, the board must represent the interests of shareholders, with its composition varying according to the company's ownership structure. However, the board's responsibility goes beyond shareholders, as it must also take into account the expectations of broader stakeholders, including employees, customers, and society at large. As well as this, as part of its responsibilities, the board is ultimately accountable for ensuring that the company complies with legal requirements in areas like financial reporting, labor practices, and environmental regulations (Rosenberg, 2023) [73].

The CEO has more focused responsibilities. Their main functions include developing the company's strategy, leading the management team, and delivering the results promised to the board. The CEO is also responsible for appointing key executives, overseeing daily operations, and regularly reporting progress and performance to the board. Lastly, the vice presidents are responsible for specific areas within the company depending on their role. Some may lead core functions like human resources or finance, others may oversee entire regions, and in international companies, some are in charge of specific business units worldwide. Their work supports the overall strategy and daily management set by the CEO and board. Ultimately, it is important to understand that corporate governance structures can vary across the world depending on company ownership, which influences board

composition and decision-making. However, even if structures may vary, every company has senior leaders responsible for daily operations, and others responsible for long-term strategy (Rosenberg, 2023) [73].

The instructor will then discuss some of the main governance failures observed in companies. In first place, one of the most common causes of corporate governance failures is an ineffective board of directors. Frequently, this is due to board members lacking the necessary skills, having limited experience in key business areas, and statutory directors being unable to report early warning signs or strategic misdirections that could lead to the company's collapse. Secondly, another common governance failure is the board and executive leadership's inability to effectively manage risk, which causes problems to continue instead of being fixed. For example, a company may grow quickly by making bold mergers or acquisitions, but ignoring the risks involved can lead to its downfall later on. Another cause of governance failure is having overly complicated processes. These can lead to poor communication, making it hard for the board, audit, compliance, or supervisory bodies to be properly informed. Bad communication can be disastrous, especially when critical information is unclear or missing, which can damage the organization. The last major cause is the focus on maximizing profits for shareholders and top executives, which can create a culture that encourages questionable behavior and weakens the company's commitment to integrity (Ribeiro, 2024) [74].

A clear example of corporate governance failure is Rio Tinto's Juukan Gorge crisis. In May 2020, the company destroyed two ancient rock shelters in Western Australia that held sacred significance for the local Aboriginal community. This incident revealed serious flaws in Rio Tinto's governance practices, including poor engagement with indigenous communities, insufficient oversight, and a failure to follow internal policies (Cameron Hume, 2020) [75]. The event reflected a failure in corporate governance and in appropriately acknowledging the sensitivity of the project. It would be highly valuable for the instructor to present "Corporate Governance at Rio Tinto – an ESG Case Study" to provide a deeper explanation of the company's governance failures in this case.

After explaining the concept of corporate governance, its roles, principles, and common failures, the instructor will pose the question: Why does governance matter in ESG? The answer will be that the "G" is fundamental to making both the "E" and the "S" possible. Without effective corporate governance, it is almost impossible for companies to meet their environmental and social commitments. Governance provides the foundation that enables both environmental and social initiatives to be implemented effectively, ethically, and transparently within organizations. In fact, most environmental or social failures can be traced back to ineffective corporate governance. Additionally, the integrity of ESG disclosures is impacted by company governance, which determines whether or not ESG indicators are disclosed and pursued ethically. A strong and efficient governance is also essential in ensuring that ESG enthusiasm is translated into tangible action and systemic change (World Economic Forum, 2022) [76].

Now, narrowing the focus, the discussion will turn to the board's role in ESG. As previously mentioned in this session, the board of directors is responsible for overseeing the

company's governance, setting strategic direction, and ensuring that strategies are aligned with long-term value creation. Among the board's key responsibilities related to ESG are: overseeing the development and implementation of the ESG strategy, monitoring the achievement of ESG targets, and ensuring that executive compensation and incentives are aligned with long-term ESG objectives. Additionally, the board must uphold high ethical standards across the organization and play a critical role in identifying and managing ESG-related risks (Hoos, 2024) [4].

To better understand how good governance translates into effective board practices, several key elements can be highlighted. A diverse board helps improve decision-making and performance, especially in complex environments. Properly aligned ownership structures ensure that strategic decisions support long-term value creation. Increasing the number of independent board members enhances objectivity and competence. In addition, determining remuneration with non-financial ESG criteria strengthens regulatory alignment. Strong monitoring contributes to better performance outcomes, and separating the roles of CEO and Chairman helps reduce governance risks by avoiding the concentration of power (Deutsche Bank, 2020) [77]. All of these actions combined support the board's mission to promote sustainable business leadership and successful ESG integration.

Next, the course instructor will explain the five steps required to drive ESG issues on the board, based on a document developed by PwC (2021) [78] titled "Guide for the Integration of ESG Criteria into Boards of Directors". The first step is to manage the board of directors itself. The success of a board starts with how it is structured and self-managed. Companies should prioritize building a professionalized board with knowledge of social and environmental matters. Diversity within the board is also of great importance as it enhances the quality of discussions and decision-making, and improves innovation and resilience. Additionally, proper planning and management of board meetings is essential to ensure that ESG topics are regularly discussed, supervised, and approved. To support this, the governance structure should allow the board to effectively assume ESG responsibilities, either by strengthening existing committees or creating a sustainability committee. Finally, director remuneration should be aligned with long-term ESG goals, as required by the Spanish Companies Act, which draws attention to the promotion of long-term profitability and sustainability.

The second step is to define the corporate strategy. Boards must identify who their key stakeholders are, know their expectations, and ensure that their demands are integrated into the company's strategic planning. It is also advisable to set clear and measurable objectives, both qualitative and quantitative, that provide a shared direction for the entire organization over the short, medium, and long term. Additionally, the concept of corporate purpose should be clear and compelling, as it must serve as the company's aspirational goal. It is also essential to align internal codes, policies, and budgets with ESG goals by adopting guiding principles across social, environmental, and governance areas. As well as this, boards should identify which non-financial ESG issues are strategic and ensure that these are brought to the highest level of governance. When identifying strategic ESG issues, it will be of great importance to monitor regulatory developments so the company can anticipate and prepare for new legal requirements (PwC, 2021) [78].

Responding to shareholders and other stakeholders is the third step. This involves informing stakeholders about developments that affect the performance and future course of the business in order to ensure accountability and transparency. A fundamental component of good corporate governance is keeping an open line of communication with stakeholders in addition to the required periodic reporting. Ensuring that the board stays “connected” to key stakeholders promotes shared value creation, trust, and better decision-making. Additionally, boards must pay close attention to the expectations of proxy advisors and institutional investors, as their evaluations can directly impact critical matters such as access to financing or participation in investment rounds (PwC, 2021) [78].

The fourth step is to supervise the company’s management. The board must oversee the company’s performance while integrating ESG considerations into its monitoring systems. This includes using key sustainability metrics aligned with strategic goals and identifying ESG-related risks. The board should also approve a comprehensive risk management policy covering both financial and non-financial risks, and ensure effective oversight of internal control functions. Being able to recognize ESG megatrends like digital inequality or climate change, as well as keeping up with new ESG regulations, is crucial. By taking early measures to address these developments, the business can reduce risks and capture new growth opportunities. The fifth and final step is to appoint and oversee senior executives. The board must ensure that the top management team is well-prepared to take on responsibilities related to ESG integration. These leaders should have the skills and strategic mindset needed to implement ESG measures, execute board-approved decisions, and address evolving sustainability challenges. Additionally, it is important to link executive remuneration to ESG objectives and make sure that performance is routinely assessed in order to apply corrective measures when necessary (PwC, 2021) [78].

In summary, and building on everything discussed in this session, it can be affirmed that strong governance plays a critical role in enhancing shareholder value through several key factors. Board accountability ensures that directors stay focused on long-term value creation. Transparency builds trust by promoting clear and accurate communication with stakeholders. A solid ESG risk management framework helps protect the company from emerging threats, while high-quality financial reporting supports informed decision-making. Board diversity brings varied perspectives that improve performance, and a strong compliance system upholds ethical standards and strengthens stakeholder confidence. Together, these elements boost the company’s resilience and long-term performance, increasing shareholder value. Similarly, by observing the graph on slide 22 of this session (showing the relative performance of the top 20% of companies in each ESG pillar within the MSCI World Index compared to the bottom 20%) it can be concluded that good governance leads to better long-term investment performance, even when compared individually to the environmental or social pillars. Moreover, these gains may be further amplified when strong governance is combined with good environmental and social practices (Müller & Kusen, 2020) [69].

In the final part of this session, two examples of companies with strong corporate governance will be presented. First, PepsiCo demonstrates a solid governance structure by adopting and annually reviewing its Corporate Governance Guidelines and maintaining a

Global Code of Conduct, with close oversight of compliance. The Audit Committee meets regularly with the Chief Compliance & Ethics Officer, and employees are encouraged to report concerns directly to the board. In addition, the company has a comprehensive risk management framework and ensures ESG transparency through external reporting aligned with frameworks such as CDP, TCFD, and SASB (PepsiCo, n.d.) [79].

The second practical example is Allianz Africa. To illustrate this case, the instructor may show an interview with Delphine Traoré, CEO of Allianz Africa, featured in Module 2 of the IMD course Sustainability for Business. In the interview, she highlights the company's commitment to long-term organizational stability and inclusive governance. Allianz Africa focuses on succession planning and leadership development, aiming to build a strong pipeline of African leaders. The company also works to educate communities, governments, and customers about the importance of insurance and risk management, and strives to simplify policy language for better accessibility. In addition, it engages in partnerships with governments and promotes transparent communication with stakeholders (Hoos, 2024) [4].

Session 5: Strategic issues and ESG challenges

The fifth session is about strategic issues and challenges regarding ESG. To start, the instructor will describe strategic issues as factors that significantly influence a company's medium and long-term sustainability or its overall structure, including its market segments and the regions where it operates (Rosenberg, 2015) [70]. These are five strategic issues that every CEO, board member, and senior executive should consider and pay attention to when leading a business toward environmental sustainability. One of these key issues is the license to operate, which broadly refers to the acceptance of a business or project by civil society. There are two types of license to operate: the regulatory license, which involves a company fulfilling its obligations to governments and obtaining all the necessary permits; and the social license, which refers to approval from civil society beyond legal requirements, crucial for avoiding protests and harm to the business.

Although the regulatory license to operate and the social license to operate are closely related, they are not the same. They differ mainly in three ways: time, corruption, and representativity. First, there is often a time lag between public concern and formal regulation as in most cases society starts worrying about an issue before any law is made and then those concerns turn into rules. The second difference is corruption. In some countries, the law may reflect what people care about, but it's not properly enforced, either because the government lacks resources or because corruption allows some to break the rules. The third difference is representativity which refers to the cases where governments don't truly represent society, laws may serve private interests rather than the public good (Rosenberg, 2023) [73]. The license to operate must be treated as a strategic issue, not only to ensure legal compliance, but especially to manage the social license to operate. While media relations can be handled by specific departments, only senior management can build the trust required to prevent serious risks. Losing the social license can harm the company's reputation, raise operational costs, and even threaten its long-term survival.

The second strategic issue, and one of the most important for senior management, is catastrophic risk management. These are risks with the potential to destroy an entire company, and businesses often struggle to properly assess or address them. This is because when calculating the net present value of a low-probability event that may occur far in the future, the result is often a very small number, which can lead to businesses deprioritizing them. To avoid this, it is recommended that senior management periodically come together to deeply explore "what if" scenarios and identify potential catastrophic risks that, if they occur, could have devastating effects on the company (Rosenberg, 2023) [73]. The "what if" approach is essential for anticipating unpredictable events that could seriously impact the business. For example, companies affected by major crises might have been better prepared if they had asked the right questions in time. For example, firms involved in the Beirut explosion in 2020 could have asked: what if a toxic substance is released? Those behind the electric scooter battery incidents in 2021 might have asked: what if there's a chain reaction of failures? And businesses facing backlash from the rise of climate change activism may have missed the chance to ask: what if societal values change drastically? Anticipating these kinds of risks can be critical to a company's long-term survival.

The instructor then examines a specific case: the Deepwater Horizon explosion in 2010. In the oil industry, one of the most common risks in offshore drilling is a blowout, where high-pressure gases from deep underground surge up through the drill, potentially causing a surface explosion. To prevent this, companies use a device called a blowout preventer, designed to seal the well in such emergencies. However, in this case, the preventer failed. The tragedy not only resulted in terrible consequences but revealed a major flaw: the industry had no contingency plan if this key safety system failed. With this said, what began as an accident quickly escalated into a full-blown crisis (Rosenberg, 2023) [73]. Several factors in the Deepwater Horizon case reveal an inefficient risk management approach that ignored widely accepted industry practices. Risk indicators, such as dangerously high pressure levels, were clearly visible but underestimated. Cost-driven decisions led to using fewer centralizers and choosing a riskier cementing method. The absence of an updated risk matrix and the lack of analytical tools like Monte Carlo simulations or fault analysis aggravated the circumstances. Outdated contingency plans failed to account for the complexity of the operation. Moreover, there was no escalation policy to ensure critical alerts reached senior decision-makers, and communication between operational teams and corporate leadership was weak (Guilherme, 2025) [80]. Ultimately, BP lacked a proactive "What-if" approach to assess and prepare for critical failure scenarios.

Consumer behavior is another key strategic issue, particularly when it comes to understanding willingness to pay (WTP), the amount of money a consumer is willing to spend on a product or service. WTP must be considered alongside the company's production cost, since the difference between the two is the value added to the business. In other words, a company creates value when it offers products or services that consumers or other businesses are willing to pay a price that exceeds the cost of production. This concept is particularly relevant in environmental markets, where customers have shown to be unwilling to pay extra for greener options, with the exception of the food sector (Rosenberg, 2023) [73]. For example, Whole Foods Market has thrived by focusing on a niche of consumers who are willing to pay superior prices for products they perceive as fresher, organic, and less processed. While this segment doesn't represent all consumers, it is large and influential. Whole Foods became the world's leading retailer of natural and organic foods, generating $15.4 billion in sales and reaching a market capitalization of $9 billion, with over 530 stores across the United States, Canada, and the United Kingdom (Whole Foods Market, 2023) [81].

An important topic when analyzing consumer behavior is customer satisfaction, and professor Noriaki Kano's model offers a valuable perspective, especially in the context of environmental sustainability. Kano identifies three types of product quality that influence satisfaction differently. First, performance quality refers to features that have a direct and measurable impact on customer satisfaction and willingness to pay, for example, a consumer will pay more money for a larger diamond. The better the performance, the greater the satisfaction and the higher the price a customer is often willing to pay. Second, "must be" quality includes basic expectations, things where if it doesn't have it, the customer is not going to buy it. For example, people are not going to buy phones that blow up, safety is a "must be" quality. Lastly, "excitement" quality refers to attributes that customers may not expect, but when present, can greatly increase their satisfaction by addressing hidden or

unspoken needs. It is important to mention that nowadays sustainability has become a “must be” aspect in most categories, except food, if a product isn't perceived as sustainable, people won't buy it. Put differently, sustainability doesn’t generate extra satisfaction or justify paying more, but its absence leads to people choosing not to buy the product (Rosenberg, 2023) [73].

A key issue in consumer behavior is green marketing, where companies promote eco-friendly claims. An important challenge in green marketing is the gap between perceived and real sustainability. Consumers often rely on simple labels or marketing claims, which may not reflect the full environmental impact of a product. This disconnect is worsened by complex sustainability metrics where the true impact of a product may depend on different factors. For example, the environmental impact of an electric car depends on how it's used and where the electricity comes from. In France, with mostly nuclear power, its carbon footprint is low. However, in Australia, it might be worse than a modern gasoline car (Rosenberg, 2023) [73]. As well as this, many products still cause environmental harm, even if they are less damaging than the alternatives. Another challenge arises when a company emphasizes the sustainability of a specific part of its product line. For example, promoting a refillable packaging option may unintentionally suggest that its traditional packaging has been unsustainable all along. A final aspect to consider is that environmental concerns don’t always come from a company’s direct clients, but rather from end consumers further down the value chain (Rosenberg, 2015) [70].

Another key strategic issue is technological innovation, which plays a crucial role in shaping both business competitiveness and sustainability. In terms of environmental impact, emerging technologies offer significantly lower emissions and resource use compared to traditional solutions but at the expense of performance attributes. A clear example of disruptive innovation is the rapid shift from incandescent light bulbs to compact fluorescent lamps (CFLs). Although CFL technology existed since the 1980s, growing concern about climate change and lower production costs triggered its adoption in the market. Despite being more expensive, slower to light up, and offering a colder tone, their superior energy efficiency and longer lifespan redefined the industry. This example shows the importance of tracking sustainable technologies and monitoring their evolution, as they may become critical to future business and environmental strategies (Rosenberg, 2015) [70].

The second consideration regarding technological innovation is that senior management should stay alert to the potential of new technologies shifting how consumers and regulators perceive products and services. As technology evolves, it provides more insight into the impacts of various activities on society and the environment. For instance, Tide, a well-known laundry detergent brand, contained phosphates for many years and these ingredients were later found to harm aquatic ecosystems by causing excessive algae growth. Once the environmental risks were identified, alternative options were developed, and the use of phosphates in detergents was eventually banned in various regions (Rosenberg, 2015) [70].

The final strategic issue addressed in this course is globalization. One of its main challenges is the variation in regulatory frameworks across countries, although there are

ongoing efforts to harmonize legal standards globally. Additionally, the social license to operate takes on different forms depending on the ability of civil society to influence business in each country. Adding to the complexity, civil society is now more connected than ever before, which means that a company's actions in one region can rapidly gain visibility elsewhere. As a result, strategies that lead to success in one country may put the company's social license to operate at risk in another (Rosenberg, 2015) [70].

In the second part of this session, the instructor will address ESG challenges. Although ESG is a powerful tool for promoting sustainability and improving risk management (as will be explored in Session 6), it is important for senior management to understand the challenges and limitations that come with its implementation. The first challenge that will be discussed is the lack of a universal standard for ESG reporting. Regulatory requirements vary across countries and governing bodies, creating a complex landscape that makes compliance both difficult and resource-intensive. Additionally, companies often use different methodologies to collect and report ESG data, resulting in inconsistencies that make it difficult to make reliable performance comparisons. This fragmentation also leads to stakeholder confusion, as investors, consumers, and regulators struggle to interpret and compare ESG information across companies. As well as this, the absence of a single framework also increases the risk of greenwashing, where firms may overstate or misrepresent their sustainability efforts (EcoActive, 2025) [82].

An additional challenge for businesses engaging in ESG practices is the limited data coverage in emerging markets. These regions often lack the resources and capital needed to prioritize ESG initiatives, making them seem less urgent. Small and medium-sized enterprises (SMEs), in particular, may not have the expertise or infrastructure required to collect and report accurate ESG data. Monitoring systems and data collection technologies are frequently underdeveloped or inconsistent, resulting in ESG information that is both scarce and unreliable. This lack of clarity makes it difficult for projects to demonstrate their impact and attract ESG-focused investors. Furthermore, the absence of a universal ESG metric system complicates compliance efforts, and in some cases, leads to perceptions of non-compliance, ultimately reducing the attractiveness of these markets to sustainability-driven investors (Lui, 2024) [83].

Missing data is also an important challenge in ESG reporting and evaluation. When addressing this issue, it is crucial to distinguish between data gaps and data holes. Data gaps refer to missing or incomplete information within existing frameworks. In contrast, data holes go a step further, they represent areas where there is a lack of robust frameworks, clear guidance, or established best practices. In such cases, there may even be uncertainty about what kind of data is needed in the first place (Future of Sustainable Data Alliance, 2021) [84]. While there have been ongoing improvements in ESG data reporting and availability, critical data points are still missing. In the environmental dimension, there are data gaps in areas like energy consumption and GHG emissions, while biodiversity and nature-related metrics suffer from deeper data holes due to the lack of robust frameworks. For the social dimension, information on workplace injuries, employee health, and income inequality is often incomplete or inconsistently reported. In the governance dimension,

significant data holes persist in areas such as political stability, corruption, rule of law, and civic freedoms (Future of Sustainable Data Alliance, 2022) [85].

When companies report on ESG, they may face several behavioral challenges that influence the quality and transparency of their disclosures. One common issue is a short-term focus, where economic pressures can lead firms to prioritize immediate financial gains over long-term sustainability goals (Chopra et al., 2024) [86]. Companies may also base their decisions more on protecting their reputation than on achieving genuine sustainability improvements. For example, they may replace previously used indicators with new ones that portray the company more positively, rather than reflecting actual progress (Waniak-Michalak et al., 2018) [87]. Additionally, powerful stakeholders, such as large institutional investors or key clients, can heavily influence ESG reporting practices, pushing firms to highlight certain issues while downplaying others, depending on what those stakeholders care about. Finally, there is often a fear of revealing excessive information due to the risk that increased public attention could lead to criticism or greenwashing claims, even when their sustainability efforts are real (Sustainable Brands, 2024) [88].

One common challenge companies face is supply chain monitoring in the context of ESG reporting. Few firms have a comprehensive ESG tracking system in place, 84% do not monitor their full supply chain, and 70% are unsure about what data to track. A study by risk management provider Alcumus, based on businesses in the UK, US, and Canada, found that 38% of companies consider accessing and collecting supply chain data to be one of the most significant challenges in ESG reporting. One of the main obstacles is that many suppliers lack the ability to report performance data and do not have the systems needed to automate data collection. In fact, 78% of suppliers simply do not collect such data, making transparency across the supply chain very difficult (Green Business Journal, 2022) [89].

When assessing ESG criteria, one of the main challenges is subjectivity. It's often hard to combine different ESG metrics into a single, quantitative assessment. For example, the environmental impact of certain energy sources is often open to debate. In the case of electric vehicles, the total impact depends on how one balances the environmental costs of inputs, such as energy use and rare earth mineral extraction, against the benefit of zero emissions. While some aspects, like carbon emissions, can be measured objectively, many ESG factors rely on value judgments. This complexity is further reflected in the variability of ESG ratings, which differ on how each factor is weighted in the overall ESG score (Matos, 2020) [90].

Another challenge when assigning ESG scores is the presence of certain biases that can affect their accuracy and fairness. One common issue is size bias, where larger companies tend to receive higher ESG ratings because they have more resources to publish ESG disclosures and protect their reputation. There is also geographic bias, as companies located in regions with stricter disclosure requirements often score better. Finally, industry bias can occur when ratings are adjusted based on the company's sector. This can sometimes oversimplify or mislead the evaluation, failing to capture important differences in sustainability performance across companies in the same sector (Matos, 2020) [90]. A further challenge in ESG assessment is the lack of consistency across rating providers. A

study by Gibson, Krueger, Riand, and Schmidt (2019) [91] analyzed ESG scores from six major providers (Thomson Reuters, MSCI, Sustainalytics, KLD, Bloomberg, and Inrate) using normalized data for S&P 500 firms. The findings showed an average correlation of less than 50% between the ratings, revealing a high degree of inconsistency. This variation makes it difficult for investors to accurately compare ESG performance.

Focusing on the CSRD, the instructor will highlight two major challenges. The first is the interpretative conflict. There is a lot of uncertainty among stakeholders about how to implement the reporting standards, which causes businesses to be unsure about the format and content of their upcoming sustainability reports. The second challenge is the lack of national transposition of the Directive. As of January 21, 2025, Spain remained one of 14 countries in the European Economic Area that had yet to complete the transposition process. This delay has created legal uncertainty in several areas. The accreditation of auditors under the new ESRS standards cannot move forward without enabling legislation, meaning there are currently no officially qualified professionals for verification. Plus, medium-sized companies already subject to reporting obligations under Spain's Law 11/2018 are left in a legal limbo until their status under the CSRD is clarified. As well as this, subsidiaries of multinational companies that were previously required to report under Spanish law now also face legal uncertainty (Forética, 2025) [34].

After addressing the challenges related to the CSRD in Spain, the instructor will shift focus to the United States, where the ESG landscape remains uncertain due to shifting political priorities and a growing wave of anti-ESG sentiment. A key recent development was the SEC's choice to suspend its new climate disclosure rule, which had been introduced in response to investor calls for more standardized and transparent climate-related reporting. The rule was put on hold voluntarily after it faced legal challenges in multiple jurisdictions. At the same time, more and more states in the US have passed legislation restricting the use of ESG factors in business and investment decisions. More than 40 anti-ESG bills have been passed in 21 states as of 2025. These bills fall into four main categories: laws prohibiting ESG criteria in public investing, contracting restrictions requiring businesses to affirm they do not "boycott" certain industries, anti-boycott laws preventing the state from working with financial institutions that exclude sectors such as fossil fuels or mining, and anti-discrimination laws that ban the use of ESG scores in lending or business practices (Tonello, 2025) [92]. At the same time, there has also been a significant increase in anti-DEI shareholder proposals, aimed at reducing or eliminating corporate diversity, equity, and inclusion initiatives. From 6% of all DEI-related suggestions in 2022 to 23% in 2024, the number of anti-DEI ideas has increased dramatically, and this trend is expected to continue in 2025 (Tonello, 2025) [93].

To conclude the session, ESG implementation challenges in Latin America will be addressed. According to a survey by RSM LATAM (2024) [94], only 46% of companies in the region have a formal sustainability policy or strategy in place, and just half have appointed a dedicated Head of Sustainability. One of the main difficulties reported, cited by 30% of businesses, is the generation and monitoring of key performance indicators. It could be valuable to present the full document containing all results and data tables, which is listed in the references section of this paper.

Session 6: Advantages and risk management

This session will provide an in-depth explanation of the advantages of implementing ESG standards in companies and the key role ESG plays in risk management. To begin, the instructor will discuss how paying attention to environmental, social, and governance factors creates value. One of the first benefits is cost reduction and cost avoidance. On one hand, there is a strong correlation between resource efficiency and financial performance. Effectively implementing ESG principles can help reduce operational costs such as the cost of raw materials. Research by McKinsey (2019) [95] indicates that these factors can impact operating profits by up to 60%, highlighting the importance of sustainability practices in strategic value. On the other hand, adopting ESG practices can help companies avoid costs related to non-compliance. As regulations in both the U.S. and the EU become more strict, businesses are required not only to set ESG targets but also to monitor and report their progress. Without proper ESG metrics and a clear understanding of the supply chain, organizations face elevated risks of legal expenses, fines and sanctions (Merchant, 2023) [96].

A second advantage of implementing ESG criteria is the potential to boost company revenues. According to an analysis conducted by the NYU Stern Center for Sustainable Business, which reviewed over 1,000 studies, effective corporate management of ESG factors is often associated with stronger operational performance. Specifically, 58% of the corporate-focused studies identified a positive correlation between ESG practices and financial indicators such as return on equity (ROE), return on assets (ROA), or stock price. These findings highlight how a strong ESG proposition is closely linked to higher equity returns (Whelan et al., 2021) [97]. A clear example of this is Unilever, which saved $1.27 billion in operational costs by embedding sustainability at the core of its business over the course of 10 to 20 years. In addition, its operating margins increased by $700 million due to rising revenues. This growth was largely driven by the launch of its Sustainable Living Brands (SLBs), a portfolio of products built around strong social and environmental values. By 2020, half of Unilever's total sales came from SLBs, which were growing nearly 70% faster than the rest of the business (Arora, 2023) [98].

Another important advantage of implementing ESG principles is the reduction in regulatory and legal interventions. Companies with strong ESG practices are less exposed to government interventions and are more likely to receive their support. This translates into greater strategic freedom and lower regulatory pressure. This is critical as McKinsey Quarterly researchers (2019) [95] estimate that around one-third of corporate profits are exposed to state intervention, although this varies by industry. In sectors such as pharmaceuticals and healthcare, approximately 25–30% of profits may be at risk. In banking, this figure rises to 50–60%, due to the importance of capital requirements, "too big to fail" policies, and consumer protection regulations, which make financial institutions more exposed to government oversight.

Employee productivity uplift is another key advantage of implementing ESG practices. When companies generate a positive social impact, it often translates into greater employee satisfaction. A sense of purpose can lead to improved performance and higher

productivity. Supporting this, research by Alex Edmans of the London Business School revealed that firms included in Fortune's "100 Best Companies to Work For" consistently outperformed others, achieving annual stock returns 2.3% to 3.8% higher over a span of more than 25 years. Additionally, it is crucial to consider that productivity issues can also emerge beyond the company itself, particularly throughout the supply chain. It's common for main suppliers to delegate sections of large orders to subcontractors often having minimal control over labor conditions. This lack of oversight can introduce both ESG risks and productivity constraints (Henisz, Koller, & Nuttall, 2019) [95].

Next, the instructor will show a video from the company Patagonia, which highlights how the workers who produce the clothing enjoy good working conditions and are consistently taken into account. Patagonia pays a premium for every garment made in a Fair Trade Certified factory, and this additional money goes directly to the employees through a Community Development Fund that they manage themselves. The Fair Trade model is based on active participation and worker empowerment, allowing them to make decisions that truly address their needs. As a result, employees feel heard and motivated, which leads to better performance within the company.

The implementation of ESG criteria also contributes to better investment and asset optimization. A solid ESG strategy can improve investment returns by directing capital towards more sustainable and promising areas (e.g. renewable energy). At the same time, it helps companies avoid stranded investments that may lose value or become obsolete due to long-term environmental issues, such as the devaluation of oil tankers. It is essential to recognize that accurately assessing investment returns depends on beginning with the appropriate baseline. In the context of ESG, maintaining the status quo is rarely neutral; it often leads to a gradual decline, reducing future cash flow (Henisz, Koller, & Nuttall, 2019) [95].

One of the most visible ways ESG creates value is by enhancing a company's reputation and brand equity. Brands that commit to ESG principles are often seen as trustworthy, responsible, and forward-looking, which increases consumer support (Bosschaart, 2024) [99]. Ethical and sustainable practices not only strengthens the brand's image but also help build customer loyalty and distinguish the company in competitive markets. A company can stand out from competitors, draw in like-minded customers, and connect with more conscientious market segments by cultivating a positive brand image based on sustainability. According to studies, consumers are more likely to favor and promote firms that they believe to be socially and environmentally responsible (Agu, Iyelolu, Idemudia, & Ijomah, 2024) [100].

The final advantage the instructor will address, before moving on to the importance of ESG in risk management, is attracting and retaining talent. Companies with a strong ESG purpose are more successful in appealing to top talent, as candidates increasingly seek organizations that are purpose-driven. It is no longer just about salary. According to the 2022 Argyle-Leger Confidence Report, 58% of U.S. workers identified respect, health benefits, and work-life balance as their main motivators, while only 42% prioritized salary (Morel, 2024) [101].

Once several advantages of ESG have been described, the instructor will move on to explain why ESG plays a crucial role in risk management. To introduce the topic, a practical example will be used: the case of Kodak. In 1975, an engineer at Kodak developed the first digital camera. However, the company chose not to release it, fearing that this innovation would destroy its core business, traditional photographic film. Kodak believed that digital photography would take a long time to become accessible and of acceptable quality for the market. What the company failed to do was properly assess the risk, as they did not understand the speed of technological advancement or its potential for exponential growth. Kodak's leadership was unable to recognize that digital photography would not be just another product, it would represent a deep transformation of the entire photography market. As well as this, the company was too slow in its attempts to regain market share and lacked the agility to adapt to the changes in the industry. The company never planned for significant disruptions, believing themselves untouchable due to their dominant position. With this being said, Kodak's case is a great illustration of how failing to identify certain risks can be fatal for organizations (Ribeiro, 2024) [74].

Following this example, in order to understand what risk management entails, it is first necessary to define what is meant by risk. According to COSO (2017, p. 5) [102], risk is defined as "the possibility that events may occur and affect the achievement of the strategy and business objectives". Some common ESG risks include climate change, pollution, poor working conditions, inequality, lack of board diversity, and corruption. Risks can be classified into four main categories, depending on the nature of the expected outcome or, in other words, the type of consequence that may arise. Compliance risks arise when an organization fails to adhere to laws, regulations, or internal policies, and are usually managed through risk minimization. Hazard risks involve events that lead to negative consequences, such as cybercrime, and are addressed through risk mitigation. Control risks are linked to uncertainties in outcomes, like actual sales volume, and require active risk management. Finally, opportunity risks refer to potential losses from failing to seize financial opportunities, and are best handled by identifying and embracing strategic opportunities. Depending on the nature of risks, they can result in favorable, unfavorable, or uncertain outcomes (Dathe et al., 2024) [103].

Once the concept of risk has been explained, it is important to understand what corporate risk management means. It is a process aimed at identifying potential events that could impact the organization and addressing them to ensure the achievement of strategic objectives. Effective risk management strengthens performance by aligning business goals and strategy with potential risks, allowing companies to anticipate potential issues and make more informed, well-prepared decisions (Grimm, Farias, & Santos, 2023) [104]. The main objective of risk management is to support the achievement of an organization's strategic goals by reducing potential threats and maximizing opportunities (Dathe et al., 2024) [103].

The process of risk management involves several key stages. First, risk identification, which consists of recognizing all possible risks and their sources, such as operational failures or regulatory shifts. Second, risk assessment, which focuses on analyzing the likelihood and potential impact of each risk. Good understanding of risk magnitude and probability is essential for making well informed decisions. As a general rule, risks with both

high impact and high probability require more attention. On slide 16 of this session, an illustration of a risk matrix is presented, where the risks that should be prioritized are located in the upper-right quadrant (Dathe et al., 2024) [103].

Following this, the third step is risk prioritization, which consists of prioritizing risks according to the severity of their impact and the urgency of response, allowing for a more efficient allocation of resources and efforts toward the most critical issues. Next comes risk mitigation, which involves designing and applying strategies to either reduce the likelihood of a risk occurring or minimize its impact if it does. Examples of mitigation actions include redundancy planning, diversification, or the implementation of safety protocols. The fifth step is risk monitoring, which refers to the constant review and updating of risk profiles, as well as the identification of new risks and corresponding mitigation measures. Finally, risk communication entails ensuring that all relevant stakeholders receive clear, transparent information about identified risks and the strategies to manage them effectively (Dathe et al., 2024) [103].

The COSO (Committee of Sponsoring Organizations of the Treadway Commission) framework for managing ESG-related risks is structured around five key components. It begins with governance and culture, which involves raising awareness among boards and executive management about ESG risks and promoting a collaborative culture for risk management. The second component is strategy and objective-setting, which links ESG risks to the business context, serving as the foundation for all ERM (Enterprise Risk Management) activities. Understanding the impacts and dependencies on nature and society is essential to create value in the short, medium, and long term (Grimm, Farias, & Santos, 2023) [104].

In the performance phase, organizations identify, assess, and prioritize risks, taking into account their limited resources and the need to focus efforts strategically. This is followed by implementing risk responses through innovative and collaborative solutions that consider the source, cost, and benefits of each risk. The next step is reviewing these activities to evaluate their effectiveness and adapt strategies as needed, with findings communicated to internal and external stakeholders. Finally, the process concludes with information, communication, and reporting, ensuring that appropriate risk-related information is shared to support informed decision-making (Grimm, Farias, & Santos, 2023) [104].

The COSO model is a very comprehensive framework for integrating ESG risks into a company's risk management. However, there are also other models that are a little more practical. One of them is PwC’s Four-Step Framework for ESG Risk Management, which aims to effectively guide ESG risk management in complex business environments. The first step and starting point for a company’s ESG journey is Business Overview. This step includes several key activities like gathering relevant information about the company’s operations, reviewing financial statements, reading existing reports, and engaging with internal stakeholders. Based on this, an As-Is analysis is prepared to outline the current state of the company’s environmental impact, social initiatives, and governance structure. Business overview also involves researching the ESG practices of external partners, since they can significantly affect the company’s ESG performance and reputation. Additionally,

the countries where the company operates are analyzed in terms of ESG regulations, moral norms, and societal expectations. Finally, ESG clusters, groups of related ESG issues, are identified to help focus attention on the most critical areas (Dathe et al., 2024) [103].

The second step, Setting Goals, focuses on aligning the company's ESG objectives with its broader business strategy. With the information from the Business Overview, this phase begins by identifying the core ESG topics within each ESG cluster. For each of these topics, relevant ESG KPIs are selected to monitor and evaluate performance over time. To prioritize these topics effectively, weighting factors are applied based on their strategic relevance, considering their potential impact on financial performance, brand reputation, stakeholder expectations, and regulatory compliance. After this, the ESG roadmap is developed, with a shortlist of the chosen high-priority ESG topics. The roadmap serves as a guide for decision-making on resource allocation by setting clear performance targets measured through the selected KPIs (Dathe et al., 2024) [103].

Comparing the company's ESG performance to that of its peers and industry competitors is crucial, as the third step, benchmarking, highlights. This process involves a detailed analysis of direct competitors as well as the broader market environment. The goal is to gain insights about the company's position in respect to others and identify areas where ESG performance can be improved. The last and final step is called the Red Flag Assessment. In this phase the company will identify potential warnings that might point to areas of concern that require urgent action, assess associated risks and opportunities exposure of the chosen most important ESG topics, and develop an action plan to close the gap between current and target performance (Dathe et al., 2024) [103].

Next, the instructor will explain the ISO 31000 framework, which is designed to provide principles and guidelines for risk management applicable to all types of companies. The standard underlines that risk management should be fully incorporated into how the organization is managed and into how decisions are made. The application of ISO 31000 brings various benefits to organizations. It supports better decision-making by encouraging proactive identification and management of risks. This framework also helps enhance internal control systems, enabling more effective risk oversight. Additionally, it promotes the efficient allocation of resources to address potential risks, improves organizational resilience in the face of uncertainty and change, and ultimately contributes to building greater confidence and trust among stakeholders (Dathe et al., 2024) [103].

The ISO 31000 risk management process follows a step-by-step approach. It starts by establishing the context, which involves defining the organization's objectives, stakeholders, and internal and external influential factors that can impact the company's outcome. The next step, risk identification, entails recognizing potential sources of risk or hazards that may impact the achievement of the organization's objectives. Next, a detailed risk analysis assesses the nature, likelihood, consequences, significance and interdependencies of identified risks, followed by risk evaluation to determine which risks require immediate attention based on the organization's tolerance levels. In the final step, called risk treatment, the business selects and carries out risk management measures to address the risks that had been previously recognized. To ensure the effectiveness and

relevance of the entire process, monitoring and review, as well as communication and consultation, are continuous activities that support every step by promoting transparency, stakeholder engagement, and alignment with organizational goals (Dathe et al., 2024) [103].

As an example of how ESG is applied in managing risks, the instructor will explore the case of Nestlé, which has actively worked to align its strategy and risk management with environmental, social, and governance considerations. Nestlé has identified several key ESG-related risks. Among them are ethical concerns within the global cocoa supply chain, especially regarding child labor; environmental impacts due to the large volume of waste generated by single-use coffee capsules; and the mismanagement of water resources. To address the root causes of child labor in Africa, Nestlé launched the Sustainable Livelihood Initiative, which focuses on improving farmers' living conditions through better agricultural practices, increased access to education for women and children, and investments in cocoa quality. As part of this effort, Nestlé also incentivizes school enrollment by offering financial support to families. In response to environmental concerns, the company continuously seeks ways to recycle and reuse materials, as well as to replace end-of-life materials, in order to reduce its environmental footprint. For water management, depending on the type of water usage (drinking, agricultural, or manufacturing), Nestlé created a number of control plans for responsible water use. These strategies focus on conserving water, reusing it when possible, and ensuring that all procedures follow environmental regulations. Additionally, Nestlé collaborates with other organizations to enhance water efficiency and safeguard water supplies for future generations (Dathe et al., 2024) [103].

To conclude this session, the course instructor will discuss the benefits of adopting a solid ESG approach in risk management. Research has shown that companies with higher ESG scores tend to have lower default risk and greater financial resilience. For example, a study of companies listed on the Shanghai Stock Exchange found that those with strong ESG ratings were less likely to default on their financial obligations, highlighting the role of sustainability in promoting financial stability. Additionally, other studies have identified a U-shaped relationship between corporate sustainability efforts and risk exposure. This indicates that investing in environmentally responsible initiatives can reduce long-term risks, however, it is important to maintain a balance to avoid overinvestment, which could lead to idiosyncratic risks. Moreover, strong ESG practices enhance transparency in communication with stakeholders and reduce the risk of misinformation (Dathe et al., 2024) [103]. Some additional benefits of ESG in business include more efficient resource allocation and cost savings, stronger compliance and resilience to uncertainty, and a competitive edge through better opportunity recognition. ESG practices can also lead to higher profitability and make companies more attractive to investors (more information can be found in session 9).

Session 7: Strategic options and how to develop a sustainability strategy

To begin this session, the instructor will introduce two key concepts essential for evaluating and identifying the most suitable strategic option for a company: environmental sensibility and compliance. The first concept, environmental sensibility, according to Rosenberg (2015) [70] refers to the relationship that individuals within the organization have with the natural environment. Environmental sensibility can vary depending on several influencing factors, such as: The nature of the business itself and its regulatory burden. While every company has some impact on the environment, the degree of that impact depends largely on the nature of its operations. For example, a power plant or a mining site will inevitably have a much greater environmental impact than a movie theater. Another important factor is the level of commitment from shareholders on issues connected with the environment as well as the outside pressure from interest groups, customers, consumers, and other stakeholders. External pressure can increase environmental sensibility within the company, either in a positive or negative way, even if managers and employees do not fully agree with the criticism. Finally, internal interest from key employee and management groups also plays a role in shaping how seriously the organization takes its environmental responsibilities (Rosenberg, 2015) [70].

The second concept is compliance, which in the ESG context refers to the company's adherence to recognized reporting standards and regulations. Companies can approach compliance at different levels. On one end, some may adopt a minimalist strategy, aiming only to meet the basic legal requirements in each country where they operate. On the other end, companies may choose to take a leadership position, going beyond compliance by doing much more than what the law requires. This approach is often linked to competitive advantages, such as enhancing differentiation, reducing costs, redefining market positioning, or preparing for future changes in regulations or market expectations. Non-compliance, by contrast, is generally not seen as a viable option, as it involves breaking the law (Rosenberg, 2015) [70].

Once these two concepts have been explained, Figure 2 illustrates the different strategic options available to companies in regards to sustainability. The horizontal axis represents the level of compliance, while the vertical axis shows the degree of environmental sensibility. By combining both axes, it is possible to visualize how companies position themselves and choose strategies based on their legal adherence and their environmental awareness. It is important to recognize that the most suitable strategic option will differ from one company to another, depending on its unique circumstances. None of the five strategies can be seen as inherently right or wrong, with the exception of "breaking the law," which is never a valid choice.

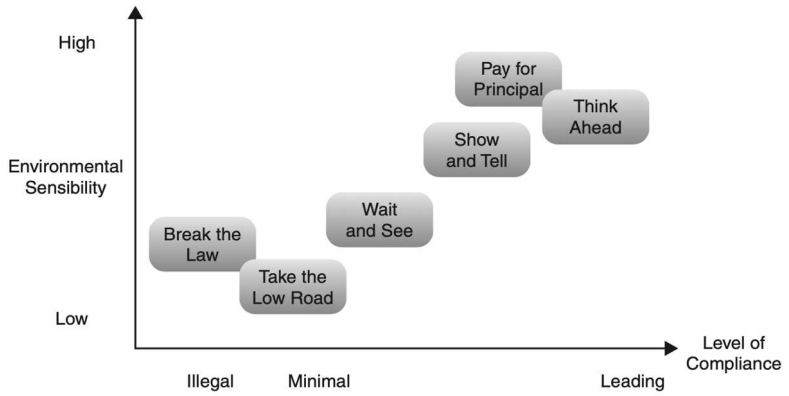

Figure 2. *Strategic Options (Rosenberg, 2015) [70]*

Since breaking the law is not a valid option and will not be considered in this course, the first strategic option to be discussed is known as "taking the low road". As shown in Figure 2, this strategy is characterized by low environmental sensibility and a focus on minimizing compliance costs, as environmental issues are not seen as strategically important. A typical example might be small or regional fast-food chains, where neither management, employees, nor customers show strong environmental concern. These businesses often limit their actions to meeting basic legal requirements, such as health and safety regulations or responsible waste disposal. In industries with low environmental impact and minimal regulation, this strategy can be reasonable as long as the company's legal and social license to operate is not at risk and there are no serious environmental threats. Nonetheless, it is crucial to have monitoring and control systems in place to ensure full compliance with the law, along with external communication that reinforces this commitment (Rosenberg, 2015) [70].

Moving up the diagonal, the next strategic option is known as "wait and see". This approach involves going slightly beyond minimum legal compliance while remaining ready to adjust practices if environmental action becomes profitable or necessary. Rather than acting immediately, companies adopting this strategy focus on building internal capabilities and staying informed knowing that environmental issues will become more important over time. There are four key functions that support this approach. First, maintaining a regulations inventory allows firms to identify and track legal requirements across all operational units using concrete data. Second, monitoring the environmental footprint of products and services to understand the company's current impact. Third, trend tracking is essential for observing shifts in legislation, consumer behavior, and the actions of environmental groups and social media. Finally, developing managerial sensibility ensures that different levels of management are prepared to respond when the time comes (Rosenberg, 2015) [70].

The next strategic option is called "show and tell", which means that the company includes its environmental performance as part of its communication, both inside the company and to the public, making sustainability part of its culture and brand. Companies usually choose this approach when they believe that stakeholders care about the company’s commitment to environmental sustainability. However, there’s a risk: if environmental problems come to light, or even if false accusations are made, people may see the

company's efforts as greenwashing, which can hurt its reputation. That's why it's crucial for a company following this strategy to have strong internal systems to track environmental data in real time and to make sure everything is correctly done. Companies taking this approach also need a skilled communication team that understands how to explain complex environmental data clearly and accurately. In addition, the company must have solid financial models to understand the costs of compliance and of going beyond what the law requires, so management can take it into consideration in decision making. Finally, senior management must have a solid understanding of sustainability, not only to prioritize it within the organization, but also to communicate it effectively to the press, shareholders, and more (Rosenberg, 2015) [70].

Another strategic option is known as "pay for principle," where the push for sustainability comes directly from the shareholders, who believe it is important and demand it. In this case, the company makes environmental responsibility a core component of its values and culture. In this approach, the company builds its operations around clearly stated principles, which are reviewed regularly at the board level to ensure continued alignment. There is also a realistic understanding of the financial implications, accepting that environmental initiatives come with costs. At the same time, the company invests in research and development to create innovative products and services that are sustainable. Additionally, sustainability is integrated into marketing and communication strategies as well as into the articulation of the firm's values and culture (Rosenberg, 2023) [73].

The last strategic option is known as "think ahead," and it is based on the idea that if a company believes the future will be different, it should start taking action today. The "think ahead" strategy requires several key functions. First, scenario planning is very important, not by predicting the future, but by exploring different possible futures and asking "what if" questions to prepare for various outcomes. This process involves active participation from senior management and even the board. Second, change management is essential, including 10 to 20 year programs for developing new infrastructure and technology, as well as medium-term initiatives to shift corporate culture and increase employees' environmental awareness. Finally, strategic flexibility is crucial. Companies need to be able to check if the ideas and plans they made still make sense as time passes and changes occur. They should be ready to adjust their strategies depending on how the world actually develops. This requires being comfortable with some uncertainty and knowing that not everything will go exactly as planned but that the company is perfectly able to adapt when faced with a tipping point. This is truly what "think ahead" is all about (Rosenberg, 2023) [73].

An example of the "think ahead" strategy is Virgin Atlantic. The airline decided to replace its older Airbus A340 aircraft with new Boeing 787-9 Dreamliners, which are more fuel-efficient and environmentally friendly. This move reflects a belief that, in the near future, customers will value airlines with better environmental performance, especially regarding carbon emissions per passenger kilometer. Virgin aims to lead the industry in this metric, targeting a 30% CO_2 reduction by 2020 compared to 2007. So the company decided to invest now in order to face future expectations, making it a clear case of "think ahead" (Rosenberg, 2023) [73].

After explaining the different strategic options, the instructor will pose the key question: “So, how can companies choose the right path?” The answer lies in six essential steps. The first step is to develop an honest assessment of how the company has responded to environmental challenges in the past. A firm’s current options are strongly shaped by its history. This involves reviewing how ESG issues have evolved in four key areas: the industry as a whole, the regions where the company operates, environmental groups, and the company itself. The second step shifts focus to the present, requiring an analysis of the company’s current position across those same four dimensions. This includes understanding how the firm compares to competitors, how it meets regulatory demands, and how it manages relationships with stakeholders. The third step is to look toward the future. Once the past and present are clearly understood, the company can begin exploring what might come next by developing and analyzing different potential scenarios for the regions and markets in which it operates (Rosenberg, 2015) [70].

The fourth step is to bring together the past, present, and future into one unified framework. For companies active in multiple industries or regions, this means analyzing each part individually and then merging the results into a complete picture. The next step is to bring the board on board, which means involving the Board of Directors in choosing the overall strategic approach. This is essential, as environmental sustainability and the strategic issues it influences can significantly impact a firm’s long-term success or failure. Finally, develop a clear and easy-to-communicate strategic vision, and ensure that managers, employees, and other key stakeholders are properly trained to follow and support it (Rosenberg, 2015) [70].

The instructor will then explain that forward-looking companies define ESG targets that align with their core values, business model, and long-term goals. These companies decide how far they want to go beyond regulatory requirements, which is what is referred to as "high jumps” and which ESG areas they aim to lead in, known as “long jumps”. They also evaluate trade-offs, carefully weighing the costs and benefits of each ESG initiative. In addition, forward-looking companies focus on measuring and assessing performance, aligning short-term indicators with long-term strategic goals to ensure consistent progress. In summary, forward-looking companies succeed in ESG by identifying the most relevant areas of impact, considering trade-offs, and using meaningful metrics to monitor what truly drives sustainable success (Pérez, Hunt, Samandari, Nuttall, & Bellone, 2022) [105].

To understand a company’s current strategic position, it is essential to conduct a thorough strategy analysis, as both internal and external factors play a crucial role in determining business success. Internal factors are those within the company's control and directly influenced by management. These include the organizational culture and structure, management capabilities, human resources, operational excellence, and technology and infrastructure. In contrast, external factors originate from the broader environment and are outside the company’s direct control. These include the economic context, legal and regulatory environment, market conditions, and political factors (Dathe et al., 2024) [103].

Strategy analysis involves carefully examining the internal and external factors that can greatly influence a company’s chances of achieving success. To support the

development of a solid strategy, organizations often rely on several analysis methods. The PESTEL analysis examines macro-environmental influences (political, economic, social, technological, environmental, and legal) that help identify major opportunities and threats in the business environment. Porter's Five Forces framework assesses industry attractiveness and profitability by analyzing elements such as supplier and customer strength, the threat of new entrants and substitutes, and the level of rivalry. SWOT analysis offers a holistic view of the organization's strengths, weaknesses, opportunities, and threats, serving as a foundation for strategic planning and to understand the organization's competitive position. Additionally, core competencies analysis focuses on identifying the company's unique capabilities and resources that provide a competitive edge in the market (Dathe et al., 2024) [103].

In addition to the previously mentioned tools, other useful methods for strategy analysis include benchmarking, which compares a company's performance and practices with those of leading competitors using measurable performance indicators. This approach is cost-effective and can reveal areas where the company can improve or innovate. Stakeholder analysis is another valuable tool, focusing on identifying the interests, expectations, and potential impact of key stakeholders. Understanding this can help companies align their strategies with stakeholder needs. Finally, cultural analysis examines the values, beliefs, behaviours, and communication styles that define an organization's culture. This analysis can identify cultural strengths and weaknesses, and is particularly useful when evaluating the cultural compatibility between organizations in the case of mergers or acquisitions (Dathe et al., 2024) [103].

Strategy choice refers to the process of selecting the most appropriate course of action from a set of alternatives identified during the strategy analysis phase. To guide this decision, organizations commonly assess each strategic option using three main criteria. Suitability considers how well a strategy aligns with the company's current position and circumstances. Acceptability evaluates the possible impacts of a strategy's risks and benefits, and how well it aligns with stakeholders' expectations. Finally, feasibility examines whether the organization has the necessary resources to implement the chosen strategy (Dathe et al., 2024) [103].

Once the strategic path has been chosen, the options analysed, and the strategies selected, the next step is implementation. To carry out this phase effectively, companies follow a structured process of five key steps, which the course instructor will explain. The first step in strategy implementation is to define clear goals and objectives that reflect what the organization intends to achieve. Once these are established, action plans must be developed to translate strategic goals into concrete tasks, specifying activities, timelines, responsibilities, and key milestones. To execute these plans, proper resource allocation is essential, ensuring that financial, human, technological, and physical resources are in place through effective budgeting and distribution. As implementation often brings change, change management becomes critical to adapt structures, processes, and behaviours. This includes achieving organizational alignment, where every department and employee understands the strategic goals and their role in achieving them, as well as behavioural alignment, which involves reducing resistance and encouraging employee engagement through communication, training, and participation in the transition process. Finally, monitoring and

evaluation play a key role in tracking performance, identifying deviations and making needed adjustments (Dathe et al., 2024) [103].

When companies align their ESG policies with their main business activities, they can successfully apply ESG across the entire organization. Embedding ESG into everyday operations and company culture is a process that can be broken down into three key steps. First, initial integration involves making ESG an essential part of the company's regular business activities. This includes incorporating ESG into core strategic plans, covering areas such as the products and services offered, the markets in which the company operates, talent management practices, operational processes, relevant performance metrics, and the company's approach to aligning its external engagements with ESG priorities. Next come the follow-up initiatives, where companies turn their ESG commitments into concrete actions. These may include offering incentives to promote ESG impact, supporting stakeholders in improving their ESG performance, and implementing transparent reporting systems. As a final step, companies carry out continuous analysis to track and improve their ESG performance over time. This includes refining ESG metrics, selecting qualified external ESG agencies, adapting to changing regulations, and preparing for impact-weighted accounting (Dathe et al., 2024) [103].

When discussing strategy, it is essential to consider a strategic management framework known as the Balanced Scorecard. The core idea behind the BSC is to translate a company's strategy into a set of measurable objectives using both financial and non-financial key performance indicators, organized across four key perspectives. The customer perspective focuses on understanding and meeting customer needs, using metrics like satisfaction, loyalty, retention, and market share to assess value delivery and relationship strength. The internal process perspective evaluates the performance of internal operations, with indicators such as efficiency, quality, innovation, and process performance. The learning and growth perspective focuses on the organization's capacity to adapt to change through learning and development. Performance within this perspective can be evaluated using indicators such as the level of employee training, satisfaction, retention, and the adoption of new technologies. The fourth perspective is the financial perspective which reflects the strategy's financial impact, using indicators like revenue growth, profitability, ROI, ROE, and cost efficiency (Dathe et al., 2024) [103].

In the Balanced Scorecard framework, the vision and strategy form the foundation for setting objectives and performance measures across the four perspectives. The vision defines the overall direction of the organization, while strategy is the approach for achieving the vision and reaching long-term objectives. The vision and strategy help shape how performance is managed in each part of the Balanced Scorecard. This is done through four main elements: Objectives, measures, targets and Initiatives. Objectives are the goals the companies want to achieve which are aligned with organizations' vision and strategy. Measures, also called KPIs, are used to track progress toward those objectives. Targets set the specific results the company wants to reach within a certain period of time for each measure and initiatives are the specific actions carried out to help achieve the targets. By joining the perspectives to the vision and strategy, companies can guarantee that measures and targets are completely aligned with the strategic priorities (Dathe et al., 2024) [103].

It is important to recognize that implementing strategy often involves change, which can lead to employee resistance. For this reason, when applying ESG strategies within a company, effective change management is essential. A well-managed change process helps engage employees, builds their commitment, reduces resistance, and ultimately increases the chances of successful implementation. Effective change management relies on several key components. First, a clear and compelling vision is essential to motivate employees by explaining the benefits of the change. A detailed change plan should outline the objectives, timeline, resource distribution, and methods for communication and education. Transparent communication keeps employees informed and training equips them with the skills needed to adapt. Identifying and engaging key stakeholders is also crucial, as involving them in the process creates a sense of ownership and builds support across the organization. A dedicated change management team or change agents should guide and coordinate the initiative, offering support and addressing any challenges that arise. Finally, a monitoring system is necessary to track progress, collect feedback, and identify areas of improvement or potential risks (Dathe et al., 2024) [103].

A widely used framework to guide organizational change is Lewin's Change Management Model, which consists of three stages: unfreezing, moving, and refreezing. In the first stage, unfreezing, the goal is to prepare the organization for change by challenging the current status quo and raising awareness about why the change is necessary. This involves identifying and reducing resistance while reinforcing driving forces that support the transition. Engaging employees early and addressing their concerns is key to gaining their support. The second stage, moving, begins once the organization is ready to implement new processes, structures, or technologies. This is a phase where continuous support, clear communication, and training are critical to help employees adapt and feel secure throughout the transition. Finally, in the refreezing phase, the focus is on reinforcing and sustaining the changes by embedding them into the company's daily operations through updated policies, procedures, and support systems (PsicoNetwork, n.d.) [106].

Another model is the Kotter's Eight-Step Change Model which consists of eight sequential steps that guide organizations through the change process. The first step is to establish a sense of urgency and that involves helping employees and stakeholders understand why change is necessary and what risks exist if the organization stays as it is. Once urgency is established, the second step is to create a guiding coalition by assembling a capable group of change agents with diverse skills and knowledge from different departments and levels of the organization to help lead the change effort. The third step is to develop a vision and strategy, in other words, a clear and inspiring direction for the future along with a practical roadmap to achieve it. In the fourth step, this vision must be communicated effectively, ensuring that the message resonates with employees and helps align them with the desired change (Freeman-Gray, n.d.) [107].

The fifth step is to empower others to act on the vision by removing barriers, offering necessary training, and providing resources in order for employees to feel capable of contributing. Then, organizations should focus on generating short-term wins, which involves achieving and celebrating early successes to maintain motivation and build momentum. In the seventh step, built gains, leaders must use the credibility gained from short-term wins to

keep driving the transformation forward, providing additional resources and support when necessary. Finally, the last step is to anchor the changes in corporate culture by ensuring changes become part of how the company operates long term (Freeman-Gray, n.d.) [107].

This session has addressed several key aspects of the ESG process cycle within companies, including the analysis of the current position, the definition of ESG targets, and the integration of ESG into business strategy. The final topic to be discussed is the engagement of ESG stakeholders in order to maintain the company's social license to operate. Engaging ESG stakeholders to maintain a social license involves several key aspects. First, a company's overall strategy must address the evolving needs of its main stakeholders, such as investors, employees, and partners. This requires ongoing improvements and responsiveness. Second, forming strong investment propositions is essential, as investors increasingly expect ESG efforts to align with long-term business goals. Companies should clearly show how sustainability enhances efficiency, reduces risks, and drives long-term value through transparent reporting with well-chosen KPIs. Lastly, the pace of communication is important. Nowadays, ESG reporting is a required component of conducting business. Regular, timely updates show alignment between ESG initiatives and overall strategy and contribute to the development of trust (Dathe et al., 2024) [103].

To conclude, the case of Lufthansa illustrates how airlines face increasing pressure from a wide range of stakeholders (passengers, employees, investors and others) on ESG concerns. On the environmental front, key concerns involve the airline's impact on climate change through greenhouse gas emissions, as well as local issues like air quality and noise pollution. Social expectations include high-quality customer service, passenger safety, accessibility for individuals with diverse needs, and fair labor practices that ensure employee well-being. From a governance perspective, stakeholders demand ethical business conduct, transparency, and strong corporate governance. This includes increased board diversity, independent oversight, and executive compensation aligned with long-term sustainability performance (Dathe et al., 2024) [103].

In response to these pressures, Lufthansa has made sustainability a core component of its business strategy. The company has implemented a wide range of ESG initiatives and continuously develops innovative solutions that help strengthen its competitive position. As noted in the book *Implementing Environmental, Social and Governance (ESG) Principles for Sustainable Businesses* (2024) [103], Lufthansa has defined clear objectives and measures to address stakeholder expectations and improve performance across all ESG dimensions. After reviewing this case, the instructor may invite participants to reflect and discuss which ESG strategic option Lufthansa adopted, what its main ESG targets are, and which strategy analysis methods were used in shaping its sustainability approach in order to recap some of the concepts explained in this session.

Lufthansa employs a Show and Tell strategy because it has openly and proactively incorporated environmental, social, and governance values into its business model, going beyond legal compliance. The company publishes regular ESG reports, reveals external agency ratings, and openly exposes its sustainability aims and progress, such as SAF use and SBTi validation of emission targets. Lufthansa is clearly not Taking the Low Road, since

it goes far beyond minimum legal compliance. It is also not a Wait and See strategy, as the organization is not just observing or preparing for potential future changes, it is already taking important action. As well as this, it is not a Think Ahead strategy because Lufthansa is not changing primarily in anticipation of future developments, even though it does have long-term initiatives, its actions are mainly focused on addressing the current needs of stakeholders and the present demands of sustainability. Finally, its strategy could not be classified as Pay for Principal, as its ESG efforts are driven by strategic business goals rather than purely ideological convictions.

Session 8: Stakeholder Value Creation

Companies that are leading the way towards sustainability all share a common characteristic: they actively engage with diverse stakeholders in order to drive progress. In this session, the instructor will focus on the importance of stakeholders in ESG and how stakeholder engagement creates value and delivers tangible benefits. Stakeholder theory argues that companies have a duty to take into account the interests of all individuals affected by their operations, whether directly or indirectly. These stakeholders are essential for the company's long-term success. Typical stakeholders in a business organization include: financiers, such as investors and lenders who fund the company; customers who buy its products or services; suppliers who deliver essential inputs for its operations; employees who contribute their skills and labor to its success; and society at large, which may be affected by the company's activities, products or services (Dathe et al., 2024) [103].

Freeman's Stakeholder Model expanded the traditional stakeholder theory by introducing other influential actors. These additional stakeholders include government bodies and agencies that influence operations through regulations and policies; competitors that impact market positioning and dynamics; consumer advocates that affect product demand; and the media which can shape public perception and impact a company's reputation. Freeman also emphasizes that managers and other employees within the same firm may have different interests according to their roles in the company, and for this reason should be recognized as a separate stakeholder group. Additionally, this model categorizes stakeholders into two types: primary stakeholders, who have direct interactions with the company and are directly interested in its operations (such as traditional groups and managers), and secondary stakeholders, who do not engage directly but are affected by the company's activities in a more indirect way (Freeman, Harrison, & Wicks, 2007) [108].

Milton Friedman's shareholder value approach contradicts Edward Freeman's stakeholder model. According to Friedman, the sole responsibility of managers is to act in the best interest of shareholders by maximizing their wealth. This viewpoint has been widely criticized, with one main criticism being that many shareholders seek short-term profits rather than long-term value, prioritizing quick financial gains above the company's long-term sustainable development. In contrast, Freeman's stakeholder theory argues that a company creates value via meaningful interactions and collaboration with all of its stakeholders. This involves not only shareholders, but also employees, consumers, suppliers, and society in general. According to this model, businesses have a broader social responsibility, and long-term success is dependent on serving the interests of all stakeholders, not only those with equity (Dathe et al., 2024) [103].

Next, the instructor will introduce Stakeholder Relationship Management (SRM), which involves the structured process of identifying, engaging, and maintaining relationships with individuals, groups, or organizations that have a legitimate interest in the company's actions and outcomes. Building strong connections with a diverse range of stakeholders can support both sustainable business growth and positive societal outcomes. Effective SRM typically follows five main steps: Stakeholder Identification, Stakeholder Prioritisation,

Visualising Stakeholder Community, Stakeholder Engagement, and Monitoring Stakeholder Engagement (Dathe et al., 2024) [103].

Stakeholder Identification begins with creating a list of individuals, groups, or organizations that have a legitimate interest in or could be affected by the company's activities. After that, the company needs to identify mutual expectations, which involves understanding both how each stakeholder contributes to the project and what they hope from the project's success or failure. Once this is established, stakeholders can be classified along two key dimensions. The first distinguishes between strategic stakeholders, who influence high-level decision-making (such as senior management or major investors), and operational stakeholders, who affect day-to-day activities (like employees or contractors). The second categorization separates internal stakeholders, who are part of the organization, from external stakeholders, who interact with the company outside of it (Dathe et al., 2024) [103].

Once stakeholders have been identified, the next crucial step is to prioritize them based on their relevance and influence on the company's operations. This prioritization can be assessed across three main dimensions. The first is proximity, which reflects how closely and frequently a stakeholder interacts with the organization, indicating their level of involvement. The second is power, referring to a stakeholder's capacity to significantly influence or even disrupt business success. Lastly, urgency captures the immediacy and importance of stakeholder concerns. This is shaped by factors like time sensitivity, such as strict deadlines in operational processes, and criticality, which reflects the perceived intensity by stakeholders for specific issues (Dathe et al., 2024) [103].

A Power/Interest Grid is a commonly used tool to prioritize stakeholders by mapping them according to their level of authority (power) and their concern for the project (interest). It helps project managers to develop tailored communication strategies. Stakeholders with high power and high interest, such as project sponsors and team leaders, should be closely managed and actively involved. Those with high power but low interest, like regulators, must be kept satisfied to avoid potential risks. Stakeholders with low power but high interest, such as customers or end-users, should be kept well-informed and consulted regularly. Finally, low power and low interest stakeholders require minimal communication but should still be monitored in case their influence or concern increases over time (Oguz, 2022) [109].

After prioritizing stakeholders, the next step is called "Visualizing the stakeholder community." It consists of developing a clear overview of stakeholders and their key characteristics to support the design of effective engagement strategies. This step serves several important purposes in stakeholder relationship management, including: providing a practical list of current stakeholders, evaluating their main attributes, enhancing objectivity and transparency in the assessment process, simplifying stakeholder data for easier interpretation, and supporting the planning of stakeholder engagement activities (Dathe et al., 2024) [103].

A practical tool for stakeholder visualization is the Stakeholder Circle methodology, which graphically represents three key dimensions: proximity, power, and urgency. The concentric circles reflect how close each stakeholder is to the business activity, those directly

involved appear near the center, while those with indirect relationships are placed further out. The radial depth of each segment illustrates the stakeholder's degree of power and the size of each segment along the circumference represents urgency, with larger blocks reflecting higher urgency. For instance, in the example shown in slide 11, stakeholders 1 and 3 are directly involved in the activity of the business, while stakeholder 2 is more distant. Stakeholder 1 holds significant power (level 4), playing a key role in the project's success, whereas stakeholder 3 has lower influence (level 2), and stakeholder 2, despite being less involved, presents a moderate degree of power (level 3) (Dathe et al., 2024) [103].

The next phase in stakeholder relationship management is stakeholder engagement, which involves two components: the stakeholder engagement profile and the communication strategy. The engagement profile requires a clear understanding of each stakeholder's attitude and receptiveness. Stakeholders are evaluated along two dimensions: their level of support for the business and their receptiveness to information. Comparing the real and target stakeholder engagement profiles helps visualize the gap between the current state and the desired situation. In the example from slide 12, Stakeholder 1 is supportive but shows low interest in receiving information. The company's target profile for this stakeholder aims for moderate receptiveness, indicating only a small gap to address in order to increase receptiveness. Stakeholder 2 is less supportive but open to communication, requiring significant effort from the organization to shift attitudes and increase its support. Stakeholder 3 is neutral in support but highly receptive, exceeding the expected stakeholder engagement target of 3, which may call for a revised communication approach to maintain support and avoid disengagement (Dathe et al., 2024) [103].

The engagement profiles are helpful for the determination of communication strategy. ESG communication should be designed to the specific needs and expectations of the stakeholders that have been identified and prioritized. An effective ESG communication strategy is built around several key elements. It starts with defining the audience, which are the stakeholders directly or indirectly interested in the company's ESG activities. The purpose should align communication efforts with corporate goals while reflecting stakeholder needs. The message must highlight ESG actions, achievements, and challenges across environmental, social, and governance dimensions, supported by solid data. Communication channels should be selected based on stakeholder preferences. Maintaining a consistent frequency of updates ensures sustained engagement. Finally, assigning a dedicated owner, such as an ESG committee, is essential for ensuring accountability and consistency in all communications (Dathe et al., 2024) [103].

When engaging with stakeholders, companies must pay attention not only to market stakeholders but also to those in the nonmarket environment, such as governments, NGOs, the media, regulators, activists, and communities. These groups play a crucial role in shaping regulatory frameworks, safeguarding company value, and enabling new value creation opportunities. A strong example is Maersk, which anticipated the EU's move to include container shipping in the carbon trading system. In response, the company protected its position by investing early in green methanol-powered ships, engaging with governments, and collaborating with various stakeholders to scale zero-carbon fuel solutions. This illustrates how by working with a broader network of stakeholders (market and non-market

stakeholders) companies can speed up innovation, unlock competitive advantages, and generate shared value. As well as this, if Maersk had not considered and engaged with the nonmarket environment, it would not have been able to anticipate regulatory changes or take early action to adapt (Hoos, 2024) [4].

The skills required for success in the market environment differ significantly from those needed in the nonmarket environment. In market settings, managers must act quickly, prioritize efficiency, respond to changing market conditions, and always put the customer first. It is about being agile and outperforming competitors. In contrast, the nonmarket environment demands collaboration, empathy, and the ability to build alliances, even with competitors. Companies must be able to listen and understand the interests and needs of others, as well as to compromise and find common ground. It's also important to be open and honest about what they don't know. Two major challenges in the non-market environment are the diversity of stakeholders, since some hold significant formal power while others have only informal influence or no power at all, and the variation in non-market contexts across countries, where political systems, legal frameworks, and media freedoms can differ widely. Yet, actions taken by companies in one country can have global repercussions (Hoos, 2024) [4].

The final step in stakeholder relationship management is monitoring stakeholder relationships. This phase focuses on two key areas: maintaining the stakeholder community and reviewing the stakeholder engagement profile. Maintaining the stakeholder community requires proactive engagement, including regular communication, trust-building efforts, and open dialogue. Since the stakeholder network is dynamic, companies must remain vigilant to changes in stakeholder attitudes and influence. On the other hand, reviewing the engagement profile involves the continuous assessment and adjustment of how stakeholders are engaged. This ongoing process is essential for achieving ESG goals and upholding responsible, transparent business practices (Dathe et al., 2024) [103].

As the session progresses, the instructor will explain the concept of stakeholder capitalism, a model in which companies aim to create long-term value by addressing the interests of all stakeholders and contributing to broader social well-being. Companies need to strengthen their relationships with all stakeholders, including competitors, who can sometimes become strategic allies. This idea is captured in the concept of coopetition, a strategic approach where companies both compete and collaborate to achieve shared goals. A practical example involves moving company A, which receives an order of 3,000 packages from an importer but can only ship 1,500. Instead of rejecting the order or delaying delivery, the company collaborates with competitors B, C, and D to move the remaining 1,500 units, 500, 700, and 300 units respectively. This cooperative solution not only meets the client's expectations but also illustrates how engaging with competitors can lead to shared value and improved business outcomes (Ribeiro, 2024) [74].

A real-life example of collaboration between competitors is the relationship between Apple and Samsung. While the two companies compete directly in the smartphone market, they have also partnered in the development of new technologies. Samsung, known for its expertise in advanced display technologies such as OLED and LCD, has supplied critical

components for Apple devices, one of the most well known is the Retina display used in iPhones. This case illustrates how competition does not necessarily imply a distant or conflicting relationship; in fact, in many occasions collaboration between competitors can generate mutual benefits (Ribeiro, 2024) [74].

It is also important to consider how conflicts with stakeholders can negatively impact the ESG agenda and how failing to embed sustainability in the company's strategy can ultimately undermine long-term value creation. The case of Cubatão in Brazil clearly illustrates this. In the 1980s, uncontrolled industrial pollution had serious consequences for many stakeholders. However, companies were unwilling to give up profits, even if it meant sacrificing the interests of those stakeholders. The population suffered from various health problems, the healthcare system collapsed due to excessive demand, companies faced high absenteeism, social security dealt with requests for temporary leave and early retirement, and local government faced higher public spending to meet the growing demand for medical services. As a result, the stakeholders rose up against the companies and demanded action. The situation became so serious that the government also had to intervene. This situation demonstrates that overlooking stakeholder concerns and environmental sustainability can escalate into conflict, threaten a company's license to operate, and destroy value instead of creating it. Sustainable business practices and stakeholder engagement are not just ethical practices, they are also strategic tools for long-term resilience and competitiveness (Ribeiro, 2024) [74].

So, how does the value creation process begin within a company? The instructor will explain that it starts with senior management, which is responsible for initiating the generation of sustainable value across the organization. The model also distinguishes between support activities and core activities. Support activities are those that contribute to sustainable value creation but are not directly connected to the consumer market. These include, for example, the Environmental Management System (EMS), which involves structured actions not only to comply with environmental regulations or prevent risks, but also to add value to the company's products and services. Another activity is people and environmental management, which refers to human resources practices focused on training and motivating employees and contractors in social and environmental responsibility. Finance and sustainability is also a key activity, involving the allocation of financial resources to support greener processes, equipment upgrades, environmental consulting, employee development, and green marketing. Other relevant support areas include cleaner production, which optimizes resource use and reduces waste at the factory level; reverse logistics, which enables the reuse and recycling of materials and water; and information systems, which integrate data across departments, enabling better decision-making (Ribeiro, 2024) [74].

The core activities are those directly linked to the market that generate sustainable value for the company. These include the development of green strategies, which require analyzing the company's macroenvironment (such as government policies, competitors, and supplier dynamics) and microenvironment (internal strengths and weaknesses) to align with socio-environmental goals. Other key activities are promoting responsible consumption by understanding and shaping consumer demand for sustainable products, implementing environmental marketing through the design, pricing, and promotion of eco-friendly products,

and building a green competitive advantage by differentiating products through cost leadership or unique value (Ribeiro, 2024) [74]. This process shows that creating sustainable value is not something a company can do alone. It needs the active involvement of stakeholders at every step. By analyzing the macro and micro environment, the company is interpreting and responding to the interests of stakeholders. For example, responsible consumption and green marketing are only effective when there is dialogue with consumers and society to understand their values, concerns, and needs. Likewise, green differentiation is only meaningful if stakeholders recognize that value and support it.

The instructor will then explain the “Stakeholder Value Creation Chain” model, which shows how ESG strategy and stakeholder relationships support a company’s success. It starts with ESG actions that bring benefits to different groups: more engaged employees, stronger community partnerships, greater trust with suppliers, more loyal customers, and increased investor interest. These benefits often reinforce one another. For example, many employees prefer to work for environmentally responsible companies, which increases engagement. That engagement can lead to higher productivity, customer satisfaction and much more. These reinforcing effects contribute to greater stakeholder value, which in turn leads to enhanced shareholder value. The model clearly demonstrates that when ESG efforts align with stakeholder expectations, they create a cycle of mutual benefit (Kay, Brindisi & Martin, 2020) [110].

Stakeholder engagement is not an easy process, it comes with several challenges. One key difficulty is measuring impact, as it’s hard to assess how engagement truly influences decisions and outcomes beyond counting meetings or survey responses. Cultural differences also pose challenges, since communication styles and expectations vary across cultures. Additionally, power imbalances can complicate the process, because sometimes companies give more weight to powerful actors and ignore less influential groups. Another issue is ensuring long-term commitment, as maintaining consistent engagement over time can be difficult when faced with competing priorities. Finally, short-term profit pressure often leads companies to deprioritize stakeholder engagement, treating it as a cost rather than a long-term investment (Sustainability Directory, 2025) [111].

After explaining the challenges, the instructor will highlight the key benefits of stakeholder engagement. First is “education”, engaging with stakeholders organizations can gain valuable insights and different perspectives that can lead to competitive advantage. Second, it supports effective decision-making, as opinions from stakeholders help modify or confirm strategic choices. Third, stakeholder engagement builds trust, showing stakeholders that their perspectives matter. Fourth, stakeholder engagement can increase the chances of finishing a project on time by reducing unexpected events. Fifth, it strengthens risk management, helping identify and address threats early. Finally, it promotes accountability, both internally and externally, by encouraging transparency and keeping stakeholders informed (Frick, 2019) [112].

A strong example of stakeholder engagement creating both value and sustainability is Lipton’s sustainable tea initiative under Unilever. In 2007, Lipton partnered with the Rainforest Alliance to certify its tea supply chain through a holistic approach that treats

environmental, social, and economic aspects equally. To meet the certification standards, farmers are required to continuously improve in areas such as worker welfare, farm management, and environmental protection. This includes reducing pesticide use, eliminating waste, and applying better farming techniques to boost productivity and cut costs. Workers benefit from fair wages and access to quality housing, education, and healthcare, while the environment is preserved. One of the program's key goals is to help farmers earn higher prices for their tea, improving their income and long-term quality of life. This example shows how partnering with the Rainforest Alliance to obtain sustainable production certification not only protects ecosystems, but also improves livelihoods across the entire value chain (Rainforest Alliance, 2007) [113].

To close the session, the instructor will present the case of Nestlé, a company that for nearly 20 years has focused on creating shared value by generating shareholder returns while improving the well-being of stakeholders. Nestlé's initiatives include fighting malnutrition in emerging markets through fortified products, supporting smallholder farmers with training, better crops, and financial aid, creating career opportunities for youth, collaborating on sustainable packaging, and developing plant-based food innovations to address health, affordability, and climate concerns. This long-term commitment has driven innovation and provided a competitive advantage for Nestlé across all operations. With over 277,000 employees, the company uses its resources and knowledge to develop products that promote nutrition, health, and well-being. Nestlé's strategy focuses on a regenerative food system that supports people, families, pets, and communities. This commitment to creating shared value is what makes Nestlé stand out from its competitors and keeps the company successful over time (Nestlé, 2024) [114].

Session 9: Investment and Financing

In this session, the instructor will discuss key aspects of sustainable investment and finance. The session will cover topics such as sustainable investing, ESG investment strategies, sustainable finance instruments, the importance of ESG investing, and the challenges it presents. The instructor will begin by explaining what sustainable investing is. Sustainable investing involves incorporating ethical and sustainability criteria (ESG factors) into the evaluation of potential investments. It means allocating capital to companies that are committed to sustainability and responsible business practices. Moreover, it requires recognizing that investment decisions have broad implications and can help address global challenges such as climate change and social inequality. Investors use ESG criteria to assess how effectively companies manage sustainability-related risks and opportunities and take these considerations into their investment decision making (Thompson, 2023) [49].

The instructor will then explore the historical evolution of sustainable investing. It began in the 1960s with the rise of Socially Responsible Investing (SRI), driven by civil rights movements, environmental concerns, and opposition to the Vietnam War. In the 1970s and 1980s, the anti-apartheid divestment movement proved the power of investors to drive change through their investment decisions. The 1990s saw the integration of environmental, social, and governance factors into investment analysis, recognizing their impact on long-term financial performance. A key milestone came in 2006 with the launch of the UN Principles for Responsible Investment (PRI), which offered a global framework to help investors incorporate ESG considerations into their strategies and practices. In the 2010s, ESG investing became mainstream due to rising awareness of global challenges, supportive regulation, and growing evidence of ESG companies outperforming their peers in the future. Today, ESG investing is a main part of the financial system, with investors routinely applying ESG criteria and relying on ESG ratings agencies to evaluate companies' sustainability practices (Thompson, 2023) [49].

The incorporation of ESG factors into portfolio management has experienced exponential growth over the past two decades. Portfolio management is the process of selecting and monitoring investments. As shown in the graph in slide 4 of this session, total assets managed with ESG criteria in the U.S. rose from just $178 billion in 2005 to over $16,564 billion by 2020. This rapid increase reflects the growing recognition among investors of the importance of environmental, social, and governance considerations in selecting investments. Beyond the overall growth in ESG investing, the industry has also experienced a significant shift in the types of issues investors prioritize. Back in 2007, the leading ESG concerns focused on tobacco, oppression in Sudan, and human rights issues. In contrast, by 2020, climate change and carbon-related concerns had become the top priority, with over $4 trillion in assets linked to this issue alone. This re-ranking was driven by both a growing investor interest in environmental challenges and major advances in the ability to measure carbon exposure (Geczy, 2025) [115].

The ESG financial ecosystem is a network of interconnected actors that enable the integration of ESG factors into investment decisions. It includes issuers, either public or private, that disclose ESG-related information in response to growing demand from investors

and other stakeholders. This information is used by financial intermediaries: rating providers that assess ESG performance, index providers that construct ESG benchmarks, asset managers that develop and market ESG investment products, and institutional investors like pension funds and insurers that incorporate ESG data into their fiduciary strategies. At the end of the chain are the end investors who ultimately bear the risks and rewards of these investments. Supporting this entire ecosystem are disclosure organisations, such as GRI, SASB and TCFD; regulators and supervisors; and ethical standard setters like the UN and the OECD which provide guidelines for responsible investing and sustainability goals. This structure facilitates the flow of non-financial information, promoting better-informed decisions, long-term value creation, and responsible business practices and investments (Boffo & Patalano, 2020) [116].

In the context of the ESG financial ecosystem, the concept of ESG indices was introduced when discussing index providers. However, it is important for the instructor to explain what ESG indices actually are and provide examples of those currently in use. When investors want to understand how a market is performing, they often refer to a market index. An index is a tool used to measure the performance of a specific group of assets, typically by calculating a weighted average that represents a sample of the broader market. An ESG index, is a collection of stocks from companies that demonstrate strong ESG performance. Like other indices, an ESG index is designed to serve as a benchmark, specifically for companies that prioritize environmental, social, and governance practices in their operations. These ESG indices help investors track the performance of high-scoring ESG companies, compare them to the broader market, and guide investment decisions aligned with sustainability goals (Fennel, 2023) [117]. Some examples of ESG index providers are MSCI, S&P Dow Jones, FTSE Russell, and Calvert.

After explaining that ESG data is now used by investors to inform decision-making, the instructor will ask a key question: What are the main reasons why institutional investors consider ESG factors? According to recent survey data from the US Social Investment Forum, the top reason cited by institutional investors is risk, mentioned by 84% of respondents. Client demand comes in at number two, mentioned by 81%. ESG integration is increasingly seen as a tool for identifying, understanding, and managing both systematic and idiosyncratic risks, particularly those related to climate change. ESG data helps investors better assess potential risks and shape the risk profile of their portfolios accordingly. Other reasons include achieving positive environmental or social impact, and to obtain financial returns (Geczy, 2025) [115].

An important concept to understand when discussing investing is that of risk and risk-adjusted return, as it provides the foundation for the topics that will be discussed throughout the session. Every investment carries a certain level of risk, often measured by volatility, which reflects how much an asset's price fluctuates around its expected value. A risk-adjusted return evaluates how much return an investor receives relative to the amount of risk assumed. An optimal risk-adjusted return means either achieving the highest possible return for a given level of risk or minimizing risk while maintaining a desired return (Geczy, 2025) [115]. This becomes especially relevant in ESG investing, as some wonder if pursuing ESG objectives leads to lower returns and others explore whether ESG integration can

actually enhance returns by reducing exposure to long-term risks. A strong ESG company may not offer the highest short-term returns, but its risk-adjusted return may be superior in the long term.

The instructor will then introduce several ESG investment strategies, each offering a different way to integrate ESG considerations into the investment process. One of the most widely used is ESG integration, which involves systematically incorporating ESG risks and opportunities into traditional financial analysis. Another common strategy is screening, which can be either negative or positive. Negative screening involves excluding companies that do not align with certain ESG standards which may be particularly important to the investor, such as those involved in tobacco, weapons manufacturing, or fossil fuel extraction. Positive screening, by contrast, focuses on including companies that demonstrate strong ESG performance and support investors' sustainability goals (Thompson, 2023) [49]. Another strategy with a more targeted approach is thematic ESG investing, which allocates capital to specific themes such as climate change, clean technology, or gender equality. Finally, impact investing is a strategy which aims to generate financial returns while also having positive social or environmental impacts (Investing.io, 2025) [118].

In addition to the strategies used to implement ESG in investment selection, there is also an important strategy related to the overall investment process: investment diversification. Diversification consists of purchasing a variety of investments across different sectors or regions in order to reduce the risk of market volatility (Lam-Balfour, Royal & Ayoola, 2024) [119]. In other words, it is important for investors not to put all their eggs in one basket, or in this case, not to place all their capital in a single company. In fact, large institutional investors are often legally required to maintain diversified portfolios. Diversification is a key principle in both traditional and ESG investing as it can help boost investment returns while reducing risk.

After discussing ESG investment strategies, the instructor will turn to sustainable finance instruments, beginning with ESG Exchange Traded Funds (ETFs). ESG ETFs combine two key strategies: responsible investing and ETF investing. On one hand, ESG responsible investment refers to various methods that integrate environmental, social, and governance factors into the investment process, with the goal of promoting progress and long-term value creation (RBC Global Asset Management, n.d.) [120]. On the other hand, ETFs are investment funds that trade on stock exchanges like individual stocks. They typically hold a diversified basket of assets such as stocks and bonds, and often track a specific index (Iris Carbon, 2024) [121]. Therefore, ESG ETFs allow investors to diversify their investments and fund many companies at once.

ESG ETFs offer several benefits for investors seeking to align their portfolios with sustainable values. First, they make it easy to incorporate responsible investing by offering a wide range of investment options such as focusing on companies with high ESG ratings, excluding controversial industries like tobacco or weapons, or following specific themes like fossil-fuel-free or gender diversity. Second, sustainable investing can contribute to portfolio resilience by helping identify hidden risks, such as climate change or data security, that may not be captured through traditional financial analysis but can significantly affect a company's

success in the long-term. Third, ESG ETFs provide broad diversification across asset classes, sectors, and regions, allowing investors to add different levels of diversification into their portfolios. Finally, many ESG ETFs are cost-effective, making them an affordable and practical option for long-term investment strategies (RBC Global Asset Management, n.d.) [120].

The second sustainable finance instrument introduced is green bonds. When entities seek funding, they typically choose between issuing stocks or bonds. Bonds are a form of debt where investors become creditors of the issuing entity. Green bonds are a specific type of bond used to raise capital for environmental or climate-related projects. The European Investment Bank (EIB) issued one of the earliest examples in 2007, a €600 million Climate Awareness Bond focused on renewable energy and energy efficiency. The World Bank followed in 2008 by launching the first labeled green bond of about US$440 million, responding to demand from Scandinavian pension funds seeking to support climate-focused projects. This initiative supported the World Bank's strategy to innovate in climate finance and raised awareness on how developing countries can both contribute to and be affected by climate change. Similarly, the African Development Bank (AfDB) issued a $500 million green bond in 2013 to finance climate change solutions in Africa supporting inclusive and sustainable growth in the continent (The World Bank, 2025) [122].

According to the guide Green Bonds for Climate Resilience (2021) [123], there are seven key steps involved in issuing a green bond. The process begins with adopting a recognized guidance framework that outlines how green projects will be selected, how proceeds will be managed, and what reporting requirements will apply. Next, the issuer must identify appropriate green projects and assets that align with the selected criteria. Once projects are selected, the issuer develops a Green Bond Framework that articulates the governance policies and procedures to ensure compliance. To verify that the Green Bond Framework has been properly followed, independent verification is necessary, often through a Second Party Opinion or certification under the Climate Bonds Standard. The next step is to set up robust tracking and reporting systems to ensure that the proceeds are allocated as planned and to provide transparency to investors. After that, the bond is issued following standard procedures, such as structuring, marketing, and pricing the bond, with clear communication on green project selection criteria used. Finally, issuers are expected to report annually on the allocation of funds and on the environmental impact of the green bond (Qadir & Creed, 2021) [123].

Green bonds offer several benefits for issuers who are looking to develop sustainable projects. While the funds raised through green bonds could technically also be raised through conventional bonds, green bonds allow issuers to reach a broader and more diverse base of investors, especially those focused on sustainable and responsible investing or who integrate ESG criteria into their decision-making. This diversification makes issuers less dependent on specific markets and helps expand funding sources. In addition, green bonds enhance visibility and raise awareness around an issuer’s environmental initiatives, serving as a tool to strengthen closer engagement with investors. Additionally, it is important to mention that public funding alone cannot meet the scale of investment needed for the global transition to a low-carbon and climate-resilient development and growth. With private

financing already contributing around 60% of climate-related capital flows, green bonds play a crucial role in mobilizing further private capital for green projects (The World Bank, 2025) [122].

After explaining what green bonds are and outlining their benefits, the instructor will present a screenshot from the document *What Are Green Bonds?* (2025) [122], which showcases various examples of green bond issuers. Among them is Toyota Financial Services, which issued a US$1.75 billion green bond in March 2014 to finance consumer loans and leases for electric, hybrid, and low-emission vehicles, with bond returns being tied to the performance of those loans and leases. Another example is the District of Columbia Water and Sewer Authority (DC Water), which issued US$350 million in green bonds in July 2014, with a 100-year maturity, to fund part of its Clean Rivers Project. These are just two examples, but the full list illustrates how green bond issuers can range a lot, from cities and states to bilateral development agencies, utilities, corporations, banks, and other types of entities.

The next sustainable finance instrument is sustainability-linked loans (SLLs). SLLs offer improved loan terms, like interest margin reduction, if the borrower meets pre-agreed sustainability performance targets (SPTs), which are measured through ESG key performance indicators (KPIs). The objectives of SLLs fall into two main areas: first, defining core sustainability targets that are aligned with the borrower's overall sustainability objectives; and second, ensuring transparency in the evaluation of whether those SPTs have been met (Ezcutari, 2022) [124]. In contrast to green loans, SLLs concentrate on the borrower's sustainability performance rather than requiring the loan to finance a green project.

SLLs are structured around five core components: the selection of KPIs, calibration of SPTs, loan characteristics, reporting, and verification. First, the KPIs must be clearly defined, measurable, and relevant to the borrower's core business, ideally benchmarked against industry standards. Second, the SPTs should align with the borrower's broader sustainability strategy and be ambitious, meaningful, and consistent throughout the loan term. Third, SLLs can be applied to bilateral or syndicated loan structures, with financial incentives activated if the borrower meets the agreed SPTs. These targets can include reducing greenhouse gas emissions, improving energy efficiency or increasing recycling rates. A variety of benchmarking techniques, including the borrower's performance over time, position in relation to industry peers, and evaluation of scientific advancements or pertinent national, regional, or global goals, should be used to assess the borrower's performance. Fourth, borrowers must report regularly, maintaining updated information on SPTs and the assumptions and methodology used. Lastly, external and independent verification of progress toward each SPT is required annually. Even when data is publicly available, third-party validation is strongly recommended. Once verified, if targets are met, the interest margin reduction is applied for the following period (Ezcutari, 2022) [124].

Since the topic of loans has been introduced, the instructor will also reference recent research by leading business and financial adviser Grant Thornton UK LLP, which highlights that mid-market companies can no longer afford to ignore the growing importance of ESG in

lending decisions. The study, based on a survey of nearly 50 UK-based lenders, reveals that 73% now have an ESG lending strategy in place (In 2022 it was only 57%). Moreover, 81% of respondents stated that a company's ESG profile or its ability to transition to net zero will increasingly influence lending decisions over the next five years. A significant 93% believe regulators may soon require banks to incorporate sustainability considerations into their capital allocation models, affecting both the availability and cost of borrowing. There is increasing pressure on lenders to meet sustainability goals by aligning their portfolios with net zero commitments. For this reason, lenders now expect companies to embed ESG into their core business strategy and those that fail to meet these expectations risk facing higher borrowing costs or losing access to capital altogether (Accountancy Age, 2024) [125].

Now, returning to the topic of sustainable investing: When is an investment considered sustainable? According to Article 2(17) of the SFDR regulation, an investment is considered sustainable only if it contributes to an environmental or social objective, does not significantly harm any of these objectives, and the investee companies follow good governance practices. Environmental objectives may include improvements in resource efficiency, renewable energy use, reduction of greenhouse gas emissions, biodiversity protection, and circular economy efforts. Social objectives include fighting inequality, promoting social cohesion and integration, improving labor relations, and supporting human capital or disadvantaged communities. These investments must not negatively impact other sustainability goals and must be carried out by companies who follow good governance practices, particularly regarding management structures, relationship with employees, fair remuneration, and compliance with tax obligations (Union Europea, 2019) [126].

Sustainable investing offers a wide range of benefits for investors, companies, and society at large. One key advantage is risk mitigation. By considering ESG factors, investors can better evaluate long-term risks, including environmental risks such as climate change and resource scarcity, as well as social and governance risks. Companies with poor ESG practices often face legal, reputational, or operational consequences, which are risks that can be mitigated by investing in firms with strong ESG integration. Another important benefit is values alignment. Sustainable investing allows individuals and institutions to support causes they care about while still pursuing financial returns. Additionally, strong ESG performance is increasingly linked to long-term financial outperformance. Companies that effectively incorporate ESG criteria tend to be better positioned than their peers in the long run. Finally, sustainable investing creates positive impact by directing capital toward businesses and projects that address urgent global challenges, from environmental issues like climate change to social issues such as injustice and inequality (Thompson, 2023) [49].

Another advantage of sustainable investing is what could be called Returns with Responsibility. According to the Morgan Stanley Institute for Sustainable Investing, a simulated investment of $100 in a sustainable fund in December 2018 would be worth $136 in December of 2024, outperforming a traditional fund that would have reached $131 over the same timeframe (Morgan Stanley Institute for Sustainable Investing, 2025) [127]. This evidence suggests that investors do not necessarily have to sacrifice financial performance when investing sustainably. In fact, research on European equity funds shows that the 10

funds with the highest ESG ratings are, on average, more profitable in the long term than those with the lowest ESG ratings (Rodríguez, 2025) [128].

The last advantage discussed in this session is the strong performance of ESG funds in times of crisis. While they may not always deliver higher risk-adjusted returns, ESG funds have shown greater resilience during market downturns. For instance, in the 2008 financial crisis, German green funds and indices like FTSE4Good declined less and recovered more quickly. Similarly, during the COVID-19 crisis, European investors moved away from traditional funds and invested in more sustainable options. In the first quarter of 2020 alone, ESG funds saw $46 billion in net inflows, while traditional funds faced $385 billion in outflows (Rodríguez, 2025) [128].

Once the advantages of sustainable investing have been described and explained, the instructor will then address some of the key challenges that may arise in its implementation. One significant challenge is the inconsistency and limited reliability of ESG data. Companies often report ESG information in varying ways and data can be incomplete in some reports, making accurate comparisons and evaluations difficult. The absence of standardized metrics and reporting guidelines further complicates consistent assessments across sectors and regions. Another difficulty is the complexity of sustainable investing, which requires navigating an environment of evolving ESG considerations, regulations, and standards. Evaluating both ESG and financial indicators together also demands considerable time and can be quite complex. Additionally, investors frequently face trade-offs between aligning with ethical values and maximizing financial returns, especially when excluding entire industries from their portfolios. Lastly, greenwashing is another challenge, as some firms overstate their ESG efforts, making it hard to distinguish genuine sustainability from mere marketing strategies (Thompson, 2023) [49].

To conclude the session, it is worth briefly explaining what ClimateCoins are and how they work. ClimateCoin is a cryptocurrency designed to fight climate change, with the mission of supporting the goals of the Paris Agreement and helping limit global warming to 1.5 °C. Each ClimateCoin represents one metric ton of CO2 that has been either captured or avoided. The process begins when a green project removes or prevents the emission of CO2. This project is awarded a carbon credit, equivalent to 1 ton of CO2. That credit is then tokenized and becomes a ClimateCoin. Individuals or companies can purchase these coins to offset their carbon footprint or support environmental efforts. Finally, they can burn the coin to claim the credit and make the offset official (ClimateCoin, 2025) [129].

Session 10: The role of AI in sustainability

In this session, the importance of AI in sustainability will be explained, as well as how it can both positively and negatively impact the integration of ESG in companies, ESG investment selection, and reporting. The session will begin by introducing the concepts of AI and Generative AI. On one hand, when people talk about artificial intelligence, they usually refer to machine learning algorithms that use structured datasets to make predictions. Generative AI, on the other hand, are models trained to generate new data that is similar to the data they were trained on, rather than only making predictions (Zewe, 2023) [130]. While traditional AI is well-suited for processing structured data such as spreadsheets or databases, it often has trouble understanding context and is usually limited to doing just one thing. This is a problem in sustainability, where the information often comes in more complex formats like texts, images, or graphs. Generative AI is more flexible and can manage many different tasks. It can create full reports, plan social media content, or automate processes in different areas. Generative AI includes models capable of producing text, images, music, speech, artwork, human faces, and even code, making it a powerful asset for advancing ESG integration and sustainability efforts (PwC, 2024) [131].

Slide 3 of this session shows a diagram that illustrates how AI systems might affect different ESG criteria over the course of their lifecycle. From an environmental perspective, it is essential to assess the sustainability of AI by considering its impact across the supply chain. Additionally, it is important to investigate how AI might be applied to solve significant global sustainability issues and help meet the UN SDGs like developing climate actions, sustainable infrastructure, or reducing social inequality. On the social perspective, AI must protect data privacy and resilience, even in situations of unexpected errors or disruptions. To guarantee responsible and reliable AI systems, governance principles such as explainability, transparency, legal compliance, and ethical design are essential. Ultimately, how ethically and sustainably the technology is developed and used will determine if AI has a good or negative impact on ESG criteria (EY, 2023) [132]. Although some of the concepts mentioned are not limited to a single ESG dimension (In the diagram each element is linked to one or more ESG factors), for simplicity, this text presented them under one main category. For example, data privacy is closely related to governance as well, but it was discussed here mainly from a social perspective to keep the explanation concise. In the presentation, the instructor will take the time to explain each point in detail, highlighting how every aspect is connected to the different ESG dimensions.

For the next few slides, the instructor will focus specifically on the environmental dimension of ESG and explore the question: How can AI contribute to a more sustainable environment?. In relation to biodiversity, AI combined with satellite imagery helps detect changes in land use, vegetation, forest cover, and damage from natural disasters. By optimizing sorting processes throughout the entire waste lifecycle, AI also enhances waste management. In the energy sector, AI models like neural networks and fuzzy logic are applied in the energy sector to lower the consumption of natural resources and energy demands. In water management, AI can predict stream flow, monitor water quality, and forecast droughts as well as soil water conditions. In transportation, computer vision facilitates improved decision-making for public mobility and traffic control. In relation to air

quality, AI can collect data from sensors and satellites to improve climate models and adjust air purifier performance based on real-time air quality data. It also improves the detection of localized emissions using remote sensing. Finally, in agriculture, AI tools like drones and satellite imagery allow farmers to monitor soil quality and crop productivity, improving efficiency. AI also plays a role in monitoring illegal fishing (EY, 2023) [132].

The instructor will then present a practical example of using AI for climate risk prevention. Mitiga Solutions, a spanish startup, has developed a global climate risk platform called Climate Risk Score. This innovative tool, built on Microsoft Azure, uses scientific models to assess the impact of climate change on businesses, including their assets, operations, and supply chains. For all kinds of clients, it offers an integrated solution that lets them measure and report their climate risk, make informed decisions about resource allocation, and evaluate the financial cost of their actions. Additionally, Mitiga solution's platform provides an unbiased and trustworthy evaluation on climate risks to assist businesses in meeting European and global regulatory requirements as they come under growing pressure to be open and honest about their exposure to climate risks (Microsoft Press, 2023) [133].

Another example is the case of Grupo Nueva Pescanova, which partnered with Microsoft to advance the digitalization of aquaculture through the use of Artificial Intelligence, the Internet of Things, and Big Data technologies. This collaboration led to the development of the world's first intelligent aquaculture farm for vannamei shrimp. The smart farm offers 100% real-time, fully automated control of all processes and can anticipate environmental and consumption patterns. Feeding stations automatically adjust the amount of food based on real-time shrimp behavior, helping to optimize feeding, improve animal welfare, and reduce waste. Thanks to this project, Grupo Nueva Pescanova improved its shrimp production in Ecuador, enhanced the precision of its farming predictions by 90–95%, and cut response times to issues by up to 80% (Microsoft Press, 2023) [134].

The final example the instructor will present before discussing the environmental impacts of AI models is Amazon's development of the Package Decision Engine, an AI model designed to automatically select the most efficient packaging for each product. This innovation has significantly improved shipping efficiency while also reducing the environmental impact of Amazon's packaging. By minimizing the use of materials such as cardboard, plastic bags, air pillows, and tape, Amazon has avoided using over 2 million tons of packaging materials since 2015. As well as this, previously, packaging decisions were made manually through physical testing and the process was time-consuming and not scalable. Now, the AI-driven system has automated much of this work, contributing to Amazon's broader environmental goals and allowing employees to focus on other sustainability-related challenges (Amazon Staff, 2024) [135].

The next topic to be discussed by the instructor is the environmental impact of AI models. Generative AI models require high amounts of electricity to train, putting pressure on the electric grid. Even after deployment, these models continue to consume large amounts of energy as they are used by millions of people and further refined through fine-tuning. In addition to energy use, maintaining the necessary hardware demands

considerable volumes of water for cooling it during training, deployment, and updates. This can put stress on municipal water systems and affect local ecosystems (Zewe, 2025) [136]. AI systems also contribute to carbon emissions in two main ways: embodied emissions, produced during early stages like data processing and model experimentation, and operational emissions, generated during training and inference. This last stage is where the deployed model makes predictions at a massive scale to serve users globally (EY, 2023) [132].

To address the growing environmental impact of AI, especially its high electricity consumption and carbon emissions, initiatives like the strategic partnership between Google, Intersect Power, and TPG offer a promising solution. This collaboration aims to build renewable energy infrastructure to power Google's new data centers with clean energy. As AI adoption accelerates, data centers are seeing a sharp increase in electricity demand. In fact, despite Google's goal of achieving net-zero emissions by 2030, its emissions rose by 13% in 2023 and 48% since 2019, largely due to AI-related electricity use. Therefore, it is crucial to invest in renewable energy sources in order to lower carbon emissions while meeting the enormous energy demands of AI models. As part of the new partnership, Intersect Power will develop new clean energy projects, including both renewable generation and storage, while Google will act as a main energy buyer in shared industrial parks. This will allow new data centers to operate alongside newly added clean power capacity (Segal, 2024) [137].

Having addressed the importance and environmental impact of AI, the instructor will now move on to explain how AI can contribute to support social sustainability, as well as the social impacts of AI models. When used for social good, AI can offer many benefits, such as promoting fairness and improving access to essential services like healthcare. However, if not designed or implemented responsibly, it may also create new inequalities, biases, or exclusions. To begin with the advantages, AI can play a crucial role in making services and job opportunities more accessible to everyone. One key area is human augmentation. AI-powered exoskeletons can help individuals with physical disabilities perform tasks that were previously impossible for them. In addition, AI algorithms used alongside sign language gloves can translate sign patterns into electrical signals and spoken words, improving communication by verbalizing their signs. Another benefit of using AI can be seen in the health department. AI can detect physical or mental well-being by analyzing a person's voice tone, pitch, and vocabulary. It can also assist in medical diagnostics such as analyzing data sets to detect melanomas with the same accuracy as dermatologists. Lastly, geographic tracking is another important benefit because by combining AI with tools like Google Street View urban landscapes can be analysed to identify inequality and deprivation patterns. Also, AI can be used to track and control the spread of infectious diseases (EY, 2023) [132].

An example of AI used for social good is Walmart. It offers voice and text shopping assistants that allow customers to add or eliminate items from their cart, schedule deliveries, and quickly reorder products. The system also uses past purchases to recognize each customer's preferred brands. Walmart has also tested AI chatbots for supplier negotiations, achieving 1.5% cost savings and longer payment terms, with most suppliers reporting a positive experience. Additionally, for employees, the "Ask Sam" voice assistant helps in-store

workers quickly find product locations, prices or check schedules. Moreover, Walmart uses generative AI to automate certain customer support requests, enabling chatbots to understand and respond in a more human-like and intelligent manner (Marr, 2024) [138]. On top of that, in order to guarantee that company clients have access to the products they require at the appropriate time, AI-powered systems optimize Walmart's inventory forecasting, planning, and logistics (Marr, 2024) [139].

However, as mentioned before, while AI has the potential to significantly benefit the social dimension of ESG, it also presents several challenges. There are three key areas of concern: AI fairness and bias, data privacy and security, and workforce impact. First, AI systems trained on public datasets may reflect societal biases, unintentionally leading to discriminatory outcomes. Bias in algorithm design can further reinforce these inequalities. Second, AI's ability to process massive amounts of information raises concerns around the misuse of sensitive data and threats to privacy. Regarding security, AI systems have the risk of data breaches as they are vulnerable to cyberattacks. Lastly, AI integration is transforming the workforce by automating repetitive tasks, such as in manufacturing, customer service, and data entry, shifting jobs toward more higher-value roles (EY, 2023) [132].

Moving on to the final ESG dimension, the instructor will begin by explaining how AI can support governance. One key area is fraud detection, where AI helps financial institutions create more accurate customer profiles, detect suspicious activity, and assess risk across multiple domains. AI techniques such as unsupervised learning and outlier detection can reduce false positives and enhance the efficiency of investigations. In monitoring and compliance, AI streamlines regulatory processes by scanning large volumes of legal documents and generating summaries or initial drafts of policies, allowing compliance officers to focus on more strategic tasks. Another important application is in data governance, where AI ensures that customer data is used correctly and remains protected at all times by identifying cyber threats, detecting anomalies, and monitoring data traffic through encryption and pattern recognition techniques. The fourth advantage is board reporting and governance analytics: AI can automate the generation of accurate, real-time reports and customize dashboards for each board member's priorities, improving the effectiveness and responsiveness of governance processes (EY, 2023) [132].

After discussing the benefits of using AI in governance, the instructor will move on to explain the potential governance-related issues of AI models. These can be grouped into four categories: transparency, explainability, bias issues, and performance issues. First, transparency is a major concern. AI algorithms are often extremely complex, making it difficult to understand how outcomes are obtained and what data is being used. End users typically lack visibility into these processes. Second, explainability, which is closely related to transparency, is another challenge. Unlike traditional mathematical or statistical models, AI systems are very complex and for that reason they lack inherent explainability. Third, bias issues arise from the composition of the development team, the training data, and the techniques used. These biases can be hard to detect due to the black-box nature of AI, and they affect user trust when the influence of those biases isn't clear. Lastly, without a robust model performance monitoring plan, the AI system's performance may not meet user

expectations as they are more complex, consume more data and are harder to explain than traditional models (EY, 2023) [132].

After reviewing each ESG dimension separately, the instructor will now present the overall advantages of using AI to support ESG efforts. The focus will begin with how AI is helping businesses accelerate their sustainability journey today. In asset management, AI collects performance data to predict asset health and potential failures, enabling preventive maintenance, which helps prolong the life of the asset and reduce waste. In inventory management, AI uses demand forecasting to balance stock levels with customer demand while minimizing the environmental impact of transportation through routing optimization. The third advantage is schedule optimization. AI improves asset maintenance by prioritizing tasks on assets that pose higher costs or greater risk of failure. Anomaly detection is another benefit, particularly in manufacturing, where AI-powered image and video recognition can detect defects early on. Lastly, AI can be used to save energy by aligning computing and cooling resources with compute demand patterns (Compute optimization) (Thomas, 2023) [140].

Continuing with the session, it will be valuable for the instructor to explain how AI can support ESG investment selection. First, AI makes it possible to analyze large volumes of data in great detail, tasks that would be extremely time-consuming and resource heavy without AI. Second, by using techniques like sentiment analysis and natural language processing, AI can discover key data and eliminate irrelevant information. Third, AI allows companies to assess their current ESG position and make strategic decisions to improve in needed areas. Lastly, both consumers and portfolio managers have greater access to ESG investment data from different companies, helping them make more informed investment choices (EY, 2023) [132].

Similarly, AI is extremely beneficial to ESG reporting. One of the main challenges in this area is collecting and integrating data from multiple sources. AI, through natural language processing and machine learning, simplifies this process by extracting information from unstructured documents, normalizing diverse data types, and enabling real-time tracking of ESG metrics. In terms of accuracy and consistency, AI algorithms are effective at detecting anomalies and errors, cross-referencing data with historical and industry benchmarks, and minimizing bias. AI also improves insight generation and reporting automation by uncovering hidden patterns, providing predictive analysis to forecast trends, applying sentiment analysis to assess public perception, and turning complex ESG data into clear and easy to understand visuals. Finally, AI helps reduce time and costs by automating repetitive tasks, optimizing resource allocation, and offering scalability to meet growing reporting demands without requiring a proportional increase in resources (Rose-Collins, 2024) [141].

Microsoft is a great example of how AI can facilitate and improve ESG reporting. Through Microsoft Fabric, the company offers AI-powered sustainability data solutions that centralizes scattered ESG data into a unified platform. This enables analysis of metrics aligned with regulations like the CSRD and generates customized insights on carbon, water, and waste management. Additionally, Copilot in Power BI allows users to create and edit

ESG reports using natural language, accelerating the reporting process. Microsoft also provides pre-built ESG reporting templates that comply with standards such as CSRD, GRI, and IFRS, and allow for custom additions via .CSV files to meet specific organizational needs. Furthermore, Microsoft's AI agents provide real-time sustainability data analysis and help estimate EU carbon tariffs on imports (Noticias ASG, 2024) [142].

An example of a company already applying AI in its ESG reporting is Unilever. The company has developed a centralized, cloud-based platform that gathers sustainability data from across its various business units into a single, unified system. This allows for real-time monitoring and more effective analysis of ESG performance. To ensure consistency in its disclosures, Unilever aligns its reporting with globally reporting frameworks and the Science-Based Targets initiative (SBTi). Additionally, the company uses AI-powered tools to automate the processes of collecting, validating, and reporting ESG data. These tools along with machine learning algorithms, help detect anomalies and improve data quality before it is submitted to regulatory bodies (BI Group, 2025) [143].

While implementing AI in ESG reporting brings numerous advantages, it also presents several challenges. Four key issues stand out. First, data privacy and ethics. Sensitive data, like employee demographics or supplier practices, is frequently included in ESG reports. Businesses need to make sure their AI systems comply with regulations like the GDPR and handle data in an ethical manner, to ensure no individual's privacy is violated. Second, addressing bias in AI models. ESG metrics may be distorted by biases that AI may inherit from training data, for this reason it is important to carry out regular audits of AI models to detect and eliminate these biases. These first two first challenges were also discussed earlier in relation to the social and governance impacts of AI models, but it is important to highlight them again in this slide. Third, resource investment is a challenge as implementing AI for ESG reporting requires upfront investment in technology, training, and infrastructure. For smaller organizations, a recommendation is to use cloud-based AI tools that can offer a more cost-effective option. Fourth, keeping up with regulatory changes is crucial and it is an issue because ESG standards are continuously evolving and AI models must be up to date and adapt to ensure ongoing compliance and data integrity (Rose-Collins, 2024) [141].

After that, the instructor will go over four strategies to maximize AI's contribution to ESG. First, AI should be viewed as a governance tool rather than only using it for reporting or operational tasks. It should be incorporated into the design of ESG policies, action frameworks, and evaluation criteria. AI is quickly evolving from a supporting role to a key force behind governance and sustainability leadership. Second, companies should adopt predictive and prescriptive approaches, shifting from historical reporting to scenario-based planning. AI models are able to predict logistical disruptions, climate effects, and regulatory risks. Third, companies should unify ESG and business data into one system that connects areas like sustainability, technology, operations, and finance. Having all this information in one place helps the company make faster and more effective decisions while supporting climate goals. Lastly, it's important for businesses to track the energy impact of using AI in their company, looking at metrics like how efficient the algorithms are, how much energy

each task uses, and the emissions caused by cloud computing (MIL Madrid Innovation Lab, n.d.) [144].

To build on the previous recommendations, it would be valuable for the instructor to explain the four ways companies can get started on their ESG–Responsible AI journey, as outlined by PwC (2022) [145]. First, organizations should identify and connect with teams inside the company already working on ESG topics (such as workers in sustainability offices, operations leaders, human capital and others) and with tech teams. Second, companies should find common ground between ESG and Responsible AI teams to align efforts and strengthen both areas. Third, it's essential to collaborate with development teams to align on governance practices. Governance should manage risks without hindering innovation, and involving developers in the process helps improve adoption. Lastly, companies should uncover opportunities to align procurement practices. Since new technology often enters through procurement, these teams should be supported to better evaluate complex AI models, identify ethically elaborated technology and ensure alignment with ESG standards.

According to PwC (2024) [131], the Roadmap for Integrating Generative AI into Sustainability Initiatives consists of seven key steps. First, companies must set clear goals and identify specific sustainability challenges that GenAI could address. Second, organizations should gather and prepare high-quality data, ensuring it is free of bias and private information, with an emphasis on large datasets to increase model performance. Third, it may be necessary to fine-tune the Generative AI model when the task differs significantly from the data it was originally trained on. This process involves modifying a Large Language Model's parameters to function for specific tasks. However, reusing pre-trained models is recommended whenever possible to reduce resource use. Fourth, model evaluation should be conducted using appropriate metrics to assess Large Language Models according to their specific applications. As well as this, testing and validation are essential to reduce operational, security, and ethical risks, and to avoid potential adversarial attacks. Fifth, once validated, the model can be deployed, with proper attention to scalability, performance, and access control. Finally, ongoing monitoring and maintenance are essential to detect issues such as data drift or bias, ensuring the long-term reliability, safety, and effectiveness of the GenAI.

To end this session, it is worth highlighting that the Environmental, Social and Governance Association of Malaysia (ESGAM) has launched ESGAMConnect, an AI-powered ESG platform designed to support businesses across the entire ESG value chain. It includes digital tools for evaluating and identifying gaps in ESG processes, as well as ESG-focused learning and talent development. It also offers an industry-focused marketplace that connects companies with trusted ESG professionals, including consultants, trainers, auditors, and solution providers. Additionally, businesses can get government assistance and green financing solutions through its grants and financing hub. ESGAMConnect transforms ESG compliance into a strategic, data-driven opportunity, and supports companies with ESG reporting, audit readiness, and access to accreditation bodies and carbon credit markets (Azuar, 2025) [146].

Session 11: Transition towards a sustainable economy

In this session, the instructor will focus on explaining the importance of sustainable infrastructure in the transition toward a sustainable economy, as well as the impact infrastructure has on advancing the circular economy. To start this session, it is important to explain what sustainable infrastructures are. Systems and structures that offer necessary services while being planned, constructed, and run in accordance with sustainability principles across all dimensions are known as sustainable infrastructures. This means they are environmentally responsible throughout their entire life cycle, while also being sustainable from economic, financial, social, and institutional perspectives. In order to promote balanced and long-lasting growth, sustainable infrastructure aims to meet current needs without sacrificing the ability of future generations to meet their own (Ineria, n. d.) [147].

Once the definition of sustainable infrastructure is understood, it becomes clear that developing it requires a shared vision among all stakeholders involved. This common understanding brings several key benefits. For instance, imagine an investment group, an engineering firm, and a city mayor aiming to promote a sustainable infrastructure project. If each has a different idea of what sustainability/sustainable infrastructure means, coordination will be difficult, and the project is unlikely to succeed. A shared understanding improves coordination among stakeholders and offers a strong conceptual basis for change. It also leads to better project outcomes, as aligned objectives help all actors work toward the same goals and attract higher-quality investments. By including sustainability early in project design, creating roadmaps, enhancing capacities, and bolstering public policy, it also promotes institutional strengthening and makes systemic and long-term change possible. Additionally, it offers greater incentives for private sector participation, as a unified definition of sustainability reduces confusion in capital markets and helps to have a well defined set of criteria. Finally, a shared understanding promotes the standardization of tools and performance indicators. This helps reduce costs, allows comparison between different projects, and makes it easier to apply sustainable solutions in all stages of a project (De Vecchi et al., 2025) [148].

Sustainable infrastructure integrates four essential dimensions of sustainability. From an economic standpoint, it aims for long-term financial viability and supports sustainable economic growth. This includes maximizing investment returns over the infrastructure's life cycle, encouraging innovation, creating jobs, and using financial resources efficiently. Environmentally, it aims to reduce negative impacts and promote the conservation of natural resources by minimizing emissions, preserving biodiversity, and managing energy, water, and waste responsibly. On the social side, sustainable infrastructure promotes inclusion and equity by improving access to basic services, ensuring accessibility for all, supporting local employment, and involving communities in decision-making. Finally, the institutional dimension refers to the need for strong governance, transparency, and coordination among stakeholders, ensuring that sustainability is embedded in policies and regulations (Ineria, n. d.) [147].

The G20 established six voluntary principles in 2019 to guide infrastructure investment, highlighting the essential role infrastructure plays in advancing sustainable development and economic growth. These principles go beyond economic efficiency to also prioritize social, environmental, and governance considerations. While this writing does not delve into each of the six principles in detail due to length, the instructor may refer to the document published by the World Bank Group (2020) [149], *G20 Principles for Quality Infrastructure Investment*, which provides a comprehensive explanation of each.

The instructor will then explain the different phases of an infrastructure project and the opportunities to integrate sustainability throughout its entire life cycle. Infrastructure projects generally follow a sequence of phases: planning and strategy, prioritization, project planning, design, bidding, financing, construction, operation and maintenance, and finally, decommissioning or reuse. These phases are typically grouped into two stages: upstream, which refers to the early stages of a project when it is still being planned and key decisions are being made (processes carried out prior to project bidding); and downstream, which refers to the later stages when the project is already being executed. First, in the planning and strategy phase, high-level decisions are made to determine what types of investments are needed to address the population's needs. This leads to the development of specific project portfolios aligned with those needs. In the prioritization phase, priority projects are defined, and sustainability variables can be integrated into budget allocation rather than focusing only on minimizing costs. Here, climate or social impact studies and cost-benefit analyses are essential to ensure proper prioritization (De Vecchi et al., 2025) [148].

The project planning phase involves defining the specific characteristics of the prioritized project. During the design phase, technical experts specify materials, equipment, and measures to mitigate potential climate risks. This is a key opportunity to incorporate sustainability through the use of local or recycled materials and energy or water-efficient equipment. In the bidding phase, competitive processes are used to select suppliers based on price, feasibility, sustainability, and quality. The financing phase involves formalizing how the construction and operation will be funded, typically through a combination of public, private, and international sources. This is also when detailed risk analyses are conducted, covering financial, environmental, and social aspects. During the construction phase, all prior decisions are executed. It is critical to minimize environmental and social impacts, ensure worker safety, and monitor the project closely to meet contractual requirements. In the operation and maintenance phase, the infrastructure is put into use. Regular monitoring and maintenance are essential to prevent asset deterioration and ensure service quality in the long-term. Finally, the decommissioning or reuse phase outlines how to restore affected areas, reuse materials, and manage waste sustainably (De Vecchi et al., 2025) [148].

Sustainable infrastructure not only brings enormous benefits for society and the environment, as the instructor will explain later on, but also generates significant economic advantages. It supports job creation, enhances productivity, and reduces losses caused by inefficiencies such as power outages or traffic congestion. For example, improving infrastructure in regions like Sub-Saharan Africa could significantly boost GDP per capita, while in countries like the United States, millions of jobs across key sectors depend on reliable transport systems. Additionally, increasing global infrastructure investment by just

1% of GDP could generate major employment opportunities around the world (the number of additional jobs that could be created is illustrated in the graph shown on slide 8 of this session). Additionally, improving infrastructure efficiency could reduce related costs by up to 40%, according to estimates from the McKinsey Global Institute (Economist Intelligence Unit, 2019) [150].

Sustainable infrastructure offers numerous environmental benefits that are key to addressing today's global challenges. These infrastructures help combat climate change and natural disasters, reduce greenhouse gas emissions and pollution, manage natural capital more responsibly, and improve resource efficiency. As Ms. Marchal (Senior Policy Analyst at the Environment Directorate, OECD) highlights, the infrastructure built over the next five years will be decisive in achieving the goals of the Paris Agreement, representing a brilliant opportunity for countries to choose more climate-resilient infrastructure (Economist Intelligence Unit, 2019) [150]. According to The New Climate Economy, sustainable planning could avoid up to 3.7 gigatonnes of CO2 emissions annually over the next 15 years. Furthermore, sustainable infrastructure can increase access to electricity for the one billion people who do not currently have it by prioritizing renewable energy and creating a decentralized digital grid (Iberdrola, 2025) [151]. Green infrastructure, such as mangroves, urban forests, and vegetation, can improve air quality, absorb carbon, and prevent soil erosion and flooding. Green roofs are one solution that reduces urban heat, prevents water contamination, and controls flooding. For example, a simulation study found that installing green roofs on half of downtown Toronto might cut local temperatures by as much as 2°C (Economist Intelligence Unit, 2019) [150].

Sustainable infrastructure also plays a crucial role in the social dimension of ESG, particularly by ensuring access to essential services such as healthcare, education, housing, water, and sanitation. Infrastructure can also contribute to promoting gender equality and ensuring women's protection. For instance, adequate sanitation facilities are vital to ensure equal participation in economic and educational opportunities. Without access to safe toilets or private sanitary facilities in schools or workplaces, many girls and women are forced to stay at home or drop out during menstruation. The World Bank estimates that at least 500 million women and girls worldwide do not have access to adequate facilities for managing their menstrual hygiene. Furthermore, the absence of infrastructure affects maternal health due to poor water quality and sanitation. Infrastructure can also accelerate social mobility. For instance, the installation of solar energy in schools in Tanzania and Sudan raised primary and secondary school pass rates from below 50% to nearly 100% (Economist Intelligence Unit, 2019) [150].

Infrastructure that is designed to withstand disruptions and stresses throughout its life cycle promotes resilience and supports development, positively impacting all three pillars of sustainability. Economically, it helps reduce disruptions caused by extreme weather events, such as heavy storms, by ensuring the continuity of essential services like electricity and water during crises, while also lowering the frequency and costs of repairs. Environmentally, it supports the conservation of natural resources, promotes nature-based solutions, and enhances communities' ability to adapt to climate change, for example by using green infrastructure to manage floods and storms. Socially, it protects human well-being by

maintaining access to vital services in emergencies and protecting communities during crises (Economist Intelligence Unit, 2019) [150].

The Calgary Airport-Banff Rail (CABR) Project is a prime example of sustainable infrastructure. It is a rail link with the aim of connecting Calgary International Airport with Banff train station by 2025. This initiative is expected to improve labor mobility, boost tourism, and support Alberta's economic diversification while reducing carbon emissions (Milne & Turnbull, 2022) [152]. The project aligns with the Banff National Park Net Zero 2035 target and includes hydrogen-powered trains to promote environmental sustainability. This sustainable infrastructure will enhance access for Indigenous communities and alleviate traffic congestion. Additionally, from an economic perspective, it is projected to create over 22,500 jobs and generate $6.4 billion in gross value, offering a significant advantage to the region (Railway News, 2023) [153].

Sustainable infrastructure brings excellent benefits, but it also faces major challenges, one of the most significant being the enormous financial investment required. According to estimates, between USD 3.2 and 3.7 trillion will be needed by 2030 to meet infrastructure needs. However, many emerging and developing economies are already struggling with an investment gap. The infrastructure spending from 2014 to 2020 was about USD 259 billion per year, which is significantly less compared to the predicted USD 711 billion needed annually. This investment gap, illustrated in the graph on slide 13 of this session, shows significant underinvestment across regions such as South Asia and Latin America (Economist Intelligence Unit, 2019) [150].

Another major challenge linked to the high investment needs of sustainable infrastructure is the lack of funding and resources. These projects are often complex and span long time horizons, which discourages investments due to political, institutional, and financial uncertainty. Moreover, many countries do not even have the financial capacity or strategic foresight to convert sustainability goals into viable, impactful infrastructure. To close this gap, stronger collaboration with the private sector is essential, as public-private partnerships can help mobilize the necessary institutional capital. Additionally, the concept of sustainable infrastructure is still not widely understood by many initiatives, despite the last ten years seeing the emergence of assessment tools. Lastly and what is really concerning is that despite managing more than $120 trillion in global assets, institutional investors only devote about 5% of their portfolio to infrastructure at the moment, indicating a significant funding shortfall (De Vecchi et al., 2025) [148].

The instructor will highlight the importance of involving the private sector to address the funding gap in sustainable infrastructure, dedicating a slide to public-private partnerships. These partnerships bring key advantages: they mobilize capital, transfer technology and expertise, and provide clear regulatory frameworks. A key example is the rapid expansion of renewable energy in Latin America. Wind power generation grew from just 3,400 GWh in 2010 to over 96,000 GWh in 2019, thanks to private sector engagement. In countries like Chile, Brazil, and Mexico, solar and wind projects were made possible not only through investment, but also through the contribution of know-how to face challenges involved in the operational management of wind or solar farms. These regions initially

lacked experience in building and operating such infrastructure, making the involvement of private actors crucial (De Vecchi et al., 2025) [148].

An essential concept in the shift toward a sustainable economy is the circular economy. In order to reduce the pressure on limited natural resources, this model aims to arrange the production, supply, and consumption of materials in closed loops. One example of a hierarchy of action to attain circularity is the 6R principles, which are shown in slide 16's figure. The circular economy's primary goal, as demonstrated by the 6R principles, is to reject or drastically cut down on the quantity of raw materials that enter the system. This is accomplished by “closing the loop” and maximizing the quantity of materials recovered, which are then recycled, repaired, refurbished, and utilized to create another new product (Global Infrastructure Hub, 2021) [154].

The instructor will then pose the question: Why is transitioning to a circular economy important? He will explain that there are two key reasons: addressing climate change and reducing the risk of resource scarcity. First, by supporting energy efficiency and renewable energy initiatives, the circular economy helps achieve climate goals. About 55% of global greenhouse gas emissions can be reduced by renewables, but lowering emissions associated with material use is also necessary to meet the 1.5°C target set by the Paris Agreement. This is where circular strategies can be extremely helpful. By minimizing waste and reusing materials, circularity reduces the carbon footprint of production and consumption. Secondly, embracing circular principles can ease the pressure on finite resources. It helps reduce supply chain vulnerabilities and raw material dependency by promoting the use of local, secondary materials. Designing products with circularity in mind not only decreases the demand for raw materials but also builds resilience against future shortages (Global Infrastructure Hub, 2021) [154].

Infrastructure has a significant impact on advancing the circular economy due to its heavy use of natural resources and contribution to global greenhouse gas emissions. An estimated 50% of all greenhouse gas emissions are thought to originate from infrastructure, of which 40% are operating emissions (emissions produced during infrastructure use) and 10% are embodied emissions (emissions from the use of construction materials). Circular economy practices can directly reduce embodied emissions by minimizing the use of raw materials, and indirectly lower operating emissions through smarter design and material efficiency. Additionally, infrastructure consumes more than half of the world's materials. As material demand is expected to rise until at least 2060, adopting circular principles in infrastructure is crucial to mitigate risk of resource scarcity (Global Infrastructure Hub, 2021) [154].

The circular economy offers a powerful solution to global challenges like climate change and resource scarcity, and infrastructure plays a key role in unlocking this potential. The roadmap to enable circular infrastructure focuses on four main pathways: strengthening data-based evidence, developing innovative policies, supporting technological innovation, and fostering international collaboration. Improving the infrastructure sector’s capacity to collect and share data is essential, as it creates a foundation for change and helps stakeholders make informed decisions. With data-based evidence it is possible to then

develop sectoral and national strategies that are specific to local contexts, establishing a clear vision and priorities for circular practices. Additionally, technology is essential since it speeds up the shift and makes circular business models viable. Finally, international cooperation is essential to exchange experiences, strengthen policies, and align efforts globally. By combining these actions a more sustainable and circular infrastructure system can be achieved. Each of these areas includes short, medium, and long-term voluntary actions. A practical example for each of these actions is illustrated in the 2021 document *Roadmap for Enabling Circular Economy Potential in Infrastructure* [154]. It would be helpful if the instructor used these examples during the session, as each flag shown on the slide corresponds to a specific country case that demonstrates how one of these actions has been implemented.

Given that 38% of global energy-related carbon emissions come from building construction and operations, green buildings have emerged as a key solution (Gomstyn & Jonker, 2024) [155]. These are structures designed and equipped to minimize environmental impact and promote community well-being (Iberdrola, n.d.) [156]. They typically feature high energy and water efficiency through insulation, smart systems, and renewable energy integration. Technologies like IoT sensors, smart lighting, and automated climate control optimize resource use in real time. Additionally, green buildings aim to reduce emissions and waste, often using sustainable or recycled materials during construction. Site selection is also important as choosing locations near public transit or existing infrastructure (such as water and utility lines) helps cut emissions from transportation and reduce the need for new utility development (Gomstyn & Jonker, 2024) [155].

One example of a green building is the Iberdrola Tower in Bilbao, which has earned the prestigious LEED CS 2.0 Certification from the US Green Building Council, which recognizes environmentally responsible, healthy, and cost-efficient structures. This building was built with at least 20% recycled materials and an additional 20% locally sourced materials to reduce transportation-related emissions, and it is powered entirely by certified 100% renewable energy. It contains advanced technologies that allow for water reuse and a 40% reduction in standard consumption (Iberdrola, n.d) [157]. Rooftop solar panels, LED lighting systems, and extremely efficient HVAC systems all contribute to its excellent energy efficiency. Fan coil units that allow for independent temperature management by zone and demand-controlled ventilation, which modifies airflow according to occupancy and air quality, are also included in the building. As well as this, the glass façade facilitates natural light entry, which improves energy savings (Inarquia, n.d.) [158].

The final topic addressed in this session will be the importance of building clean AI infrastructure. Data centers' energy needs are increasing more quickly than the capacity of the current energy infrastructure due to the rapid expansion of AI technology. According to the International Energy Agency, global electricity consumption from data centres could surpass 945 terawatt-hours by 2030, which is more than doubling current levels and equal to Japan's total electricity use. The majority of data centers nowadays use conventional energy sources including natural gas, diesel generators, grid electricity, and lithium-ion batteries, all of which have limited scalability and a high carbon footprint. More reliable and sustainable solutions are required to meet the energy demands of AI in the future. Long-term

zero-emissions solutions are offered by technologies like advanced nuclear and geothermal power, but they frequently encounter lengthy development times, infrastructure constraints, and regulatory delays. In the short-term, dispatchable solar energy, which is solar power combined with thermal storage, emerges as a viable and scalable alternative.This system stores solar heat to generate electricity when needed, allowing for consistent 24 hours clean energy delivery. Integrating solutions like advanced nuclear, geothermal, and dispatchable solar energy can enable the development of robust, low-carbon infrastructure capable of sustaining the upcoming phase of digital growth (Happi, 2025) [159].

Two examples of green investments in AI infrastructure are the YTL Green Data Center Park in Malaysia and Equinix in the United States. The YTL Green Data Center Park is the first integrated data center park in Malaysia powered by renewable solar energy, with a capacity of 500 MW (YTL, 2022) [160]. The second example is Equinix, a global data center and digital infrastructure company, announced in 2024 the issuance of €1.15 billion (USD $1.21 billion) in green bonds to finance renewable energy projects and decarbonization initiatives across its data center network (Segal, 2024) [161].

Session 12: Case Study

This session will focus on a case study of Iberdrola. The instructor will analyze the company and its 2024 Sustainability Report, addressing various topics covered in previous sessions, such as corporate governance, materiality assessment, regulatory compliance, among others. To begin, it is essential to understand what Iberdrola is: a multinational company in the energy sector, recognized as the world's leading producer of wind power and one of the largest electricity companies by market capitalization. Iberdrola is committed to the energy transition through a sustainable business model built on renewable energy, smart grids, large-scale energy storage, and digital innovation (Iberdrola, 2025) [162].

The Iberdrola Group has integrated the United Nations Sustainable Development Goals (SDGs), into its corporate strategy and Governance and Sustainability System. Its main focus lies on SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action). Iberdrola is a global leader in renewable energy, with €120 billion in investments over the past two decades. The company is strongly committed to SDG 13, aiming for carbon neutrality in Scope 1 and 2 emissions by 2030, and net-zero emissions, including Scope 3, by 2040. Iberdrola also directly contributes to SDGs 6, 9, 15, and 17: it achieves high water productivity (SDG 6), promotes sustainable industrialization through clean energy and digitalization (SDG 9), works to protect biodiversity and reach zero net loss of nature by 2030 (SDG 15), and actively engages in global and local sustainability initiatives and partnerships (SDG 17). Additionally, indirectly the company supports the achievement of all remaining SDGs (Iberdrola, n.d) [163]. The Iberdrola Group acts as a key promoter of sustainable development and focuses on meeting both current and future needs in order to tackle major economic, social, and environmental challenges. Slides 4 and 5 will present the company's environmental and social goals, along with the level of progress achieved toward each of them.

Iberdrola's Sustainability Report and Non-Financial Information Statement (NFIS) of 2024, were reviewed by KPMG. They confirmed that Iberdrola's environmental section satisfies the standards of the European Taxonomy (Regulation EU 2020/852), that the report applies the European Sustainability Reporting Standards (ESRS), and complies with Directive (EU) 2022/2464 (CSRD). KPMG's limited assurance review found no evidence that the Sustainability Report failed to adhere to Iberdrola's adopted sustainability framework, including the materiality assessment process, compliance with the ESRS, and Article 8 of the EU Taxonomy Regulation, or that the NFIS was not properly prepared in accordance with applicable commercial legislation and ESRS criteria (Iberdrola, 2025) [164].

In 2024 Iberdrola was included in leading sustainability indices and received multiple high-level ESG ratings. Among them are that the company earned the highest AAA rating from MSCI and was ranked in the top 1% globally in the S&P Global ESG Score. It was also listed among the top-rated utilities by Sustainalytics and received a spot on the CDP Climate Change A List. Iberdrola was included as well in the leading ECPI indices, recognized for its strong sustainability performance. Additionally, the company was named a leader in the electric utilities industry by the Dow Jones Best-in-Class Indices and included in Equileap's Global Top 100 for Gender Equality (Iberdrola, 2025) [165].

Moving on to the double materiality assessment, the instructor will explain that in 2024 Iberdrola implemented its double materiality assessment through four phases. The first phase focused on understanding the company's business model, sector, geographic presence, and key stakeholders, as well as relevant regulations and sustainability frameworks. In phase two, the company identified actual or potential environmental and social impacts (impact materiality), as well as sustainability-related risks and opportunities (financial materiality) across short, medium, and long-term periods. Iberdrola used both internal and external sources to determine impacts, including international frameworks and reports from institutions like the UN, WEF, and IEA, as well as internal sources like its enterprise risk management system, stakeholder engagement model results, and human rights report. For risks and opportunities, the company used its risk map, IFRS guidelines, and platforms like PRI and ENCORE. Notably, because of methodological differences between the two perspectives, phases two, three, and four were conducted independently for impact and financial materiality (Iberdrola, 2025) [164].

Iberdrola assessed the significance of each impact in Phase 3 of the double materiality assessment by taking into account feedback from impacted stakeholders as well as internal business units. Impacts were evaluated as either positive or negative, and as current or potential. The assessment methodology, outlined in slide 9 of this session, used variables such as scale, scope, probability, and the degree to which a negative impact is irreversible. These variables helped determine the severity of each impact, with severity taking precedence over probability in human rights-related cases. Based on the overall score, impacts were categorized as material if they were considered critical, significant or important. Regarding financial materiality, the process involved filtering out risks unlikely to have a financial effect or those with very low probability. It also excluded risks and opportunities associated with regulated activities that were not expected to have sustainability-related financial implications. The resulting list of inherent risks was reviewed by Chief Risk Officers across Iberdrola’s country subsidiaries. Phase 4 concluded with a final inventory of risks considered financially material and a list of the most important impacts (Iberdrola, 2025) [164]. Slide 10 of this session presents the materiality topics and subtopics, based on the highest scores in both impact and financial materiality.

The instructor will then explain the structure and composition of Iberdrola’s Board of Directors. The board consists of 14 members, of whom only two are executive directors, the chairman and the chief executive officer, meaning that 86% of the board are external directors. Among these, 91% meet the criteria to be classified as independent under the Spanish Companies Act. The board also includes two vice-chairs and one lead independent director, all of whom are fully independent, as well as an Executive Committee. In addition, the board is supported by four consultative committees: the Audit and Risk Supervision Committee, the Sustainable Development Committee, and the Appointments Committee (all of which are 100% independent) and the Remuneration Committee, where two out of three members, including the chair, are independent (Iberdrola, 2025) [166].

Since 2015, Iberdrola has implemented a “Board of Directors Composition and Member Selection Policy” aimed at ensuring diversity and inclusiveness within the senior management of the company. While specifically prohibiting any kind of bias or discrimination,

especially those that could impede the inclusion of women, this policy promotes the appointment of directors with a balanced mix of backgrounds, nationalities, ages, genders, skills, and experience. The most recent composition shows a strong gender balance, with 43% of board members being women and 57% being men. Additionally, there are representatives from Spain, the United States, the United Kingdom, Brazil, and Italy on the board. In terms of tenure, 57% of directors have served for less than five years, 29% for six to ten years, and only 14% have been in the role for more than a decade, supporting a mix of fresh perspectives and institutional knowledge (Iberdrola, 2025) [166].

Iberdrola has been recognized (once again) this year by World Finance as the top-performing company in corporate governance in Spain. Companies with the strongest governance structures are highlighted by this award, which emphasizes their commitment to accountability, transparency, and their participation in tackling important global issues. Iberdrola's deep understanding of stakeholder expectations allows it to exceed legal and regulatory standards, which can be demonstrated by initiatives such as publishing its Sustainability Report 15 years ahead of legal requirements. In order to maintain legal and ethical integrity, Iberdrola has also put in place a strong Compliance System, which is guided by ethical principles and transparency. Moreover, Iberdrola was the first business in the IBEX 35 to publish a Compliance System Transparency Report (Iberdrola, 2025) [167].

After addressing Iberdrola's corporate governance, the instructor will discuss the company's approach to risk management. Operating across diverse countries, industries, and markets, Iberdrola faces various inherent risks that may challenge the achievement of its objectives. Recognizing the importance of effective risk oversight, the company's Board of Directors has established measures to ensure that key risks are properly identified, assessed, and managed. These mechanisms aim to maintain an optimal risk-opportunity balance that enables Iberdrola to achieve its strategic goals with controlled volatility, provide strong assurance to shareholders, protect the interests of investors, customers, and other stakeholders, safeguard the Group's results and reputation, maintain long-term financial stability, and promote a strong risk-aware culture among employees through communication and training (Iberdrola, 2025) [168].

Furthermore, Iberdrola has developed a responsible and resilient business model that places Stakeholders at the heart of its strategy, organizing them into six main categories: employees, shareholders and the financial community, customers, communities, supply chain, and the environment. To better target engagement efforts to their unique needs and expectations, these groups are further divided into subgroups. To address stakeholder needs and expectations, Iberdrola has implemented and actively promoted its Global Stakeholder Engagement Model as a key instrument to ensure compliance with its Stakeholder Engagement Policy. The model is implemented across the six stakeholder categories in the five main countries and at most Generation and Sustainable Energy facilities. In addition to encouraging a culture of communication, this model helps each business unit to understand its stakeholders, communicate effectively, evaluate expectations, and implement targeted actions to mitigate risks and maximize benefits. It considers impacts from multiple perspectives, such as reputational risk, the effects of corporate actions, and stakeholder exposure to significant events. Iberdrola continuously

updates its communication channels and monitors evolving stakeholder concerns (Iberdrola, 2025) [164].

A key example of stakeholder value creation at Iberdrola is the 'Electricity for All' program. Around 600 million people globally still lack access to essential electricity services, limiting their quality of life and development opportunities. In response, Iberdrola launched this initiative in 2014, aiming to provide electricity access to over 16 million people by 2030. As of the end of 2024, the programme has already reached 13.8 million people across Latin America and Africa, promoting universal access to modern energy through solutions that are both sustainable and inclusive (Iberdrola, n.d) [169].

Once the company's relationship with stakeholders has been discussed, the instructor will briefly address Iberdrola's sustainable finance. Thanks to strong financial discipline, Iberdrola continues to lead in corporate sustainable financing. By the end of 2024, nearly 90% of its investment plan was aligned with the EU taxonomy, reinforcing its global leadership in green bonds and attracting high demand from sustainability-focused investors. In 2024, the Group signed €9,643 million in sustainable financing, bringing its total sustainable finance portfolio to €60,053 million. The graph in slide 19 of this session illustrates how of the €9,643 million in new sustainable financing €7,796 million corresponds to green financing, mainly through bonds. Additionally, €1,847 million corresponds to KPI-linked sustainable financing, mostly via commercial paper programmes and bank loans (Iberdrola, 2025) [165].

To fund sustainable energy projects, Iberdrola issued a hybrid green bond worth €800 million on the Euromarket in 2024. Despite challenging market conditions marked by geopolitical instability, the bond was 3.75 times oversubscribed, attracting more than €3 billion in demand from over 200 international investors. With a competitive 4.25% coupon rate and a near-zero premium, it became Iberdrola's most attractive hybrid issuance in the past three years. This favorable market response not only highlights Iberdrola's leadership in sustainable finance but also shows that investors have confidence in the company's financial strength, potential for long-term growth, and dedication to the energy transition (ESG News, 2024) [170].

Next, the instructor will explain how Iberdrola integrates artificial intelligence into its sustainable operations. For over a decade, Iberdrola has used AI to make energy predictions, improve efficiency, and identify patterns that support daily operations. AI plays a key role in the process of developing clean energy, helping to optimize wind and solar power generation by predicting ideal turbine locations and using advanced data analysis to predict and prevent issues before they occur. As well as this, by identifying birds close to wind farms and momentarily stopping turbines, AI supports biodiversity protection. In the area of electricity grids, AI enhances customer service by estimating blackouts durations in the case of incidents and allows the company to anticipate future grid maintenance needs through predictive models built on historical data and over 100 operational variables (Iberdrola, 2025) [171].

Last year, Iberdrola became the first European energy utility to join the EU AI Pact, a framework that promotes the ethical and responsible application of AI. Through this

commitment, Iberdrola pledged to strengthen internal AI governance, identify systems that could be considered high-risk under the new legislation, and improve AI knowledge across its workforce (Magyar, 2025) [171]. The company has an AI policy that complies with the new regulation, which includes registering AI models along with their risk evaluations and aligning its operations with a global standard. Additionally, Iberdrola established a Global AI Centre two years ago, which plays an important role in ensuring secure platforms, advancing responsible AI practices, and driving innovation across the business (Iberdrola, 2025) [171].

After discussing Iberdrola's use of AI and its commitment to responsible innovation, the instructor will now present a concrete example of sustainable infrastructure through Iberdrola's Smart Solutions for households. These offerings promote energy efficiency, help manage and reduce energy consumption, and contribute to lowering carbon footprint. By providing charging infrastructure and sustainable energy supply contracts that are up to 10 times less expensive than fuel, the Smart Mobility solution promotes the use of electric vehicles. With customized solar panel installation and maintenance, Smart Solar enables users to produce their own energy. Smart Home enhances energy savings through detailed consumption insights, while Smart Services offer electrical support for emergencies and repairs. Finally, Smart Clima offers eco-friendly heating and cooling solutions which help create a more intelligent and sustainable home energy model (Iberdrola, 2025) [165].

The final topic the instructor will address regarding Iberdrola is its approach to circular economy. The company uses three main pillars to address this challenge: promoting resource efficiency, using secondary materials, and applying the waste hierarchy principle to reduce waste generation. Iberdrola's strategy includes actions across several areas. First, its business model focuses on the efficient generation, storage, transmission, and distribution of energy, which leads to reduced fossil fuel consumption, lower water usage, and less waste. Second, Iberdrola collaborates closely with its suppliers to obtain products and services that incorporate more recycled materials, require less energy, and offer greater potential for reuse and recycling. Third, it applies circular principles throughout the life cycle of its infrastructure, leveraging advanced technologies to extend asset longevity and optimize water use (Iberdrola, 2025) [165].

To conclude, the instructor will highlight two circular practices implemented by Iberdrola in 2024. The first focuses on wind turbine blade recycling. In collaboration with external partners, Iberdrola established the company EnergyLoop in 2022 to develop recycling technologies in anticipation of the large number of blades expected to be dismantled or upgraded from wind farms across Spain. These efforts not only support Iberdrola's operations but also aim to integrate the recovered materials into other sectors such as construction, chemicals, and ceramics. In 2024, the construction of a recycling plant in Cortes (Navarre) was completed, with operations expected to begin in early 2025. The second example involves the management of radioactive waste at the Cofrentes nuclear power plant. Spent fuel is currently stored safely in pools and in an Individualised Temporary Storage (ITS) facility. While current technology limits reuse of this waste, the company is keeping an eye on future reactor advancements that may enable fuel recycling (Iberdrola, 2025) [164].

Result Analysis

By observing and analyzing the 12 sessions conducted to train a company's senior management in ESG, it can be stated that the course developed addresses the application of ESG criteria in business strategy in both a conceptual and practical manner. For all topics, a strong theoretical foundation was provided to ensure that participants gained the necessary knowledge, alongside various real-world company examples, including Unilever, Nestlé, Patagonia, Allianz, and many others. The use of real examples was so crucial that Session 12 was entirely dedicated to analyzing Iberdrola through the lens of the different themes covered throughout the course.

By examining successful cases, companies attending this course can clearly understand the real value of implementing ESG, not merely as a compliance exercise, but as a strategic tool to avoid risks, drive long-term growth, and create lasting value for stakeholders. Likewise, the course did not only include success stories but also examined failure cases, such as Kodak, which failed to properly assess risks and implement measures, allowing competitors to take over, and the Deepwater Horizon disaster, where no adequate preparation for critical failure scenarios was in place. These examples highlight the importance of applying ESG from a different perspective, not just through success when ESG is implemented, but through the serious consequences that can occur when it is not.

After analyzing the sessions, five key topics emerge as essential takeaways for any senior management team attending this course. The first is the double materiality assessment, one of the core requirements under the CSRD for corporate sustainability reporting. It is crucial that companies report on the issues most relevant to them. As explained primarily in Session 3, double materiality requires companies to evaluate two dimensions: financial materiality, which considers how sustainability-related issues affect the company’s financial performance either as a risk or as an opportunity, and impact materiality, which assesses the company’s effects on society and the environment. The outcome of this process is a list of material topics that form the foundation of the company’s sustainability strategy, helping direct time and resources to the matters that truly count.

When companies properly assess the seriousness of their impacts, as well as the risks and opportunities they face, they can make well-informed decisions that maximize their positive impacts while minimizing potential threats. The course also emphasized how double materiality brings multiple benefits to ESG reporting. It provides a unified foundation for all companies, ensuring that sustainability disclosures are consistent and comparable across organizations. At the same time, it enables companies to effectively respond to stakeholder pressure by addressing all ESG-related factors such as risks, impacts, and opportunities, in a transparent and meaningful way.

The second key topic is corporate governance. Sometimes, when discussing ESG, people may fall into the mistake of prioritizing the environmental and social dimensions while overlooking or neglecting the governance pillar. This is a serious error, as any company aiming to implement ESG effectively must understand that governance serves as the foundation upon which the other dimensions are built. If senior management is not well

trained in ESG matters, does not value sustainability, or is inefficient, it becomes very difficult for a company to embark on the path toward sustainability.

Strong corporate governance is crucial to ensure that ESG goals are actively pursued, that progress is effectively monitored, and that the company's commitment to making a positive impact is translated into concrete actions and accurately reported. The board of directors plays a key role in setting strategies aligned with long-term value creation, upholding ethical standards across operations, and establishing a robust risk management framework to support sustainable decision-making. That said, ESG performance largely depends on having good corporate governance practices and on the board of directors understanding the importance of advancing the company's sustainable development goals and how to do so effectively.

The third key topic that participants should take away from the course is the concept of risk management and the crucial role ESG plays as a tool for managing risk. As mentioned earlier in Session 6, investing in environmentally responsible initiatives can significantly reduce long-term risks. Investors are increasingly incorporating ESG criteria into their decision-making, and taking action on ESG now can help companies avoid divestment or loss of funding in the future. ESG frameworks also assist businesses in identifying, assessing, and mitigating non-financial risks, such as environmental disasters, regulatory shifts, or reputational damage, that could severely impact operations and value creation. Additionally, companies with strong ESG practices are better prepared to adapt their strategies in the face of evolving regulatory or market conditions. They are also less exposed to government intervention and more likely to receive institutional support.

The fourth key topic covered in this course is stakeholder value creation. ESG initiatives can deliver meaningful benefits to various groups, such as stronger ties with local communities and improved customer loyalty. These advantages often reinforce one another, increasing overall stakeholder satisfaction and ultimately enhancing shareholder value. It is crucial for the people who will be attending this course to understand that when ESG efforts are aligned with stakeholders' expectations and needs, they can generate mutual value. Companies that integrate ESG into their strategy also focus on identifying and engaging with stakeholders to better understand how their operations affect them. By doing so, the company can make more informed decisions that enable the organization to reduce negative impacts, build trust, and manage potential risks.

The final topic that leaders attending this course must not overlook is the crucial role artificial intelligence plays in accelerating and advancing sustainability within companies. As demonstrated in the examples from Session 10, AI offers multiple environmental benefits and can also have a significant positive impact on both social issues and corporate governance. Furthermore, AI helps optimize various business processes, facilitate ESG investment selection and the collection and reporting of sustainability data. It is remarkable how AI can efficiently gather information, enable real-time tracking, detect anomalies, and reduce both time and operational costs.

Future Work and Conclusions

This work concludes that the course content is essential for companies of all sizes and at any stage of integrating ESG standards into their operations. It can support businesses that are just starting their sustainability journey and seeking to meet regulatory requirements by helping them understand reporting obligations and potential challenges. At the same time, it can benefit more advanced companies by allowing them to identify potential gaps or missteps in their ESG strategies and explore areas for improvement, such as implementing sustainable infrastructure or strengthening risk management practices.

It can be affirmed that all sessions of the course are highly valuable and that the initial objectives set at the beginning of this work have been fully achieved. The course delved deeper into ESG principles, explaining to a company's senior management the most important concepts, as well as their relevance and applicability within business strategy. Likewise, updated and easy-to-understand educational materials were developed, including graphic resources, visual aids, summarized concepts, news, and videos, which are elements that facilitate information processing and help internalize key ideas. Furthermore, the course incorporated practical examples of companies from various sectors that are currently implementing ESG strategies in their organizational structures and decision-making, analyzing their successes, challenges, risk mitigation efforts, and the methodologies they used. In this way, the course fulfilled its goal of offering a practical approach rather than being purely theoretical, while also providing in-depth insights into the strategies and obstacles faced by companies, avoiding superficial examples.

Another important aspect is that the course successfully achieved its goal of providing practical tools for participants to apply within their companies, such as how to conduct a double materiality assessment, the steps involved in risk management, or how to choose the ESG pathway the company wants to pursue and develop a strategic plan accordingly. Additionally, a particularly valuable feature of the course is its focus on existing regulations, which is something many other ESG courses often lack. While most tend to focus on specific ESG topics like strategy, investment, or the breakdown of each ESG dimension, they often overlook regulation. Report requirements and regulations are crucial information that senior management need to understand, not only to ensure compliance with the law but also to avoid transparency failures, greenwashing, and other reputational risks. It is also important to note that if a company does not apply certain universal criteria, its ESG performance cannot be easily compared with that of other companies. Moreover, lacking knowledge of regulatory requirements may result in implementing ESG in an inefficient way, starting with misjudging risks, impacts, or opportunities. This could lead to poor decision-making and missed opportunities for improvement.

Something worth highlighting about this work is that it addresses ESG from multiple perspectives, an approach not commonly found during the prior research conducted for the development of this course. The course explores not only each ESG dimension individually, but also broader topics such as strategy, potential challenges, ESG investment, infrastructure, stakeholder value creation, and much more; even including discussions on the use of AI to advance sustainability. It is also important to mention that the course provides a

strong theoretical foundation on the subject, drawing on a wide range of resources including books, Coursera courses, corporate documents, news articles, academic studies, conferences, and more.

For future work, the content of this course will need to be updated, as it is based solely on information available up to early 2025. Regulatory changes, particularly in the area of reporting and sustainable business requirements are continuously evolving. Additionally, there will be more examples of CSRD-aligned reporting in the future, as companies only began to be affected by these new reporting requirements last year; prior to that, the NFDR was in place. While this course already includes several real-world examples of companies that place ESG at the core of their business strategy, future courses will be able to incorporate even more examples. Sustainable investment is on the rise, and AI is increasingly being used to advance sustainability efforts. Therefore, it is expected that there will be more practical case studies, both of companies that have successfully implemented ESG and of those that have faced negative consequences for failing to do so.

It will be advisable for future works not only to include practical examples of each topic throughout the course, but also to conclude with more comprehensive case studies that evaluate all the ESG aspects discussed in relation to a single company. In this course, such an analysis was conducted using Iberdrola as the main example, but it would be valuable to apply the same approach to additional companies. This would involve assessing each company's ESG criteria, reporting practices, risk management approach, use of AI, the type of ESG strategy adopted, and evaluating its double materiality assessment to identify the most relevant material issues, along with other aspects such as sustainable finance, stakeholder value creation, or circular economy practices, just as was done in Session 12 of this project.

References

[1] Polman, P., & Winston, A. (2022). *Impacto neto positivo: Cómo las empresas valientes prosperan dando más de lo que reciben*. Profit Editorial.

[2] Courseira Staff. (2025). *What Is Sustainability? (And Why Is It Important?)*. Courseira. https://www.coursera.org/articles/what-is-sustainability

[3] Krantz, T., & Jonker, A. (2024). *What is environmental, social and governance (ESG)?.* IBM. https://www.ibm.com/think/topics/environmental-social-and-governance

[4] Hoos, F. (2024). *Sustainability for business: ESG fundamentals* [Online course]. IMD. Coursera. https://www.coursera.org/learn/esg

[5] Novillo, C. (2019). *Greenwashing: qué es, cómo funciona y ejemplos*. EcologíaVerde. https://www.ecologiaverde.com/greenwashing-que-es-como-funciona-y-ejemplos-2077.html

[6] del Río, L. (2024). *Greenwashing: qué es, qué riesgos conlleva y cómo detectarlo*. Computing.https://www.computing.es/informes/greenwashing-que-es-que-riesgos-conlleva-y-como-defenderse/

[7] Dhanani, R. (2023). *What is greenhushing & why are brands doing it?.* The Sustainable Agency. https://thesustainableagency.com/blog/what-is-greenhushing

[8] Forum for the Future. (n.d.). *Net positive*. Forum for the Future. https://www.forumforthefuture.org/net-positive

[9] Acciona. (2025). *Informe de sostenibilidad 2024*. Acciona. https://www.acciona.com/content/dam/acciona-global/documentos/cnmv/2025/informe-sostenibilidad-2024.pdf

[10] IKEA. (n.d.). *A circular IKEA – making the things we love last longer*. https://www.ikea.com/us/en/this-is-ikea/sustainable-everyday/a-circular-ikea-making-the-things-we-love-last-longer-pub9750dd90/

[11] Prakash, S. (2024). *IKEA to launch a secondhand marketplace*. Institute of Sustainability Studies. https://instituteofsustainabilitystudies.com/insights/news-analysis/ikea-to-launch-a-secondhand-marketplace/

[12] McGrath, A., & Jonker, A. (2023). *What is corporate social responsibility (CSR)?*. IBM. https://www.ibm.com/think/topics/corporate-social-responsibility

[13] Bcorporation. (2025). About B Corp Certification: *Measuring a company's entire social and environmental impact*. https://www.bcorporation.net/en-us/certification/

[14] ExpokNews. (2025). *10 ejemplos de social washing*. ExpokNews. https://www.expoknews.com/10-ejemplos-de-social-washing/

[15] Radio Rioja. (2025). *Las compras de Mercadona a proveedores riojanos superaron los 550 millones de euros en 2024*. Cadena SER. https://cadenaser.com/rioja/2025/06/19/las-compras-de-mercadona-a-proveedores-riojanos-superaron-los-550-millones-de-euros-en-2024-radio-rioja/

[16] Williamson, L. (2024). *Mercadona's ongoing aid for DANA victims*. InSpain.news. https://inspain.news/mercadonas-ongoing-aid-for-dana-victims/

[17] Inditex. (2022). *Annual Corporate Governance Report 2022* [PDF]. Inditex. https://www.inditex.com/itxcomweb/api/media/c0ac6763-2277-4de3-a691-db3a904737ef/2022+Inditex+Annual+Corporate+Governance+Report.pdf?t=1682613833598

[18] Global Reporting Initiative. (n.d.). *Our Mission & history*. https://www.globalreporting.org/about-gri/mission-history/

[19] Sustainability Economics. (2024). *"Who Cares Wins": transforming finance and economics through ESG.* https://www.sustainabilityeconomics.net/blogs/who-cares-wins-the-report-that-started-esg

[20] PRI. (2019). *Principles for Responsible Investing* [PDF].https://esg-platform.com/wp-content/uploads/2023/10/United_Nations-backed_Principles_for_Responsible_Investing_PRI.pdf

[21] Noticias ONU. (2015). La Asamblea General adopta la Agenda 2030 para el Desarrollo Sostenible. https://www.un.org/sustainabledevelopment/es/2015/09/la-asamblea-general-adopta-la-agenda-2030-para-el-desarrollo-sostenible/

[22] O'Connor, B. (2022). *The ESG investing handbook*. Harriman House.

[23] Durham University. (2023). *COP28: The long-term goals of the Paris Agreement and the concept of Just Transition.* Durham University. https://www.durham.ac.uk/research/current/thought-leadership/2023/12/cop28-the-long-term-goals-of-the-paris-agreement-and-the-concept-of-just-transition/

[24] Lo, J. (2020). *Which countries have not ratified the Paris climate agreement? Climate Change News.* https://www.climatechangenews.com/2020/08/13/countries-yet-ratify-paris-agreement/

[25] Calma, J. (2025). *Donald Trump pulls US out of Paris climate agreement.* Theverge.

https://www.theverge.com/2025/1/20/24345964/donald-trump-paris-climate-agreement-exit

[26] Roncalli, T. (2025). *Handbook of sustainable finance*. Université Paris-Saclay.

[27] Salgado, L. (2023). *Entendiendo el ISSB (International Sustainability Standards Board)*. APLANET. https://aplanet.org/es/recursos/issb/

[28] Oliari, R. (n.d.). *Entenda as normas IFRS S1 e IFRS S2*. Deloitte. https://www.deloitte.com/br/pt/services/audit-assurance/perspectives/normas-sustentabilidade-fatores-climaticos.html

[29] Carroll, S. (2023). *Overview of IFRS S1 and IFRS S2*. Grant Thornton. https://www.grantthornton.global/en/insights/articles/overview-of-ifrs-s1-and-ifrs-s2/

[30] IFRS. (n.d.). *ISSB: Frequently Asked Questions*. https://www.ifrs.org/groups/international-sustainability-standards-board/issb-frequently-asked-questions/

[31] Nexia. (n. d.). *EU Taxonomy.* https://www.nexia.de/en/topics/sustainability/eu-taxonomie

[32] Doyle, D. H. (2021). *A Short Guide to the EU's Taxonomy Regulation*. S&P Global. https://www.spglobal.com/esg/insights/a-short-guide-to-the-eu-s-taxonomy-regulation

[33] Anderson, K. (2025). *What is the EU Taxonomy?*. Greenly Earth. https://greenly.earth/en-gb/blog/company-guide/what-is-the-eu-taxonomy

[34] Forética. (2025). *Tendencias ESG 2025*: Claves para la agenda empresarial de sostenibilidad. Forética. https://foretica.org/publicacion/2025/01/tendencias-esg-2025/

[35] Forética. (2024). Guía sobre la CSRD: Corporate Sustainability Reporting Directive. Forética. https://foretica.org/wp-content/uploads/2024/01/Guia-sobre-la-CSRD-Novedades-y-adaptacion.pdf

[36] Global Reporting Initiative. (2024). *CSRD Essentials: The definitive guide to the EU Corporate Sustainability Reporting Directive*. https://www.globalreporting.org/media/nchpzct5/gri-csrd-essentials.pdf

[37] EY denkstatt. (2023). *European Sustainability Reporting Standards (ESRS) in a nutshell*. https://denkstatt.at/en/esrs-standards-explained/

[38] Casado, A. (2021). *SFDR Mandatory Indicators & Principal Adverse Impact (PAIs)*. Greenomy. https://www.greenomy.io/blog/sfdr-principal-adverse-impact

[39] Envoria. (2023). *The GRI Standards: The most widely used sustainability reporting framework.* https://envoria.com/insights-news/the-gri-standards-the-most-widely-used-sustainability-reporting-framework

[40] Salgado, L. (2024). ESRS: Estándares de Reporte en Sostenibilidad de la UE y cómo aplicarlos. Aplanet. https://aplanet.org/es/recursos/esrs/

[41] Crowe. (2025). *Understanding the Structure of GRI Standards: Tailor Your Sustainability Reporting with GRI Standards*. https://www.crowe.com/ae/news/understanding-the-structure-of-gri-standards

[42] Global Reporting. (n.d.). *A Short Introduction to the GRI Standards*. https://www.globalreporting.org/media/wtaf14tw/a-short-introduction-to-the-gri-standards.pdf

[43] Nike, Inc. (2023). *FY22 Nike, Inc. Impact Report*. https://about.nike.com/en/impact-resources/fy22-nike-inc-impact-report

[44] IBM. (2023). *O que é o SASB?*. https://www.ibm.com/br-pt/think/topics/sasb

[45] Integrated Reporting. (2021). *International <IR> Framework*. https://integratedreporting.ifrs.org/wp-content/uploads/2024/08/IntegratedReporting_Framework_061024.pdf

[46] FSB. (2020). *2020 Status Report: Task Force on Climate-related Financial Disclosures*. https://www.fsb.org/2020/10/2020-status-report-task-force-on-climate-related-financial-disclosures/

[47] TCFD. (2017). Recommendations of the Task Force on Climate-related Financial Disclosures. https://assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf

[48] BBVA. (2020). *BBVA Report on TCFD*. https://shareholdersandinvestors.bbva.com/wp-content/uploads/2020/10/BBVA-report-on-TCFD_Eng.pdf

[49] Thompson, A. (2023). *Sustainable and ESG Investing.* Side Hustle Success.

[50] Farnham, K. (2023). What is a proxy statement? Definition, rules, & examples. Diligent. https://www.diligent.com/resources/blog/what-is-a-proxy-statement

[51] MSCI. (2024). *ESG Ratings Methodology*. MSCI ESG Research LLC. https://www.msci.com/documents/1296102/34424357/MSCI%2BESG%2BRatings%2BMethodology.pdf

[52] Sustainalytics. (2024). *ESG Risk Ratings:* Methodology abstract (Version 3.1). https://www.sustainalytics.com/docs/knowledgehublibraries/default-document-library/sustainalytics_-esg-risk-ratings_-version-3-1_-methodology-abstract_-june-2024.pdf

[53] Flesher, J. (2025). *Who are the major ESG rating agencies?*. Nossadata. https://www.nossadata.com/blog/esg-rating-agencies

[54] ESGVoices. (2023). *ESG Score Rating Agencies: Key Organizations and Their Impact*. https://www.esgvoices.com/post/esg-score-rating-agencies-key-organizations-and-their-impact

[55] FTSE Russell. (2023). *ESG Scores and data model*. https://www.lseg.com/content/dam/ftse-russell/en_us/documents/other/ftse-esg-scores-overview-2023.pdf

[56] Mehrotra, N., Ahluwalia, D. S., & Khushalani, H. (2023). *As ESG reporting becomes mainstream, complex challenges persist*. EY. https://www.ey.com/en_in/insights/climate-change-sustainability-services/as-esg-reporting-becomes-mainstream-complex-challenges-persist

[57] PwC. (2024). *CSRD - Double Materiality Assessment*. PwC Netherlands. https://www.pwc.nl/en/topics/sustainability/esg/corporate-sustainability-reporting-directive/csrd-double-materiality-assessment.html

[58] Cámara Valencia. (2024). *Guía para la elaboración de la doble materialidad* [PDF]. https://negociosostenible.camaravalencia.com/wp-content/uploads/2024/06/Guia_IVACE_para_la_Elaboracion_de_la_Doble_Materialidad.pdf

[59] Greenomy Academy. (2025). *Deep dive on the Double Materiality Assessment* [Online course]. https://academy.greenomy.io/course/double-materiality-assessment

[60] Euronext Corporate Services. (2024). The Ultimate Guide to Double Materiality Assessment. https://www.rsm.global/belgium/sites/default/files/media/Brochures/ECS_The%20Ultimate%20Guide-to-Double-Materiality-Assessment_Ebook_FINAL%20VERSION.pdf

[61] Repsol. (2024). *Integrated management report 2023*. https://www.repsol.com/content/dam/repsol-corporate/en_gb/accionistas-e-inversores/informes-anuales/2023/integrated-management-report-2023.pdf

[62] Telefónica. (2024). *Consolidated management report 2023*. https://www.telefonica.com/en/shareholders-investors/financial-reports/historical-archive-annual-reports/2023/

[63] van Kampen, M. (2018). *Growing trend in Environmental Profit & Loss Accounting* (Philips Innovation Services white paper). Philips Innovation Services. https://www.engineeringsolutions.philips.com/app/uploads/2018/11/Environmental-Profit-and-Loss-Accounting-whitepaper.pdf

[64] PUMA. (2024). *Environmental key performance data*. https://annual-report.puma.com/2023/en/sustainability/environmental-key-performance-data/index.html

[65] Kering. (2021). *Environmental profit and loss (EP&L):* 2020 group results. https://www.kering.com/api/download-file/?path=Rapport_Kering_Environmental_Profit_and_Loss_report_2020_EN_only_72e6fb39a2.pdf

[66] Dayal. (2023). *ESG Metrics and the Balanced Scorecard: A New Paradigm for Performance Assessment*. https://www.linkedin.com/pulse/esg-metrics-balanced-scorecard-new-paradigm-assessment-bipin-dayal/

[67] Haygert, G. (2024). *Como integrar ESG ao Balanced Scorecard para Impulsionar a Sustentabilidade Corporativa*. https://www.linkedin.com/pulse/como-integrar-esg-ao-balanced-scorecard-para-haygert-riffel-rocha-8zgjf/

[68] Eradiri, B. M., Adebayo, G. D., Ogieriakhi, P. A., Egbuna, I. K., & Adebayo, D. O. (2025). *Ethical and corporate governance failures in the Wells Fargo fake accounts scandal (2016)*: Impact and implications for corporate responsibility. Path of Science, 11(4). https://pathofscience.org/index.php/ps/article/view/3500/1691

[69] Müller, M., & Kusen, A. (2020). *The "G" in ESG: Governance – a question of balance*. Deutsche Bank Wealth Management. https://www.deutschewealth.com//content/dam/deutschewealth/cio-perspectives/cio-special-assets/g-in-esg/CIO-Special-The-G-in-ESG-Governance-a-question-of-balance.pdf?kid=cio.esg.reportlinks.linkedin

[70] Rosenberg, M. (2015). *Strategy and Sustainability*. A Hard-Nosed and Clear-Eyed Approach to Environmental Sustainability For Business. Basingstoke [England]: Palgrave Macmillan.

[71] Corbett-Nolan, A. (2022). *Making it easy to do the right thing*. Good Governance Institute. https://www.good-governance.org.uk/publications/insights/making-it-easy-to-do-the-right-thing

[72] OECD. (2023). *G20/OECD Principles of Corporate Governance 2023*. OECD Publishing, Paris. https://doi.org/10.1787/ed750b30-en

[73] Rosenberg, M. (2023). *Strategy and Sustainability* [Online course]. Coursera. https://www.coursera.org/learn/strategy-sustainability/home/module/1

[74] Ribeiro, R. (2024). *A força do ESG*. Rio de Janeiro: Alta Books.

[75] Cameron Hume. (2020). *Corporate governance at Rio Tinto – an ESG case study*. https://www.pensionsforpurpose.com/assets/PDFs/2020_10_08_15_52_50_ch_esg_rio_tinto_case_study_ch_aw.pdf

[76] World Economic Forum. (2022). *Defining the 'G' in ESG*: Governance factors at the heart of sustainable business. https://www3.weforum.org/docs/WEF_Defining_the_G_in_ESG_2022.pdf

[77] Deutsche Bank. (2020). *Exploring the E, S and G in ESG*. https://www.deutschewealth.com/content/dam/deutschewealth/cio-perspectives/cio-special-assets/exploring-the-e-s-and-g-in-esg/CIO-Special-ESG-Exploring-the-E-S-and-G-in-ESG.pdf

[78] PwC. (2021). *Guía para la integración de criterios ESG en los consejos de administración*. https://www.pwc.com/ia/es/publicaciones/assets/guia-esg-consejos-administracion_revWEM_V2.pdf

[79] PepsiCo. (n.d.). *Corporate governance*. https://www.pepsico.com/our-impact/esg-topics-a-z/corporate-governance

[80] Guilherme, L. (2025). *How Risk Management could have prevented the Deepwater Horizon Platform disaster in the Gulf of Mexico in 2010*. The Power of Risk Management. https://www.linkedin.com/pulse/how-risk-management-could-have-prevented-deepwater-gulf-carvalho--sqp6f/

[81] Whole Foods Market. (2023). *Whole Foods Market Unveils Latest Impact Report on Nourishing a More Sustainable Global Food System*. https://media.wholefoodsmarket.com/whole-foods-market-unveils-latest-impact-report-on-nourishing-a-more-sustainable-global-food-system/

[82] EcoActive. (2025). *The 5 Main Challenges of ESG Reporting and Best Practices*. https://ecoactivetech.com/the-5-main-challenges-of-esg-reporting-and-best-practices/

[83] Lui, A. (2024). *ESG challenges in emerging markets*. Clyde & Co. https://www.clydeco.com/en/insights/2024/08/esg-challenges-in-emerging-markets

[84] Future of Sustainable Data Alliance. (2021). *ESG Data gaps & holes*: The FoSDA Data Council perspective. Future of Sustainable Data Alliance. https://futureofsustainabledata.com/wp-content/uploads/2021/10/FoSDA-Data-Council-ESG-Data-Gaps-Holes-1.pdf

[85] Future of Sustainable Data Alliance. (2022). *FoSDA launches its flagship review of ESG data gaps and holes at COP27*. https://futureofsustainabledata.com/fosda-launches-its-flagship-review-of-esg-data-gaps-and-holes-at-cop27/

[86] Chopra, S.S., Senadheera, S.S., Dissanayake, P.D., Withana, P.A., Chib, R., Rhee, J.H., & Ok, Y.S. (2024). *Navigating the Challenges of Environmental, Social, and Governance (ESG) Reporting:* The Path to Broader Sustainable Development. Sustainability. https://www.researchgate.net/publication/377317810_Navigating_the_Challenges_of_Environmental_Social_and_Governance_ESG_Reporting_The_Path_to_Broader_Sustainable_Development

[87] Waniak-Michalak, H., Sapkauskiene, A., & Leitoniene, S. (2018). *Do companies manipulate CSR information to retain legitimacy?*. Inzinerine Ekonomika–Engineering Economics, 29(3), 352–360. https://inzeko.ktu.lt/index.php/EE/article/view/18946

[88] Sustainable Brands. (2024). *'Greenhushing' diminishing returns for 58% of U.S.'s 100 biggest companies*. https://www.sustainablebrands.com/read/greenhushing-diminishing-returns-58-companies

[89] Green Business Journal. (2022). *Two in 5 companies struggle with ESG supply chain data*. https://greenbusinessjournal.co.uk/two-in-5-companies-struggle-with-esg-supply-chain-data/

[90] Matos, P. (2020). *ESG and responsible institutional investing around the world*: A critical review. CFA Institute Research Foundation.

[91] Gibson, R., Krueger, P., Riand, N., & Schmidt, P. S. (2019). *ESG rating disagreement and stock returns*. Swiss Finance Institute Research Paper No. 19-67. https://doi.org/10.2139/ssrn.3433728

[92] Tonello, M. (2025). *Regulatory shifts in ESG: What comes next for companies?*. Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2025/04/12/regulatory-shifts-in-esg-what-comes-next-for-companies/

[93] Tonello, M. (2025). *The evolving landscape of DEI shareholder proposals*. Harvard Law School Forum on Corporate Governance.

https://corpgov.law.harvard.edu/2025/04/25/the-evolving-landscape-of-dei-shareholder-proposals/

[94] RSM. (2024). *Sustainability Challenges: The current scenario in Latin America*. https://www.rsm.global/latinamerica/sites/default/files/media/PDF/Ebook%20Latin%20America%20Landscape%202024%20-%20EN%20FINAL%20%20-%20%20Read-Only.pdf

[95] Henisz, W., Koller, T., & Nuttall, R. (2019). *Five ways that ESG creates value*. McKinsey Quarterly. McKinsey & Company. https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Strategy%20and%20Corporate%20Finance/Our%20Insights/Five%20ways%20that%20ESG%20creates%20value/Five-ways-that-ESG-creates-value.ashx

[96] Merchant, R. (2023). *How tracking ESG metrics can help reduce costs and build supply-chain resilience*. Harvard Business Review. https://hbr.org/sponsored/2023/04/how-tracking-esg-metrics-can-help-reduce-costs-and-build-supply-chain-resilience

[97] Whelan, T., Atz, U., Van Holt, T., & Clark, C. (2021). *ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000 plus studies published between 2015–2020*. NYU Stern Center for Sustainable Business. https://www.stern.nyu.edu/sites/default/files/assets/documents/NYU-RAM_ESG-Paper_2021%20Rev_0.pdf

[98] Arora, V. (2023). *How can ESG create value, reduce costs and increase revenues?*. CFO Economic Times. https://cfo.economictimes.indiatimes.com/news/esg/can-esg-create-value/104811606?utm_source=top_news&utm_medium=tagListing

[99] Bosschaart, P. (2024). *The Power of ESG in Branding*. Vim group. https://vim-group.com/insights/the-power-of-esg-in-branding

[100] Agu, E. E., Iyelolu, T. V., Idemudia, C., & Ijomah, T. I. (2024). *Exploring the relationship between sustainable business practices and increased brand loyalty*. International Journal of Management & Entrepreneurship Research, 6(8), 2463–2475. https://www.researchgate.net/publication/383847817_Exploring_the_relationship_between_sustainable_business_practices_and_increased_brand_loyalty

[101] Morel, D. (2024). *How A Business' ESG Credentials Can Attract Top Talent*. Forbes. https://www.forbes.com/sites/davidmorel/2024/01/30/how-can-a-businesss-esg-credentials-attract-top-talent/

[102] COSO. (2017). *Enterprise Risk Management—Integrating with Strategy and Performance*: Executive Summary.

[103] Dathe, T., Helmold, M., Dathe, R., & Dathe, I. (2024). *Implementing environmental, social and governance (ESG) principles for sustainable businesses*: A practical guide in sustainability management. Springer Nature Switzerland AG.

[104] Grimm, I. J., Farias, A., & Santos, L. C. R. (2023). *Incorporação ESG à Estratégia Organizacional*. Editora Appris

[105] Pérez, L., Hunt, D. V., Samandari, H., Nuttall, R., & Bellone, D. (2022). *How to make ESG real*. McKinsey & Company. https://www.mckinsey.com/capabilities/sustainability/our-insights/how-to-make-esg-real

[106] PsicoNetwork. (n.d.). *La teoría del cambio de Kurt Lewin*: Transformación y adaptación en contextos organizacionales. https://www.psiconetwork.com/la-teoria-del-cambio-de-kurt-lewin-transformacion-y-adaptacion-en-contextos-organizacionales/

[107] Freeman-Gray, J. (n.d.). *Kotter's 8 Step Change Model*. Mutomorro. https://mutomorro.com/tools/kotters-8-step-change-model/

[108] Freeman, R. E., Harrison, J. S., & Wicks, A. C. (2007). *Managing for stakeholders*. Yale University Press.

[109] Oguz, A. (2022). *Project management*: Navigating the Complexity with a Systematic Approach. MSL Academic Endeavors.

[110] Kay, I., Brindisi, C., & Martin, B. (2020). *The stakeholder model and ESG*. Harvard Law School Forum on Corporate Governance. https://corpgov.law.harvard.edu/2020/09/14/the-stakeholder-model-and-esg/

[111] Sustainability Directory. (2025). *What are challenges of stakeholder engagement?*. https://esg.sustainability-directory.com/question/what-are-challenges-of-stakeholder-engagement

[112] Frick, J. C. (2019). *Six benefits of stakeholder engagement*. NP Strategy. https://npstrategy.com/six-benefits-of-stakeholder-engagement/

[113] Rainforest Alliance. (2007). *Unilever, the World's Largest Tea Company, Commits to Rainforest Alliance Certification*. https://www.rainforest-alliance.org/press-releases/unilever/

[114] Nestlé. (2024). *Creating Shared Value at Nestlé*. https://www.nestle.com/sites/default/files/2025-02/creating-shared-value-nestle-2024.pdf

[115] Geczy, C. (2025). *ESG Impact: Investor's Perspective* [Online course]. University of Pennsylvania, Coursera. https://www.coursera.org/learn/esg-impact-investor-perspective

[116] Boffo, R., & Patalano, R. (2020). *ESG investing: Practices, progress and challenges*. OECD.

[117] Fennel. (2023). *ESG Index: What Is It and What Are Some Examples?*. https://fennel.com/blog/esg-index-what-is-it-and-what-are-some-examples

[118] Investing.io. (2025). *ESG investing explained: Balancing Profit and Purpose*. https://investing.io/esg-investing-explained/

[119] Lam-Balfour, T., Royal, J. F., & Ayoola, E. (2024). *What Is Diversification? How It Works, Benefits*. https://www.nerdwallet.com/article/investing/diversification

[120] RBC Global Asset Management. (n.d.). *What are ESG ETFs?*. https://www.rbcgam.com/en/ca/learn-plan/types-of-investments/what-are-esg-etfs/detail

[121] Iris Carbon. (2024). *What are ESG ETFs and why should you care?*. https://iriscarbon.com/what-are-esg-etfs-and-why-should-you-care/

[122] The World Bank. (2025). *What are Green Bonds?*. https://documents1.worldbank.org/curated/en/400251468187810398/pdf/99662-REVISED-WB-Green-Bond-Box393208B-PUBLIC.pdf

[123] Qadir, U., & Creed, A. (2021). *Green bonds for climate resilience*: A guide for issuers. Global Center on Adaptation. https://gca.org/wp-content/uploads/2021/10/Green-Bonds-for-Climate-Resilience_A-Guide-for-Issuers.pdf

[124] Ezcutari, C. (2022). *Sustainability-linked loans: Practical observations and thoughts*. Norton Rose Fulbright. https://www.nortonrosefulbright.com/en-gb/knowledge/publications/4f0b5962/sustainability-linked-loans-practical-observations-and-thoughts

[125] Accountancy Age. (2024). *Study shows lenders anticipate growing influence of ESG credentials on mid-market borrowing*. https://www.accountancyage.com/2024/05/27/esg-credentials-in-borrowing/

[126] Unión Europea (2019). *Reglamento (UE) 2019/2088 del Parlamento Europeo y del Consejo, de 27 de noviembre de 2019, sobre la divulgación de información relativa a la sostenibilidad en el sector de los servicios financieros*. Diario Oficial de la Unión Europea. https://eur-lex.europa.eu/eli/reg/2019/2088/oj/spa

[127] Morgan Stanley Institute for Sustainable Investing. (2025). *Sustainable fund returns lag peers' in second half of 2024*. https://www.morganstanley.com/insights/articles/sustainable-funds-performance-second-half-2024

[128] Rodríguez, D. (2025). *Inversiones financieras sostenibles: Resultados de los fondos ESG en Europa*. Universidad de Oviedo. https://digibuo.uniovi.es/dspace/bitstream/handle/10651/79395/TFG_DavidRodriguezSuarez.pdf?sequence=4&isAllowed=y

[129] ClimateCoin. (2025). *CLIMATECOIN TM: Introducing the tool to unlock the wealth of a better world*. https://climatecoin.io/CLIMATECOIN%20WP_30_04_25.pdf

[130] Zewe, A. (2023). *Explained: Generative AI*. MIT News. https://news.mit.edu/2023/explained-generative-ai-1109

[131] PwC. (2024). *Generative AI unleashed for sustainability*. https://www.pwc.de/en/digitale-transformation/generative-ai-artificial-intelligence/the-genai-building-blocks/generative-ai-unleashed-for-sustainability.html

[132] EY. (2023). *Artificial intelligence ESG stakes*: Discussion paper. https://www.ey.com/content/dam/ey-unified-site/ey-com/es-es/insights/rethinking-sustainability/documents/ey-artificial-intelligence-esg-stakes-discussion-paper.pdf

[133] Microsoft Press. (2023). *Mitiga Solutions desarrolla la primera plataforma científica global de riesgo climático con la ayuda de Microsoft*. Microsoft News Centre. https://news.microsoft.com/es-es/2023/06/08/mitiga-solutions-desarrolla-la-primera-plataforma-cientifica-global-de-riesgo-climatico-con-la-ayuda-de-microsoft/

[134] Microsoft Press. (2023). *Grupo Nueva Pescanova y Microsoft consolidan su alianza para seguir impulsando la acuicultura 4.0*. Microsoft News Center. https://news.microsoft.com/es-es/2023/05/25/grupo-nueva-pescanova-y-microsoft-consolidan-su-alianza-para-seguir-impulsando-la-acuicultura-4-0/

[135] Amazon Staff. (2024). *How Amazon is using AI to deliver customer orders with less packaging*. Amazon. https://www.aboutamazon.com/news/sustainability/amazon-sustainability-ai-reduce-packaging

[136] Zewe, A. (2025). *Explained: Generative AI's environmental impact*. MIT News. https://news.mit.edu/2025/explained-generative-ai-environmental-impact-0117

[137] Segal, M. (2024). *Google, Intersect Power, TPG Launch $20 Billion Data Center Clean Energy Partnership*. ESG Today. https://www.esgtoday.com/google-intersect-power-tpg-to-invest-20-billion-in-clean-energy-to-power-new-data-centers/

[138] Marr, B. (2024). *The Amazing Ways Walmart Is Using Generative AI*. Forbes. https://www.forbes.com/sites/bernardmarr/2024/02/15/the-amazing-ways-walmart-is-using-generative-ai/

[139] Marr, B. (2024). *How Walmart Business Is Revolutionizing B2B Shopping With AI: A Deep Dive Into The Future Of Retail*. Forbes. https://www.forbes.com/sites/bernardmarr/2024/07/19/how-walmart-business-is-revolutionizing-b2b-shopping-with-ai-a-deep-dive-into-the-future-of-retail/

[140] Thomas, J. J. (2023). *How AI is helping companies meet sustainability goals*. IBM. https://www.ibm.com/think/topics/ai-for-business-sustainability

[141] Rose-Collins, F. (2024). *El papel de la IA en la notificación de datos ESG: Transformación de la sostenibilidad y la rendición de cuentas*. Ranktracker. https://www.ranktracker.com/es/blog/the-role-of-ai-in-esg-data-reporting-transforming-sustainability-and-accountability/#:~:text=He%20aqu%C3%AD%20algunos%20ejemplos%20pr%C3%A1cticos:%201%20Seguimiento%20de,social%20e%20identificar%20%C3%A1reas%20de%20mejora.%20M%C3%A1s%20elementos

[142] Noticias ASG. (2024). *Microsoft presenta herramientas de inteligencia artificial para optimizar la gestión, los informes y la información de datos ESG*. ESG News. https://esgnews.com/es/Microsoft-presenta-herramientas-de-inteligencia-artificial-para-optimizar-la-gesti%C3%B3n-de-datos-ESG%2C-informes-y-conocimientos/

[143] BI Group. (2025). *How Unilever transformed ESG reporting with a unified data strategy*.https://www.bigroup.com.au/how-unilever-transformed-esg-reporting-with-a-unified-data-strategy/

[144] MIL Madrid Innovation Lab. (n.d.). *Cómo la inteligencia artificial está redefiniendo las estrategias de los criterios ESG*. https://milmadrid.es/ia-esg-estrategias-empresariales-sostenibilidad/#:~:text=La%20IA%20est%C3%A1%20redefiniendo%20las%20estrategias%20de%20los,la%20sostenibilidad%20en%20el%20n%C3%BAcleo%20de%20sus%20procesos

[145] Golbin, I., Axente, M. L., & Kinghorn, R. (2022). *Responsible AI and ESG: The power of trusted collaborations*. PwC. https://www.pwc.com/us/en/tech-effect/ai-analytics/the-power-of-pairing-responsible-ai-and-esg.html

[146] Azuar, A. (2025). *ESGAM launches AI ESG platform to help businesses*. The Malaysian Reserve. https://themalaysianreserve.com/2025/07/01/esgam-launches-ai-esg-platform-to-help-businesses/

[147] Ineria. (n. d.). *La importancia de las infraestructuras sostenibles*. https://ineriamanagement.com/la-importancia-de-las-infraestructuras-sostenibles/

[148] De Vecchi, R., Serebrisky, T., Sacristán, G., Rojas Sanchez, L., Ramírez, M. C., & Grunwaldt, A. H. (2025). *Programa especializado: Sustainable Infrastructure* [Online course]. Banco Interamericano de Desarrollo. https://www.coursera.org/specializations/sustainableinfrastructure#courses

[149] World Bank Group. (2020). *G20 Principles for Quality Infrastructure Investment*. https://www.adb.org/sites/default/files/linked-documents/reg-54036-001-tar-ld-02.pdf

[150] Economist Intelligence Unit. (2019). *El papel fundamental de la infraestructura en el logro de los Objetivos de Desarrollo Sostenible*. https://content.unops.org/publications/The_critical_role_of_infrastructure_for_the_SDGs_ES.pdf

[151] Iberdrola. (2025). *Infraestructuras sostenibles, claves en la lucha contra el cambio climático*. https://www.iberdrola.com/sostenibilidad/infraestructuras-sostenibles

[152] Milne, N., & Turnbull, V. (2022). *ESG in infrastructure*. Global Infrastructure Hub. https://www.gihub.org/articles/esg-in-infrastructure/

[153] Railway News. (2023). *Calgary-Banff Passenger Rail Project: Alberta's Sustainable Transport Solution*. https://www.railwaynews.net/calgary-banff-passenger-rail-project-albertas-sustainable-transport-solution.html

[154] Global Infrastructure Hub. (2021). *Roadmap for Enabling Circular Economy Potential in Infrastructure*. https://cdn.gihub.org/umbraco/media/4244/gi-hub-roadmap-for-enabling-circular-economy-potential-in-infrastructure.pdf

[155] Gomstyn, A., & Jonker, A. (2024). *What is green building?*. IBM. https://www.ibm.com/think/topics/green-building

[156] Iberdrola. (n.d.). *Los edificios 'verdes' marcan el camino hacia un urbanismo más sostenible y eficiente*. https://www.iberdrola.com/sostenibilidad/edificios-verdes-sostenibles

[157] Iberdrola. (n.d). *Symbol of the Group's commitment to innovation, sustainability and art*. https://www.iberdrola.com/about-us/where-we-are/corporate-headquarters

[158] Inarquia. (n.d.). *Torre Iberdrola, el rascacielos sostenible de Bilbao*. https://inarquia.es/edificio/torre-iberdrola-bilbao-rascacielos-sostenible-bibao/

[159] Happi, H. (2025). *How AI infrastructure could become the backbone of a sustainable future. World Economic Forum*. https://www.weforum.org/stories/2025/07/ai-infrastructure-sustainable-future-energy/

[160] YTL. (2022). *YTL Green Data Center Park launches in Johor, the first integrated data center park powered by renewable solar energy in Malaysia*. https://www.ytl.com/press-releases/ytl-green-data-center-park-launches-in-johor-the-first-integrated-data-center-park-powered-by-renewable-solar-energy-in-malaysia-2

[161] Segal, M. (2024). *Data Center Developer Equinix Issues $1.2 Billion of Green Bonds*. ESG Today. https://www.esgtoday.com/data-center-developer-equinix-issues-1-2-billion-of-green-bonds/

[162] Iberdrola, S.A. (2025). *About us*. https://www.iberdrola.com/about-us

[163] Iberdrola, S.A. (n.d.). *Committed to the SDGs*. https://www.iberdrola.com/sustainability/committed-sustainable-development-goals

[164] Iberdrola, S.A. (2025). *Consolidated Non-Financial Information Statement (NFIS) and the Sustainability Reporting*. Financial Year 2024. https://www.iberdrola.com/documents/20125/42388/IB_Sustainability_Report.pdf

[165] Iberdrola, S.A. (2025). *Integrated Report*. https://www.iberdrola.com/documents/20125/4778712/gsm25-integrated-report-2024.pdf

[166] Iberdrola, S.A. (2025). *Annual Corporate Governance Report Year 2024*. https://www.iberdrola.com/documents/20125/4778712/gsm25-annual-corporate-governance-report-2024.pdf

[167] Iberdrola, S.A. (2025). *Iberdrola, la empresa española con mejor gobierno corporativo según World Finance*. https://www.iberdrola.com/documents/20125/5291945/2025-06-24-iberdrola-empresa-espan%CC%83ola-con-mejor-gobierno-corporativo-segu%CC%81n-world-finance+-.pdf

[168] Iberdrola, S.A. (2025). *General Risk Control and Management Foundations of the Iberdrola Group*. https://www.iberdrola.com/documents/20125/42238/general-risk-control-management-foundations-iberdrola-group.pdf

[169] Iberdrola, S.A. (n.d). *'Electricity for all' programme*: We are bringing electricity to more than 16 million people who currently do not have it. https://www.iberdrola.com/social-commitment/disadvantaged-groups/electricity-all-programme

[170] ESG News. (2024). *Iberdrola Places €800 Million Hybrid Green Bond with 3.75x Oversubscription*.

https://esgnews.com/iberdrola-places-e800-million-hybrid-green-bond-with-3-75x-oversubscription/

[171] Iberdrola, S.A. (2025). *Iberdrola presents more than 150 use cases for artificial intelligence at the eleventh edition of the Digital Summit*. https://www.iberdrola.com/press-room/news/detail/iberdrola-presents-cases-artificial-intelligence-the-eleventh-edition-digital-summit

[172] Magyar, J. (2025). *Power to the people: Ethical AI feeds growth of sustainable energy*. Forbes. https://www.forbes.com/sites/sap/2025/05/23/power-to-the-people-ethical-ai-feeds-growth-of-sustainable-energy/

*Acknowledgment is given to the use of ChatGPT for assistance with translation, paraphrasing, and enhancing the clarity of the written content

ANNEX A: Slides of the course

Screenshots from the course developed on the Canvas platform can be seen below.

1. Session 1

Figure 3. *Session 1 (Slides 1-4)*

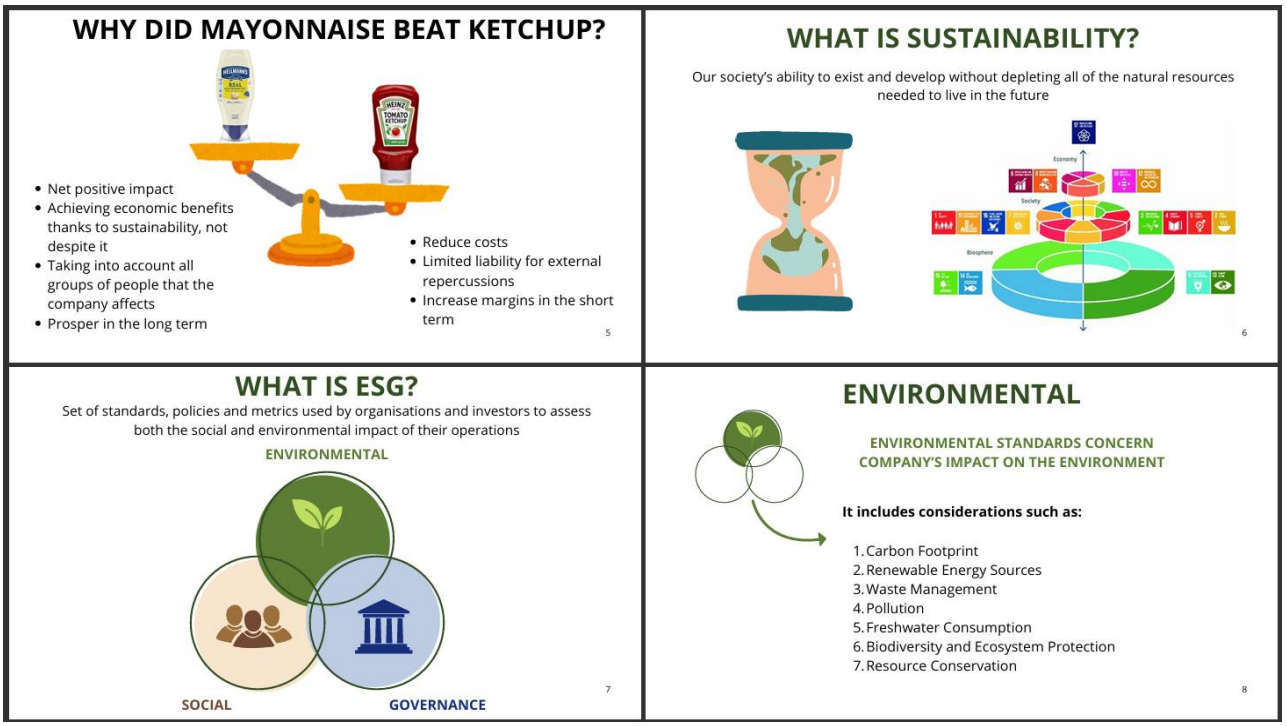

Figure 4. *Session 1 (Slides 5-8)*

Figure 5. *Session 1 (Slides 9-12)*

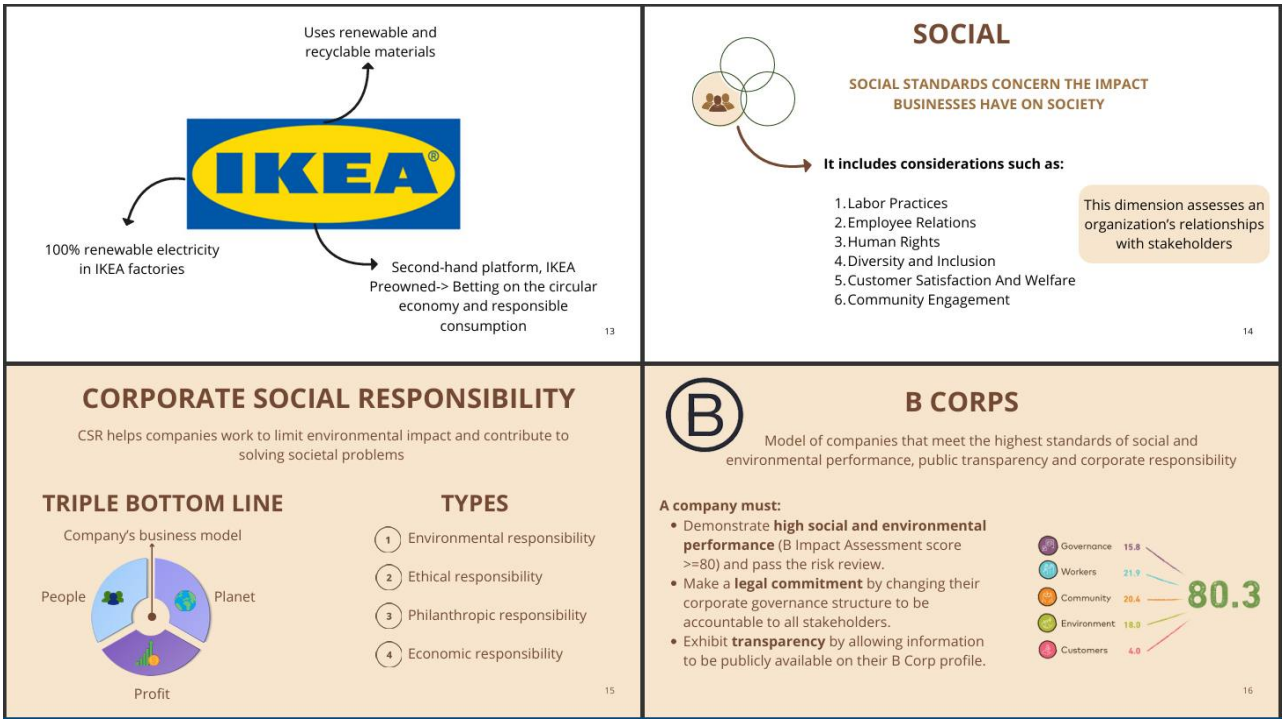

Figure 6. *Session 1 (Slides 13-16)*

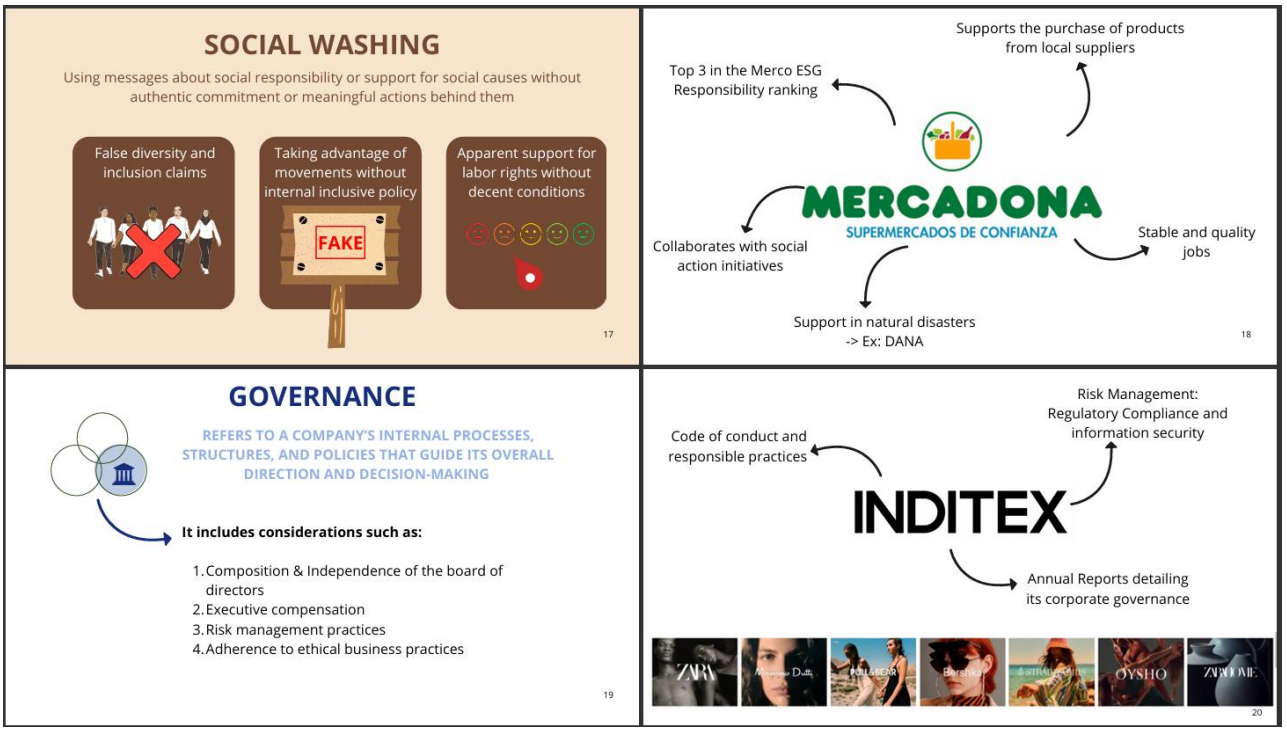

Figure 7. *Session 1 (Slides 17-20)*

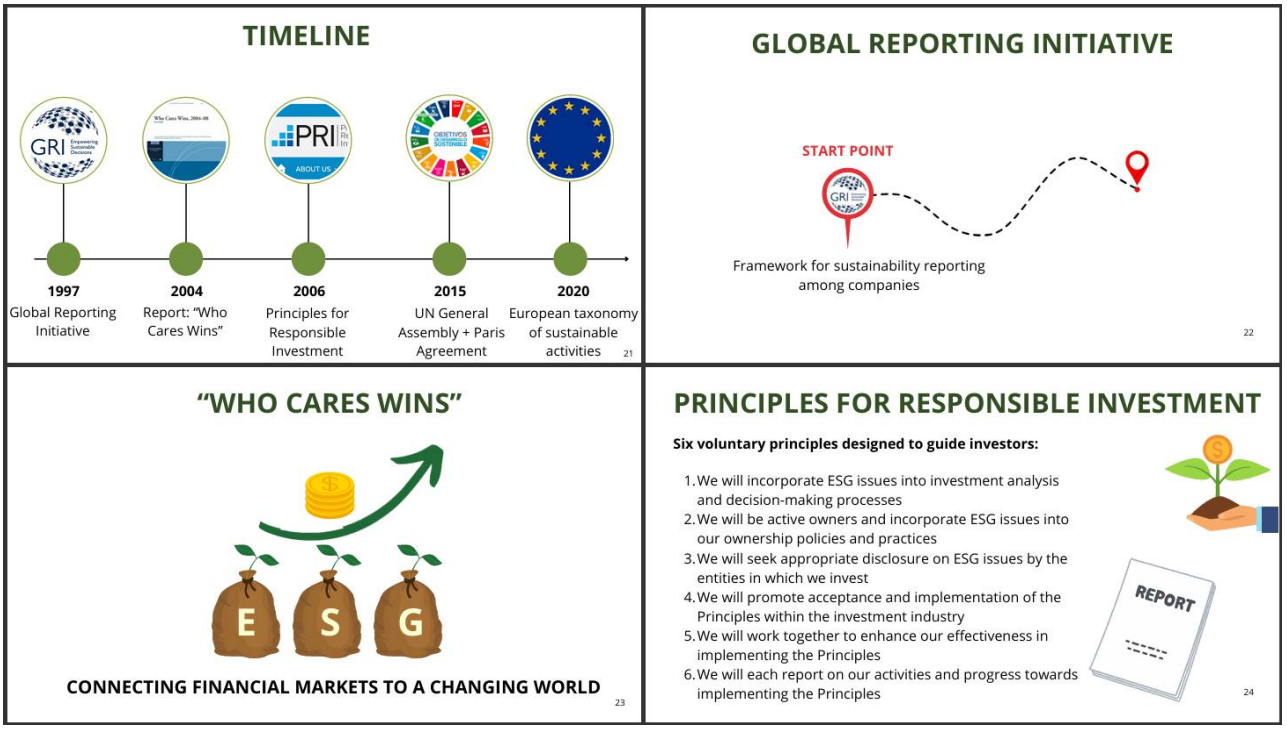

Figure 8. *Session 1 (Slides 21-24)*

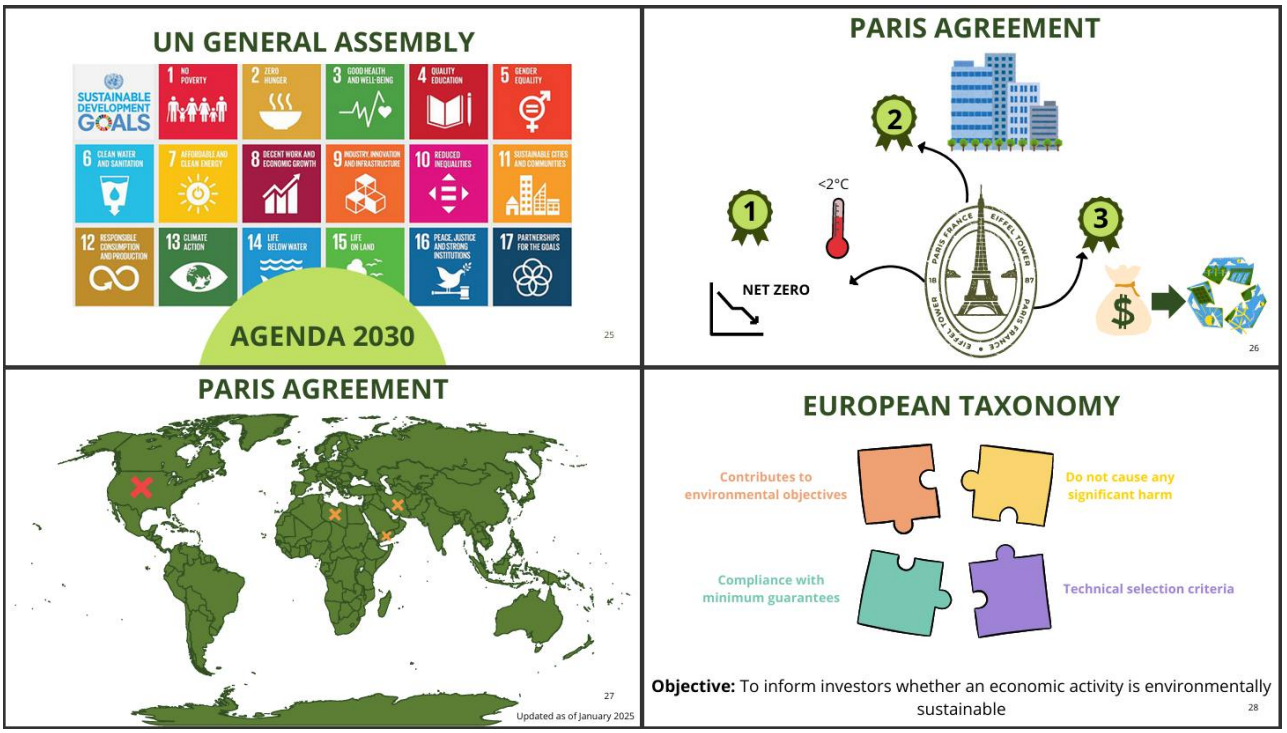

Figure 9. *Session 1 (Slides 25-28)*

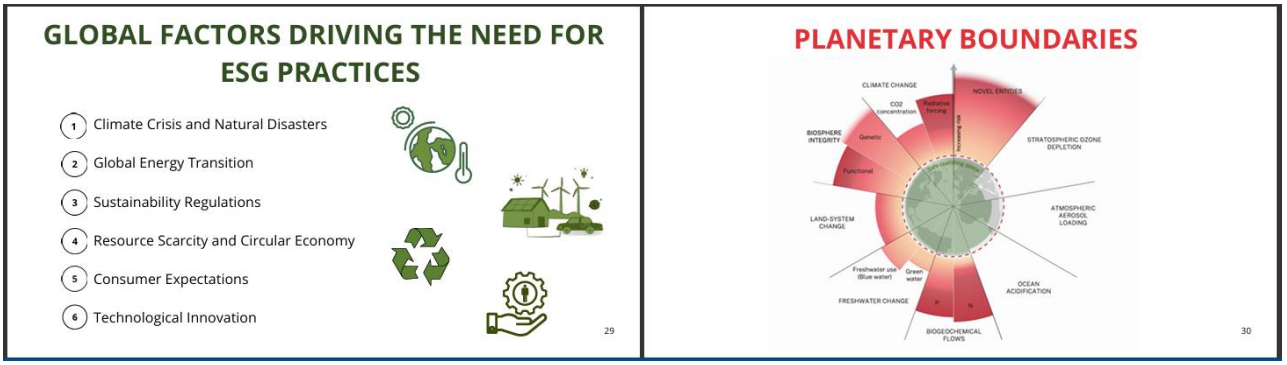

Figure 10. *Session 1 (Slides 29-30)*

2. Session 2

Figure 11. *Session 2 (Slides 1-4)*

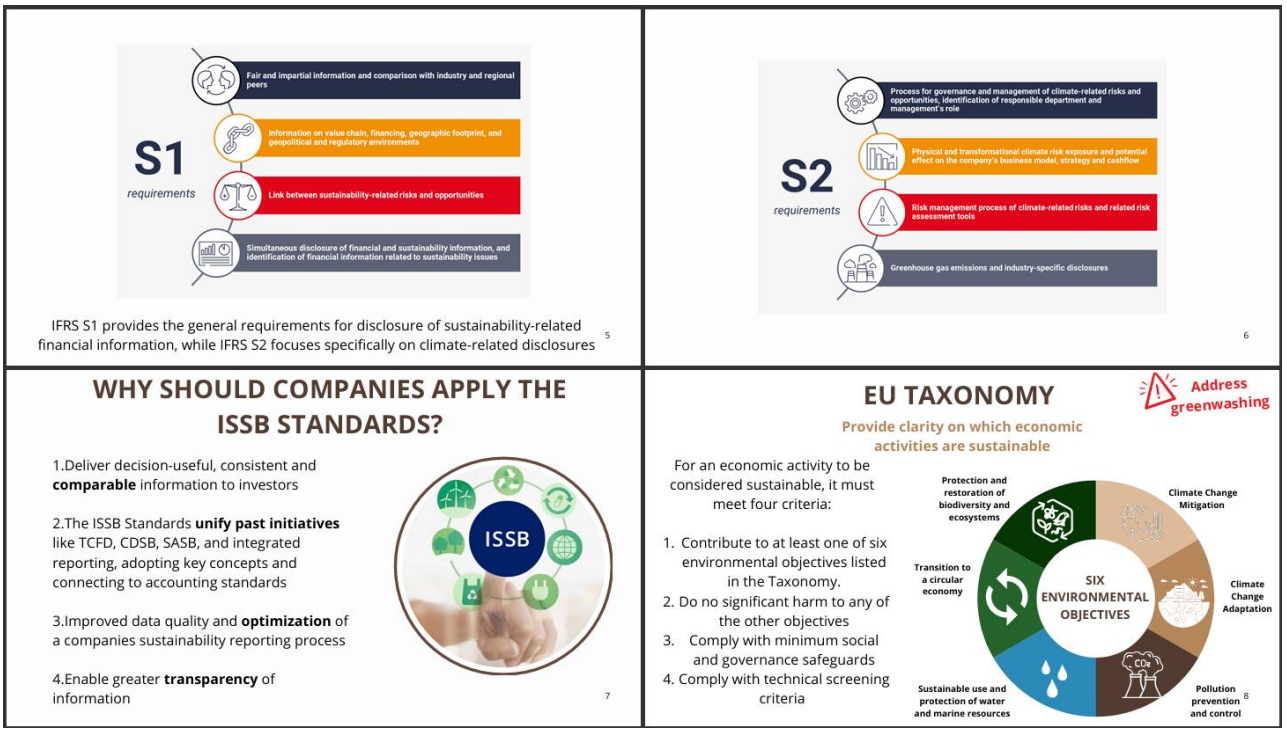

Figure 12. *Session 2 (Slides 5-8)*

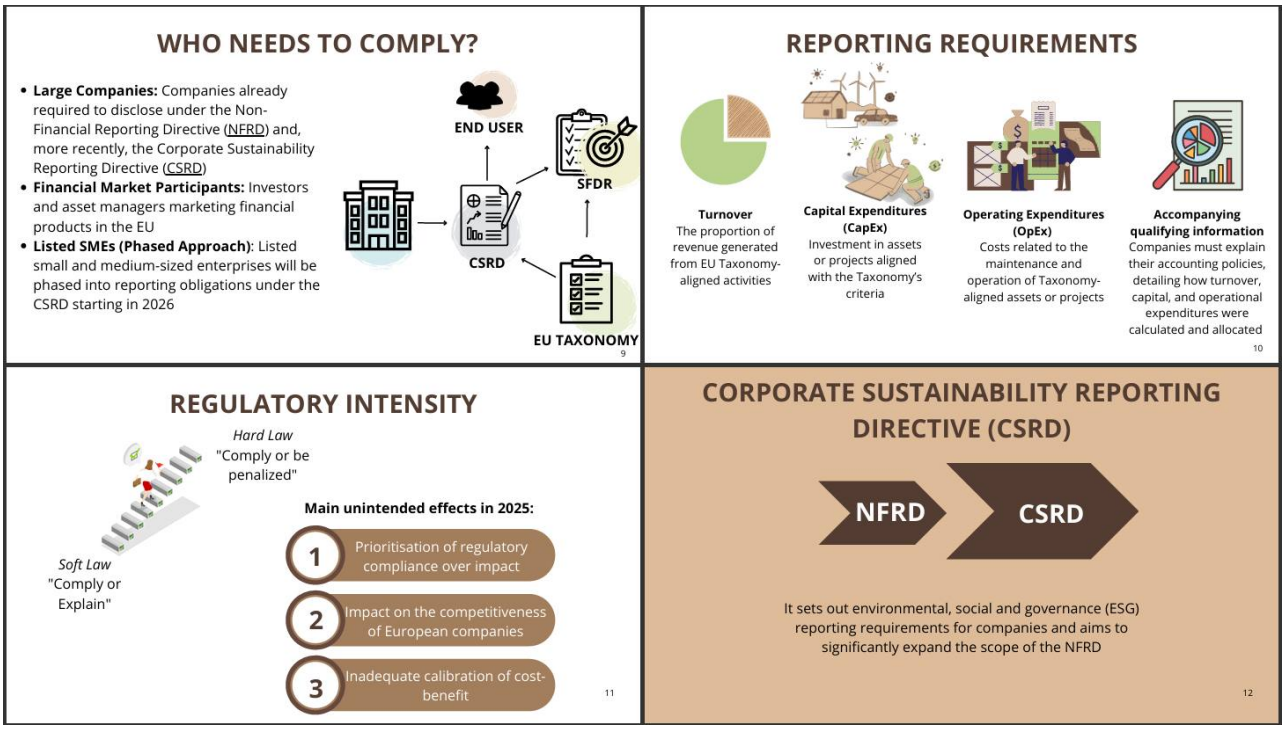

Figure 13. *Session 2 (Slides 9-12)*

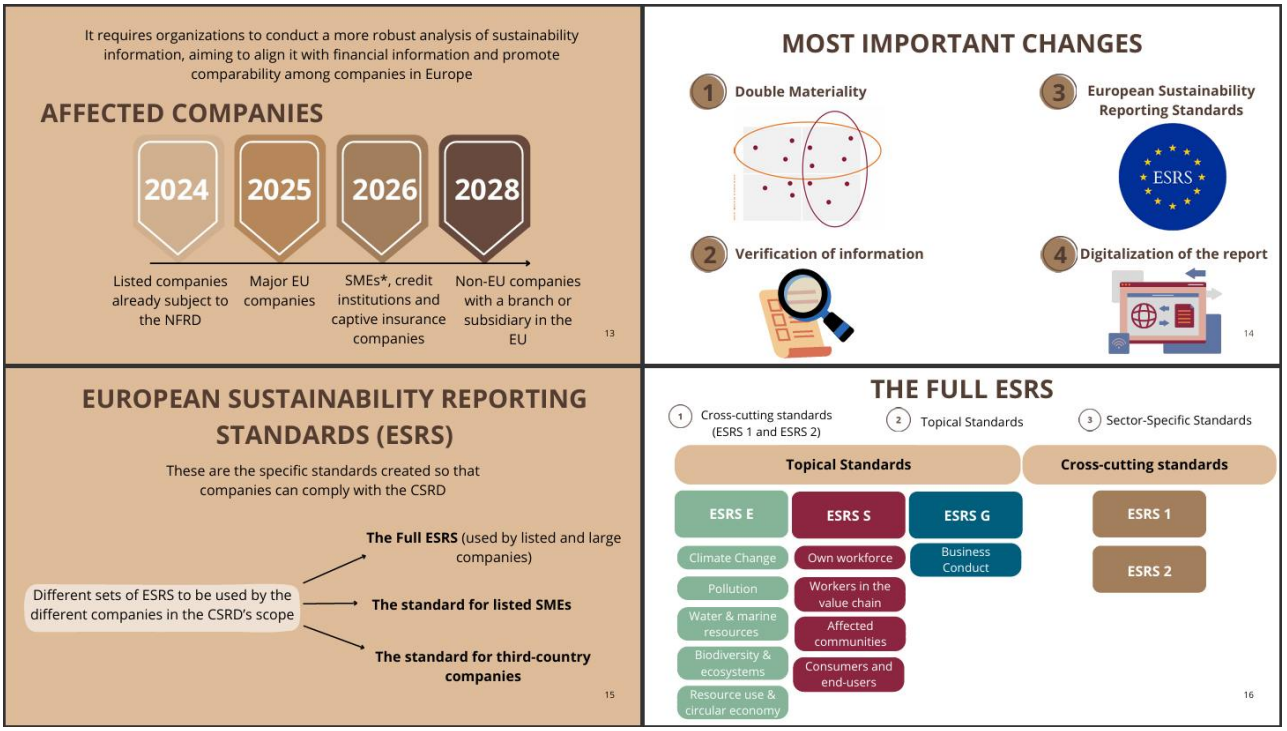

Figure 14. *Session 2 (Slides 13-16)*

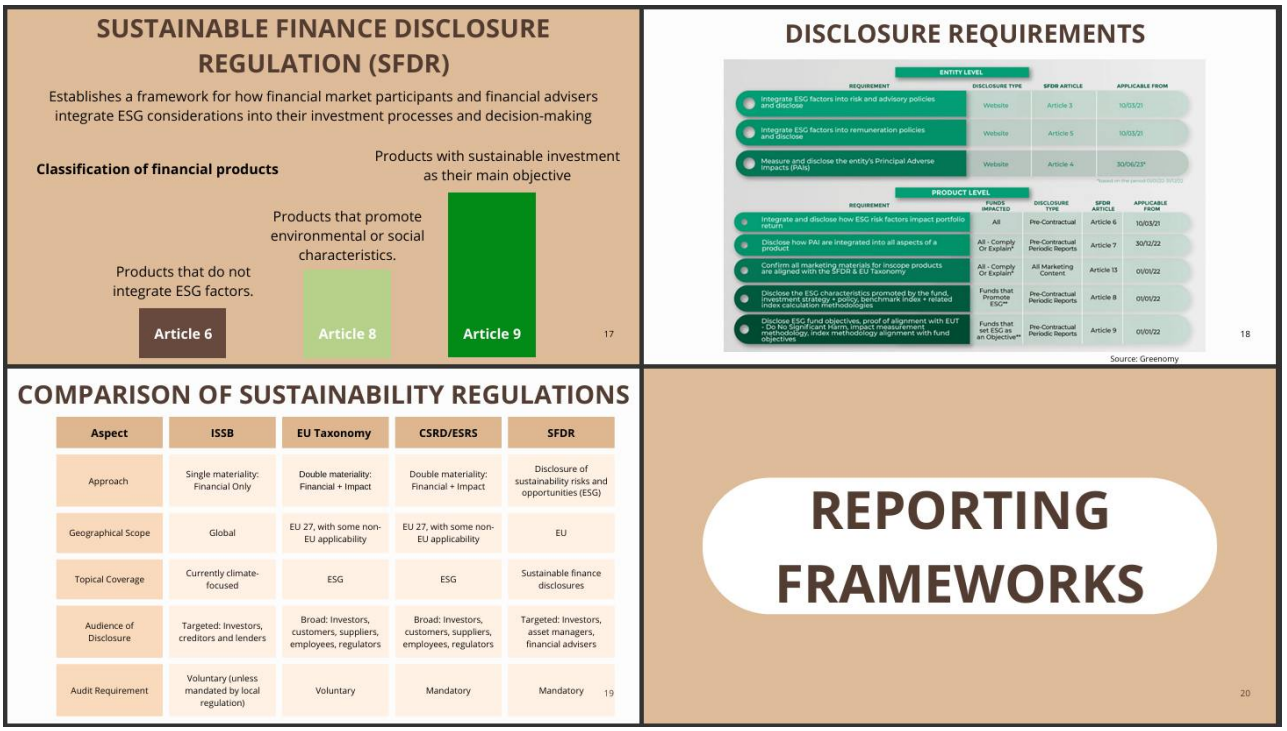

Figure 15. *Session 2 (Slides 17-20)*

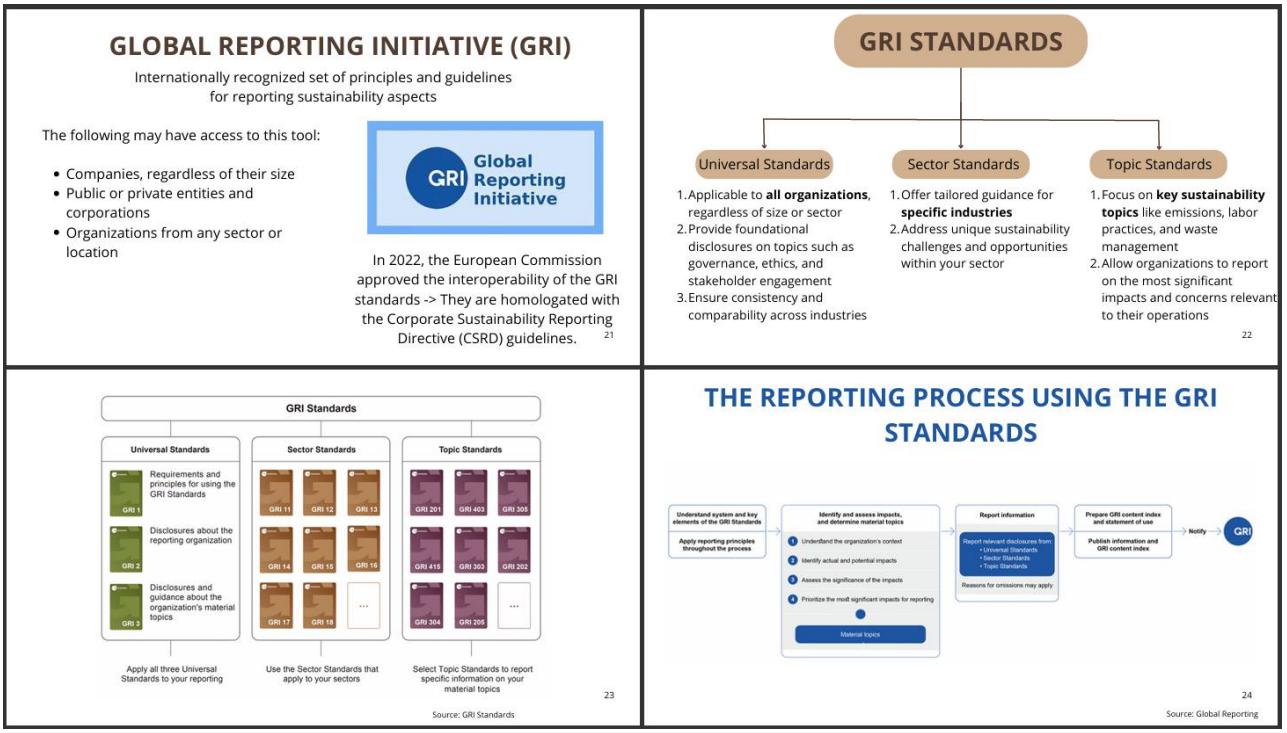

Figure 16. *Session 2 (Slides 21-24)*

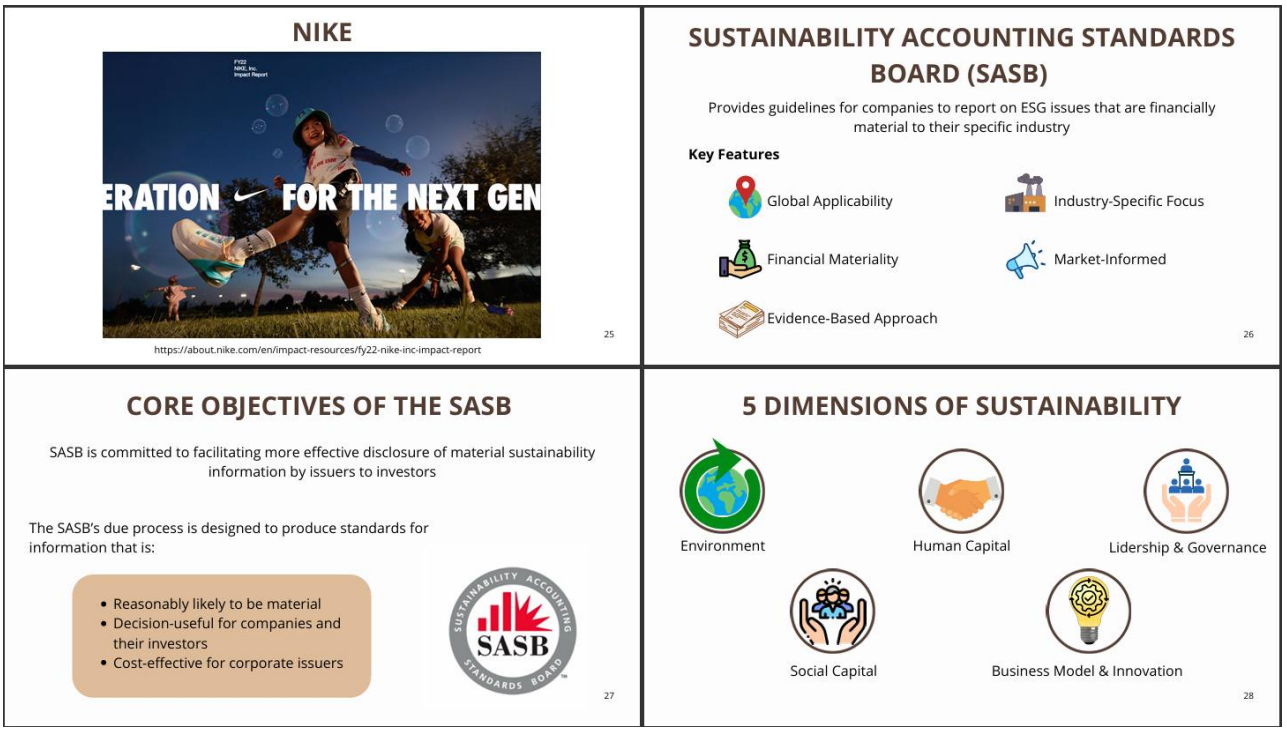

Figure 17. *Session 2 (Slides 25-28)*

Figure 18. *Session 2 (Slides 29-32)*

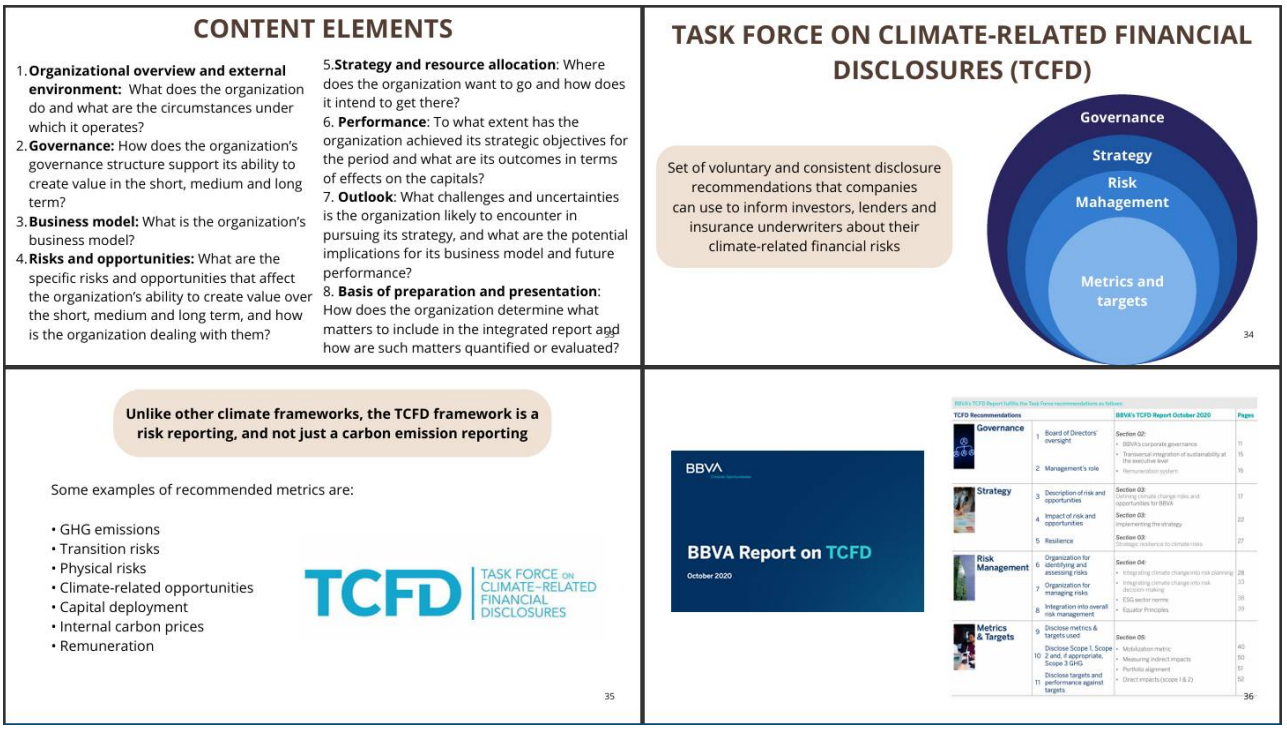

Figure 19. *Session 2 (Slides 33-36)*

3. Session 3

Figure 20. *Session 3 (Slides 1-4)*

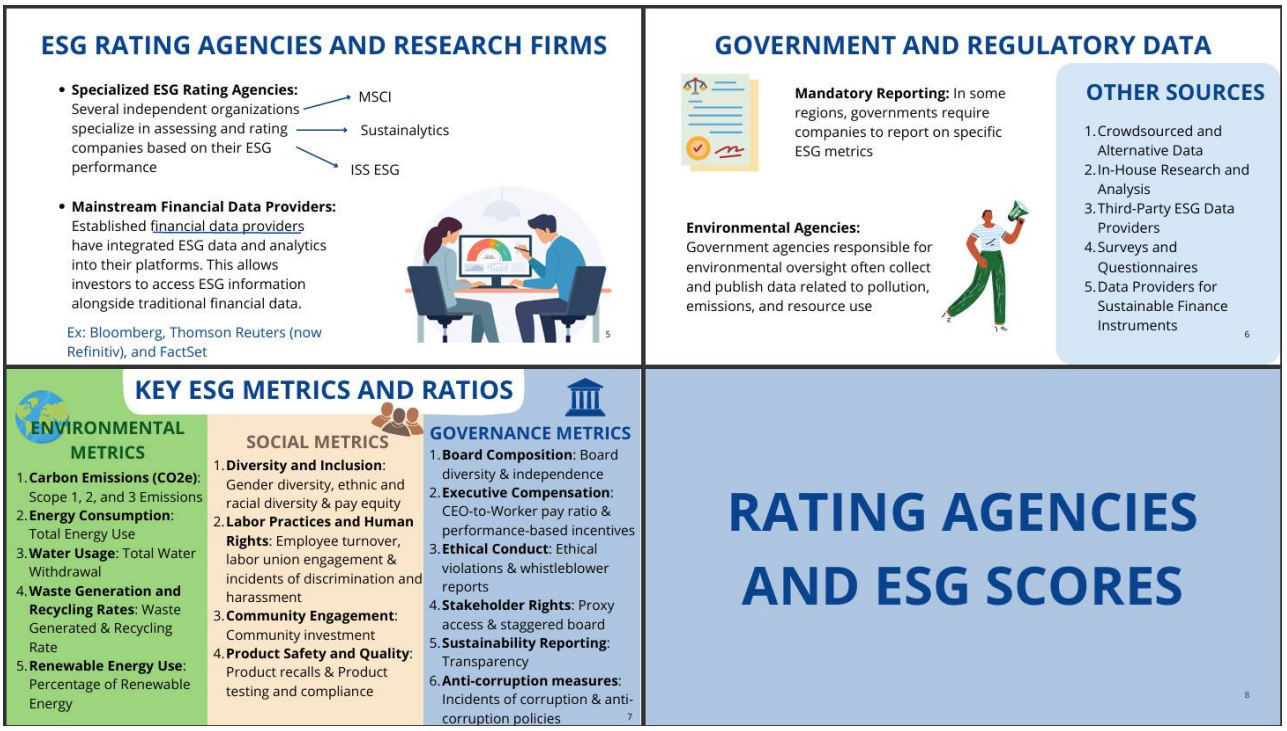

Figure 21. *Session 3 (Slides 5-8)*

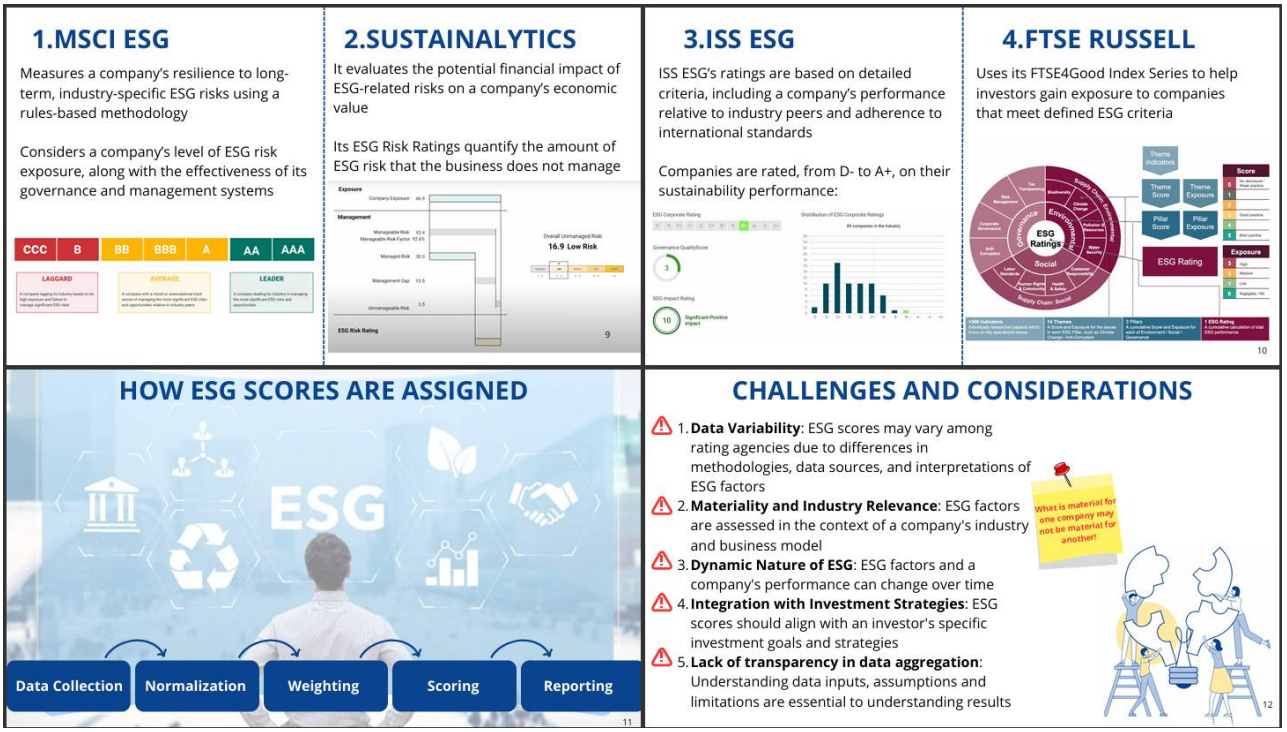

Figure 22. *Session 3 (Slides 9-12)*

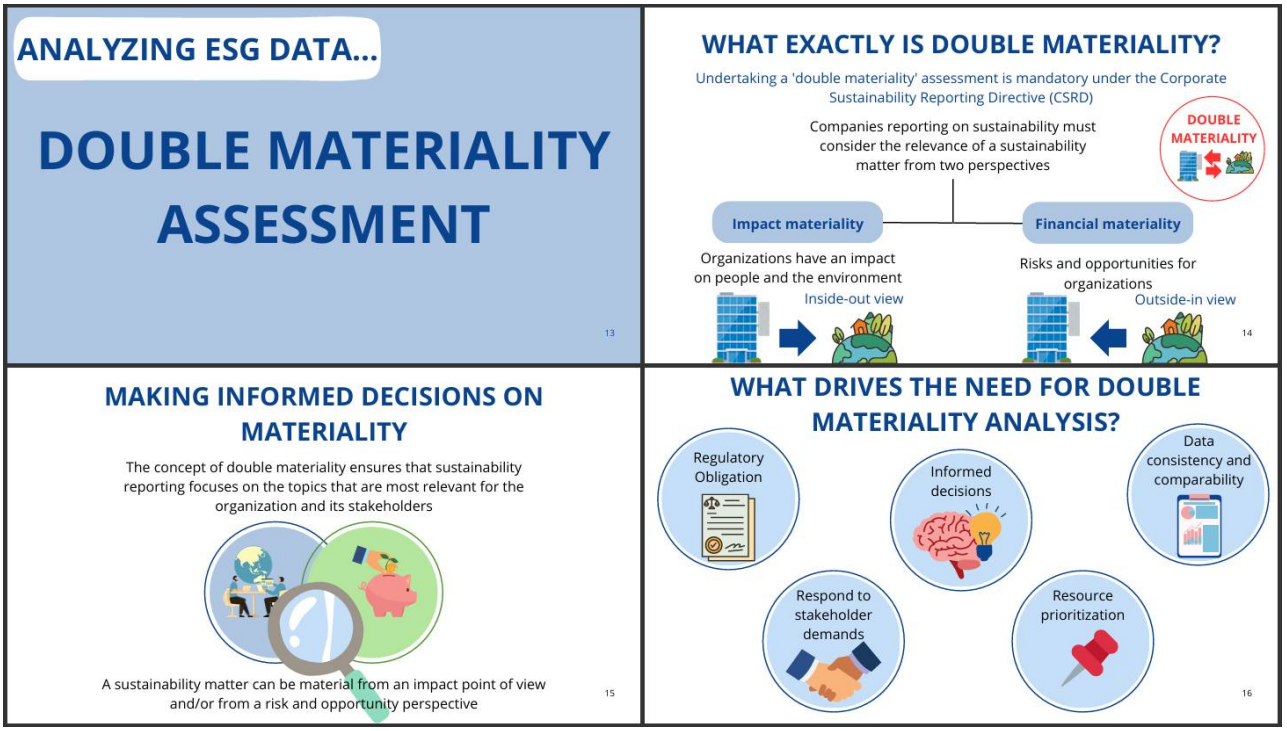

Figure 23. *Session 3 (Slides 13-16)*

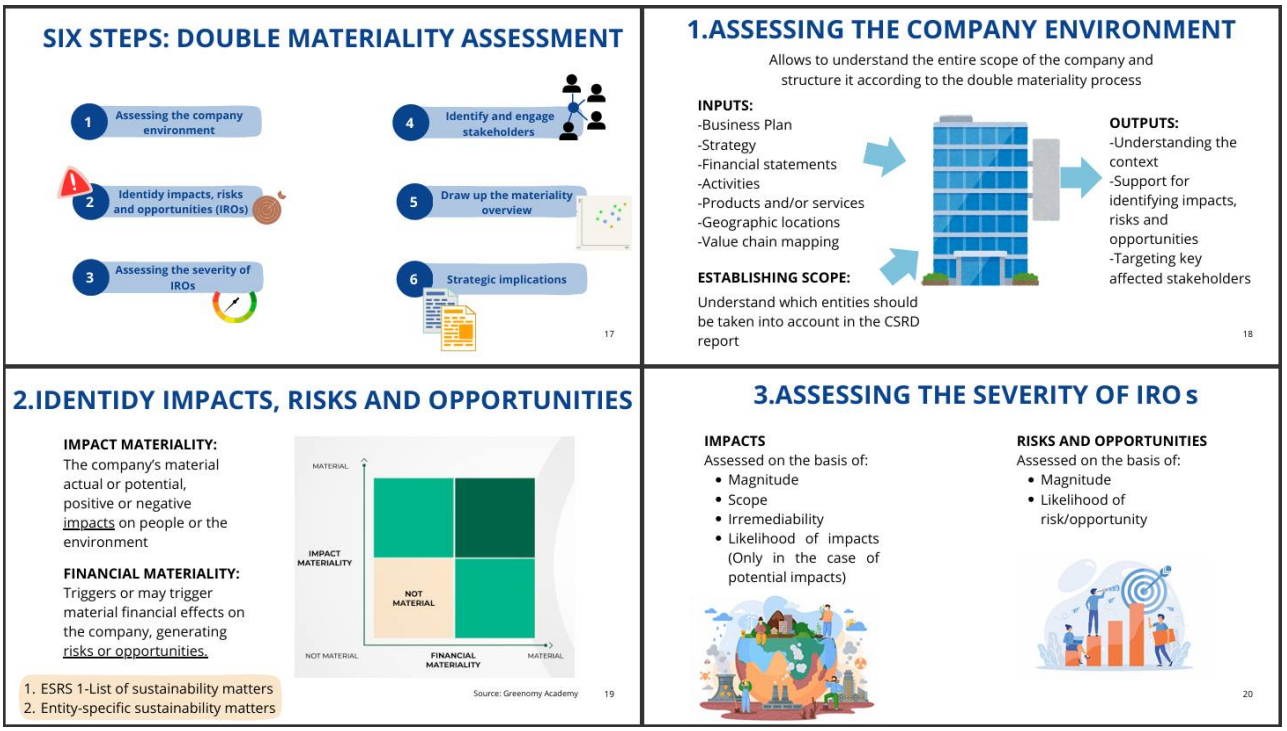

Figure 24. *Session 3 (Slides 17-20)*

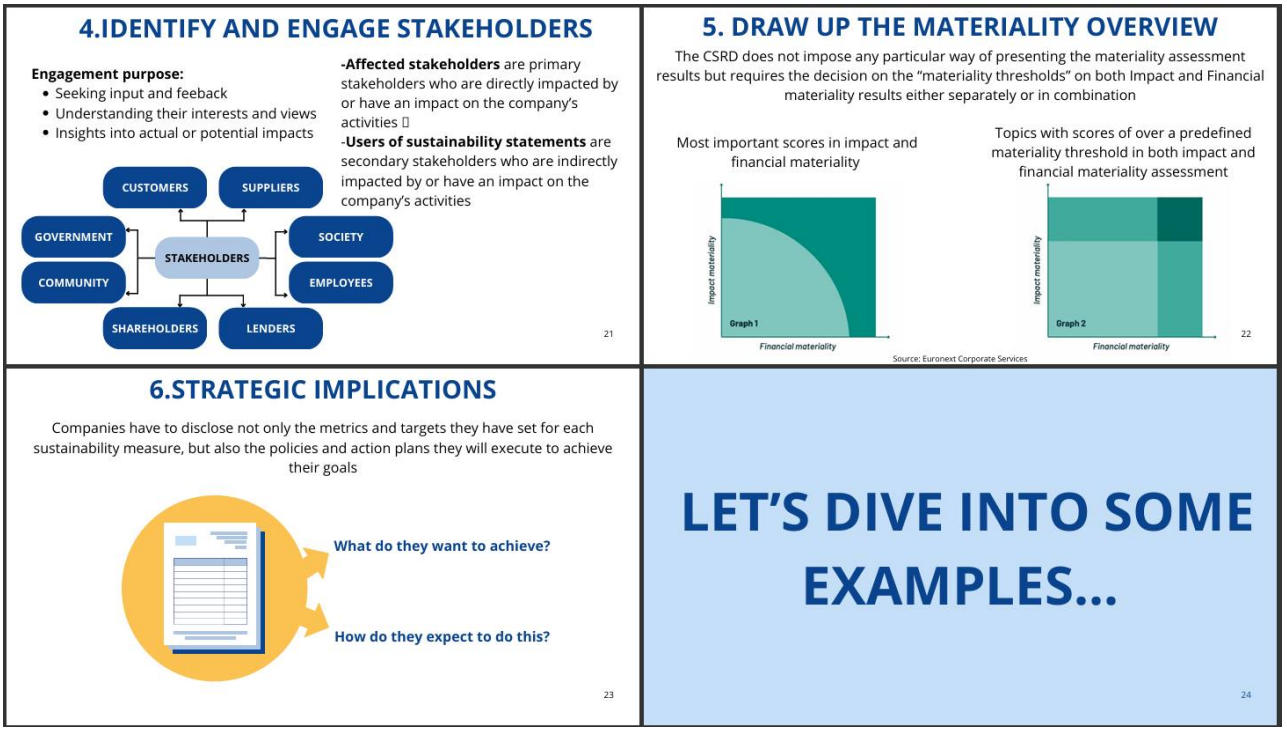

Figure 25. *Session 3 (Slides 21-24)*

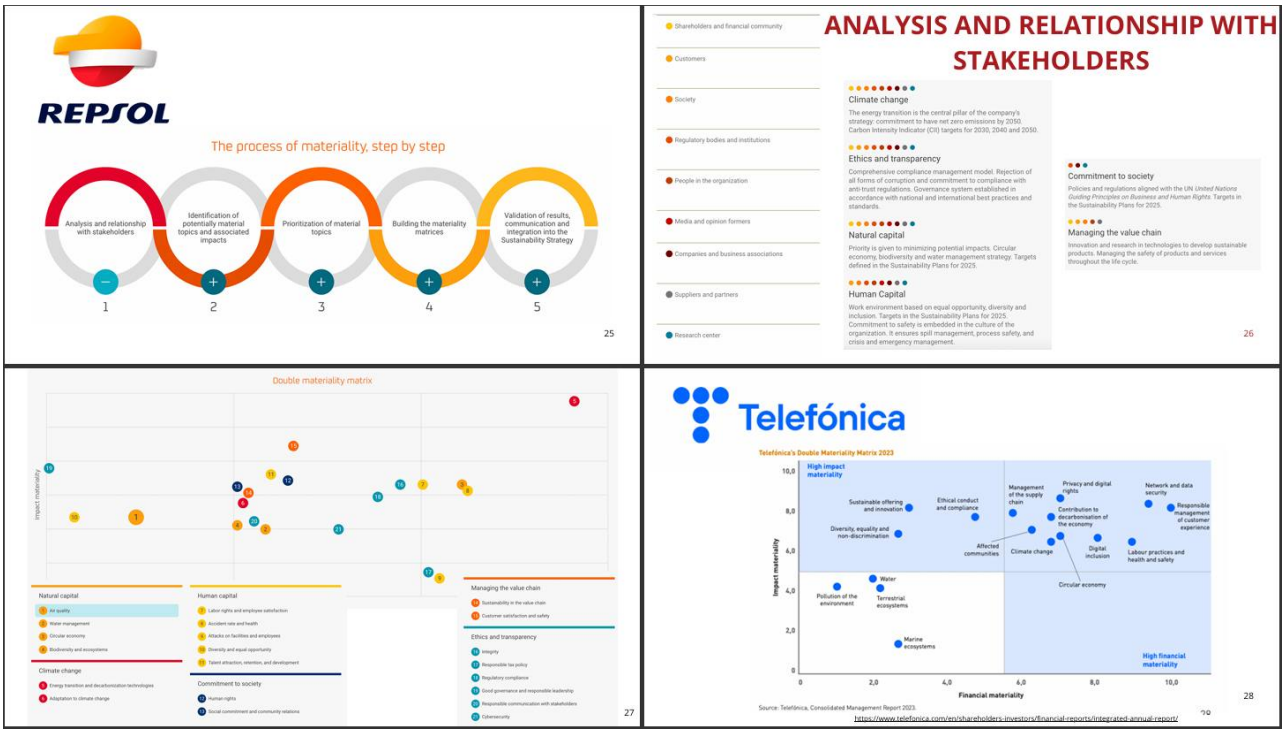

Figure 26. *Session 3 (Slides 25-28)*

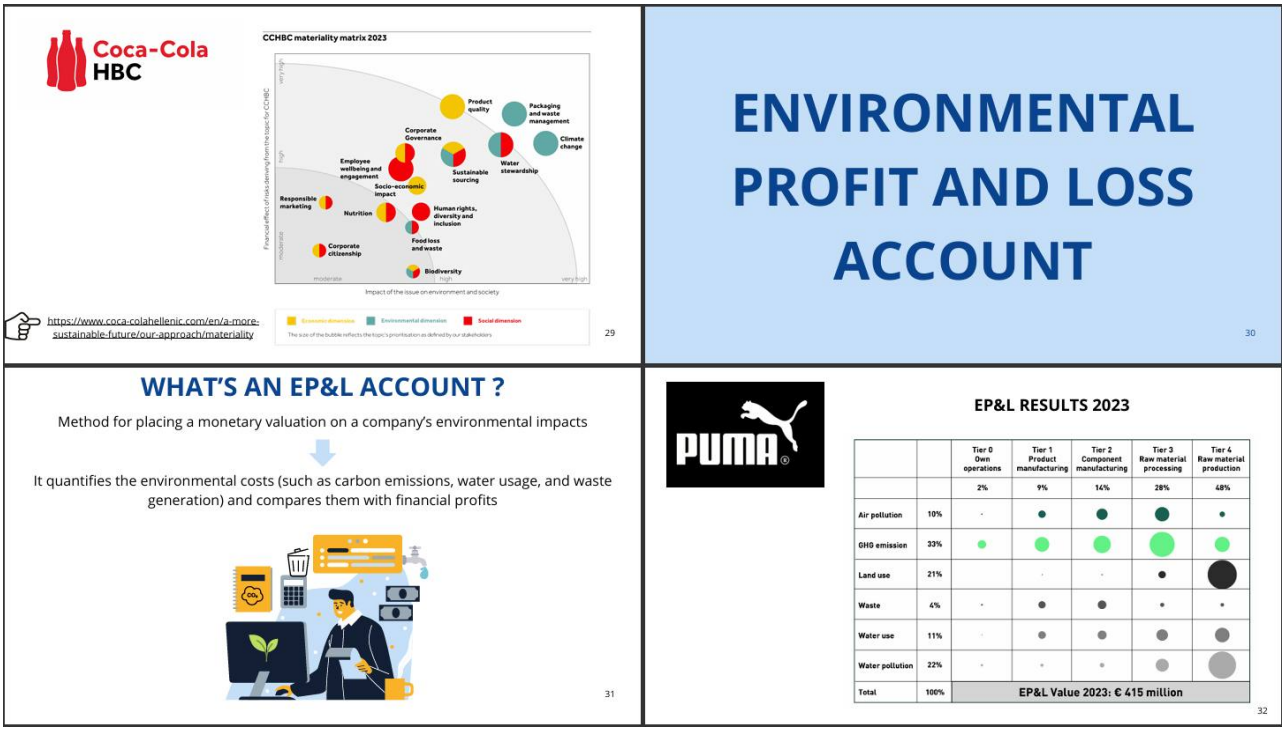

Figure 27. *Session 3 (Slides 29-32)*

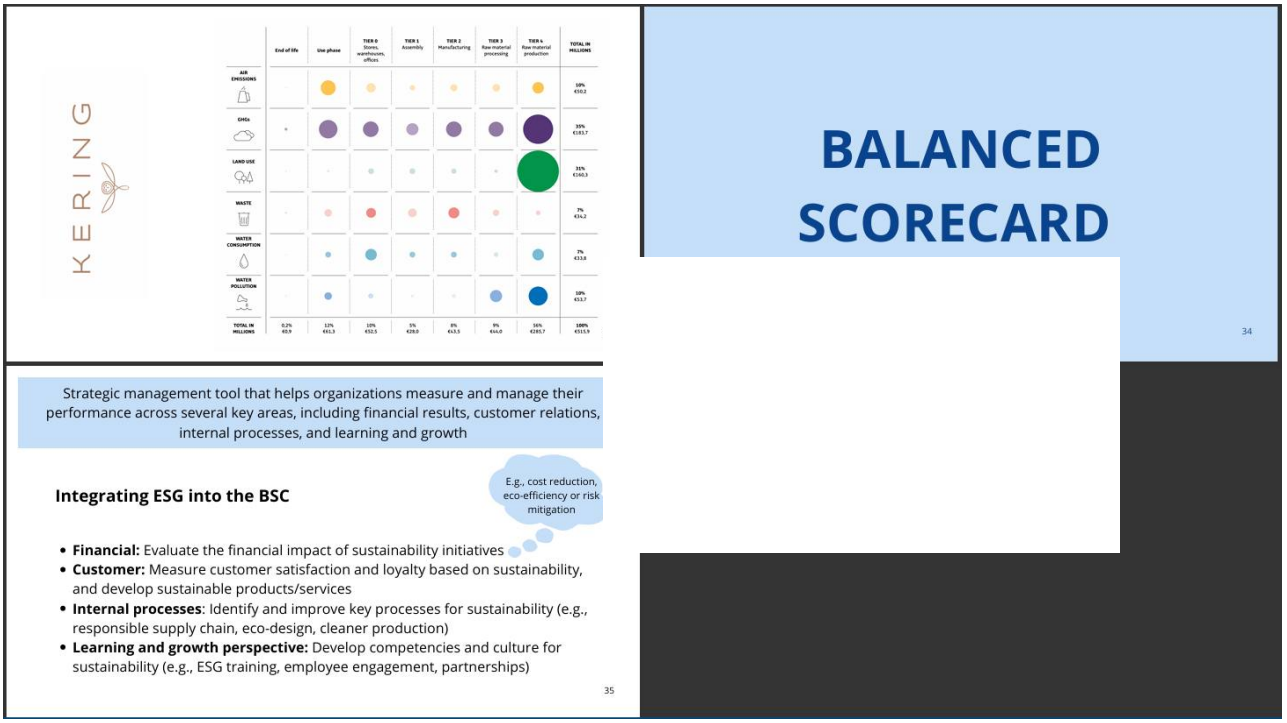

Figure 28. *Session 3 (Slides 33-35)*

4. Session 4

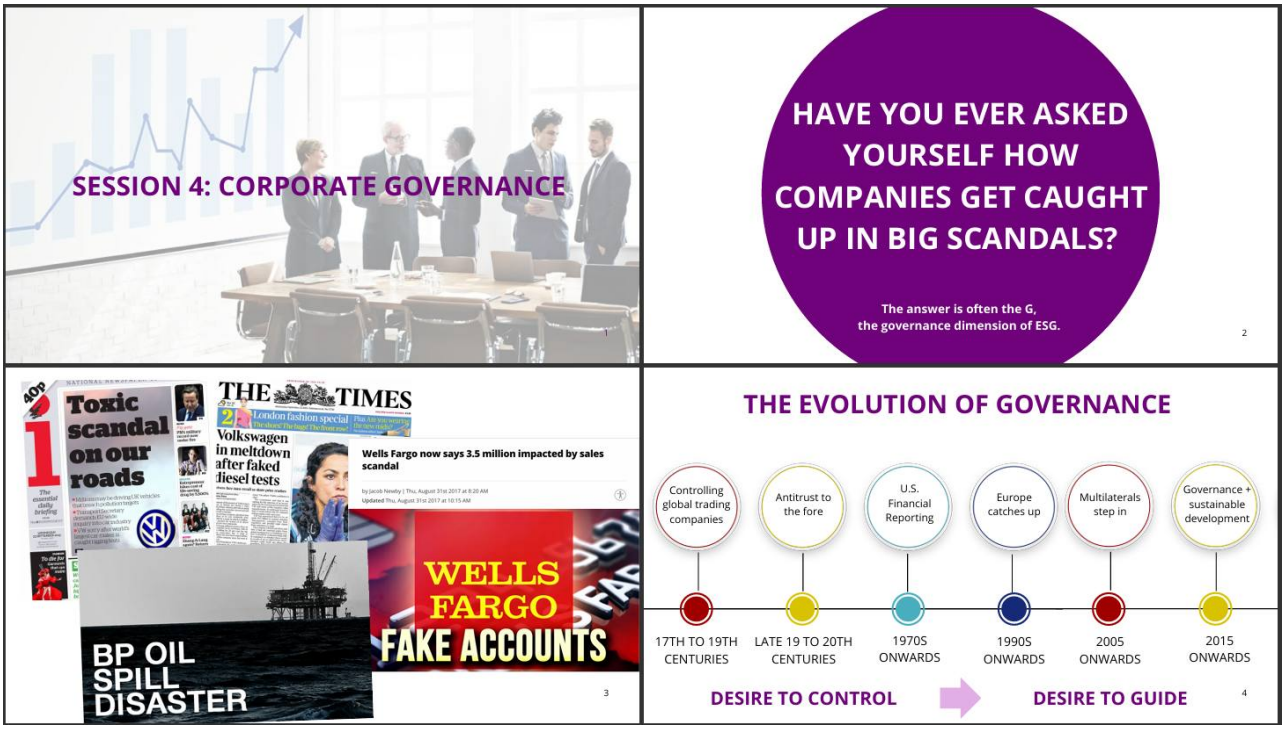

Figure 29. *Session 4 (Slides 1-4)*

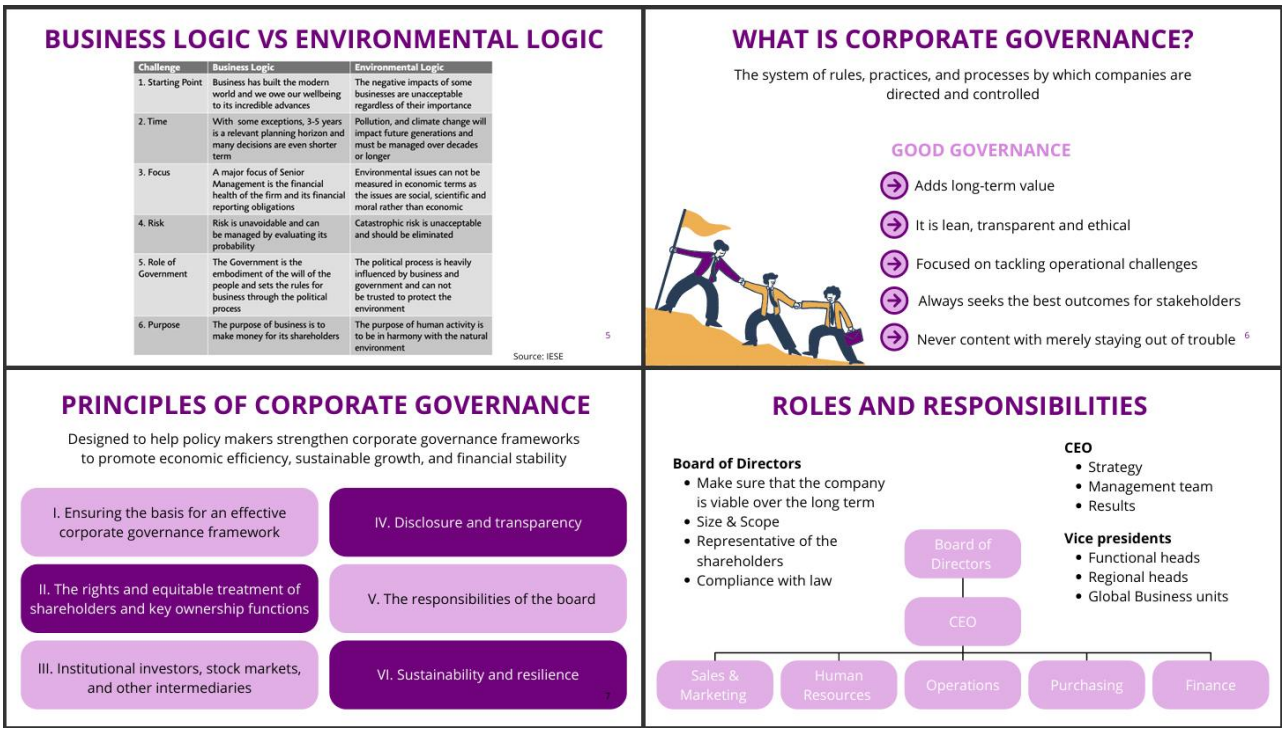

Figure 30. *Session 4 (Slides 5-8)*

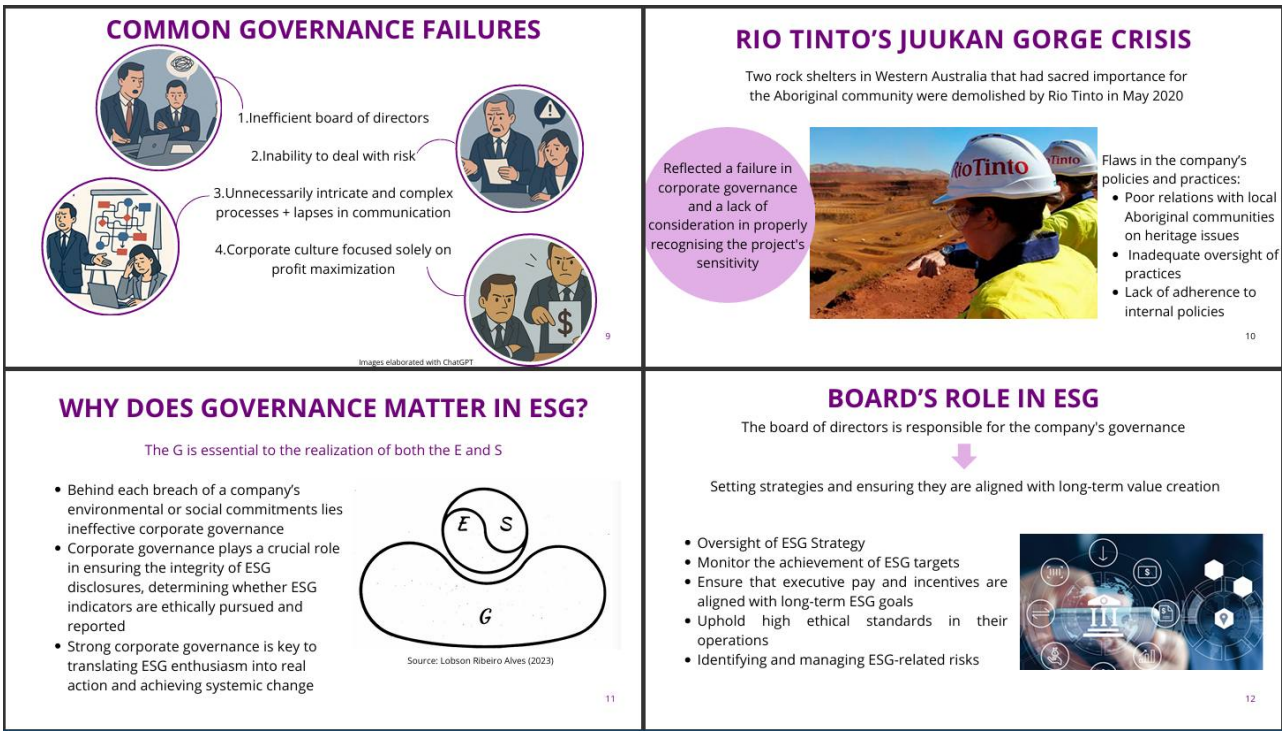

Figure 31. *Session 4 (Slides 9-12)*

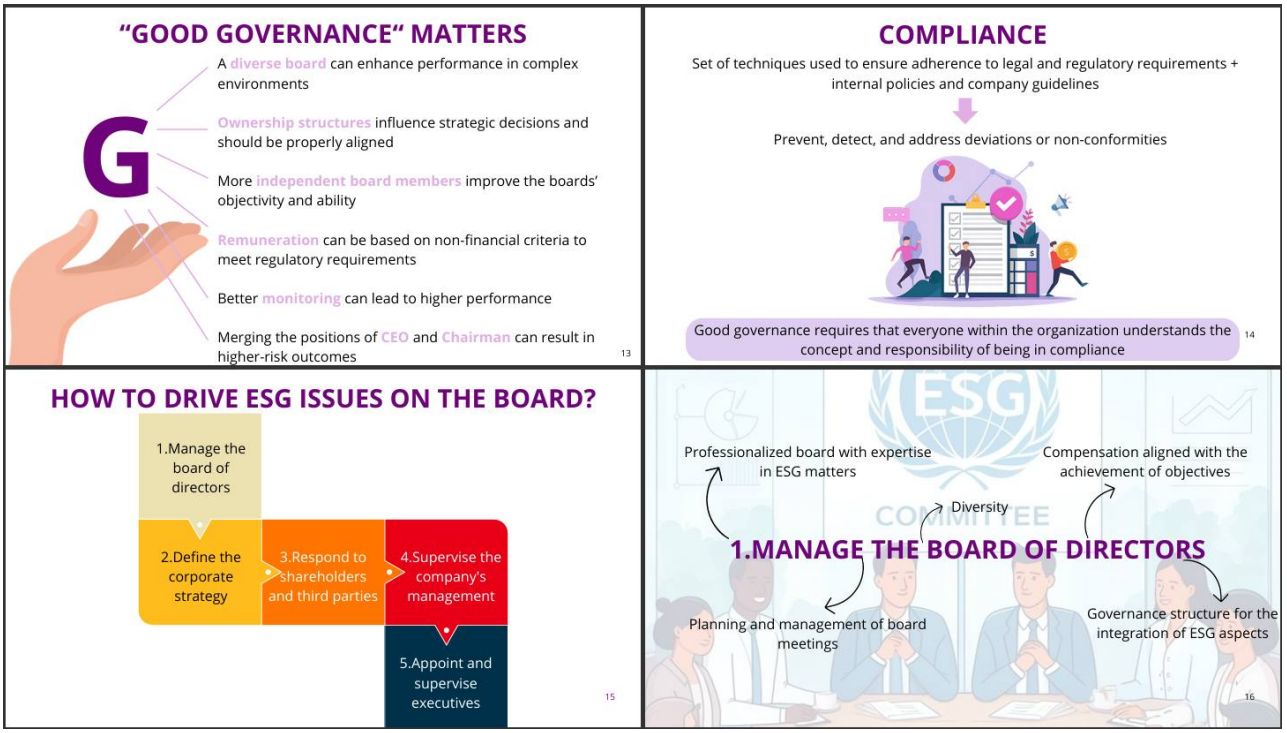

Figure 32. *Session 4 (Slides 13-16)*

Figure 33. *Session 4 (Slides 17-20)*

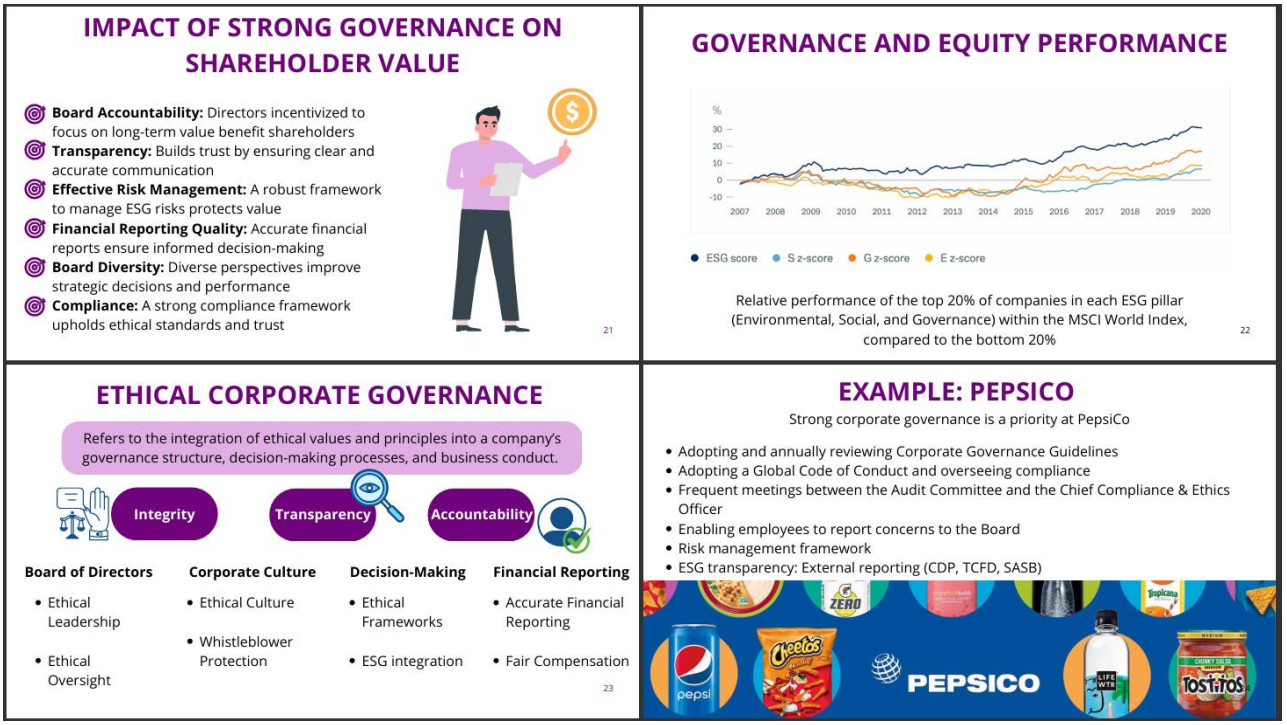

Figure 34. *Session 4 (Slides 21-24)*

Figure 35. *Session 4 (Slide 25)*

5. Session 5

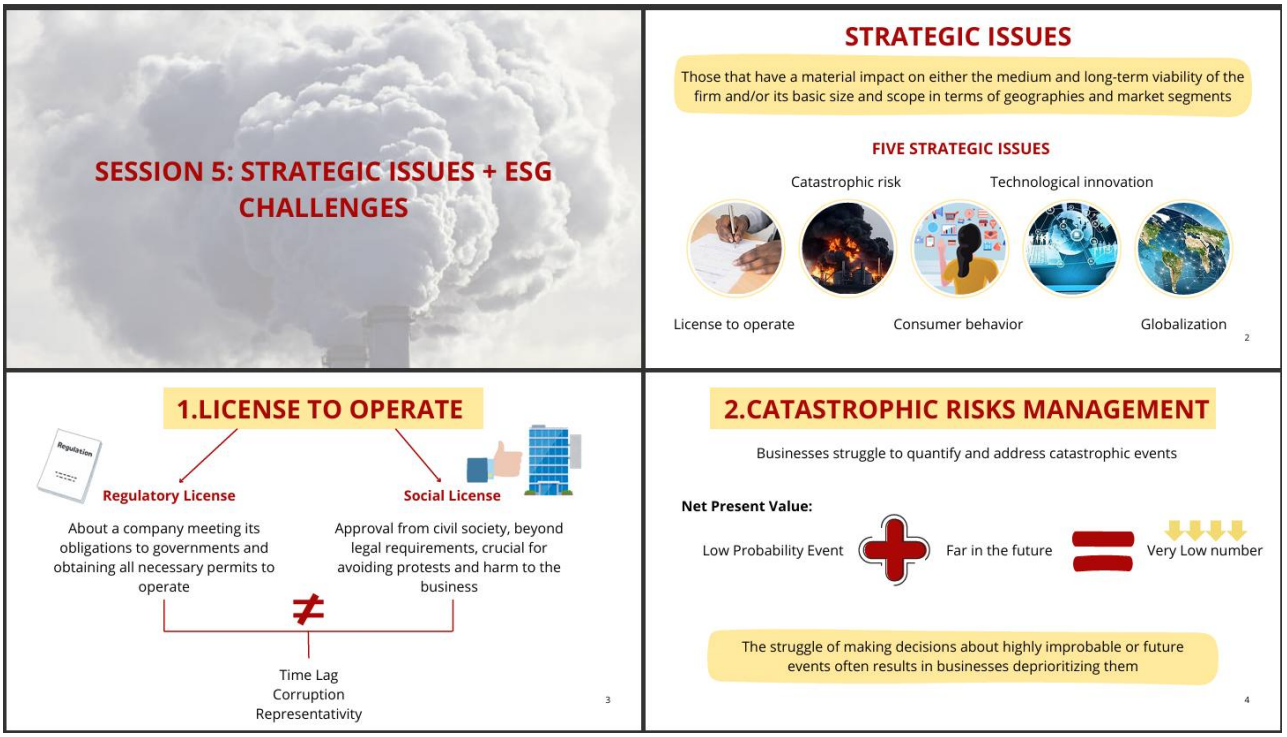

Figure 36. *Session 5 (Slides 1-4)*

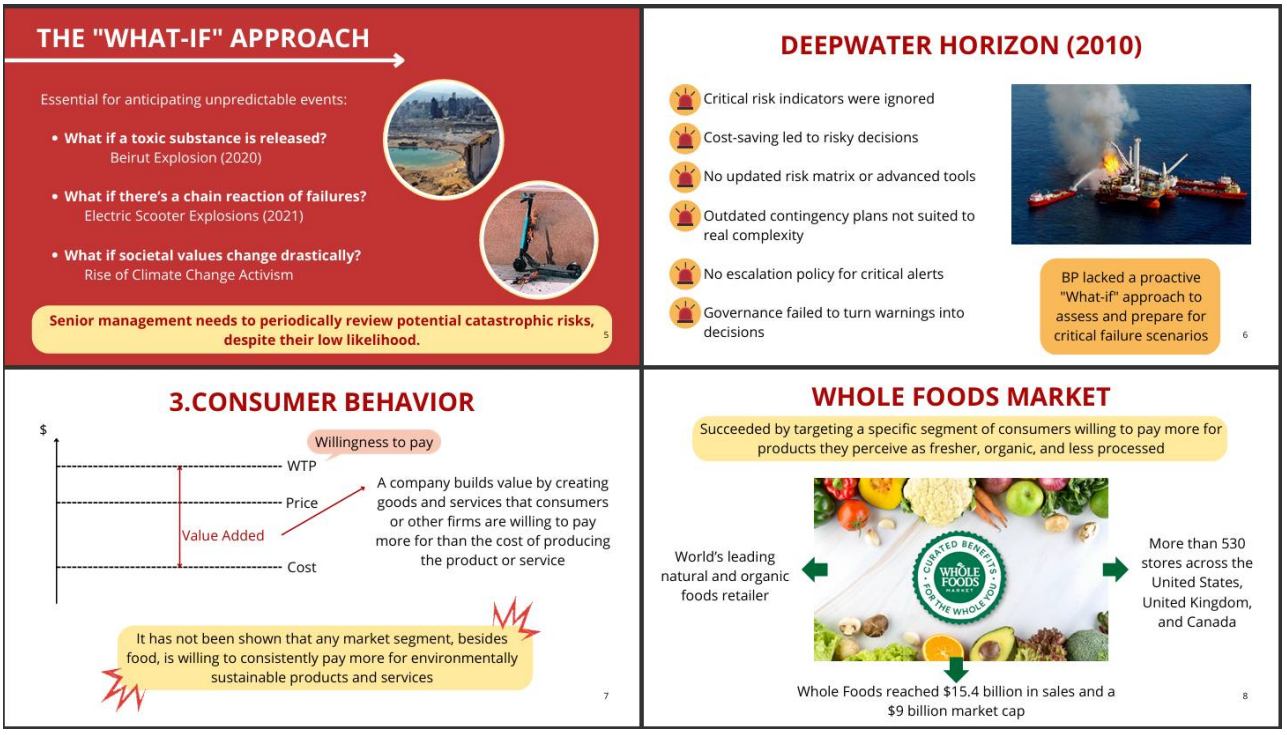

Figure 37. *Session 5 (Slides 5-8)*

Figure 38. *Session 5 (Slides 9-12)*

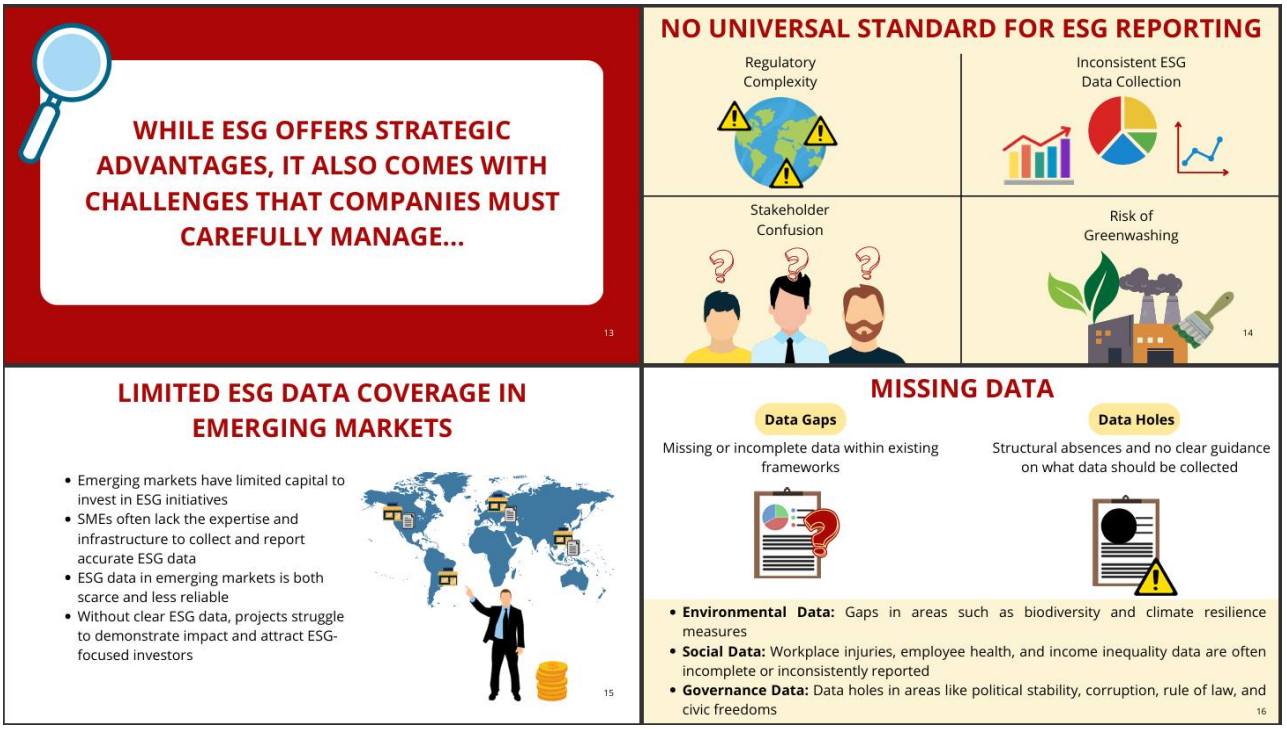

Figure 39. *Session 5 (Slides 13-16)*

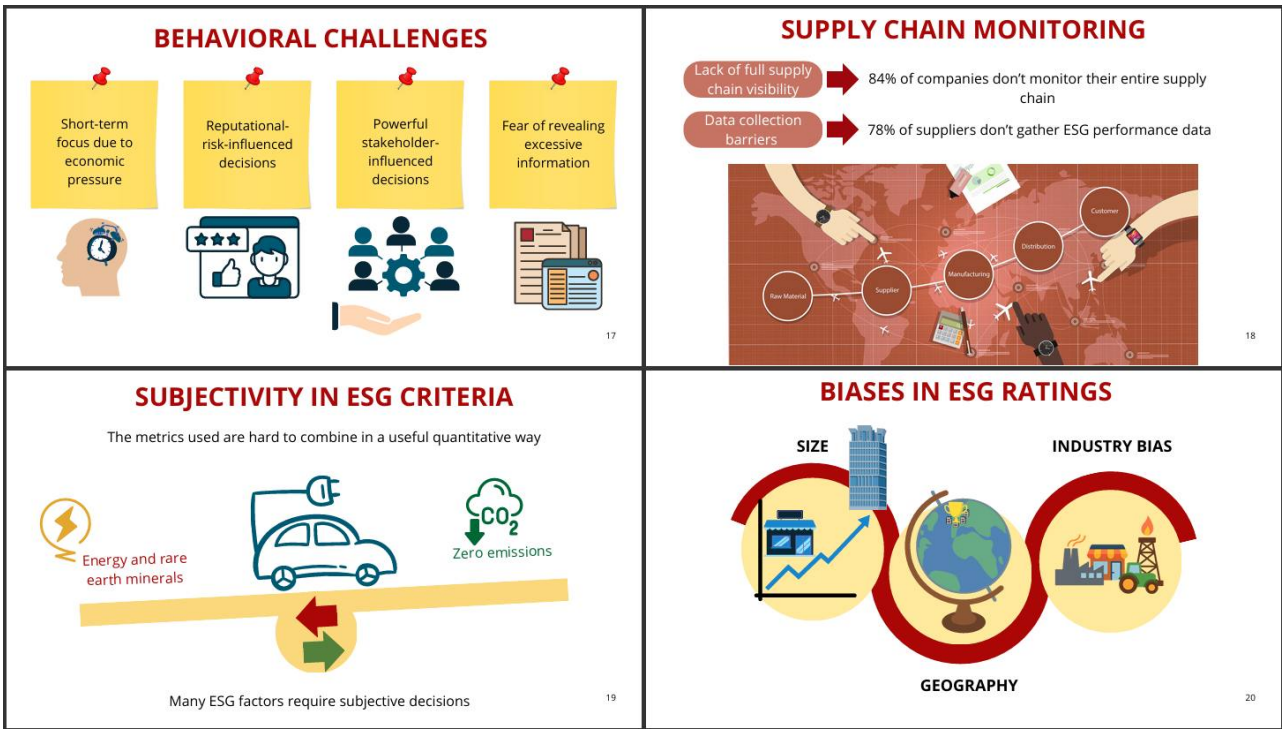

Figure 40. *Session 5 (Slides 17-20)*

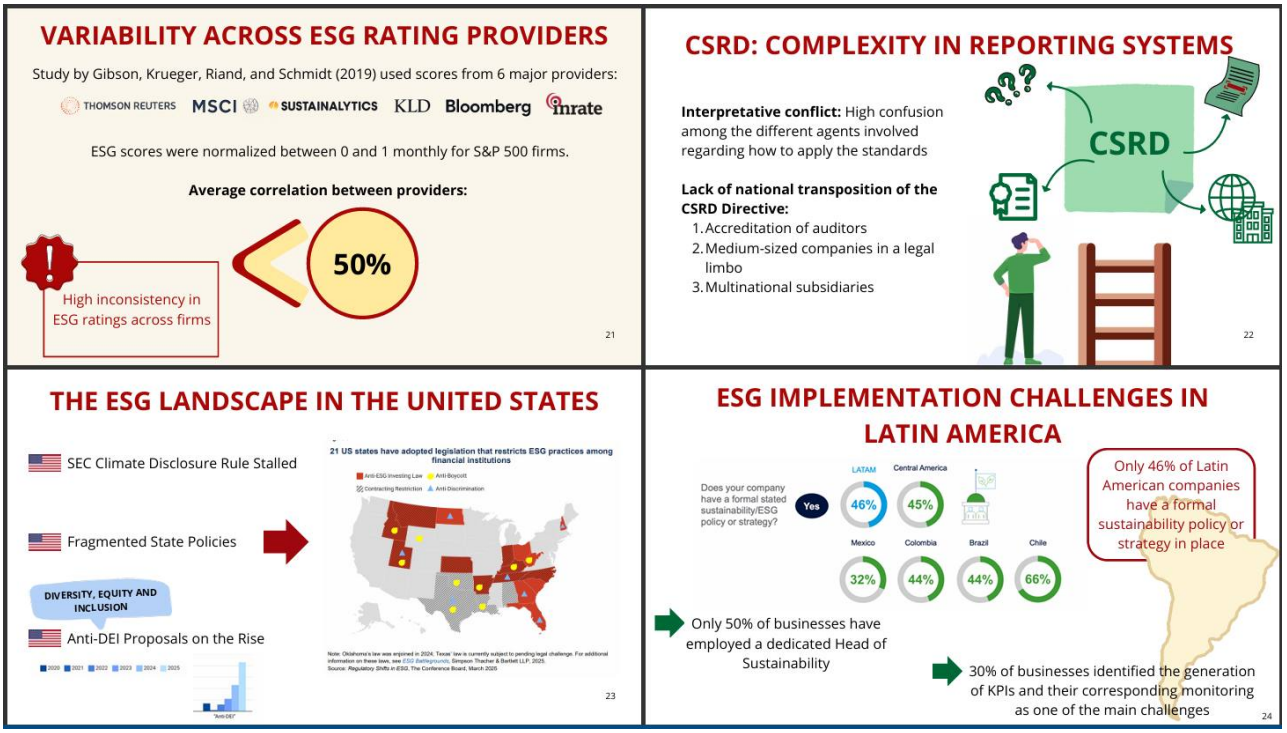

Figure 41. *Session 5 (Slides 21-24)*

6. Session 6

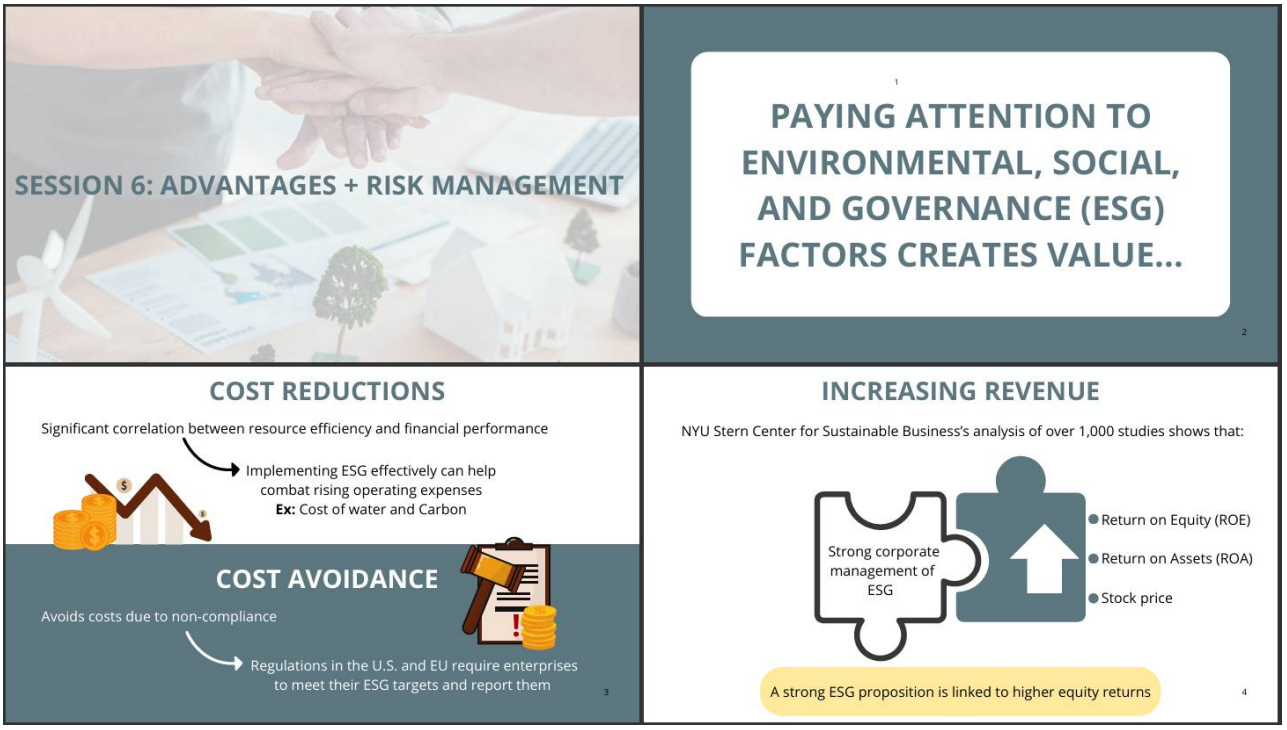

Figure 42. *Session 6 (Slides 1-4)*

Figure 43. *Session 6 (Slides 5-8)*

Figure 44. *Session 6 (Slides 9-12)*

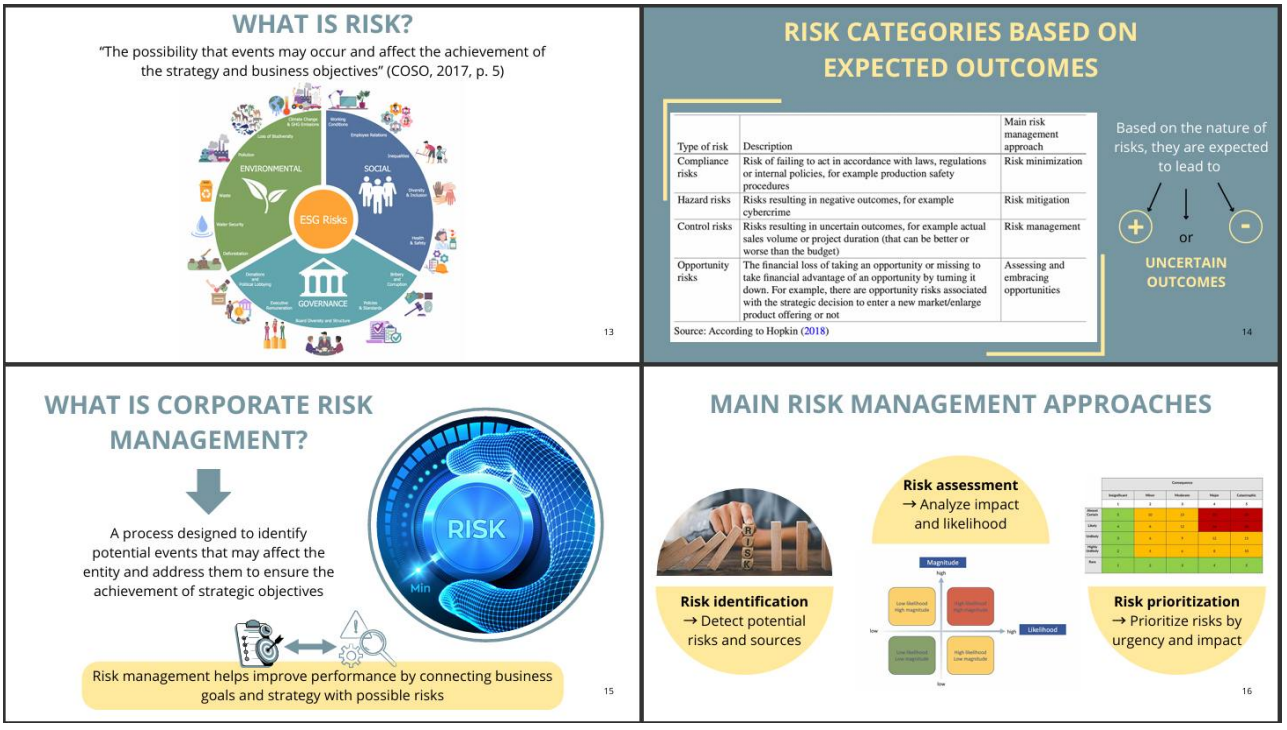

Figure 45. *Session 6 (Slides 13-16)*

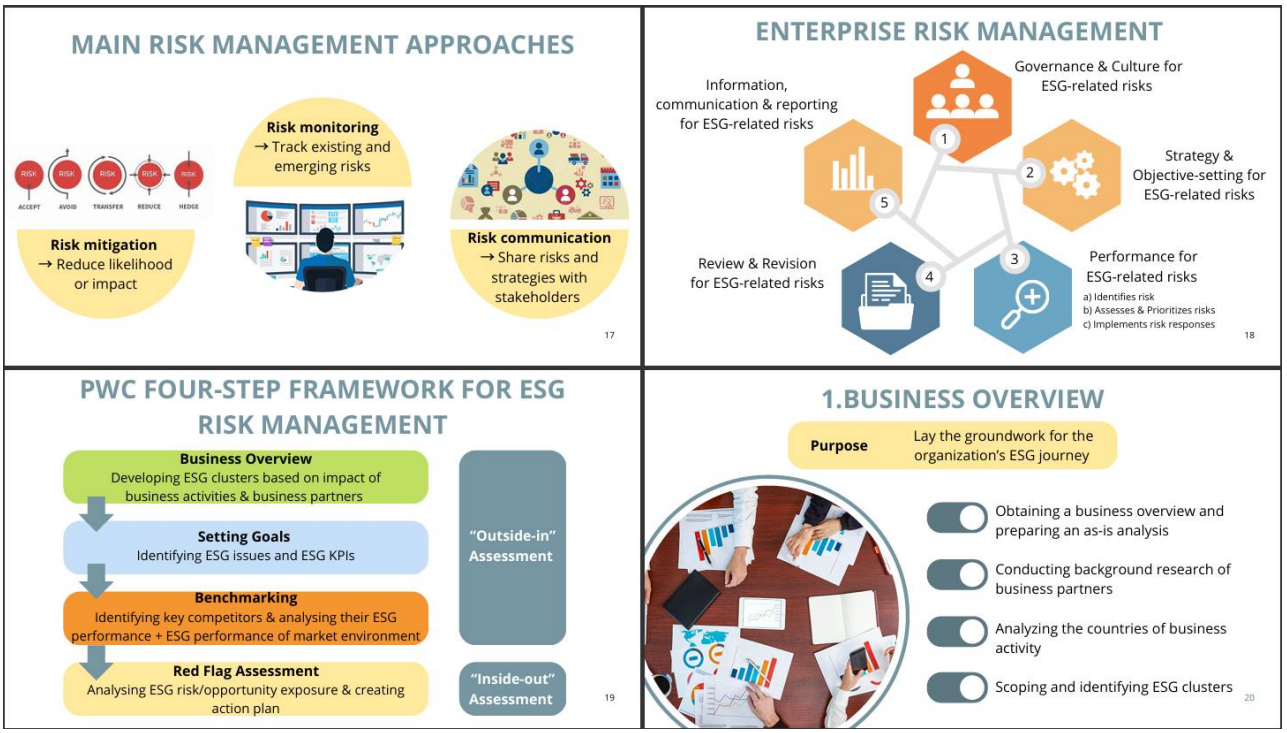

Figure 46. *Session 6 (Slides 17-20)*

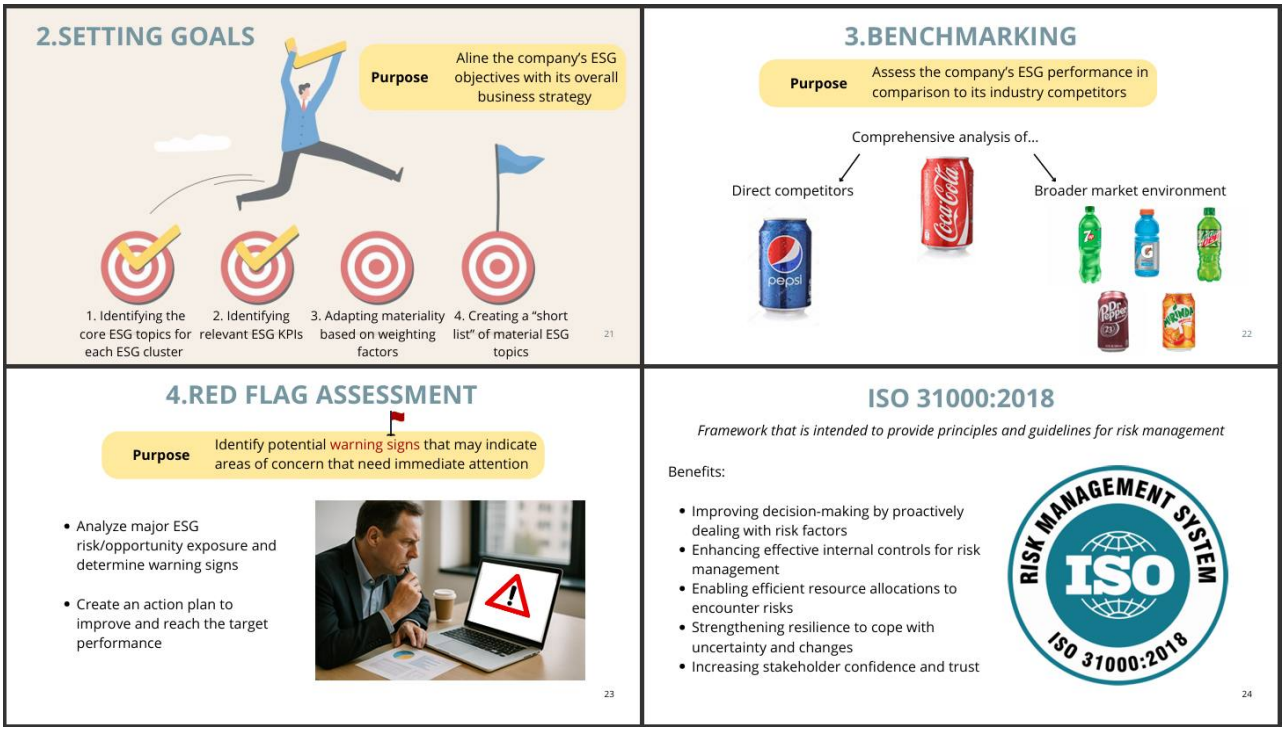

Figure 47. *Session 6 (Slides 21-24)*

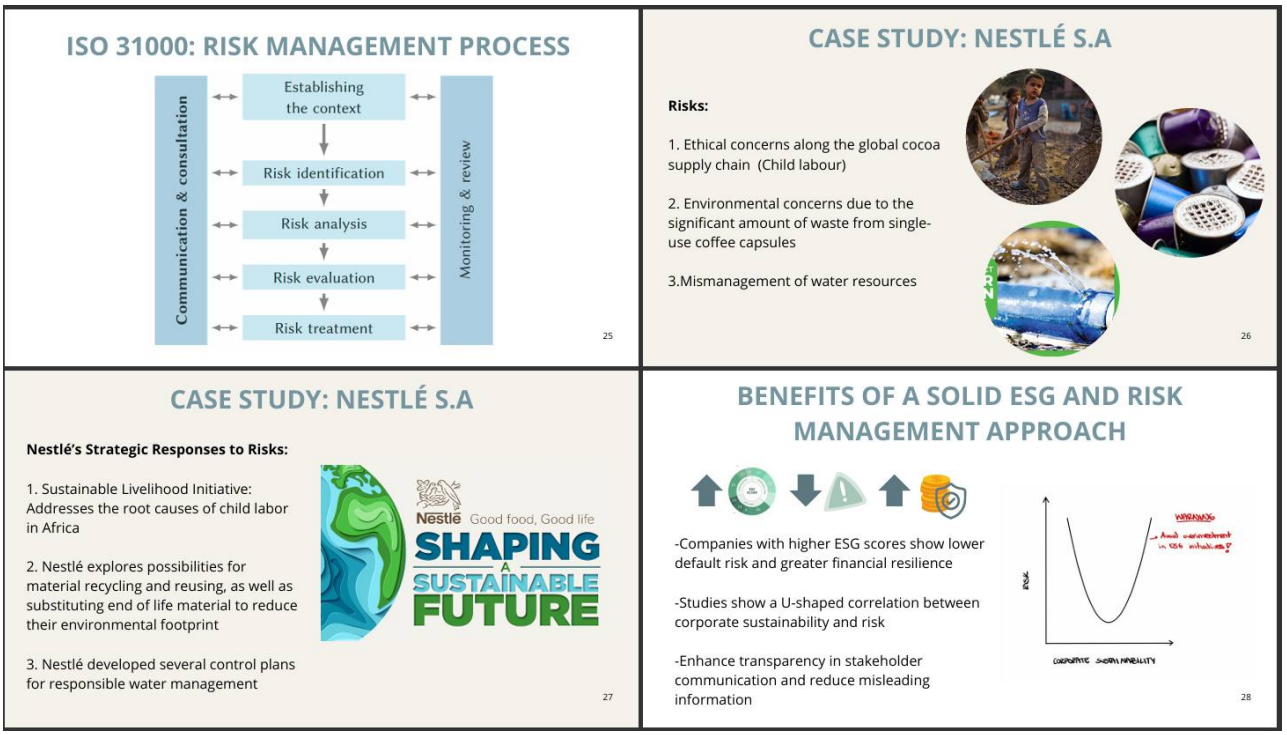

Figure 48. *Session 6 (Slides 25-28)*

Figure 49. *Session 6 (Slide 29)*

7. Session 7

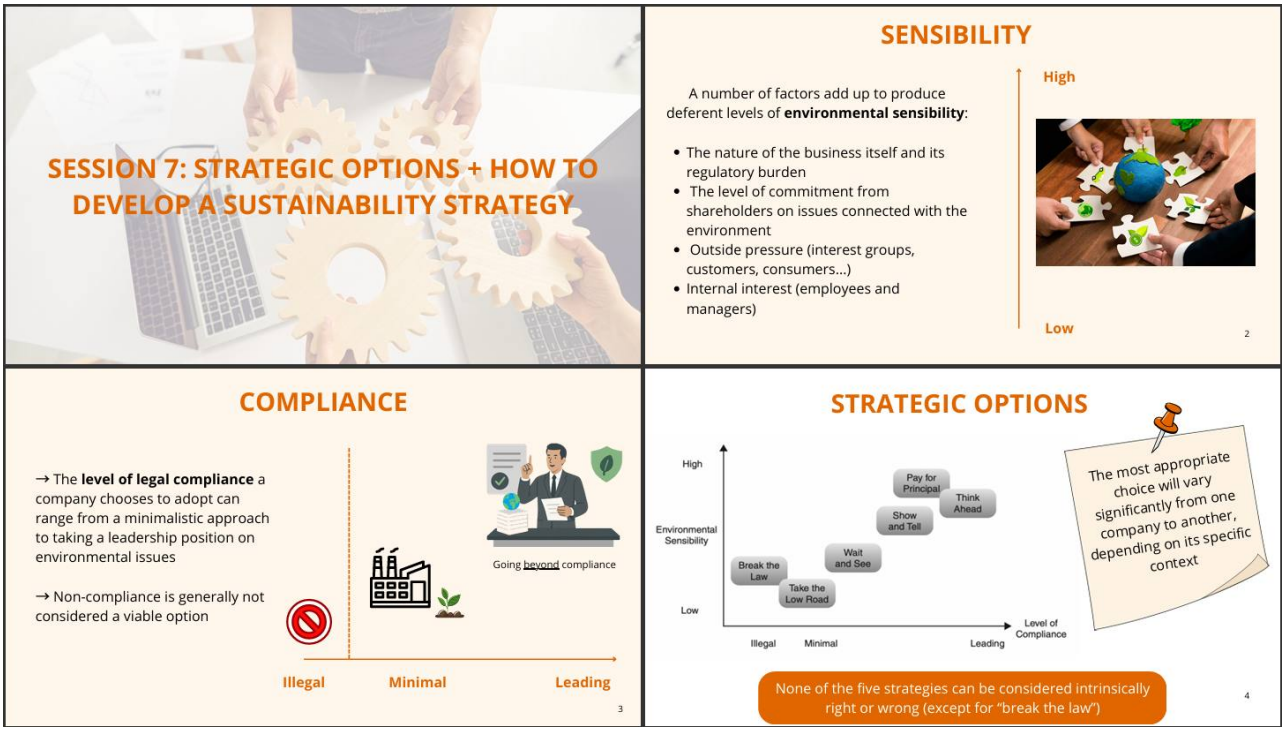

Figure 50. *Session 7 (Slides 1-4)*

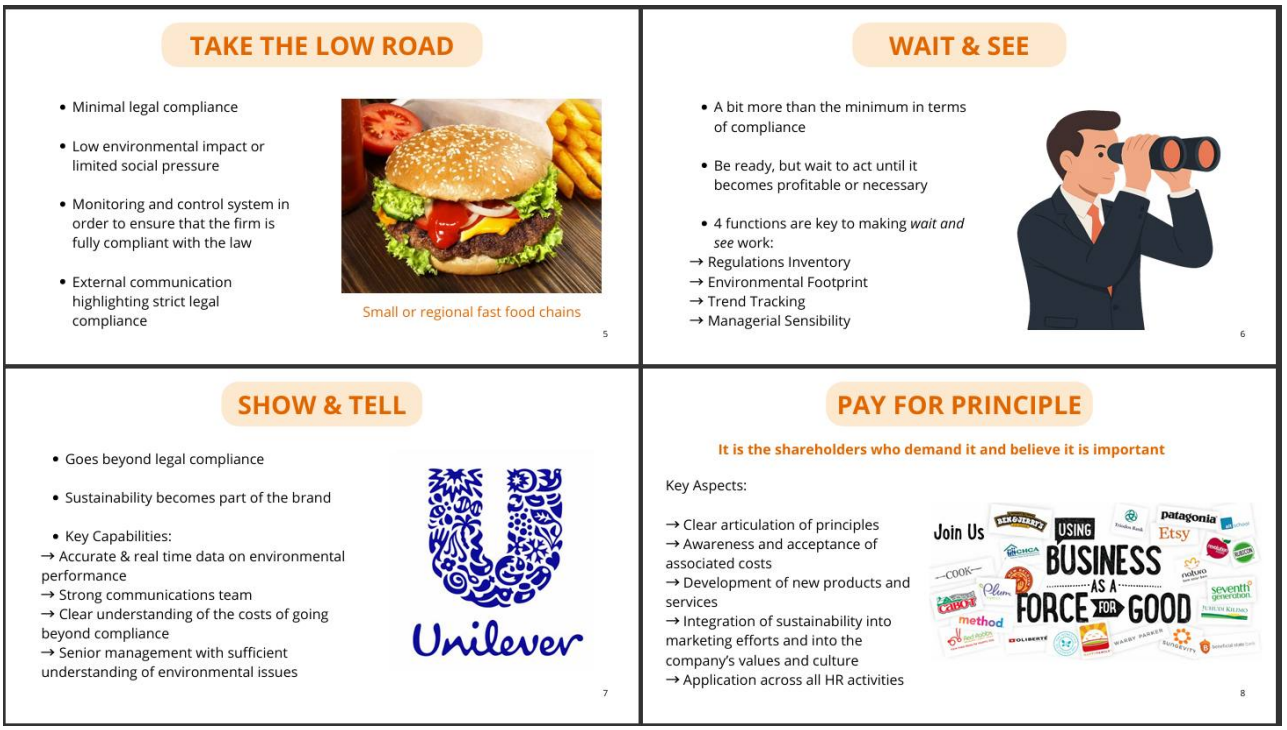

Figure 51. *Session 7 (Slides 5-8)*

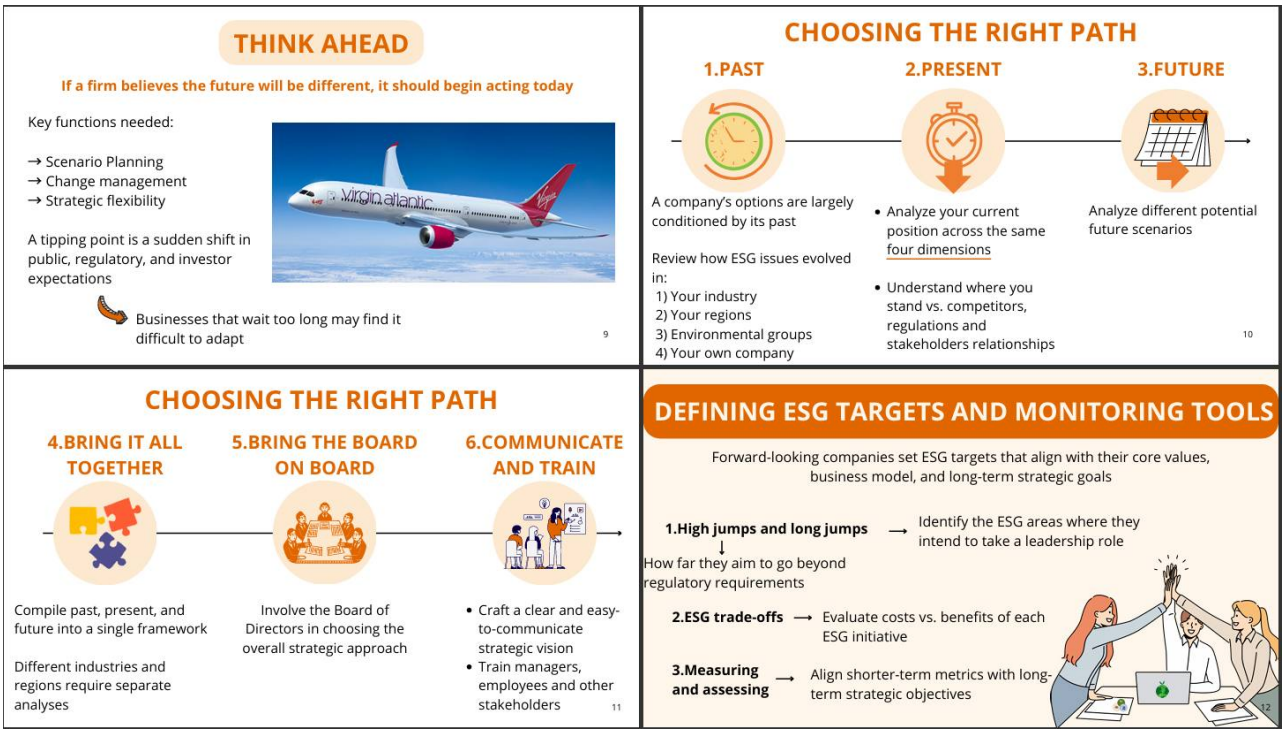

Figure 52. *Session 7 (Slides 9-12)*

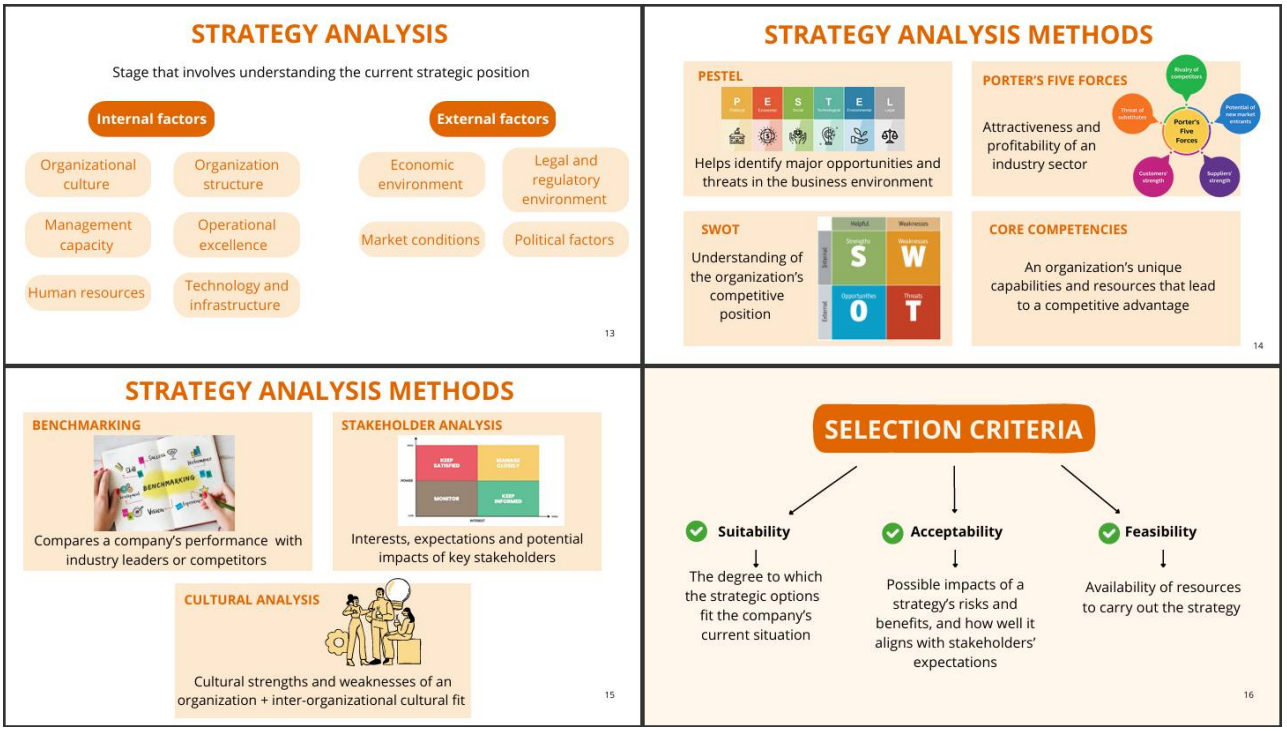

Figure 53. *Session 7 (Slides 13-16)*

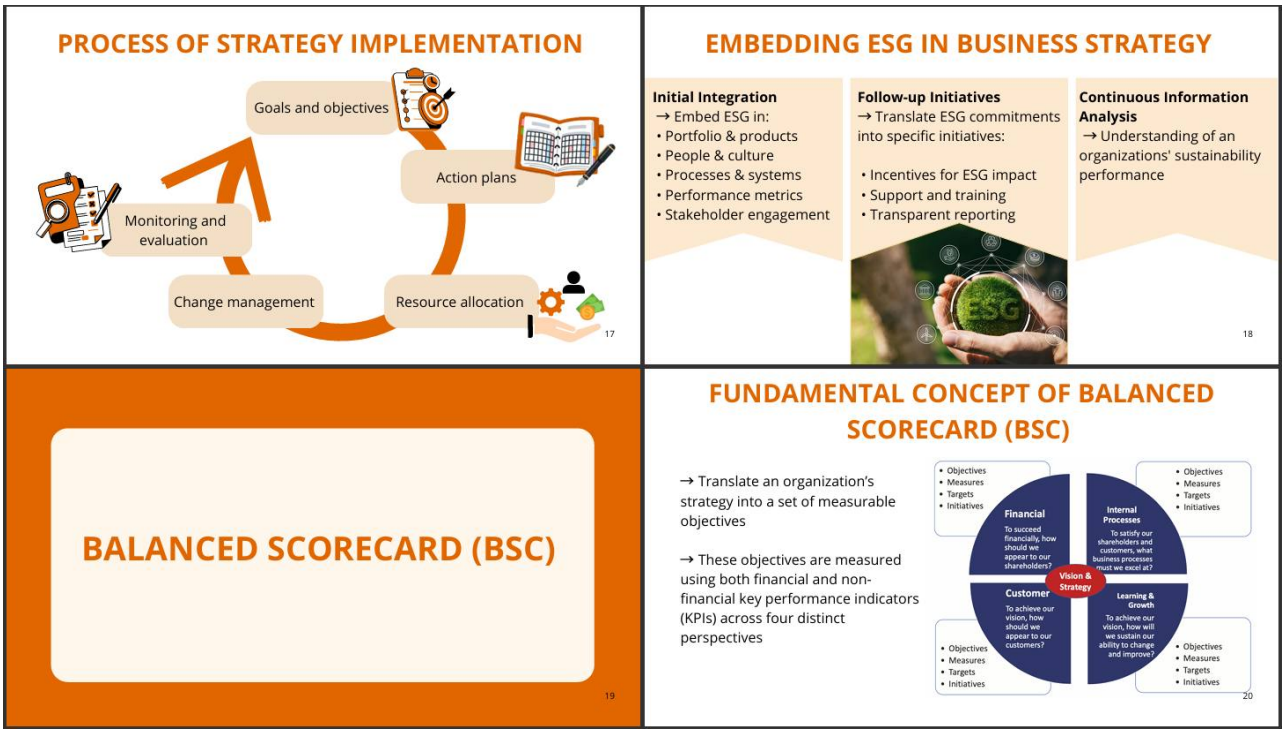

Figure 54. *Session 7 (Slides 17-20)*

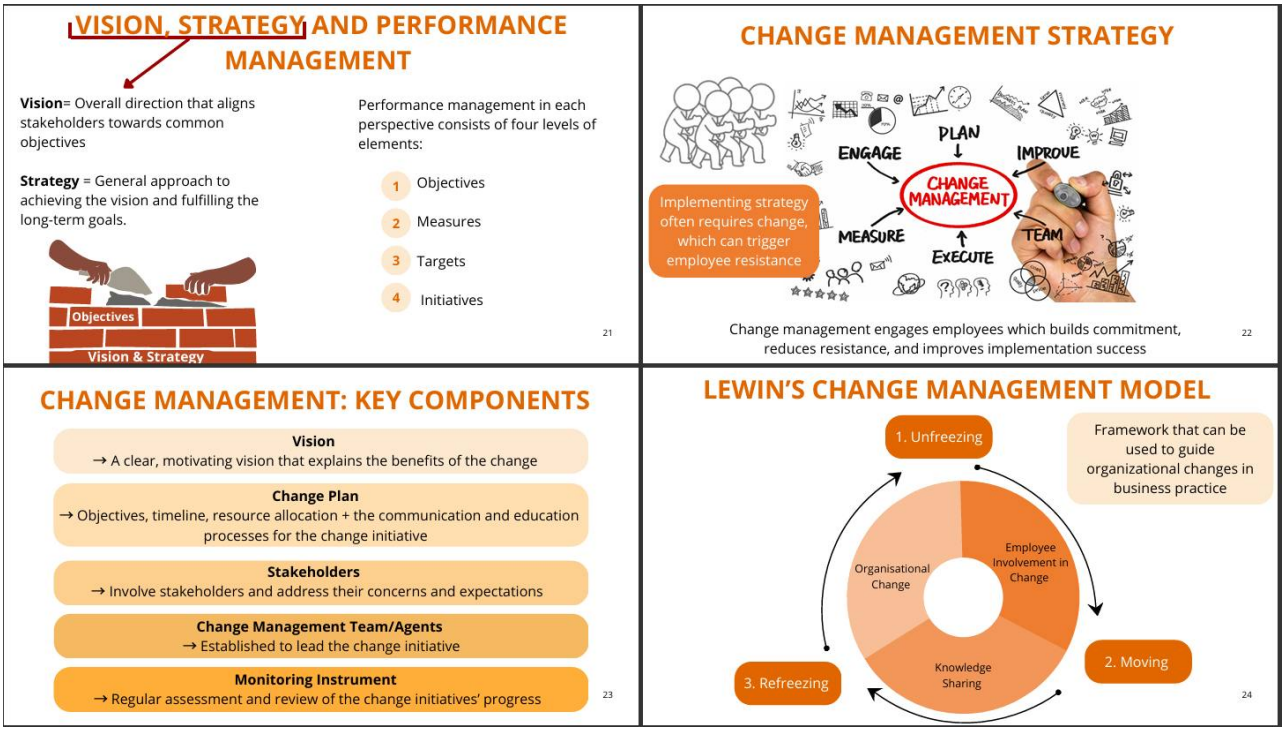

Figure 55. *Session 7 (Slides 21-24)*

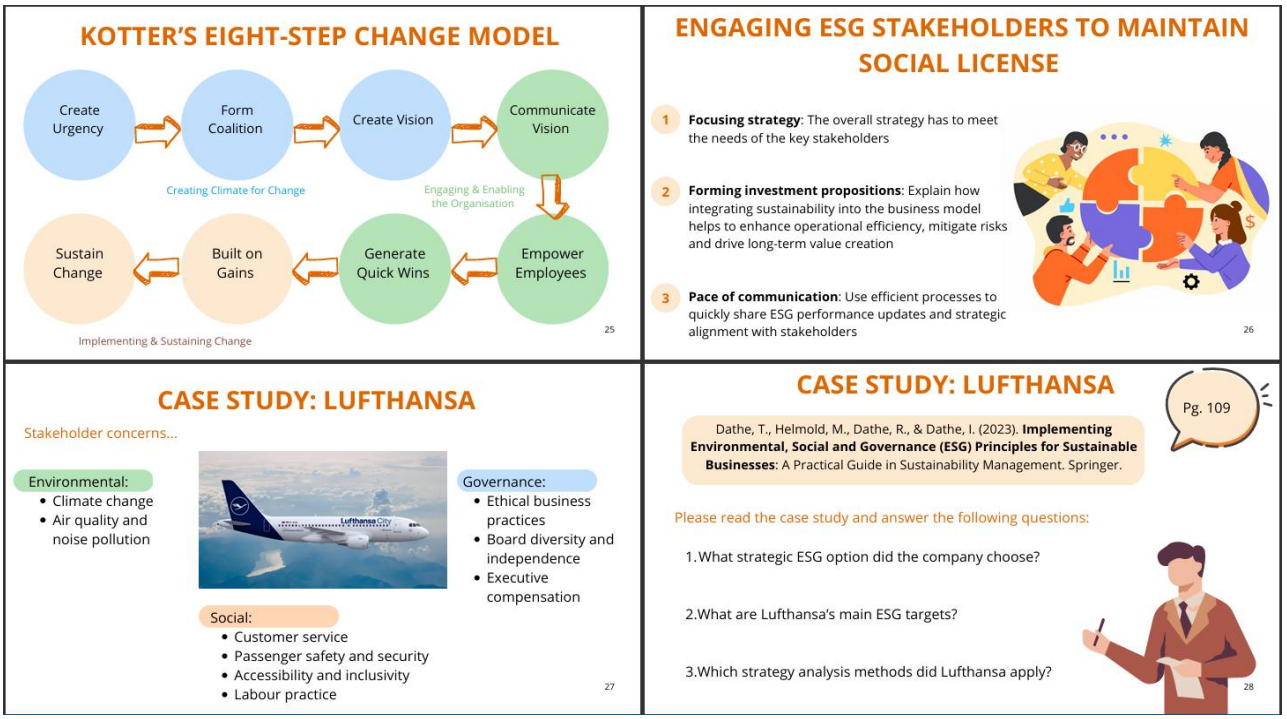

Figure 56. *Session 7 (Slides 25-28)*

8. Session 8

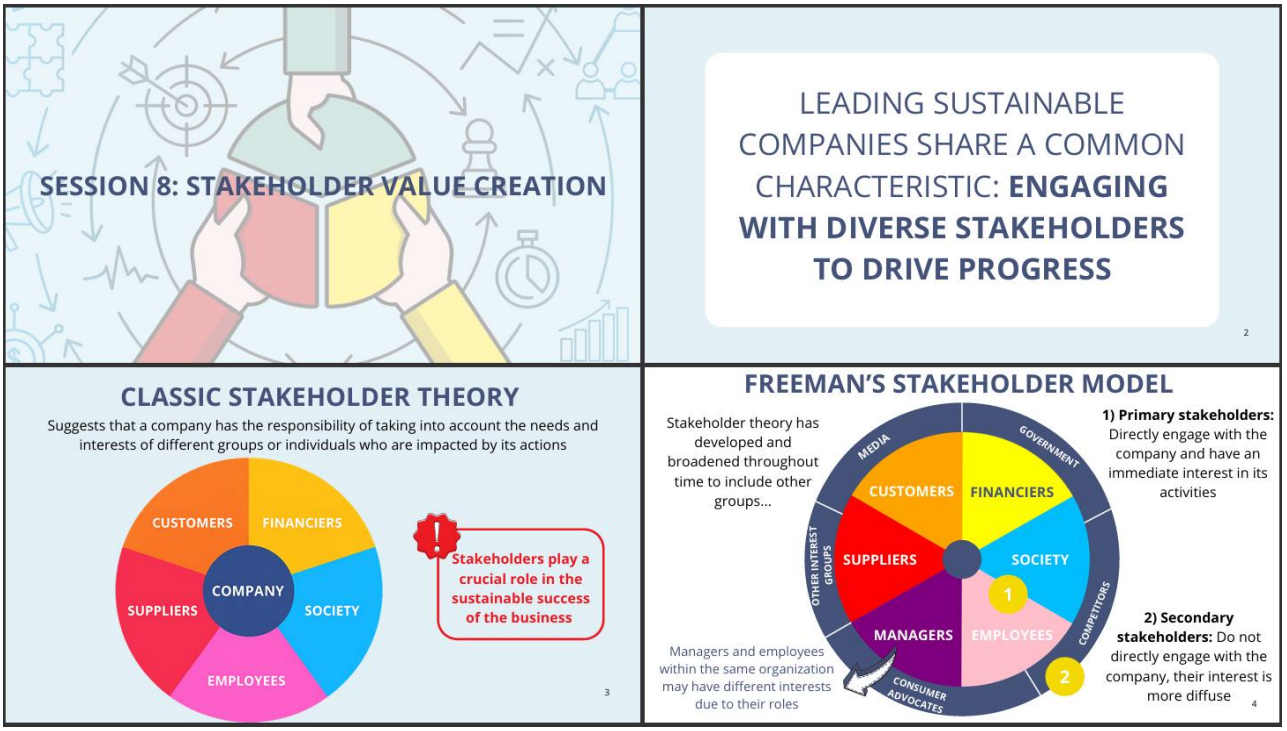

Figure 57. *Session 8 (Slides 1-4)*

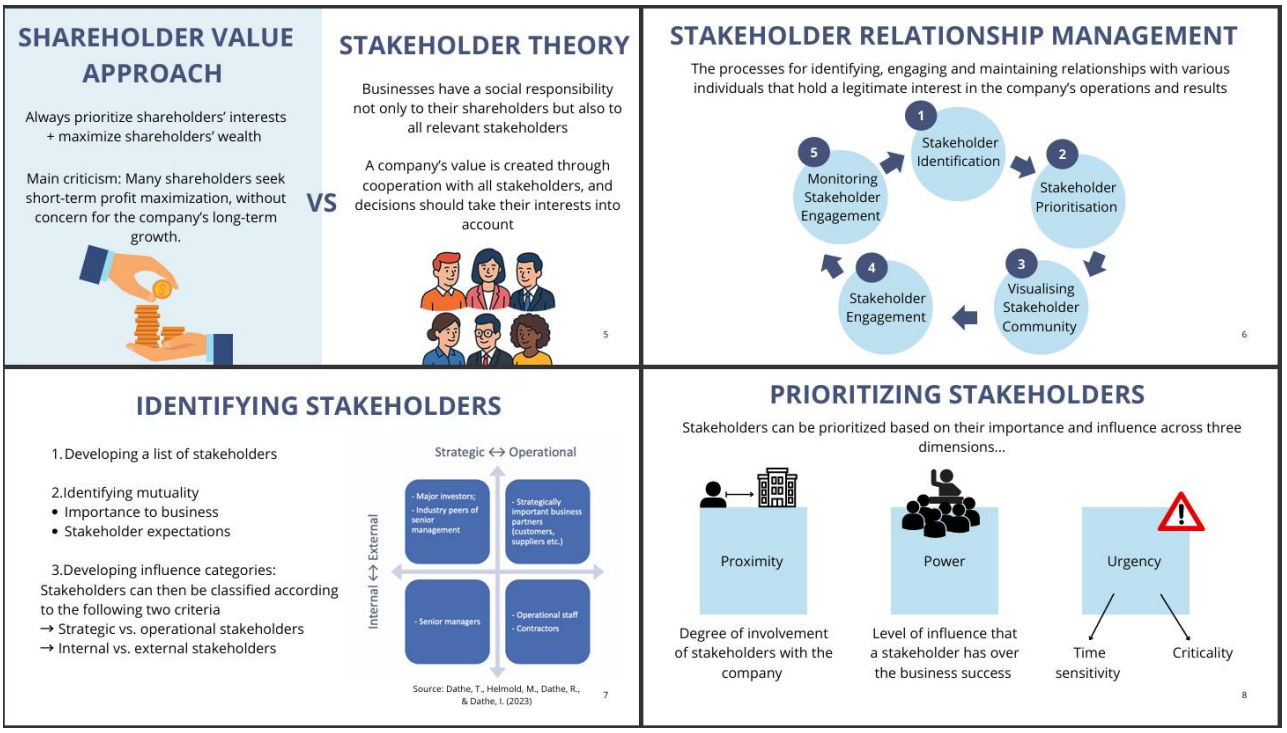

Figure 58. *Session 8 (Slides 5-8)*

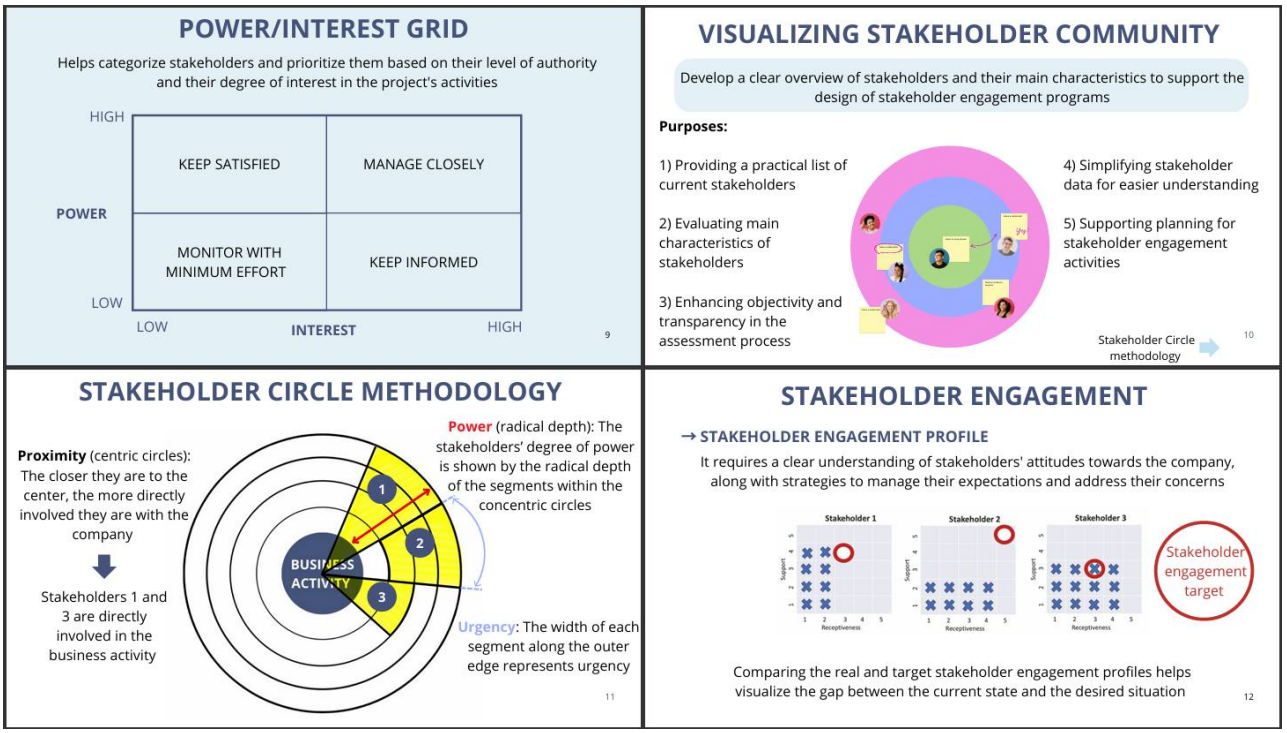

Figure 59. *Session 8 (Slides 9-12)*

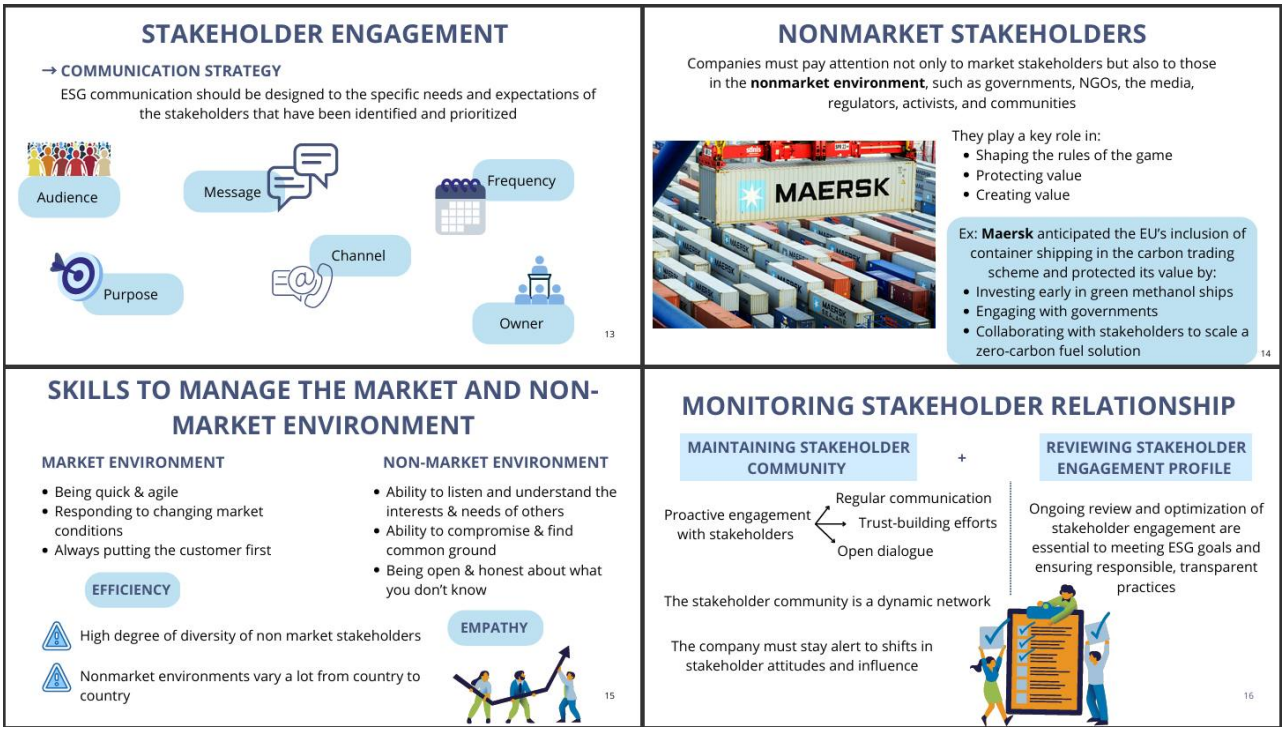

Figure 60. *Session 8 (Slides 13-16)*

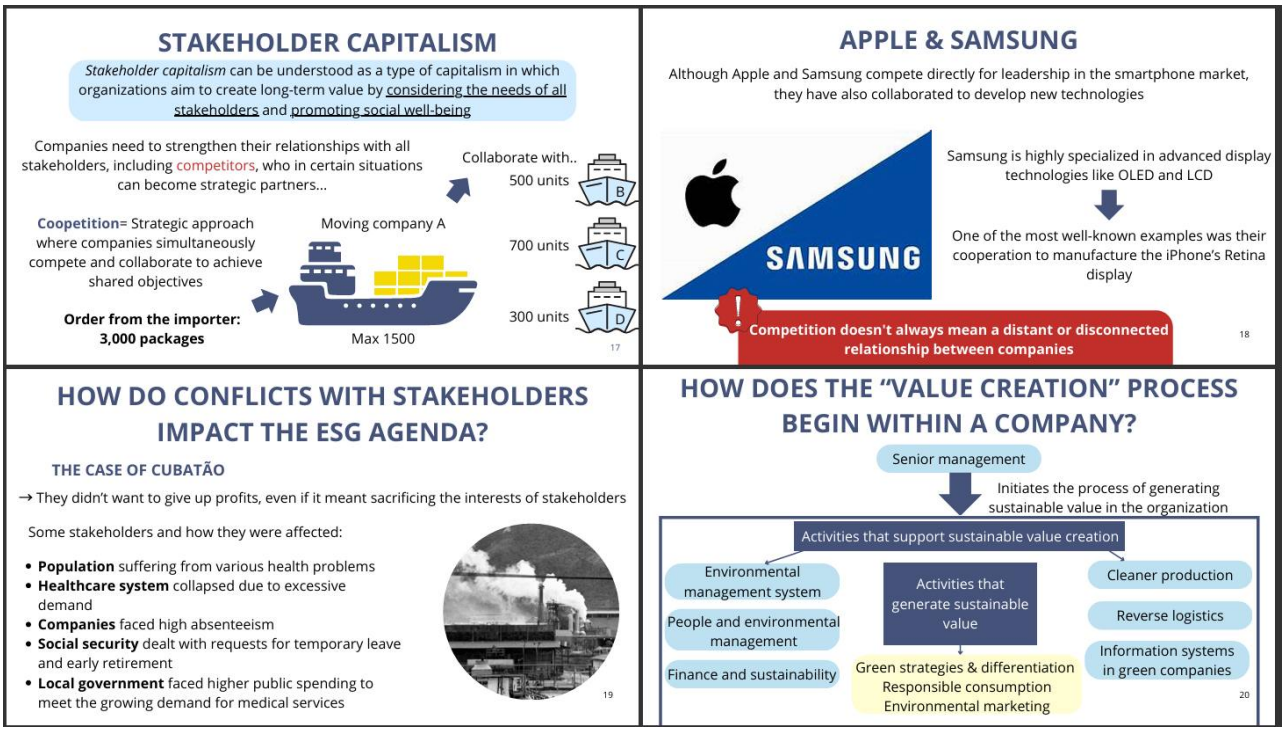

Figure 61. *Session 8 (Slides 17-20)*

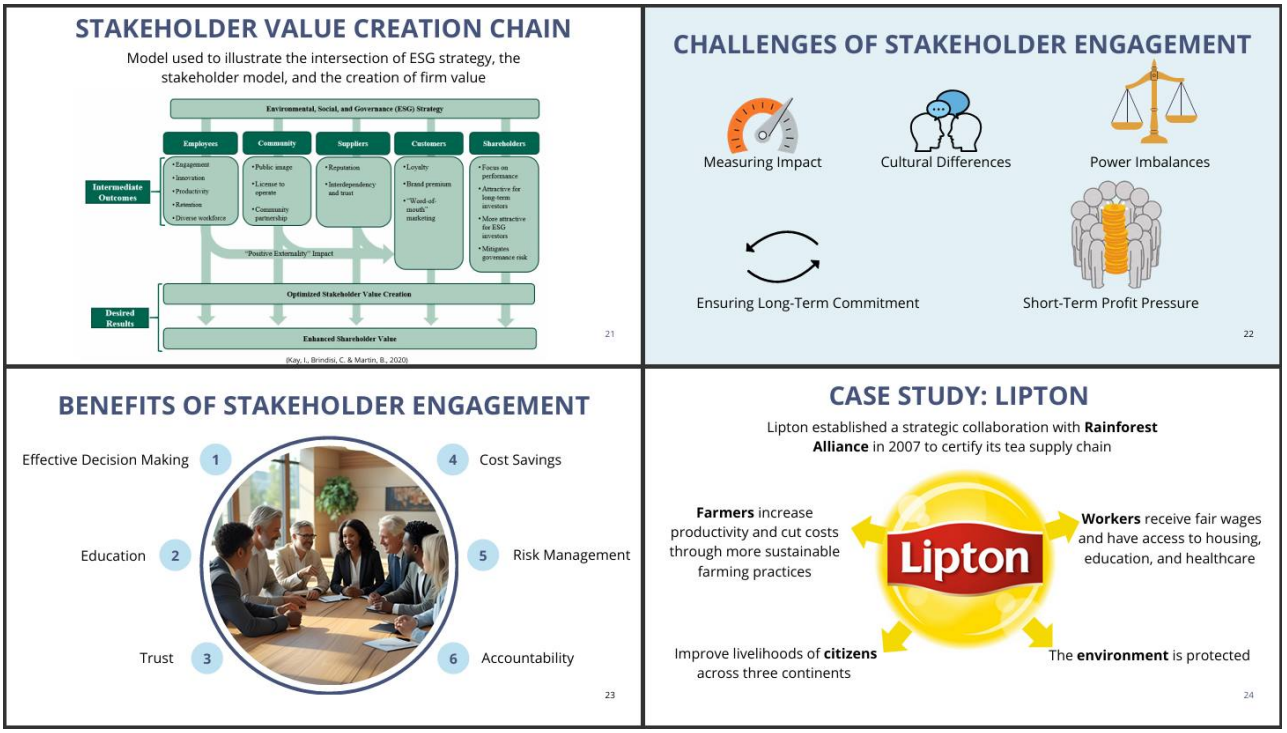

Figure 62. *Session 8 (Slides 21-24)*

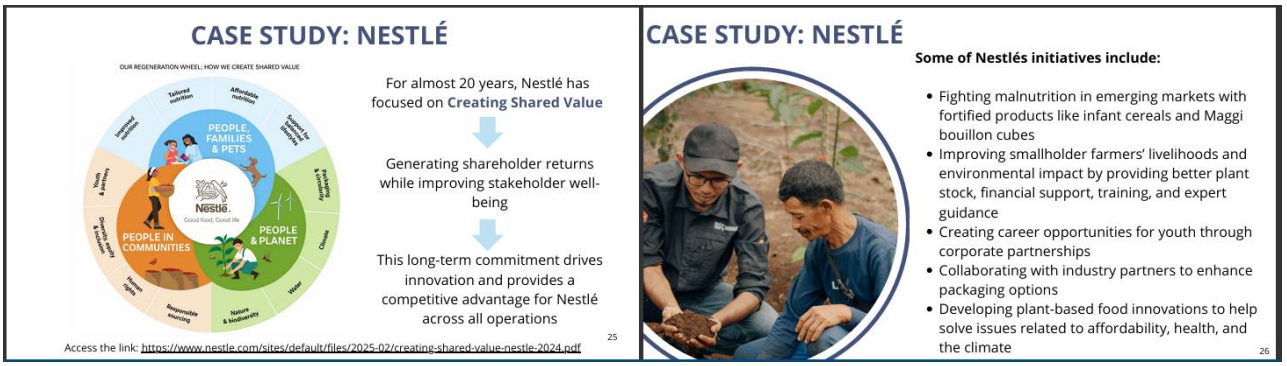

Figure 63. *Session 8 (Slides 25-26)*

9. Session 9

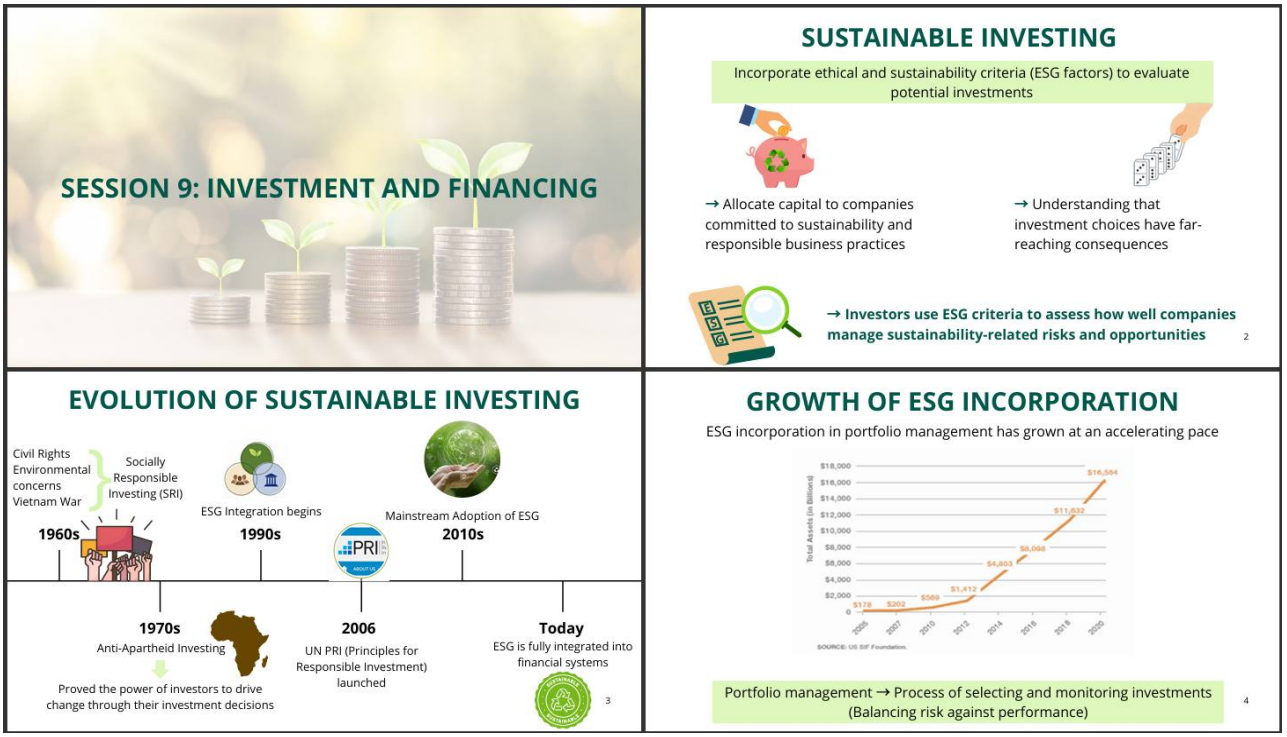

Figure 64. *Session 9 (Slides 1-4)*

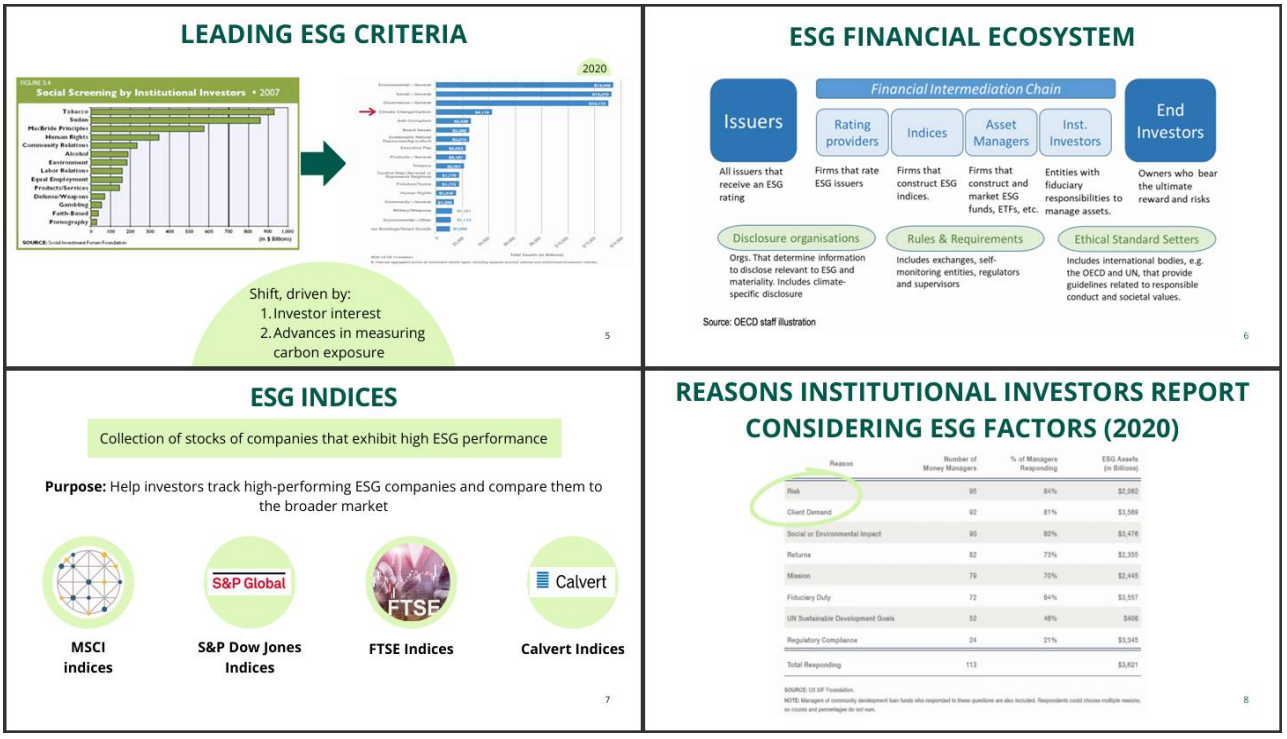

Figure 65. *Session 9 (Slides 5-8)*

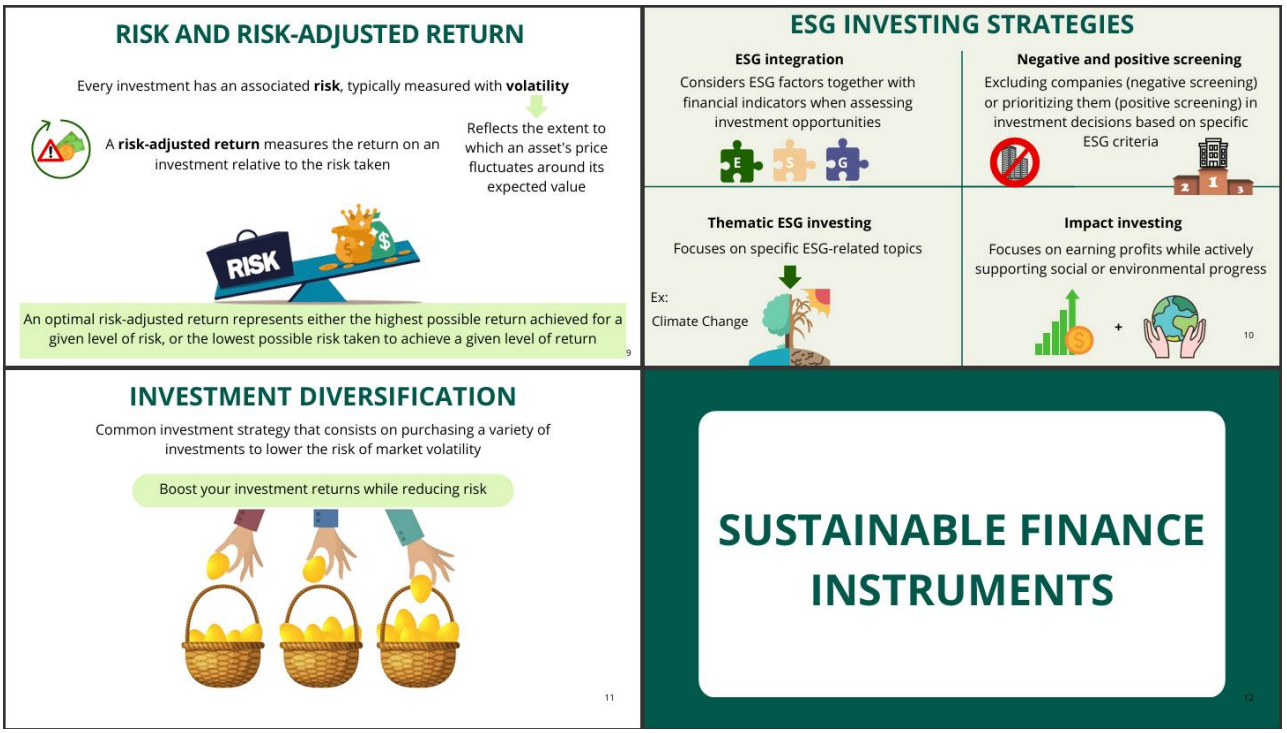

Figure 66. *Session 9 (Slides 9-12)*

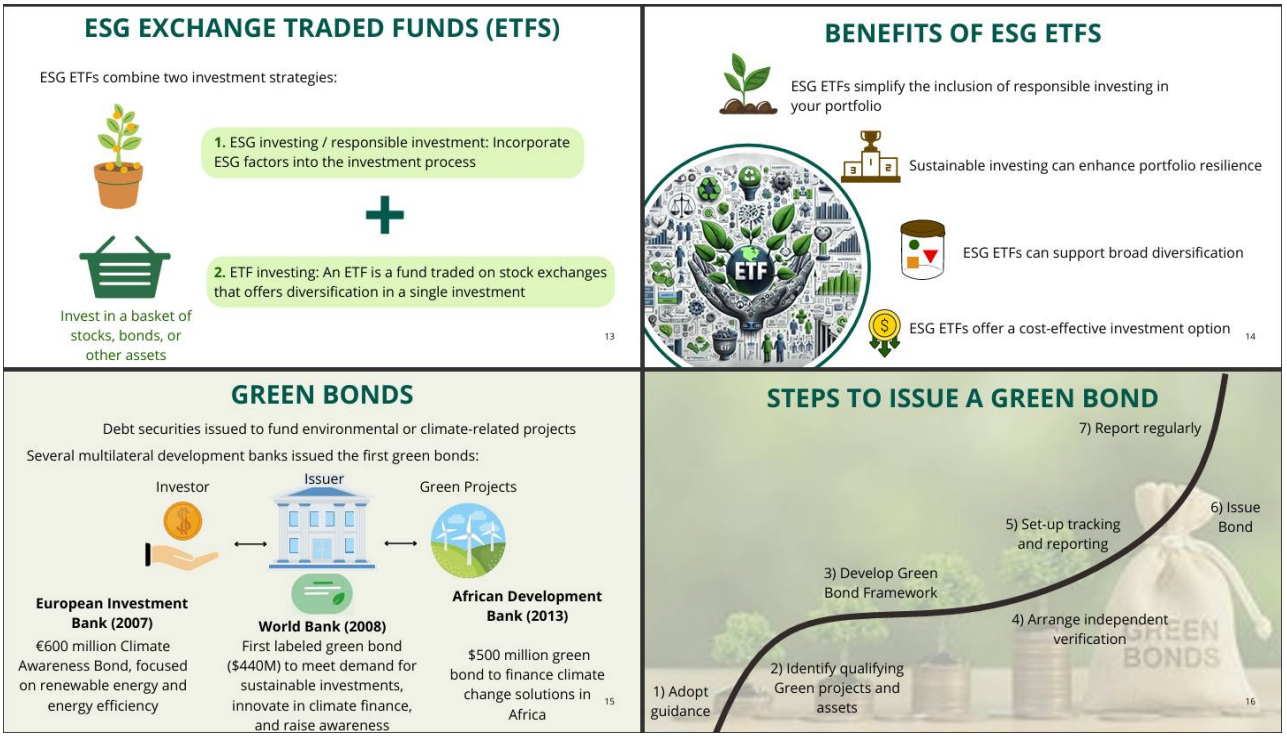

Figure 67. *Session 9 (Slides 13-16)*

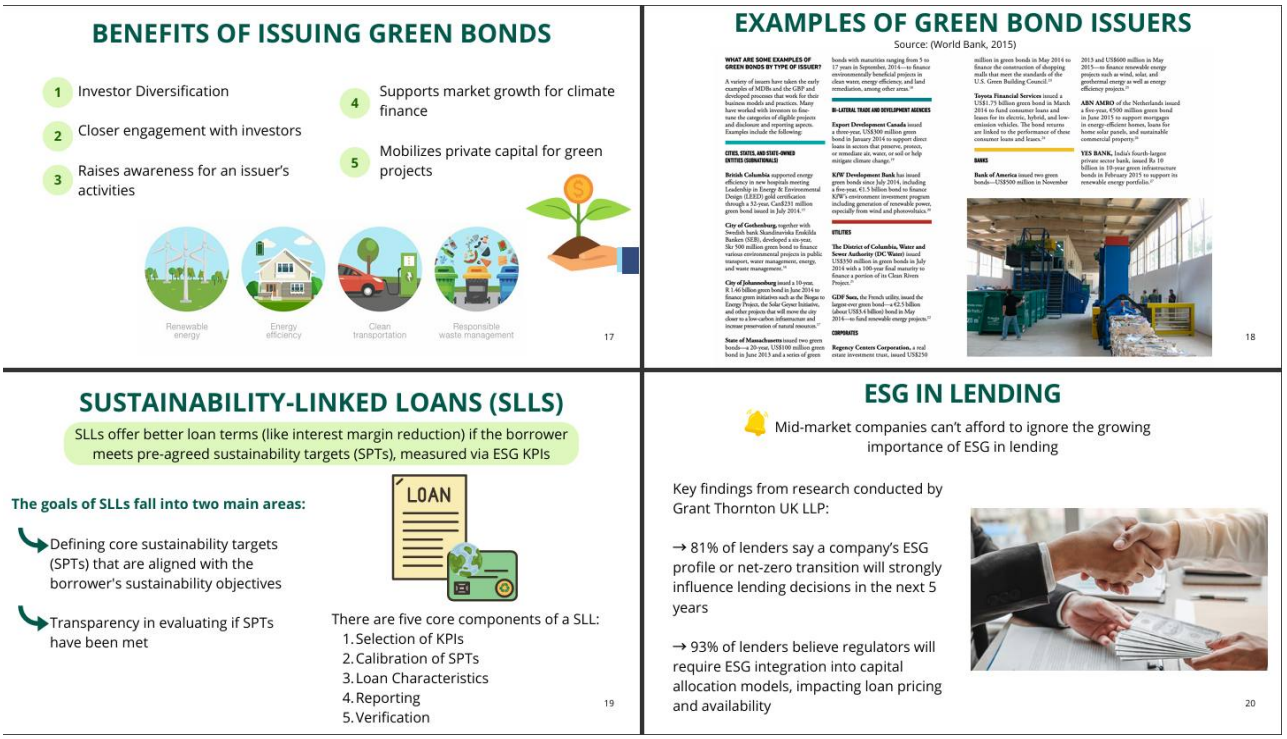

Figure 68. *Session 9 (Slides 17-20)*

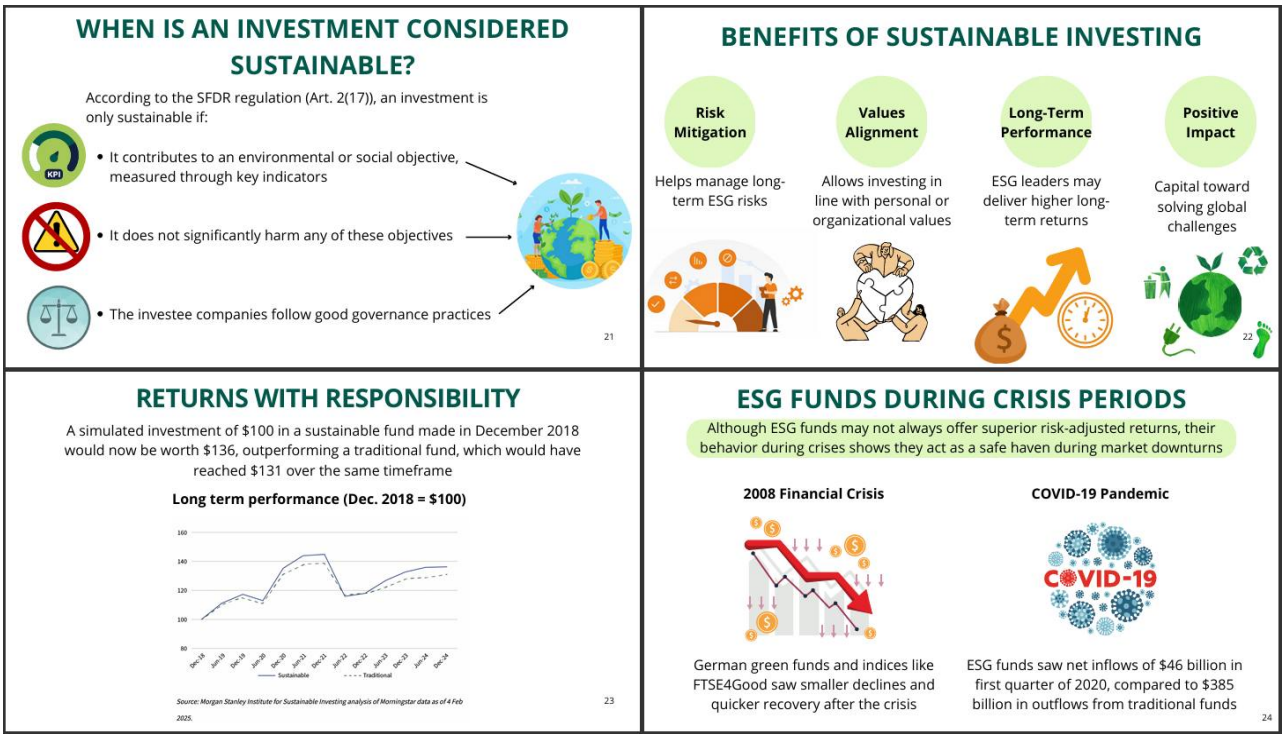

Figure 69. *Session 9 (Slides 21-24)*

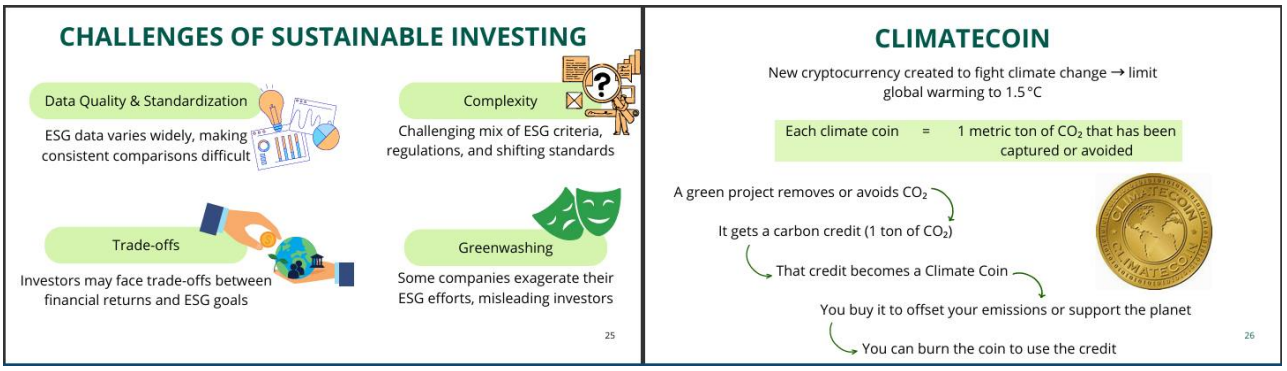

Figure 70. *Session 9 (Slides 25-26)*

10. Session 10

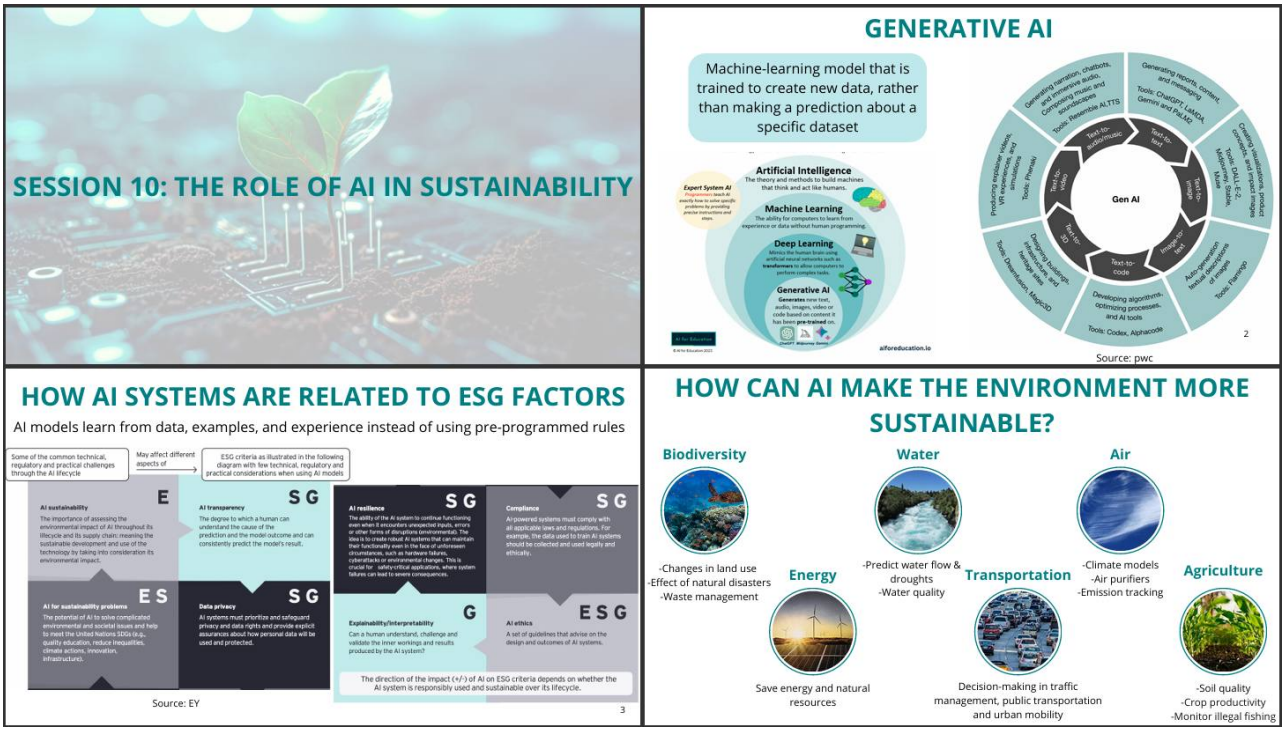

Figure 71. *Session 10 (Slides 1-4)*

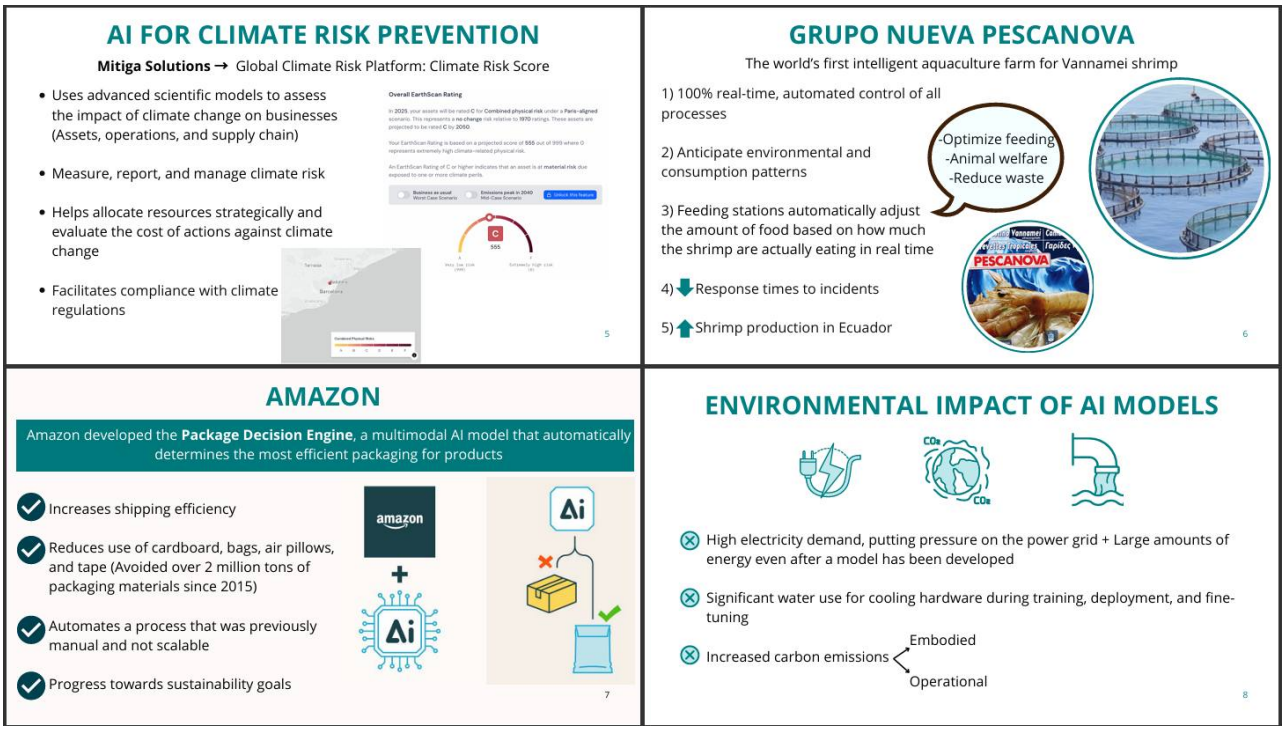

Figure 72. *Session 10 (Slides 5-8)*

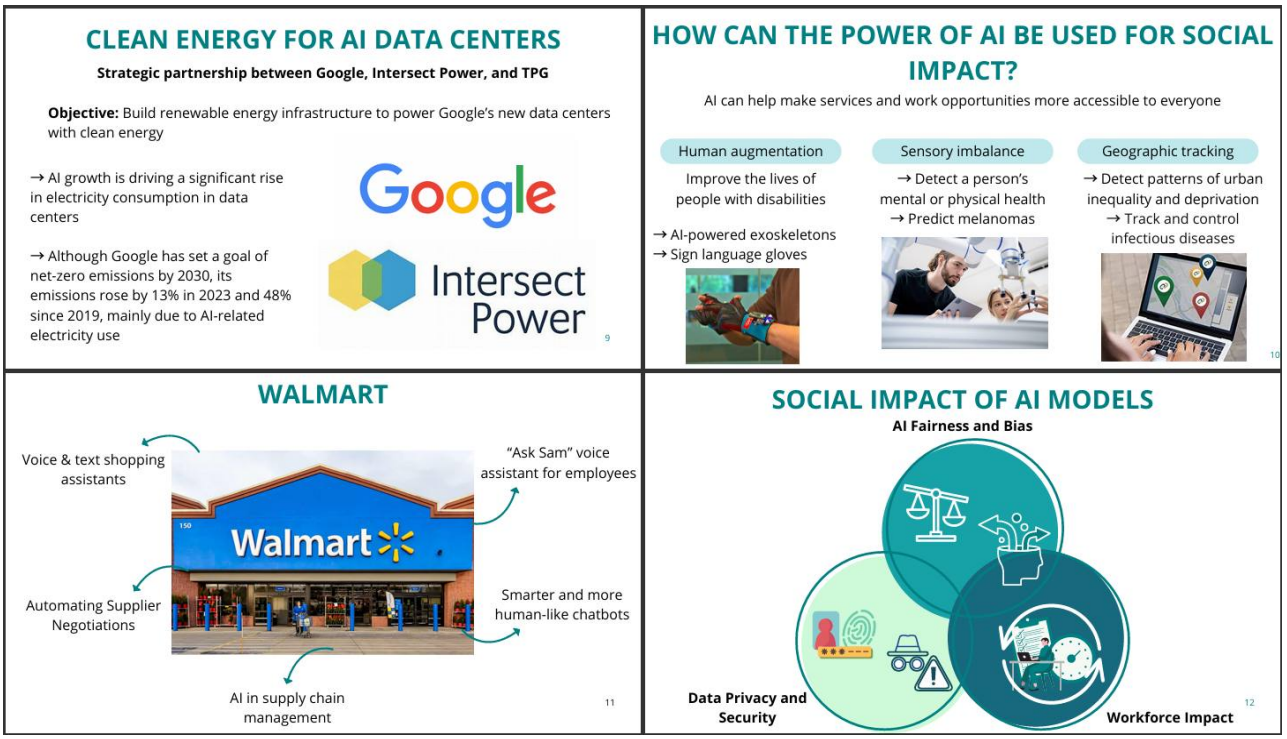

Figure 73. *Session 10 (Slides 9-12)*

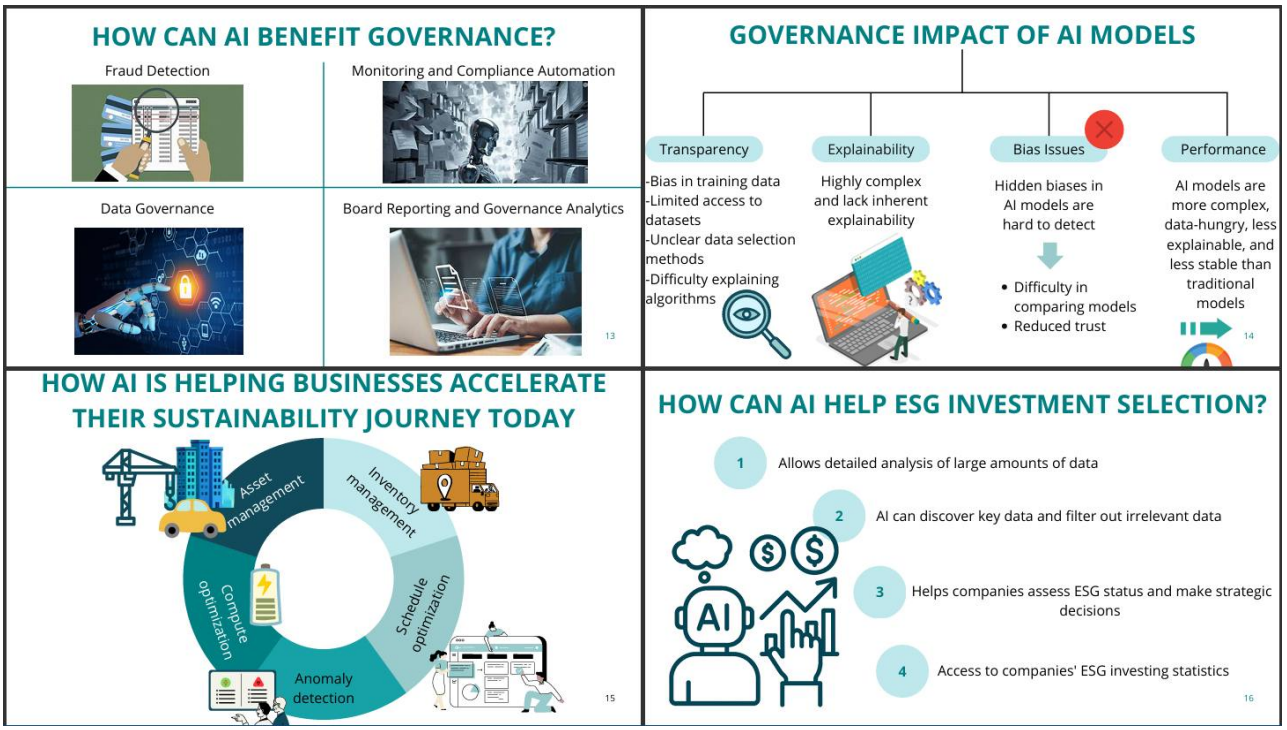

Figure 74. *Session 10 (Slides 13-16)*

Figure 75. *Session 10 (Slides 17-20)*

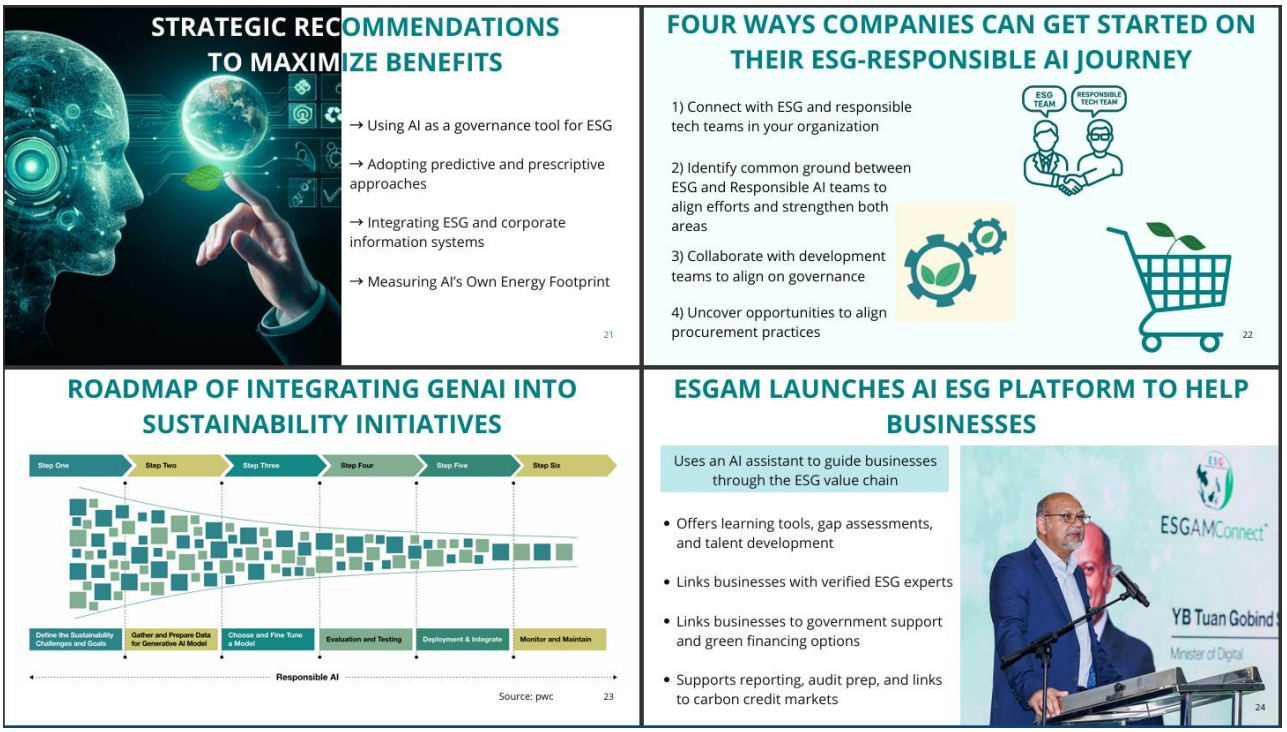

Figure 76. *Session 10 (Slides 21-24)*

11. Session 11

Figure 77. *Session 11 (Slides 1-4)*

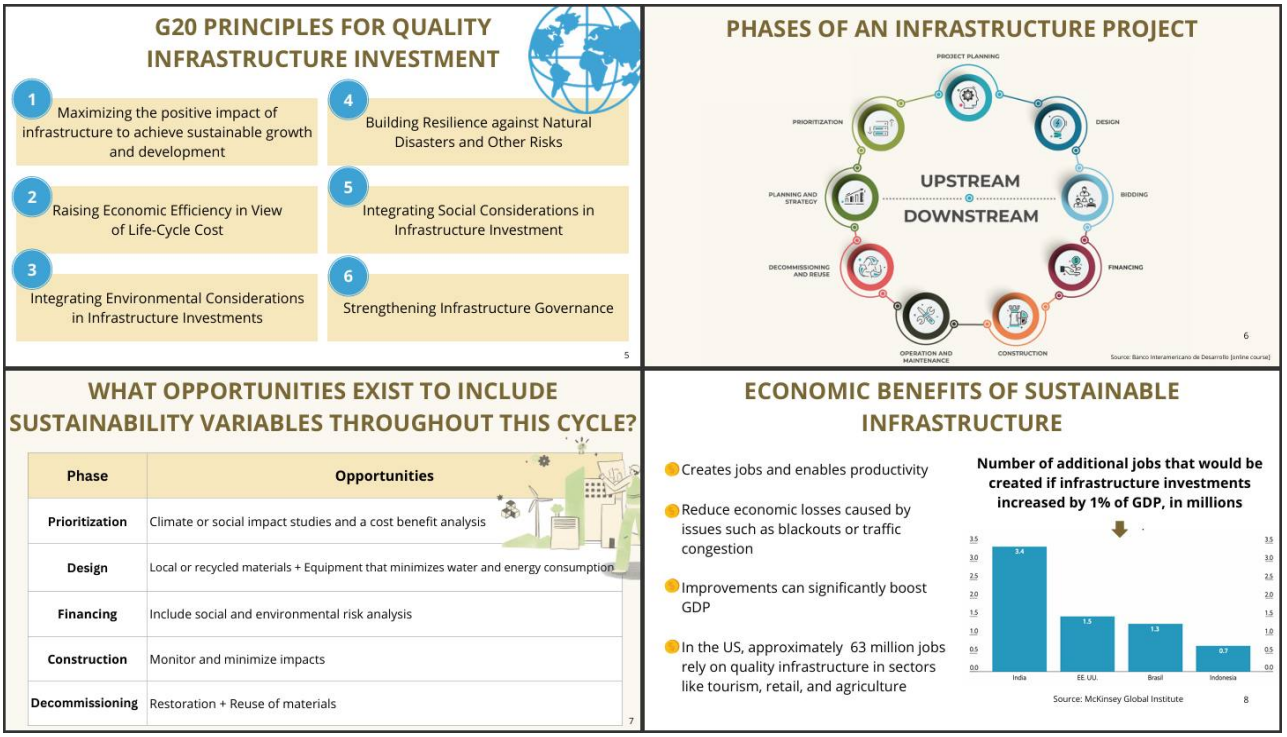

Figure 78. *Session 11 (Slides 5-8)*

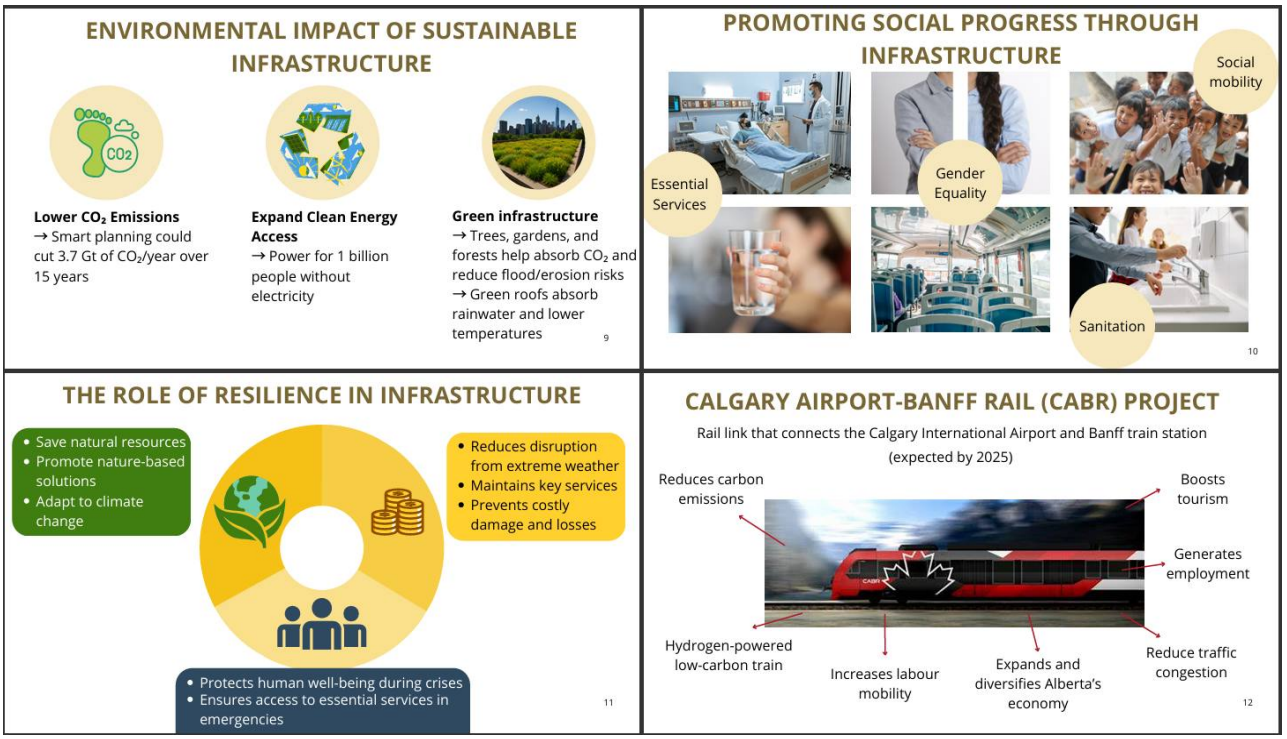

Figure 79. *Session 11 (Slides 9-12)*

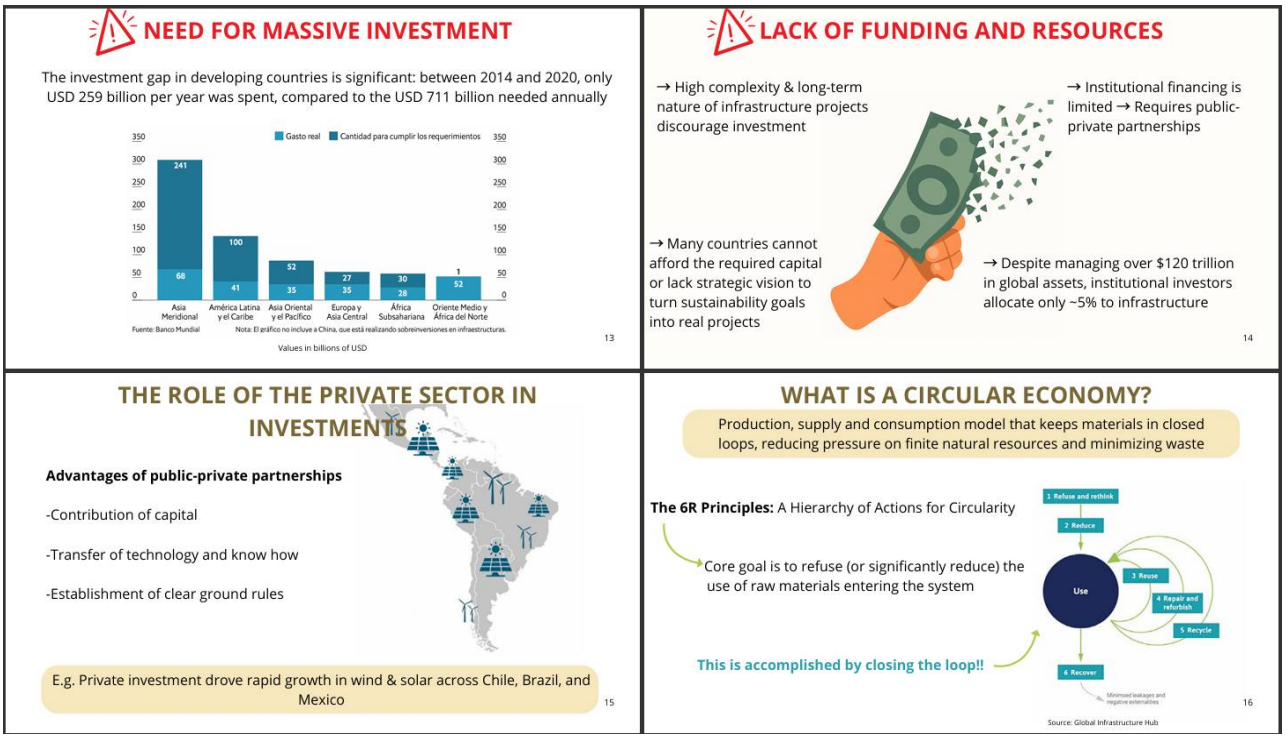

Figure 80. *Session 11 (Slides 13-16)*

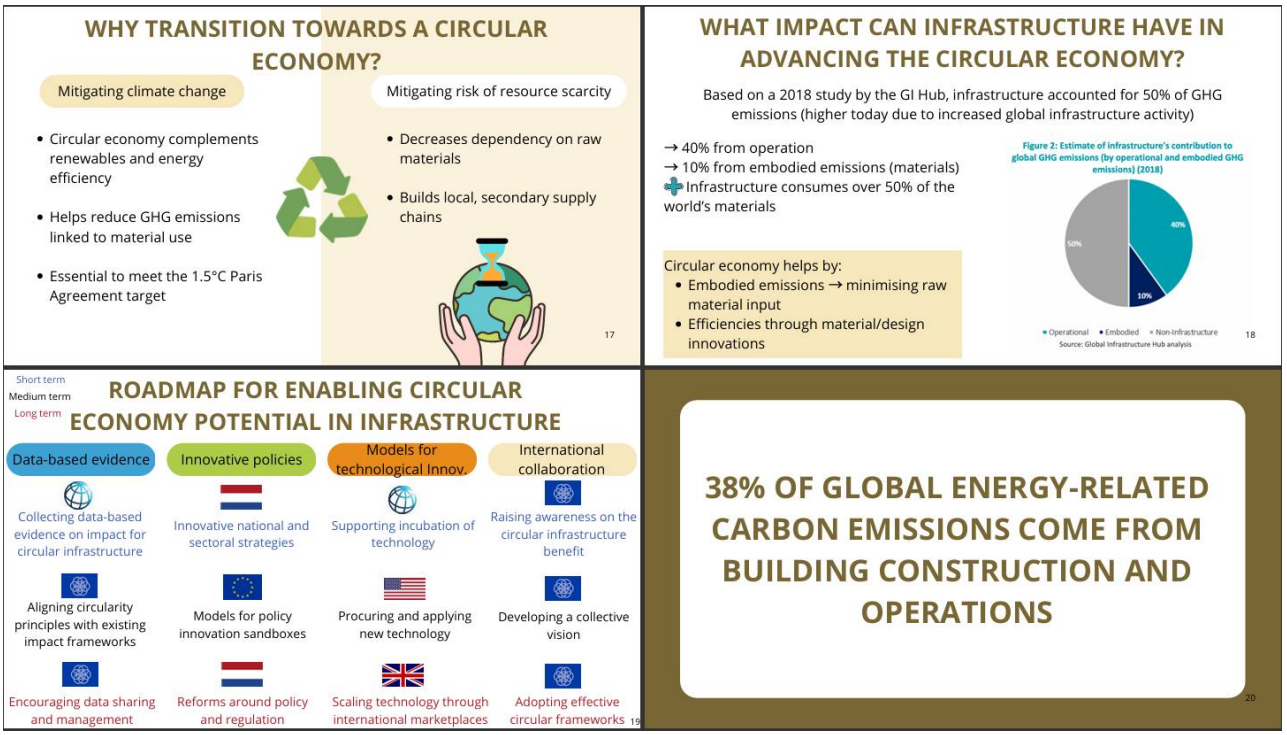

Figure 81. *Session 11 (Slides 17-20)*

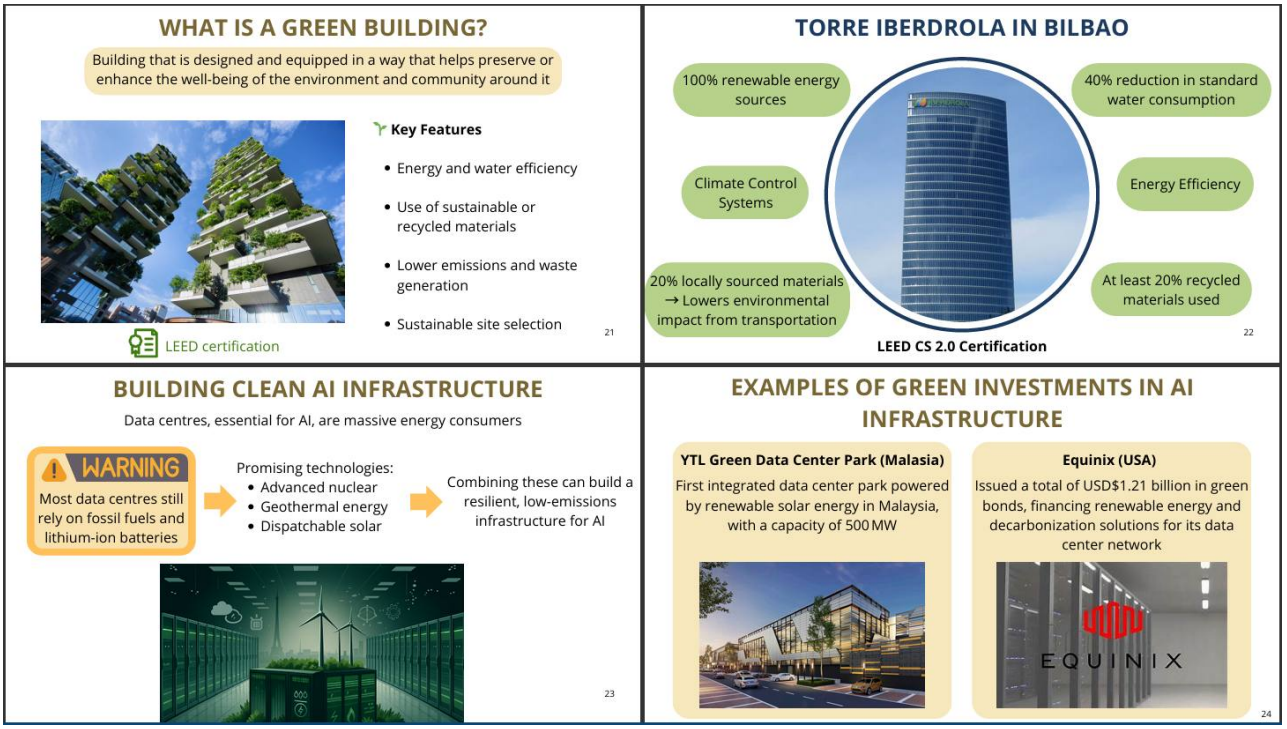

Figure 82. *Session 11 (Slides 21-24)*

12. Session 12

Figure 83. *Session 12 (Slides 1-4)*

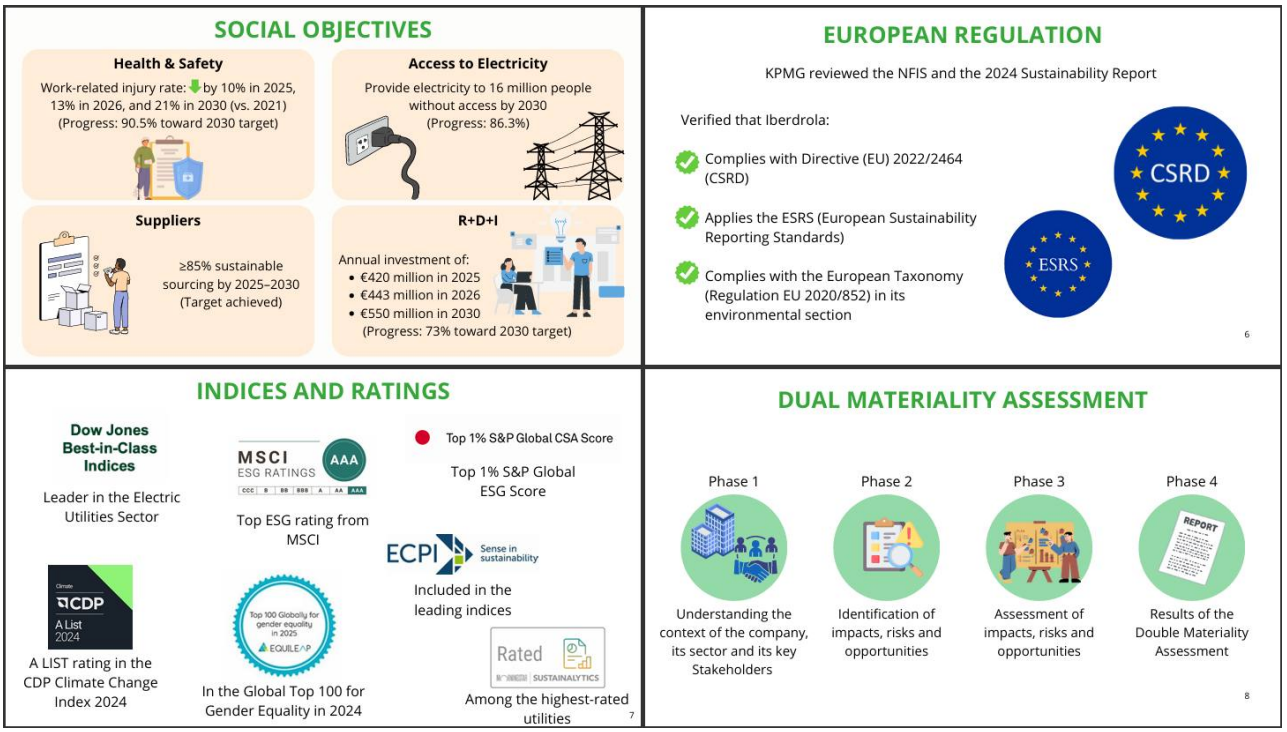

Figure 84. *Session 12 (Slides 5-8)*

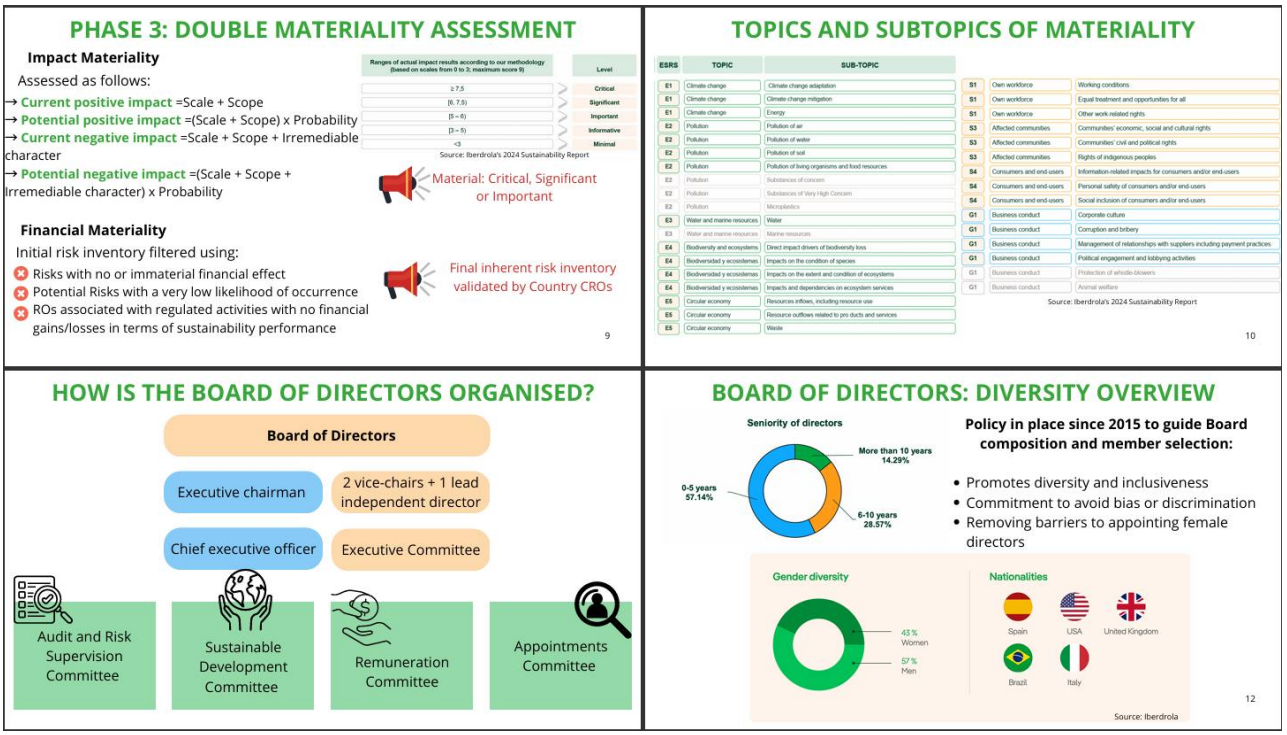

Figure 85. *Session 12 (Slides 9-12)*

Figure 86. *Session 12 (Slides 13-16)*

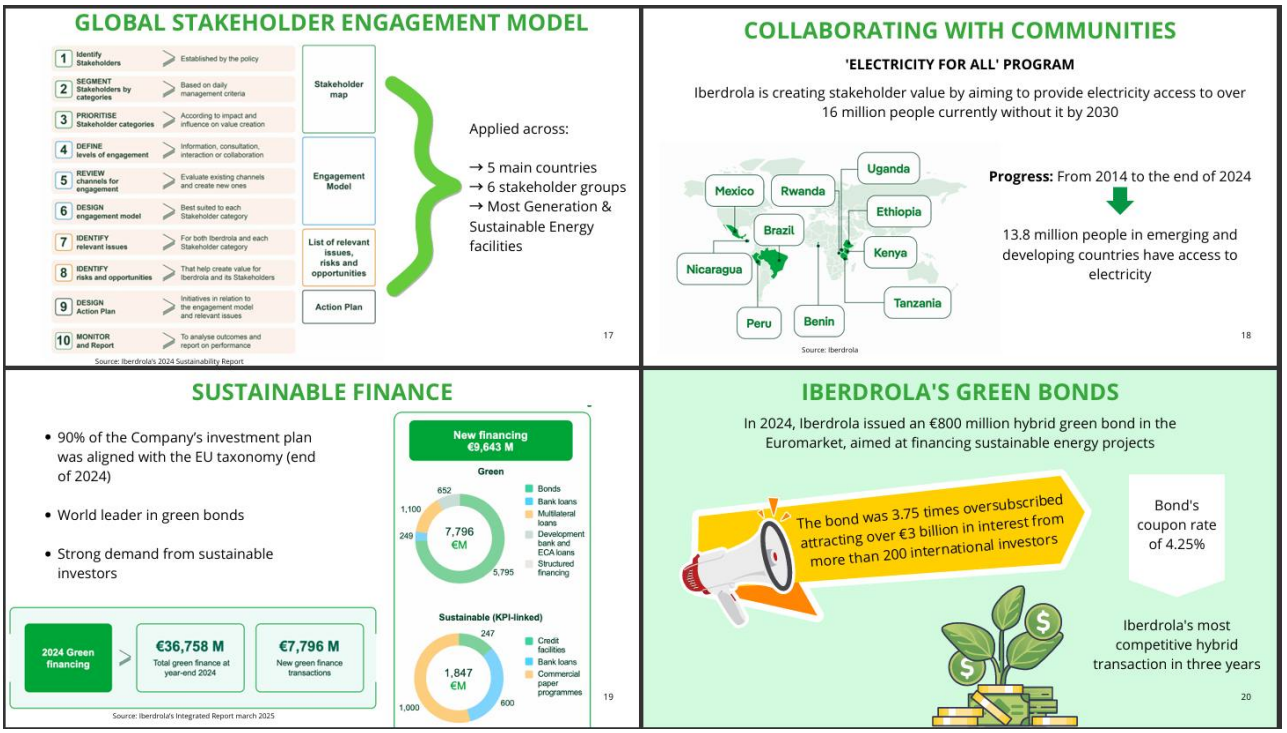

Figure 87. *Session 12 (Slides 17-20)*

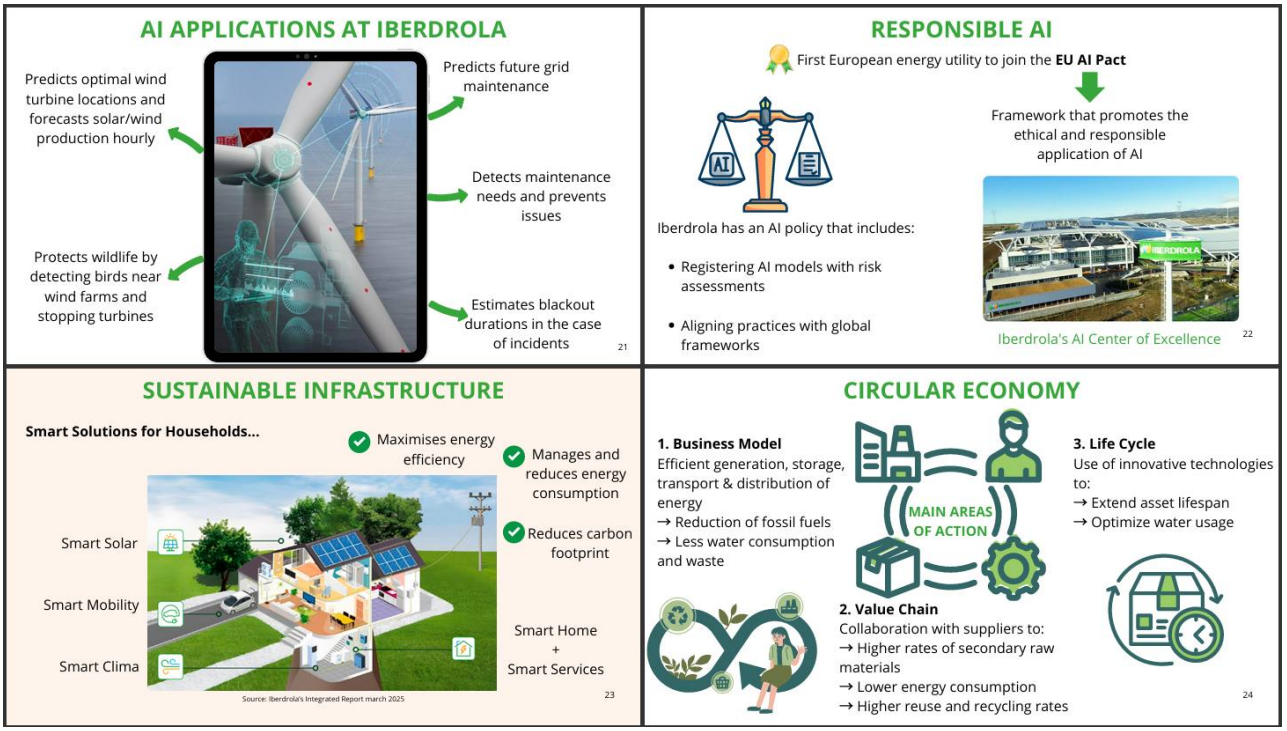

Figure 88. *Session 12 (Slides 21-24)*

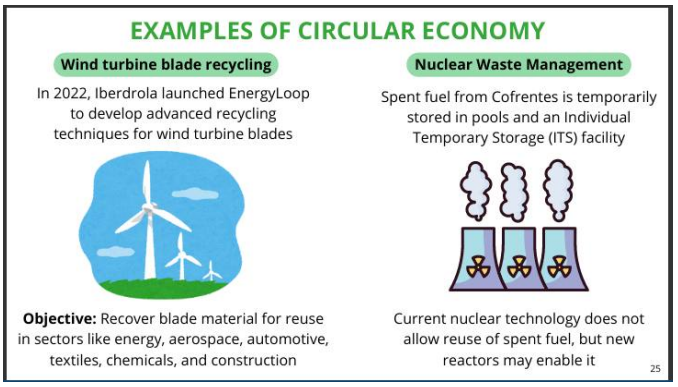

Figure 89. *Session 12 (Slide 25)*